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Extending the Technology Acceptance Model: The Role of Trust and Privacy Concerns in AI Chatbot Adoption for Islamic Mobile Banking

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Abstract: The background of this research is to develop the Technology Acceptance Model (TAM) by integrating the variables of trust and privacy concern to analyze the influence of perceived usefulness, perceived ease of use, trust, and privacy concern on customers' attitudes and intentions to use AI chatbots in Sharia mobile banking. A quantitative research design was employed, and data were collected via an online survey from 292 active mobile-banking users of Islamic banks in Greater Bandung, Indonesia, comprising both existing AI-chatbot users and non-users evaluating their intention to adopt the technology. The proposed research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that perceived usefulness has a positive and significant effect on attitude toward using AI chatbots, while perceived ease of use and trust do not significantly influence attitude. Interestingly, privacy concern demonstrates a positive and significant relationship with attitude, indicating that privacy-aware customers may develop favorable evaluations of chatbot services when adequate data protection mechanisms are perceived. The mediation analysis shows that attitude mediates the effects of perceived usefulness and privacy concern on behavioral intention, whereas the indirect effects of perceived ease of use and trust are not statistically significant.

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INTRODUCTION

The rapid diffusion of artificial intelligence (AI) has transformed the financial services industry, particularly through the integration of AI-powered chatbots into mobile banking applications (Suhartanto et al., 2026). By leveraging natural language processing and machine learning capabilities, chatbots enable banks to provide real-time customer assistance, automate routine transactions, and deliver personalized financial services. These capabilities are increasingly important as customers demand faster, more convenient, and accessible banking experiences in an increasingly digital environment (Hasan et al., 2023; Marjerison et al., 2025).

In Indonesia, the adoption of mobile banking has accelerated significantly over the last decade, including within the Islamic banking sector. Recent studies confirm that Islamic financial institutions face distinct governance challenges when digitalizing their

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services, including the need to avoid algorithmic gharar (excessive uncertainty introduced by opaque, automated decision-making), to ensure ethical and Sharia-compliant use of customer data, and to properly structure automated contracts (akad) executed through AI-driven systems (Yaqin et al., 2025). Islamic banks are under growing pressure to enhance digital service quality while maintaining compliance with Sharia principles. Consequently, AI chatbot technology has emerged as a promising solution for improving customer engagement and operational efficiency (Hamadou et al., 2024). Empirical evidence supports this claim: Hasan et al. (2023) found that perceived risk significantly moderates conversational-assistant adoption in banking, while Jafri et al. (2024) show that trust and security concerns remain persistent barriers to Fintech adoption more broadly. Despite its potential benefits, customer acceptance of AI-based financial services remains a critical challenge, particularly when users are required to interact with automated systems that process sensitive financial information.

The Technology Acceptance Model (TAM) has consistently served as one of the most prominent theoretical frameworks for explaining users' intentions and behaviors toward adopting new technologies. TAM proposes that perceived usefulness and perceived ease of use are key determinants of users' attitudes and intentions toward technology utilization, and it has repeatedly demonstrated strong explanatory power across digital banking contexts, including Generation Z's adoption of AI-enabled banking services and mobile banking adoption integrating trust and perceived risk (Çelik & Özköse, 2023), in addition to (Lim et al., 2025; Richad et al., 2019) However, the original TAM was developed for relatively static, transaction-based information systems and centers on functional beliefs alone; it does not capture the autonomous, data-intensive, and ethically sensitive nature of AI chatbots, which continuously collect personal data, make algorithm-driven decisions, and interact with users with limited human oversight. Because perceived usefulness and ease of use alone cannot account for users' concerns about how such systems handle sensitive information or whether their outputs can be relied upon, TAM's explanatory power is likely to be incomplete in this context unless extended with constructs that address trust and privacy.

