Muslim Millennials Awareness of Halal Supply Chain Knowledge and Purchase Intention for Halal Meat Products in Malaysia: A Proposed Framework

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ABSTRACT

The rapid growth of the global halal industry has shifted consumer expectations from ingredient compliance to the preservation of halal integrity across the entire supply chain, especially for perishable products such as meat. Drawing on the Theory of Planned Behavior (TPB), this study proposes an adapted framework in which four antecedents (halal supply chain knowledge, halal certification and logo, religious belief, and ethical and environmental considerations) are hypothesised to relate to the purchase intention of halal meat products among Malaysian millennials. A quantitative, correlational design is proposed. Data will be collected through an online questionnaire using purposive convenience sampling, targeting at least 384 qualified respondents, after a 30 respondent pilot test and with informed consent procedures. SPSS analysis will use Cronbach's alpha, Pearson correlation and multiple regression with diagnostic tests to test four hypotheses and identify the strongest predictor. The study is at the proposal stage: no empirical results are reported, and the stated contributions are expected rather than established. If the hypotheses are supported, the findings could inform halal practitioners, logistics providers and regulators such as JAKIM on supply chain transparency and certification trust.

Keywords: halal supply chain knowledge, halal certification, religious belief, ethical considerations, purchase intention, Malaysian millennials, Theory of Planned Behavior

INTRODUCTION

A. Background

Demand for halal products has risen rapidly, particularly in countries with large Muslim populations such as Malaysia. Consumers are now aware of halal issues not only in terms of ingredients but also in how a product is handled from farm to table. This process, the halal supply chain, ensures that products remain halal throughout production, storage and transportation [1]. Halal is also associated with cleanliness, safety and quality, which gives it appeal among non-Muslim consumers [2].

The global halal food market reached USD 2,467.9 billion in 2023 and is projected to reach USD 5,814.3 billion by 2032, a compound annual growth rate of 10% [3]. Malaysia's halal industry was valued at RM290 billion in 2023 and is targeted to contribute 11% of national GDP by 2030 [4]. Within this market, millennials have become a major consumer group. They tend to value ethical consumption, environmental protection and transparency, and prefer products that are clean, safe and responsibly produced, which aligns with the halal concept [5]. Millennials are specifically targeted as they represent the dominant consumer segment [6] with substantial purchasing power, high digital literacy, and elevated exposure to information regarding supply chain ethics, sustainability, and food safety [7]. Muslim millennials are specifically targeted as they represent the dominant consumer segment with substantial purchasing power, high digital literacy, and elevated exposure to information regarding supply chain ethics, sustainability, and food safety

B. Problem Statement

Although halal products are widely available in Malaysia, consumer understanding of halal supply chains remains limited. Many consumers focus on the halal logo without understanding the process behind it [1], [8]. Studies indicate that a significant proportion of Malaysian consumers cannot differentiate JAKIM-issued certificates from private or foreign halal labels that do not meet Malaysian standards [9]. Lack of knowledge about halal supply chains can lower purchase intention [5].

Supply chain vulnerability was illustrated by the 2020 illegal meat cartel scandal, in which meat from four countries (China, Ukraine, Brazil and Argentina) was smuggled using falsified halal certificates and import permits, compromising halal integrity and shaking consumer confidence [10]. Consumer trust in halal certification has declined due to repeated fraud incidents [10], and some consumers question its authenticity where standards are not properly followed [11].

The target population is substantial. Malaysia's Muslim population was estimated at approximately 20.8 million in 2023, or 63.5% of 33.4 million people [6], and the working-age population (15–64 years) made up 70% of the total, with millennials forming a dominant share [6]. Despite many studies on halal products, limited research addresses halal supply chain knowledge and millennial purchase intention for halal meat in Malaysia [8], [12]. This study addresses that gap.

C. Research Objectives

The study aims (RO1) to determine the relationship between halal supply chain knowledge and purchase intention of halal meat products; (RO2) to examine the relationship between halal certification and logo and purchase intention; (RO3) to investigate the relationship between religious belief and purchase intention; (RO4) to analyse the relationship between ethical and environmental considerations and purchase intention; and (RO5) to identify the most significant factor influencing purchase intention of halal meat products.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Theory of Planned Behavior

This study draws on the Theory of Planned Behavior (TPB), which holds that an individual's intention to perform a behavior is influenced by attitude, subjective norms and perceived behavioral control [13]. Attitude is a positive or negative evaluation of the behavior; subjective norms refer to social pressure from family, friends and society [14]; and perceived behavioral control reflects how easy or difficult the behavior is perceived to be, shaped by factors such as availability and affordability [13], [15]. TPB has been widely applied in halal consumer research [14], [16]. How the four variables of this study relate to these constructs is set out in Section II-G.

