Exploring User Intentions to Embrace Mobile Technology in Halal Auditing

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.91100120

Received: 10 November 2025; Accepted: 20 November 2025; Published: 02 December 2025

ABSTRACT

Halal certification remains a critical benchmark in affirming product credibility for Muslim consumers. Traditional manual auditing procedures, however, often prove inefficient and time-consuming. The integration of digital tools into auditing processes, although promising, has seen limited traction in the halal sector. This study applies the Unified Theory of Acceptance and Use of Technology (UTAUT) to analyze determinants of mobile application adoption among halal auditors in Malaysia. The analysis involved 552 mobile app users engaged in halal certification tasks. Findings highlight that constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions—alongside factors like self-efficacy and attitudes toward technology—positively correlate with the intent to utilize halal auditing applications.

Keywords: Mobile auditing, halal compliance, UTAUT, adoption behavior, digital transformation

INTRODUCTION

The halal market, grounded in Islamic principles, necessitates rigorous certification to ensure the integrity of products and services (Mohd Sulaiman et al., 2018). The conventional halal auditing workflow, largely reliant on manual procedures, is fraught with inefficiencies (Fadzil, 2022). While other sectors have capitalized on digital advancements, halal certification processes have been slow to adapt. However, emerging technologies offer potential to overhaul this process, especially through mobile-based solutions such as QuikHalal (Nowlan, 2013). This study aims to explore the motivational factors behind the adoption of such applications by halal auditors, guided by the UTAUT framework.

LITERATURE OVERVIEW

Halal Certification

Halal certification ensures compliance with Islamic law and promotes consumer trust (Ab Talib et al., 2017). Malaysia, through JAKIM, maintains rigorous standards for certification (Kamaruddin et al., 2012). Auditing procedures include adequacy, field, and follow-up audits (JAKIM, 2020). Mobile technologies like QuikHalal offer features such as digital checklists, image-based evidence, and automated reports, reducing the burden of manual tasks (Irfan & Iskandar, 2017; Ahmad et al., 2019).

The halal certification process serves as a fundamental mechanism to ensure that products and services comply with Islamic law, particularly concerning dietary, hygiene, and ethical standards. This certification not only safeguards religious requirements but also functions as a quality assurance system, boosting consumer trust and business legitimacy in both Muslim-majority and global markets (Ab Talib et al., 2017).

Malaysia plays a pivotal role in the global halal ecosystem, having developed a comprehensive regulatory framework for halal certification under the supervision of the Department of Islamic Development Malaysia (JAKIM). Since its formalization in 1974, JAKIM's procedures have become internationally recognized, providing a benchmark for halal compliance and enforcement. These procedures are grounded in the Manual Procedure for Malaysia Halal Certification (MPPHM) and include document evaluations, physical inspections, and compliance monitoring (Kamaruddin et al., 2012; JAKIM, 2020).

Three main types of audits are employed in the halal certification process which are; adequacy audits, which assess documentation and preparedness; field audits, which evaluate on-site processes and facilities; and follow-up audits, which verify corrective actions after non-compliance issues are identified. These audit stages ensure a holistic review of compliance with halal standards, covering aspects such as ingredient sourcing, equipment usage, storage, and hygiene (Jais, 2016; Mohamad & Othman, 2009).

Despite the robustness of the certification framework, the traditional approach is often resource-intensive, involving manual data entry, physical documentation, and fragmented evidence collection. This has led to increasing interest in the application of digital tools to modernize and streamline the process. One such innovation is QuikHalal, a mobile auditing application developed to digitize halal audits. It enables auditors to create checklists tailored to business types, capture photographic evidence, tag GPS locations, and generate audit reports automatically—all of which significantly reduce administrative burden, errors, and audit cycle times (Irfan & Iskandar, 2017; Ahmad et al., 2019; Holistics Lab, 2017).

Technology integration in halal auditing not only improves efficiency and transparency but also supports Malaysia's broader digital transformation agenda under Industry 4.0, which emphasizes automation, real-time data, and mobile solutions in compliance systems. However, the adoption of these technologies remains uneven, particularly among auditors and businesses that lack digital proficiency or face infrastructural constraints (Widiani & Abdullah, 2018; Amin, 2021). As such, understanding the behavioral intentions behind technology adoption—through models like UTAUT—becomes essential in designing strategies to encourage broader uptake within the halal auditing ecosystem.