However, the emergence of AI technologies has introduced new concerns that extend beyond traditional usability and performance considerations. Unlike conventional information systems, AI chatbots operate through extensive data collection, algorithmic decision-making, and autonomous interactions. As a result, users' perceptions of trust and privacy have become increasingly important determinants of technology acceptance (Alagarsamy & Mehrolia, 2023; Rodríguez Cardona et al., 2021). Trust reflects users' confidence in the reliability, integrity, and competence of the chatbot and the institution providing the service. Privacy concern, on the other hand, represents apprehension regarding the collection, storage, and potential misuse of personal and financial information. Prior studies suggest that trust positively influences technology acceptance, whereas privacy concerns may discourage user engagement with AI-based services. Nevertheless, empirical findings remain inconsistent across contexts and technologies (Amellal, 2026). For example, in conventional fintech settings, trust often outweighs privacy concerns as a driver of adoption because the underlying service is perceived as transactional and low-risk, whereas in conversational AI contexts, users disclose more personal and sensitive information during open-ended dialogue, which tends to heighten privacy concerns relative to trust. Sector-specific factors, such as the sensitivity of the data exchanged, the degree of algorithmic autonomy, and the regulatory environment, further explain why the relative strength of trust and privacy effects varies from one study to another.

Although previous studies have examined chatbot adoption in banking services, several research gaps remain. First, existing studies predominantly focus on conventional banking environments, while evidence from Islamic banking remains limited

(Hamadou et al., 2024). Second, many studies investigate trust or privacy concerns separately, providing limited understanding of how both factors simultaneously shape customer attitudes toward AI chatbot usage (Alagarsamy & Mehrolia, 2023). Third, empirical evidence from emerging markets, particularly Indonesia, is still scarce despite the country's position as the largest Muslim-majority nation and one of the fastest-growing Islamic finance markets globally (Febriandika & Hakimi, 2023; Suhartanto et al., 2021).

The Islamic banking context provides a particularly relevant setting for investigating these relationships. Beyond function, Islamic banks are under growing scrutiny; Islamic banking customers often place greater emphasis on ethical conduct, transparency, accountability, and trustworthiness (amanah). Furthermore, the management of customer information must align not only with regulatory requirements but also with Islamic values that emphasize the protection of rights and the avoidance of uncertainty (gharar). Consequently, concerns regarding data privacy and trust may exert a stronger influence on customer evaluations of AI-based banking services than in conventional banking settings (Aisyah et al., 2025).

Against this background, this study extends the Technology Acceptance Model by integrating trust and privacy concern variables to examine customer acceptance of AI chatbots in Islamic mobile banking applications. Specifically, the study investigates the effects of perceived usefulness, perceived ease of use, trust, and privacy concern on customers' attitudes toward using AI chatbots and their subsequent behavioral intention to use such technology. Focusing on Islamic bank customers in Greater Bandung (Bandung Raya), this research contributes to the literature in three ways. First, it enriches the TAM framework by incorporating AI-specific psychological factors. Second, it provides empirical evidence from an underexplored Islamic banking context in an emerging economy. Third, it offers practical insights for Islamic banks seeking to develop trustworthy and privacy-sensitive AI services that support sustainable digital transformation.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) has consistently been recognized as one of the leading theoretical frameworks for understanding information technology acceptance across diverse settings. The model proposes that users' attitudes and subsequent behavioral intentions are largely shaped by two fundamental cognitive beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived Usefulness reflects the extent to which users believe that a technology enhances their performance, whereas Perceived Ease of Use captures the extent to which they perceive the technology as simple and effortless to use. According to TAM, users who perceive a technology as useful and easy to use tend to develop favorable attitudes toward that technology, which subsequently increases their behavioral intention to use it. Due to its strong explanatory power and parsimony, TAM has been extensively applied in studies of internet banking, mobile banking, fintech services, and other digital financial technologies.