B. Purchase Intention of Halal Meat Products

Purchase intention is a consumer's willingness or likelihood to purchase a product in the future [16], and is an important predictor of actual buying behavior [13]. For halal meat, it reflects the willingness to buy meat that is certified halal and processed according to Islamic requirements. Consumers are increasingly concerned about integrity throughout the supply chain rather than only the final logo, given issues such as cross-contamination, improper storage and non-compliance during transportation [12]. Positive attitudes and strong religious values have been found to significantly influence halal purchase intention [16]. However, limited research has examined halal meat from a supply chain perspective, and empirical studies on Malaysian millennials remain scarce.

C. Halal Supply Chain Knowledge

Halal supply chain knowledge is a consumer's understanding of the processes that maintain halal integrity, including sourcing, processing, storage, transportation and distribution [12]. Khan et al. [12] found that understanding of halal supply chain processes increases trust and confidence in halal products, and that consumers who know how products are protected from contamination are more likely to trust their authenticity and form stronger purchase intentions. In contrast, Mohamed et al. [8] argued that halal supply chain

management is often too complex for ordinary consumers, who rely on visible cues such as logos and certification marks, so the direct influence of knowledge on purchase intention may be limited.

Given that millennials actively seek information through digital platforms, knowledge is expected to matter, consistent with TPB's view that knowledge shapes attitudes and thereby intentions [13]. The following hypothesis is proposed:

H1: Halal supply chain knowledge has a significant positive relationship with purchase intention of halal meat products among Malaysian millennials.

D. Halal Certification and Logo

Halal certification is official recognition by an authorised body that a product complies with halal requirements, and the halal logo is the symbol displayed to indicate this [17]. In Malaysia, certification is administered by JAKIM. Quoquab et al. [17] found that certification and logos reduce uncertainty, provide assurance of compliance, and strengthen purchase intention. Conversely, Chong et al. [11] found that logos may not always suffice because some consumers are skeptical owing to reports of fake logos and doubts about certification credibility, so effectiveness depends on transparency and public confidence in the certifying authority. Because consumers cannot directly verify compliance, the logo is expected to remain a key reference point, particularly for meat. Hence:

H2: Halal certification and logo have a significant positive relationship with purchase intention of halal meat products among Malaysian millennials.

E. Religious Belief

Religious belief is an individual's faith, commitment and adherence to the teachings of a religion [18]. Ali et al. [18] reported that stronger religious belief makes consumers more attentive to halal requirements and more likely to buy halal products, creating a sense of responsibility that their food complies with Islamic teachings. Amalia et al. [14], applying TPB, found that religious belief alone may not fully explain halal food purchase intention, as subjective norms and perceived behavioral control also matter, and social expectations may sometimes outweigh personal belief. Religious belief is nevertheless expected to remain a major influence among Malaysian Muslims, leading to:

H3: Religious belief has a significant positive relationship with purchase intention of halal meat products among Malaysian millennials.

F. Ethical and Environmental Considerations

Ethical and environmental considerations are consumers' concerns about the moral, social and environmental impacts of products and production, including animal welfare, sustainability and humane treatment of animals [7]. They relate closely to the Islamic concept of Tayyib, which requires food to be not only halal but also clean, safe and ethically produced [7]. Ali and Ahmad [7] found that young consumers increasingly support products that promote sustainability and ethical practices. By contrast, Chang and Chen [19] found that consumers often struggle to convert ethical concerns into purchases because many are unwilling to pay significantly higher prices. Ethical values are therefore expected to matter most when halal meat remains affordable and accessible. Hence:

H4: Ethical and environmental considerations have a significant positive relationship with purchase intention of halal meat products among Malaysian millennials.

G. Distinguishing the Constructs and Alignment with TPB

Halal supply chain knowledge and certification awareness may appear to overlap, so they are separated conceptually and operationally. Halal supply chain knowledge is cognitive and process-oriented: what consumers understand about how halal integrity is preserved from sourcing to retail. Certification and logo is signal-oriented: how far consumers recognise and trust an official mark as evidence of compliance. A consumer

may trust the logo while knowing little about the processes behind it, a pattern consistent with reports that many consumers rely on logos without understanding the supply chain [8], [9]. Items for each construct will therefore avoid referring to the other, and overlap will be checked through inter-construct correlations and multicollinearity diagnostics (Section III-F).

The four independent variables are not themselves TPB constructs. TPB explains intention through attitude, subjective norms and perceived behavioral control, and allows other variables, such as knowledge, to influence intention indirectly by shaping the beliefs behind these constructs [13]. This study therefore treats the four variables as background (antecedent) factors, and it is an adaptation of TPB rather than a test of the full theory. Earlier halal studies have likewise extended TPB with religiosity [20]. Table I sets out the operational definition of each construct and how it is expected to operate through TPB.

