

A Study of Intention to Use of Halal Scanning Application Among Muslim Students at UTHM

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Abstract: Manipulation of Halal certification has been recurring for decades now; demanding a viable solution to effectively identify the authenticity of Halal products. Thus, this study aims to seek the intention to use of Halal scanning application among Muslim students of UTHM by adapting Technology Acceptance Model (TAM) to observe the influence of perceived usefulness and perceived ease of use on behavioral intention to use the application. The mediation effect of attitude toward use would also be tested. Quantitative research would be deployed by distributing questionnaires to the Muslim students of UTHM. According to Krejcie & Morgan (1970), a sample of 377 respondents should be observed in this study. Data analysis would be conducted through SmartPLS 3.0 and SPSS software. PLS-SEM method would be executed, which includes descriptive analysis, measurement model assessment, structural model assessment, and mediation analysis. The outcome of this study would contribute to the academic literature, the application developer, and other affiliated parties in discovering factors contributing to the adoption of the application in Malaysia as a tool to enhance market adoption of the application and ultimately leverage digitalization within the pre-packaged Halal food industry.

Keywords: Intention to use, Halal scanning application, Technology acceptance model (TAM), PLS-SEM

1. Introduction

Halal food is food that is allowed for consumption by the Muslims and abides the Islamic Law as outlined in the Quran and the Sunnah of the Prophet (Abdallah, Abdel Rahem & Pasqualone, 2021). This concept includes all aspects of food production, such as maintaining hygiene, preventing contamination, and meeting the nutritional requirements suggested by the Islamic law (Al-Shami & Abdullah, 2021). In Malaysia, the Department of Islamic Development Malaysia (JAKIM) is responsible in refining the Halal concept and Halal assurance through the issuance of Halal certification and logo.

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When selecting food products, many consumers, particularly Muslims, consider Halal logo as an important criterion. This is especially true for pre-packaged foods as the logo assures that the product is Halal (Moidin *et al.*, 2021). According to Regulation (EU) No 1169/2011 on the Provision of Food Information to Consumers, pre-packaged food is any food that is packaged before being sold and cannot be changed without opening or modifying the packaging. This pertains to any food item that is packaged in plastic, boxes, cans, or other types of containers that require proper food labeling in accordance with the Food Regulation of 1985 (Baker Mckenzie, 2023).

In markets of high Muslim population such as Malaysia, Halal logo plays a significant role, whereby its presence or absence can greatly impact the products' acceptance in the market (Kassim, Kamal, & Diah, 2020). As a result, the issue of manipulation of Halal logo persists, wherein traders try to capitalize on its commercial value without following proper procedures and avoiding the associated costs (Shirin Asa, 2019). The recent and most severe case is the meat cartel scandal in Johor. LY Frozen Food Sdn. Bhd. was reported to have been repackaging imported meat from non-Halal slaughterhouses in China, Ukraine, Brazil, and Canada and labeling it with fake Halal logo for the past 40 years ("Meat cartel: LY Frozen Food fined RM1.5m for using fake halal logo", 2023).

This highlights the importance of having a recognition system to verify the authenticity of the Halal logo, which can be achieved through Halal scanning mobile application (Lam *et al.*, 2017). With this application, users can easily access the Halal information of the product by scanning the barcode or QR code on its packaging. Additionally, users can manually search by the product's name, brand, premise, company, or country. They will then be directed to a comprehensive list of products registered in the Global Halal Data Pool (GHDP) - a network that spans across 48 countries, including Malaysia, via Foreign Halal Certification Bodies (FHCB) (Ismail, 2017).

There are several dependable local applications available such as Verify Halal and Smart Halal, but it is yet to be widely adopted by Muslim consumers in Malaysia (Arshad *et al.*, 2017). Additionally, there has been minimal research conducted regarding the adoption of this application. This implies that the application is not commonly utilized in society and has not received thorough research and development. Thus, this study aims to seek the intention to use this application among Muslim students of UTHM by adapting Technology Acceptance Model (TAM) to observe the influence of perceived usefulness and perceived ease of use on behavioral intention to use the application. The mediating effect of attitude towards use of the application would also be tested. UTHM's Muslim students are chosen as the respondents as this study assumes their educational background allows higher awareness of the application and consequently renders reliable results. The focus of this study is solely on pre-packaged halal food products, including canned, bottled, cartoned, and jarred food, as well as manufactured food in plastic or other packaging. Other halal products are not included as they do not optimize the application's functionality.

This study is crucial to determine the Halal food consumers' intention to use this application, which will help gauge its marketability within the local market. Therefore, the application developer and other related parties would be able to identify the key factors that contribute to the increase adoption of the application. From a broader perspective, the widespread use of this application can lead to a more robust effort to digitalize the Halal food sector and enhance the transparency within it. Ultimately, the study would enrich the literature on the digitalization of Halal food industry, especially on mobile applications.