Theoretical Foundation

UTAUT consolidates eight existing theories into a unified model to explain user acceptance (Venkatesh et al., 2003). These include: 1.Theory of Reasoned Action (TRA), 2.Technology Acceptance Model (TAM), 3. Motivational Model (MM), 4.Theory of Planned Behavior (TPB), 5. Combined TAM and TPB (C-TAM-TPB), 6. Model of PC Utilization (MPCU), 7. Diffusion of Innovations Theory (DOI), and 8.Social Cognitive Theory (SCT).

By integrating these diverse perspectives, UTAUT provides a consolidated framework for understanding users' intentions to adopt technology, highlighting four key factors that directly affect both intention and usage behavior:

1. **Performance Expectancy (PE):** the degree to which individuals believe that using a system will help them attain gains in job performance.
2. **Effort Expectancy (EE):** the perceived ease of use associated with the system.
3. **Social Influence (SI):** the extent to which users perceive that important others believe they should use the technology.
4. **Facilitating Conditions (FC):** the perception of the availability of organizational and technical infrastructure to support system use.

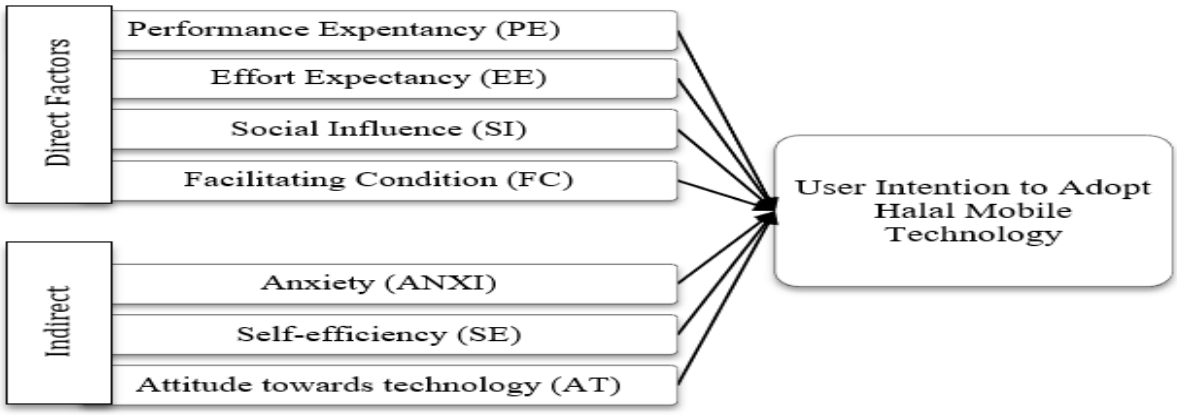
In addition to these direct predictors, UTAUT also considers moderating variables such as gender, age, experience, and voluntariness of use, which influence the strength of relationships between constructs. Later studies have expanded UTAUT to include other psychological factors like self-efficacy (SE), attitude toward using technology (AT), and technology-related anxiety (ANXI), especially when investigating contexts involving voluntary or user-driven adoption (Šumak & Šorgo, 2016; Hoque & Sorwar, 2017).

Empirical validations of UTAUT have consistently shown its superiority in predicting user intentions compared to earlier models. For instance, it has been successfully applied in domains such as e-learning, e-government services, mobile banking, and audit software adoption, including among professionals like auditors, educators, and healthcare providers (Thottoli & Thomas, 2022; Foon & Fah, 2011; Wijaya et al., 2022). These adaptations underscore the model's robustness and flexibility in capturing the multifaceted dynamics that drive user engagement with new technologies. Accordingly, this study adopts UTAUT as the foundational theoretical model to examine factors influencing the adoption of mobile auditing applications in the halal certification process.

Research Framework and Hypotheses

Seven hypotheses were developed to explore the influence of key variables on users' (halal auditors) intention to use halal auditing mobile technology, drawing on work by Venkatesh et al. (2003) and Taylor & Todd (1995).