Within the Islamic banking context, TAM has also demonstrated substantial predictive capability. Suhartanto et al. (2019) found that perceived usefulness and perceived ease of use significantly influenced customers' intention to adopt Islamic mobile banking services. Their findings suggest that while functional benefits remain important, users of Islamic financial services often evaluate technology through additional ethical and value-based considerations. Consequently, scholars have increasingly argued that the explanatory power of the original TAM can be enhanced by incorporating context-specific determinants that better account for users' concerns in AI-

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enabled digital environments. Existing studies provide theoretical justification for extending TAM with external variables; however, they do not specifically consider AI-powered chatbots. Accordingly, recent research on AI-enabled technologies offers a more appropriate foundation for this context, which shows that trust and perceived risk meaningfully extend TAM in mobile and AI-enabled banking settings (Çelik & Özköse, 2023) and that chatbot trust shapes both attitude and behavioral intention in banking contexts (Alagarsamy & Mehrolia, 2023).

The emergence of AI-powered chatbots presents a context in which traditional TAM variables may not fully explain technology acceptance. Unlike conventional information systems, AI chatbots engage in autonomous interactions, process large amounts of personal data, and provide recommendations that may directly influence customer decisions. Therefore, additional factors such as trust and privacy concerns are increasingly recognized as important determinants of user acceptance.

Trust in AI Chatbot Adoption

Trust is widely regarded as a critical determinant of technology acceptance, particularly in environments characterized by uncertainty and perceived risk. In the context of AI technologies, trust refers to users' confidence that a system is reliable, competent, secure, and capable of performing its intended functions appropriately (Alagarsamy & Mehrolia, 2023). For AI chatbots, trust encompasses confidence in the accuracy of responses, the protection of personal information, and the integrity of the institution providing the service.

Prior studies consistently demonstrate that trust positively influences users' attitudes and intentions toward technology adoption. In AI-enabled service environments, trust reduces uncertainty and enhances users' willingness to interact with automated systems. Alagarsamy and Mehrolia (2023) reported that trust plays a central role in encouraging chatbot usage by increasing users' confidence in chatbot performance and service quality. Similar findings have been observed in banking and fintech contexts, where customers must rely on digital systems to manage sensitive financial activities.

The role of trust becomes particularly important in Islamic banking. Islamic financial institutions operate based on principles emphasizing transparency, accountability, fairness, and amanah (trustworthiness). Consequently, customers may be more likely to evaluate emerging technologies according to whether they perceive them as trustworthy and ethically managed. Recent studies in Islamic fintech and mobile banking indicate that trust strengthens customer acceptance of digital financial services and remains a key predictor of adoption behavior (Khomsatun et al., 2024; Nada & Setyono, 2023). Theoretically, trust complements rather than duplicates the original TAM constructs: perceived usefulness and perceived ease of use capture beliefs about a system's functional performance, whereas trust captures a distinct, affective-cognitive judgment about the reliability and integrity of an autonomous, data-processing agent that customers cannot fully monitor or verify. Because AI chatbots make independent decisions and handle sensitive financial information with limited transparency, functional beliefs alone are unlikely to fully explain acceptance; trust is therefore expected to explain variance in attitude that usefulness and ease of use do not capture, providing a more complete account of AI chatbot acceptance in Islamic banking.

Privacy Concern in AI-Based Financial Services

Privacy concern refers to the degree of anxiety or apprehension users experience regarding the collection, storage, processing, and potential misuse of their personal information. As AI chatbots rely heavily on customer data to deliver personalized services, privacy concerns have become increasingly salient in digital financial

environments. The literature suggests that privacy concerns often act as an inhibitor of technology adoption. Users who perceive higher privacy risks tend to exhibit lower levels of trust, less willingness to disclose information, and weaker intentions to use AI-based services. Lappeman et al. (2023) found that privacy concerns negatively affect customers' willingness to share personal information with banking chatbots and undermine overall confidence in the service. These findings highlight the importance of transparent data governance and robust privacy protection mechanisms.

In extended TAM models, privacy concern has been incorporated as an external factor influencing users' evaluations of technology. Previous studies in fintech and digital banking contexts suggest that privacy concern can negatively affect users' attitudes toward technology usage, particularly when services require extensive personal data disclosure (Aldboush & Ferdous, 2023; Jafri et al., 2024). The increasing use of AI technologies further amplifies these concerns because users often have limited understanding of how algorithms process and utilize their information.