2. Literature Review

2.1 Halal Scanning Application

Halal scanning application has been available both locally and internationally for years with the main function of identifying the authenticity of the Halal logo by scanning the QR code or the barcode of the product (Arshad *et al.*, 2017). This is applicable to pre-packaged food products as it comes with

a scannable barcode or QR code as part of complying with the GS1 Standard (GS1 Malaysia Berhad, n.d.). However, Halal products that do not have a barcode or QR code could be manually searched by entering the product's name or brand (Ismail, 2017).

Verify Halal is a highly popular Halal scanning application based in Malaysia that has been downloaded over 100,000 times worldwide. It has received an impressive 4.1-star rating, making it the most trustworthy local Halal scanning application currently available. Additionally, Verify Halal works in partnership with JAKIM and Foreign Halal Certification Bodies from 48 countries, including Malaysia, to compile a comprehensive list of Halal products under the Global Halal Data Pool (GHDP) (Serunai Commerce Sdn. Bhd., 2023). Several local and international applications, such as Smart Halal, Scan Halal, and My Halal Scanner have also established their presence in the market with thousands of downloads worldwide.

Despite that, only a small percentage of users are from Malaysia. According to Similarweb's data from 2023, the majority of Verify Halal users based on average traffic share come from the United Kingdom (27.29%), Belgium (16.54%), Australia (14.49%), the United States (14.06%), and Egypt (13.20%). Malaysia accounts for less than 3% which is about 500 visits out of an average of 17,356 monthly visits globally. Similar patterns can be observed with Smart Halal, which receives an average of below 5000 monthly visits from Malaysian users.

Thus, it can be assumed that Muslim consumers in Malaysia have not widely adopted this application. This study hence aims to investigate the marketability of the application in our local market and address related issues, such as rebuilding consumer trust in Halal logo, improving transparency, and utilizing digital technologies in the pre-packaged Halal food industry.

2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) explains how consumers behave towards certain technology (Davis, 1989; Lee *et al.*, 2022). In 1986, Davis created a derivation from the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) to study the factors that affect the adoption of technology (Yulianti & Wiguna, 2020). This framework is a highly cited model in testing the adoption of technology (Chang and Wu, 2012; Davis, 1989; Davis *et al.*, 1989; Lee, 2009; Qi *et al.*, 2009; Venkatesh and Davis, 2000; Hubert *et al.*, 2018).

In addition, precedent studies have utilized it to gauge the acceptance of mobile applications in diverse industries such as grocery application (Khurana, Arora & Gupta, 2023), food delivery application (Sujith & Mohan, 2022), sports-branded application (Won, Chiu & Byun, 2022), mobile banking (Kejela & Porath, 2021), agro-advisory application (Soodan *et al.*, 2022) and mobile health (Binyamin & Zafar, 2021). Furthermore, TAM has also demonstrated its dependability in evaluating the adoption of mobile applications in Halal industries such as Halal-based application (Mustun, 2021) and Halal tourism application (Berakon *et al.*, 2021). This makes it applicable in this study, which focuses on the adoption of technology, notably mobile applications within the Halal business context.

2.3 Behavioral Intention to Use (BI)

According to Alharbi & Drew (2014, as cited in Mailizar, Almanthari & Maulina, 2021), behavioral intention to use (BI) refers to the propensity to continue using a technology to gauge how well-liked it is from consumers' perspective. Azjen (2006, as cited in Rasull *et al.*, 2020) stated that behavioral intention to use describes the willingness to carry out certain behavior and it reflects the actual behavior. Much research on technology acceptance utilizes behavioral intention to use as the dependent variable including those applying TAM and UTAUT model such as adoption of potable pork DNA detection device (Ghazali *et al.*, 2022), food delivery application (Sujith & Mohan, 2022), e-grocery shopping application (Anitha & Krishnan, 2022) and mobile banking (Kejela & Porath, 2021). Thus, the dependent variable in this study would be the behavioral intention to use Halal scanning application.

2.4 Perceived Usefulness (PU)

Perceived usefulness (PU) refers to the degree to which a person believes that using a specific system would improve his or her job performance (Davis, 1989, p. 320; Won, Chiu & Byun, 2022). A previous study found a strong positive association between perceived usefulness and intention to use delivery applications (Lee *et al.*, 2022). According to Won, Chiu & Byun (2022), the intention to use a sports-branded application is favorably influenced by perceived usefulness. Additionally, perceived usefulness has a considerable influence on behavioral intention to use the agricultural service mobile application (Verma & Sinha, 2017). In this study, perceived usefulness is anticipated to have a positive effect on behavioral intention to use Halal scanning applications; this means that if customers find the application useful, they are more likely to embrace it.