Table I Operational Definitions and TPB Alignment

Construct	**Operational definition**	**Expected TPB link**
Halal supply chain knowledge (H1)	Understanding of how halal integrity is kept in sourcing, processing, storage, transport and distribution	Background factor shaping beliefs and attitude; raises perceived control over judging halal integrity
Halal certification and logo (H2)	Recognition of, and trust in, the official halal certificate and logo as a signal of compliance	Trust cue shaping attitude; eases perceived control in identifying halal products
Religious belief (H3)	Strength of faith-based commitment to consuming halal food	Shapes attitude; linked to subjective norms through the religious community
Ethical and environmental considerations (H4)	Concern for animal welfare, sustainability and ethical (tayyib) production when choosing meat	Value-based evaluation shaping attitude; price affects perceived control
Purchase intention	Willingness and likelihood to purchase halal meat products in future	Intention (outcome)

Because attitude, subjective norms and perceived behavioral control are not measured separately, the study can test direct associations with intention but not the mediating paths TPB implies. This is acknowledged as a limitation and a direction for future research.

H. Conceptual Framework

Fig. 1 presents the proposed framework. The four antecedents are each hypothesised to relate positively to purchase intention of halal meat products (H1–H4).

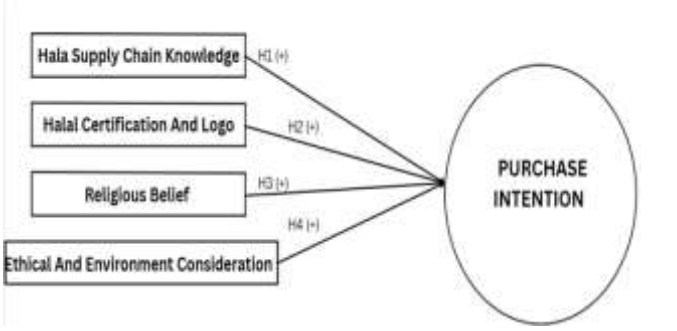


Fig. 1 Conceptual framework of the study

METHODOLOGY

A. Research Design and Approach

A quantitative, cross-sectional, correlational design is adopted to examine the strength and direction of relationships between the four independent variables and purchase intention without manipulating any variable [21]. The quantitative approach supports hypothesis testing through statistical analysis [22]. The study is conducted in Malaysia and the questionnaire is administered online.

B. Measurement and Instrument

Primary data are collected through a structured questionnaire on Google Forms; secondary data come from journals, books, government publications and industry reports. The questionnaire has sections for demographics (gender, age, education, occupation, monthly income, state of residence), screening questions, the four independent variables, and purchase intention. Constructs are operationalised as in Table I. Each is measured with multiple items on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Appendix A lists indicative items for each construct. These are draft items written from the operational definitions. The final items will be adapted from validated scales in earlier halal and consumer behavior studies, with the source of each scale reported, and refined through expert review of content validity and the pilot test. Items have not yet been validated.

C. Sampling and Sample Size

Purposive convenience sampling, a non-probability technique, is used because the study requires respondents with specific experience. Screening questions admit only respondents who are Malaysian millennials (born 1981–1996) and have purchased halal meat products. The survey link will be shared through WhatsApp, Telegram, Facebook and Instagram groups and community pages, so that respondents in different states can participate. The state, gender and education profile of respondents will be monitored during collection, and recruitment will be widened if any group is clearly over-represented.

Non-probability sampling carries a risk of selection bias: online, self-selected respondents may be younger, more educated, more digitally active and more interested in halal issues than the wider millennial population. Findings will therefore be interpreted as applying to the sample and reported with its full demographic profile, rather than generalised to all Malaysian millennials. Self-reported data may also be affected by social desirability and common method bias, and procedural remedies such as anonymity and neutral item wording will be used.

The target of at least 384 valid responses follows the sample size recommended for populations above one million (95% confidence, ±5% margin of error) [23]. Malaysia's millennial population is well above this threshold [6]. Because the sample is non-probability, the margin of error is only indicative. The target is also adequate for the planned analysis: with four predictors it gives 96 respondents per predictor, above the 15–20 observations per predictor regarded as desirable for multiple regression [24]. Collection will continue until 384 responses remain after screening and data cleaning.

D. Pilot Test and Reliability

A pilot test with approximately 30 respondents with characteristics similar to the target population will assess item clarity and reliability before full data collection [22]. Internal consistency is assessed using Cronbach's alpha, where a coefficient of 0.70 or higher is generally acceptable [24]. Table II shows the interpretation criteria [25].