Within the Indonesian context, privacy concerns are particularly relevant following the increasing public attention toward personal data protection and the implementation of data privacy regulations. For customers of Islamic banks, concerns regarding privacy may extend beyond regulatory compliance and encompass ethical expectations regarding the responsible handling of personal information. Consequently, privacy concerns are expected to play an important role in shaping customer attitudes toward AI chatbot usage in Islamic mobile banking applications.

Hypothesis Development

Perceived Ease of Use (PEOU) refers to users' perception that a technology is simple to use and requires minimal effort. In AI-powered chatbot applications, ease of use is reflected in users' ability to interact naturally with the system, retrieve information efficiently, and complete banking tasks with minimal technical complexity (Abdullah et al., 2023). Furthermore, intuitive conversational interfaces have been shown to enhance users' perceived ease of use and overall evaluations of AI-based mobile banking services (Kim & Song, 2024).

According to TAM, technologies perceived as easier to use are more likely to generate favorable attitudes because users experience lower cognitive burden and reduced uncertainty during interaction. Previous studies consistently report a positive relationship between PEOU and attitude toward emerging digital technologies, including chatbot-based services and mobile banking applications (Azli, 2023; Nguyen & Le, 2024). In Islamic banking, where customers increasingly expect convenient yet reliable digital services, perceived ease of use may further strengthen positive evaluations of AI chatbot services.

H1: *Perceived Ease of Use positively influences Attitude Toward Using AI Chatbots among Islamic bank customers.*

Perceived Usefulness (PU) refers to the extent to which individuals believe that a technology enhances their effectiveness, efficiency, or overall performance (Davis, 1989). In AI chatbot-enabled mobile banking, perceived usefulness may arise from the ability to access information instantly, receive personalized financial assistance, perform transactions efficiently, and obtain support at any time without visiting a branch office.

TAM posits that users who perceive substantial benefits from a technology are more likely to develop favorable attitudes toward its adoption. Numerous studies in digital banking environments have confirmed that perceived usefulness remains one of the strongest predictors of technology acceptance (Suhartanto et al., 2019). Recent studies on AI chatbot adoption similarly indicate that customers tend to evaluate chatbot services positively when they perceive clear functional value and practical benefits (Park et al.,

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2024). Therefore, customers who perceive AI chatbots as beneficial are expected to exhibit more positive attitudes toward their usage.

H2: *Perceived Usefulness positively influences Attitude Toward Using AI Chatbots among Islamic bank customers.*

Trust reflects users' confidence in a technology's ability to function reliably, securely, and effectively in fulfilling its intended purpose. In AI-powered chatbot services, trust is manifested through users' perceptions of information accuracy, robust protection of sensitive financial data, and the credibility and integrity of the financial institution that deploys the chatbot.

Trust becomes particularly important in AI-based services because users often lack visibility into how algorithms process information and generate responses. Consequently, customers must rely on their beliefs regarding the system's reliability and ethical operation. Previous studies have demonstrated that trust positively influences users' attitudes toward AI technologies and digital financial services (Alagarsamy & Mehrolia, 2023). Within Islamic banking, trust is further reinforced by the principles of amanah (trustworthiness) and transparency, which constitute fundamental elements of Sharia-compliant financial practices. Therefore, higher levels of trust are expected to foster more favorable attitudes toward AI chatbot usage.

H3: *Trust positively influences Attitude Toward Using AI Chatbots among Islamic bank customers.*

Privacy Concern refers to users' apprehension regarding the collection, storage, processing, and potential misuse of personal information by digital systems (Smith et al., 2011). AI chatbots require continuous interactions with users and often process personal and financial information to deliver customized services. While personalization may improve service quality, it may simultaneously increase concerns regarding data privacy and security.