2.5 Perceived Ease of Use (PEOU)

Perceived ease of use (PEOU) is defined as the degree to which a person believes that using a particular system will require no effort (Davis, 1989, p. 320; Won, Chiu & Byun, 2022). Lee *et al.* (2022) reported that perceived ease of use has a considerable favorable effect on intention to use food delivery application. Similar pattern could also be observed in the intention of using sports-branded application (Won, Chiu & Byun, 2022). In this study, perceived ease of use is expected to have a positive impact on behavioral intention to use of Halal scanning applications; this means that if consumers find the application simple to use, they will be more likely to adopt it.

2.6 Mediating Role of Attitude towards Use (AU)

Attitude toward use refers to a user's assessment of a certain technology or behavior connected to the use of that particular technology (Scherer and Teo, 2019; Soodan *et al.*, 2022). Al-Adwan, Al-Adwan, & Smedley (2013, as cited in Alotaibi, 2017) defines attitude as an individual's favorable or negative thoughts about completing the goal behavior. Throughout various TAM research, the terms attitude, attitude towards technology, attitude towards use, and attitude towards using have all been used interchangeably and have the same meaning.

According to Kejela & Porath (2021), intention to use a mobile banking application is revealed to be most significantly influenced by attitude. Positive attitudes encourage users to embrace the technology favorably and vice versa, hence the strength of the attitude will determine its mediating influence (Anubha, 2021). In a study of purchase intention of Halal cosmetic, attitude has a partial mediation effect as both direct and indirect relationships between quality and purchase intention with attitude as the mediator yielded significant results (Anubha, 2021).

Furthermore, a study on the adoption of mobile-based agricultural services found that perceived ease of use does not directly influence behavioral intention to use but is instead mediated by attitude (Verma & Sinha, 2017). In this study, it is hypothesized that attitude towards use will have mediating effect between perceived usefulness and perceived ease of use, and behavioral intention to use of Halal scanning apps; denoting that in the presence of favorable attitude, consumers who find the application either useful or not; and either easy or difficult to be used, will be more interested in adopting the application.

2.7 Hypotheses Development

H1 = Perceived usefulness has a positive influence on behavioral intention to use Halal scanning application.

H2 = Perceived ease of use has a positive influence on behavioral intention to use Halal scanning application.

H3 = Attitude towards use mediates the relationship between perceived usefulness and behavioral intention to use Halal scanning application.

H4 = Attitude towards use mediates the relationship between perceived ease of use and behavioral to use Halal scanning application.

2.8 Framework of the Study

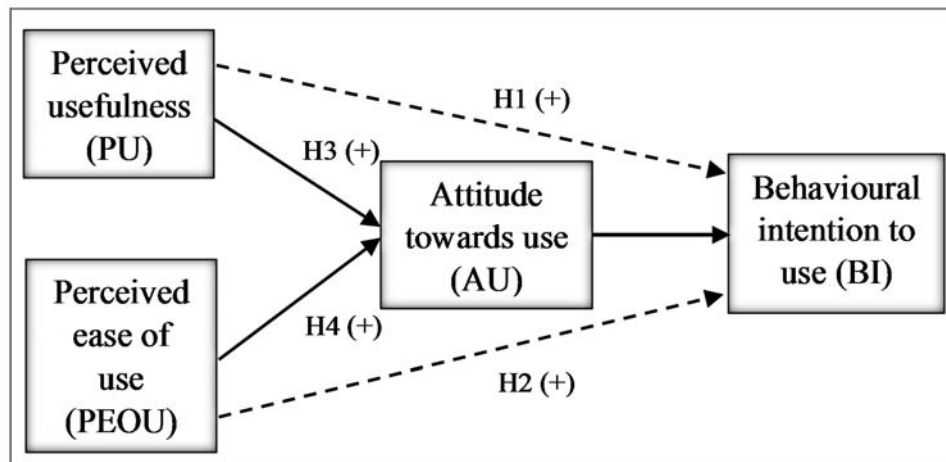


Figure 1: Technology Acceptance Model (TAM) adapted from Davis *et al.* (1989)

3. Conclusion

In conclusion, this study aims to seek the intention to use Halal scanning application among Muslim students of UTHM through observing the factors that contribute to the intention to use the application. There have been very limited studies on the adoption of this application in both local and international contexts, hence implying that the technology is fairly uncommon among the Muslim society to receive considerable attention for further research and development. Thus, this study would potentially contribute to the new findings in the literature of Halal food industry, particularly in the context of Halal scanning applications that may garner bigger potential such as fueling the digitalization effort within the Halal food industry and enhancing the transparency within it.

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