Table II Cronbach's Alpha Criteria

Cronbach's alpha (α)	Classification
$\alpha \geq 0.9$	Very good

$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Doubtful
$0.5 \leq \alpha < 0.6$	Bad
$\alpha < 0.5$	Not acceptable

E. Ethical Considerations

Participation is voluntary. The first page of the questionnaire will present an informed consent statement covering the purpose of the study, the estimated completion time, the voluntary nature of participation and the right to withdraw before submission; respondents must agree before proceeding. The same applies to pilot respondents. The age screening excludes minors. No names, email addresses or other identifiers will be collected, responses will be anonymous and reported only in aggregate, and the data will be used for academic purposes and stored with access limited to the researchers. The study will follow the research ethics requirements of Universiti Teknikal Malaysia Melaka, and any required ethical approval or exemption will be confirmed with the faculty before data collection begins.

F. Data Analysis and Planned Reporting

Responses will be coded and analysed in SPSS. Descriptive statistics will summarise respondent demographics and each construct. Pearson correlation analysis, whose coefficient ranges from −1 to +1 [26], will test H1–H4 by determining whether higher levels of each independent variable are associated with higher purchase intention. Multiple regression analysis will estimate each variable's contribution to explaining purchase intention [24] and identify the most significant factor (RO5), using the model

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

where Y is purchase intention, X_1 halal supply chain knowledge, X_2 halal certification and logo, X_3 religious belief, X_4 ethical and environmental considerations, a the constant, b the regression coefficients and e the error term. The most significant factor will be judged from the standardised coefficients.

After data collection, the results will report descriptive statistics; Cronbach's alpha for each construct; Pearson correlation coefficients with significance levels; unstandardised and standardised regression coefficients with significance levels and 95% confidence intervals; and the model's R^2, adjusted R^2 and F-test. Regression assumptions will be checked through diagnostics for multicollinearity (tolerance and variance inflation factor), residual normality, linearity, homoscedasticity, independence of errors (Durbin-Watson) and influential outliers [24], [26]. Hypotheses will be tested at the 0.05 significance level.

Study Status, Expected Contributions and Limitations

This paper reports the proposed framework and research design. Data collection has not been carried out, so no empirical results are presented and the hypothesised relationships remain unverified. Findings and discussion will be reported once the survey is completed.

The contributions below are therefore expected, not established. If the hypotheses are supported, the study would provide evidence that halal supply chain knowledge, certification trust, religious belief and ethical concern act as antecedents of halal meat purchase intention, and would offer a basis for later tests that add TPB's attitude, subjective norm and perceived control constructs as mediators. Practically, such evidence could help businesses build trust by ensuring halal integrity [1], and could help policymakers and halal authorities such as JAKIM improve regulation, certification trust and consumer awareness of halal supply chains.

Several limitations apply. The study is limited to Malaysia and to selected factors. Non-probability online sampling may introduce selection bias and limits generalisability. The data are self-reported perceptions, collected at one point in time, so causal conclusions cannot be drawn. TPB's own constructs are not measured, so mediating paths are not tested. Time and cost constraints may also affect data collection.

CONCLUSION

This paper proposes an adapted TPB-based framework in which halal supply chain knowledge, halal certification and logo, religious belief, and ethical and environmental considerations are hypothesised to relate to the purchase intention of halal meat products among Malaysian millennials. Four hypotheses were developed from literature that offers both supporting and contrasting evidence for each variable, and a quantitative survey design with Pearson correlation and multiple regression was specified, together with sampling, measurement, ethical and reporting procedures. No empirical findings are claimed at this stage. Whether each variable predicts purchase intention, and which is strongest, can only be established after data collection and analysis.

APPENDIX A: INDICATIVE QUESTIONNAIRE ITEMS

Draft items for the pilot test. All construct items use a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Final items will be adapted from validated scales and refined after expert review and the pilot test.

Table A1 Screening and Indicative Items

Code	Item
S1	Are you a Muslim citizen or resident in Malaysia? (Yes/No)
S2	Were you born between 1981 and 1996? (Yes/No)
S3	Have you purchased halal meat products in the past six months? (Yes/No)
HSCK1	I understand that halal integrity must be maintained from farm to retail, not only at slaughter.
HSCK2	I know that cross-contamination during transport, storage or display can make halal meat non-halal.
HSCK3	I am aware that halal meat should be handled, stored and transported separately from non-halal products.
HC1	I can recognise the official JAKIM halal logo.
HC2	I trust that products carrying the JAKIM halal logo are genuinely halal.
HC3	Checking the halal logo is the first step when I buy meat.
RB1	Following Islamic dietary rules is an important part of my daily life.
RB2	I feel a religious responsibility to make sure the meat I eat is halal.
RB3	My religious beliefs influence which meat products I buy.
EE1	It is important to me that animals are treated humanely.
EE2	I prefer meat products that are produced in an environmentally responsible way.
EE3	I consider whether meat is clean, safe and ethically produced when I buy it.

PI1	I intend to buy halal meat products in the near future.
PI2	I am willing to choose halal meat products over non-halal alternatives.
PI3	I plan to continue buying halal meat products.

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