Figure 1. Research Conceptual Framework



This study adopts the UTAUT model to examine factors influencing halal auditors' intention to use mobile auditing apps. Drawing on Venkatesh et al. (2003) and Taylor & Todd (1995), the framework includes four core predictors; performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), alongside three psychological factors: self-efficacy (SE), attitude toward technology (AT), and anxiety (ANXI) as shown in Figure 1.

These constructs form the basis of the following hypotheses:

H1: Performance expectancy (PE) positively influences user intention to use halal auditing apps.
H2: Effort expectancy (EE) positively influences user intention to use halal auditing apps.
H3: Social influence (SI) positively influences user intention to use halal auditing apps.
H4: Facilitating conditions (FC) positively influence user intention to use halal auditing apps.
H5: Anxiety (ANXI) negatively influences user intention to use halal auditing apps.
H6: Self-efficacy (SE) positively influences user intention to use halal auditing apps.
H7: Attitude toward using technology (AT) positively influences user intention to use halal auditing apps.

This framework enables a structured analysis of how technical, social, and psychological factors contribute to technology adoption in the halal certification context.

METHODOLOGY

A quantitative research design using a structured questionnaire was employed to assess the user intention of halal auditors toward the adoption of mobile auditing applications. The target population comprised auditors actively involved in halal certification activities across Malaysia, particularly those familiar with mobile solutions such as QuikHalal.

A convenience sampling method was used due to the accessibility and availability of respondents within the halal auditing ecosystem. While this non-probability approach may limit generalizability, it allowed the researchers to obtain a substantial and relevant sample within practical constraints. A total of 552 valid responses were collected and analyzed, providing an adequate sample size for statistical testing and model validation.

The data collection instrument was a self-administered questionnaire, divided into three sections:

- **Section A:** Demographic information (e.g., age, gender, experience level, and familiarity with mobile apps).
- **Section B:** Perception measures based on UTAUT and its extensions.
- **Section C:** User intention toward using halal auditing mobile apps.

Each construct in Section B was measured using multiple items adapted from established UTAUT literature (Venkatesh et al., 2003; Šumak & Šorgo, 2016), rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was chosen for its simplicity and effectiveness in capturing degrees of agreement.

To ensure the reliability and internal consistency of the constructs, Cronbach's Alpha was computed for each variable (Cronbach, 1951; George & Mallery, 2003). Most constructs demonstrated strong internal consistency, with alpha values exceeding the commonly accepted threshold of 0.70. However, the anxiety (ANXI) construct returned a lower reliability score of $\alpha = 0.669$, indicating moderate reliability. While slightly below the ideal threshold, this value was deemed acceptable for exploratory research purposes.

A pilot test was conducted prior to full data collection with 20 auditors to assess the clarity, wording, and reliability of the questionnaire items. Feedback from this process informed minor revisions to improve item phrasing and layout, ensuring greater accuracy and user-friendliness.

The resulting dataset was analyzed using descriptive statistics and correlation analysis, focusing on the relationships between the independent variables (PE, EE, SI, FC, SE, AT, ANXI) and the dependent variable (user intention to adopt mobile auditing apps). These analyses provided the foundation for testing the study's hypotheses.

RESULTS AND FINDINGS

This section presents a detailed analysis of factors influencing the user intention to adopt mobile auditing applications among halal auditors in Malaysia. Using the UTAUT framework, Spearman's rank correlation coefficient was employed to evaluate the strength and direction of relationships among key variables.

Table 1: Spearman Rank Correlation Coefficients among Variables

Variable	PE	EE	SI	FC	SE	AT	ANXI	UI
PE	1.000	0.738**	0.505**	0.844**	0.533**	0.741**	-0.115**	0.573**
EE	0.738**	1.000	0.501**	0.703**	0.484**	0.687**	-0.121**	0.575**
SI	0.505**	0.501**	1.000	0.526**	0.595**	0.651**	0.172**	0.652**
FC	0.844**	0.703**	0.526**	1.000	0.507**	0.742**	-0.096*	0.577**
SE	0.533**	0.484**	0.595**	0.507**	1.000	0.606**	0.163**	0.580**
AT	0.741**	0.687**	0.651**	0.742**	0.606**	1.000	-0.143**	0.648**
ANXI	-0.115**	-0.121**	0.172**	-0.096*	0.163**	-0.143**	1.000	0.043
UI	0.573**	0.575**	0.652**	0.577**	0.580**	0.648**	0.043	1.000

Note: Correlations marked with ** are significant at the 0.01 level (2-tailed), * at the 0.05 level.

As shown in Table 1, all independent variables except anxiety (ANXI) that exhibit significant positive relationships with user intention (UI) to adopt halal auditing mobile applications. Social Influence (SI) and

Attitude Toward Technology (AT) demonstrate the strongest correlations with UI (r = 0.652 and r = 0.648, respectively), indicating their critical role as primary predictors of mobile app adoption. Performance Expectancy (PE), Effort Expectancy (EE), Facilitating Conditions (FC), and Self-Efficacy (SE) also show moderate to strong positive associations, confirming their relevance within the UTAUT framework. These findings are consistent with prior research that identifies these constructs as key drivers of behavioral intention. In contrast, Anxiety (ANXI) shows a weak and statistically insignificant relationship with UI (r = 0.043), suggesting limited influence in this context. To further support the correlation results, scatter plots were used to visualize the strength and direction of relationships between each independent variable and UI.

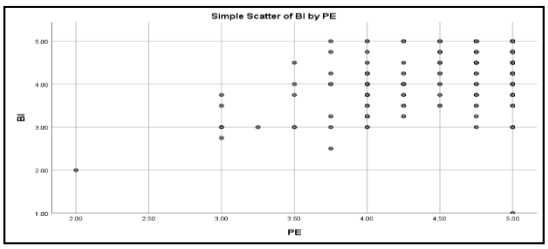


Figure 2a. Scatter plot for UI vs PE

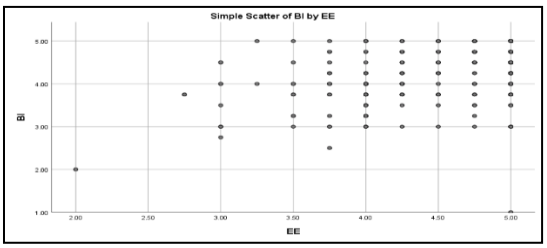


Figure 2b. Scatter plot for UI vs EE

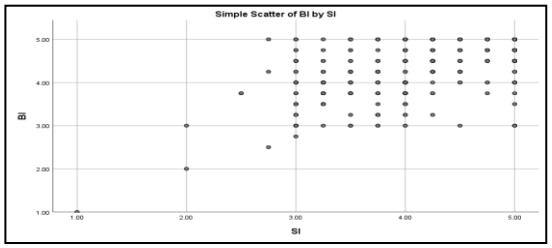


Figure 2c. Scatter plot for UI vs SI

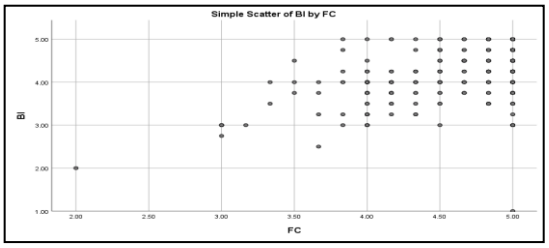


Figure 2d. Scatter plot for UI vs FC

Figure 2a to 2d visualize the relationships between the direct factors and user intention to adopt mobile technology.

1. Figure 2a: UI vs PE – A clear upward trend shows that perceived usefulness significantly enhances adoption. Indicating a moderate positive relationship between Performance Expectancy (PE) and User intention(UI).
2. Figure 2b: UI vs EE – showing correlation between Effort Expectancy (EE) and UI, emphasizing ease of use. Ease of use plays a vital role in encouraging mobile app usage.
3. Figure 2c: UI vs SI – highlighting the strong positive correlation between Social Influence and UI. Peer influence strongly correlates with intention to adopt.
4. Figure 2d: UI vs FC – showing the influence of Facilitating Conditions on UI Availability of resources and support facilities boost acceptance.

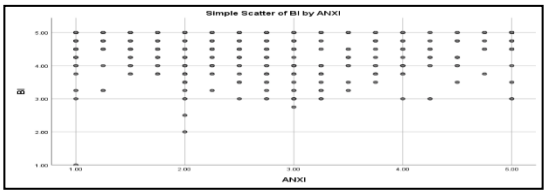


Figure 3a. Scatter plot for UI vs ANXI

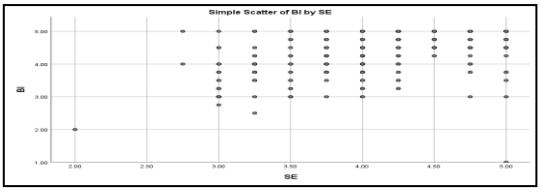


Figure 3b. Scatter plot UI vs SE

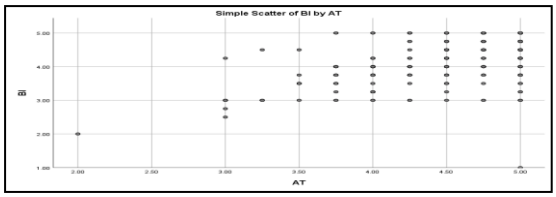


Figure 3c. Scatter plot UI and AT

Figure 3a to 3c visualize the relationships between the indirect factors and user intention to adopt mobile technology.

1. Figure 3a: UI vs SE – demonstrating self-efficacy's relationship with UI indicating that confidence in one's ability leads to higher adoption intentions.
2. Figure 3b: UI vs AT – indicating a positive attitude toward technology increases the likelihood of UI and strongly support mobile technology integration.
3. Figure 3c: UI vs ANXI – The relationship appears weak, supporting the statistical finding.

DISCUSSION

In the context of halal auditing, the study highlights social influence and attitude toward technology as the most significant determinants of mobile app adoption. This finding underscores the importance of professional peer support, institutional expectations, and shared beliefs in shaping individual choices related to technology use. Given the structured and compliance-driven nature of halal auditing, the encouragement or approval of colleagues, supervisors, or certifying authorities appears to play a central role in influencing auditors' readiness to adopt mobile solutions (Zhao et al., 2021).

The strong relationship between user attitude and intention to adopt suggests that promoting favorable perceptions of digital tools is essential. Such perceptions may include confidence in the usefulness of the app, trust in its functionality, and a general comfort level with using mobile platforms. This supports existing research, which argues that individuals with positive attitudes toward technology are more likely to engage with new systems and adapt to change effectively (Williams et al., 2019; Venkatesh et al., 2003).

Furthermore, the influence of social and attitudinal factors may be especially relevant in institutional environments where decision-making is often guided by collective norms and top-down directives. Therefore, fostering widespread acceptance of mobile auditing tools requires more than just introducing functional systems. It involves cultivating a supportive environment through peer training, endorsement from credible voices within the organization, and consistent messaging that builds trust and reduces uncertainty.

These findings affirm the applicability of the UTAUT model in this context and offer practical guidance for encouraging broader adoption. Developers, regulators, and halal certification bodies should prioritize community engagement, ease of use, and trust-building initiatives when promoting mobile auditing apps. Efforts that strengthen social endorsement and enhance user perceptions are likely to produce more sustained and meaningful adoption across the halal auditing ecosystem.

CONCLUSION

This study confirms that mobile applications such as QuikHalal have strong potential to enhance the halal auditing process by improving efficiency, transparency, and real-time documentation. However, widespread adoption remains contingent on addressing several challenges, including usability, digital infrastructure, user training, and the absence of standardized policy frameworks.

The findings highlight the importance of social and attitudinal factors, reaffirming the applicability of the UTAUT model in this context. Encouraging adoption will require coordinated efforts from developers, regulatory bodies, and certification agencies to improve digital readiness and promote user acceptance.

For a more comprehensive understanding, future research should incorporate qualitative approaches and expand to broader geographic regions. Such efforts will help uncover context-specific barriers and inform strategies for more effective integration of mobile technologies in halal certification.

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