According to privacy calculus theory, individuals evaluate the potential benefits and risks associated with information disclosure before engaging with a digital service. When perceived privacy risks outweigh perceived benefits, users tend to develop unfavorable evaluations of technology. Prior studies consistently report that privacy concern negatively affects attitudes toward AI-based services, fintech platforms, and banking technologies (Dinev & Hart, 2006; Jafri et al., 2024; Lappeman et al., 2023). Given the sensitivity of financial information handled by Islamic banks, privacy concerns may become a substantial barrier to AI chatbot acceptance.

H4: *Privacy Concern negatively influences Attitude Toward Using AI Chatbots among Islamic bank customers.*

Attitude Toward Using captures users' overall evaluative judgment of a technology, whether favorable or unfavorable. Within the TAM framework, it acts as a central explanatory construct that mediates the relationship between users' cognitive beliefs and their intention to adopt the technology. When customers perceive AI chatbots favorably, they are more likely to demonstrate a stronger willingness to continue using such services in the future. Extensive empirical evidence across diverse technology adoption contexts supports the positive relationship between attitude and behavioral intention (Suhartanto et al., 2019). Similar findings have been reported in studies of AI-powered customer service technologies, where attitude functions as a key determinant of usage intention (Marjerison et al., 2025).

H5: *Attitude Toward Using AI Chatbots positively influences Behavioral Intention to Use AI Chatbots among Islamic bank customers.*

TAM proposes that users' beliefs regarding a technology influence behavioral intention indirectly through attitude formation. Accordingly, favorable perceptions of usefulness, ease of use, and trust are expected to enhance behavioral intention by first creating positive attitudes toward AI chatbot usage. Conversely, privacy concerns may weaken behavioral intention by generating less favorable attitudes.

Previous studies on extended TAM models have demonstrated that attitude serves as an important mediating mechanism linking cognitive and psychological factors to technology adoption behavior (Aslam et al., 2023; Lim et al., 2025; Limakrisna & Moeins, 2024; Venkatesh and Bala, 2008). Therefore, the following mediation hypotheses are proposed:

H6a: *Attitude Toward Using AI Chatbots mediates the relationship between Perceived Ease of Use and Behavioral Intention to Use AI Chatbots.*

H6b: *Attitude Toward Using AI Chatbots mediates the relationship between Perceived Usefulness and Behavioral Intention to Use AI Chatbots.*

H6c: *Attitude Toward Using AI Chatbots mediates the relationship between Trust and Behavioral Intention to Use AI Chatbots.*

H6d: *Attitude Toward Using AI Chatbots mediates the relationship between Privacy Concern and Behavioral Intention to Use AI Chatbots.*

METHODS

This study employs an associative quantitative approach to examine the causal relationships between variables (Sugiyono, 2022). The research was conducted in the Greater Bandung region, encompassing Bandung City, Cimahi City, Bandung Regency, and West Bandung Regency. Regarding the population of respondents, no precise information on its size is available. The population consists of customers of Islamic banks (sharia banks) who use mobile banking applications.

The sample was drawn using incidental sampling (Sugiyono, 2022). This technique involves selecting respondents who are available and willing to participate, provided they meet the established criteria—namely, being customers of Islamic banks and active users of mobile banking services. Incidental sampling was considered appropriate for this study because no official sampling frame listing individual Islamic mobile banking customers across Greater Bandung is publicly available, which precludes probability-based sampling. Given the study's screening criteria and the practical constraints of survey-based data collection, an accessible non-probability approach allowed the research to reach a sufficiently large and heterogeneous respondent pool within a limited timeframe, consistent with its common use in prior quantitative TAM-based banking research (Sugiyono, 2022).

Data analysis was performed through hypothesis testing using the Structural Equation Modeling (SEM) approach based on Partial Least Squares (PLS). SEM-PLS was selected because it is well-suited for analyzing complex models involving numerous latent variables, can accommodate non-normally distributed data (Hair et al., 2021), and enables the simultaneous estimation of both direct and indirect relationships within a single structural model (Ringle et al., 2022). From the whole explanation above, the proposed research model can be illustrated in Figure 1 as follows:

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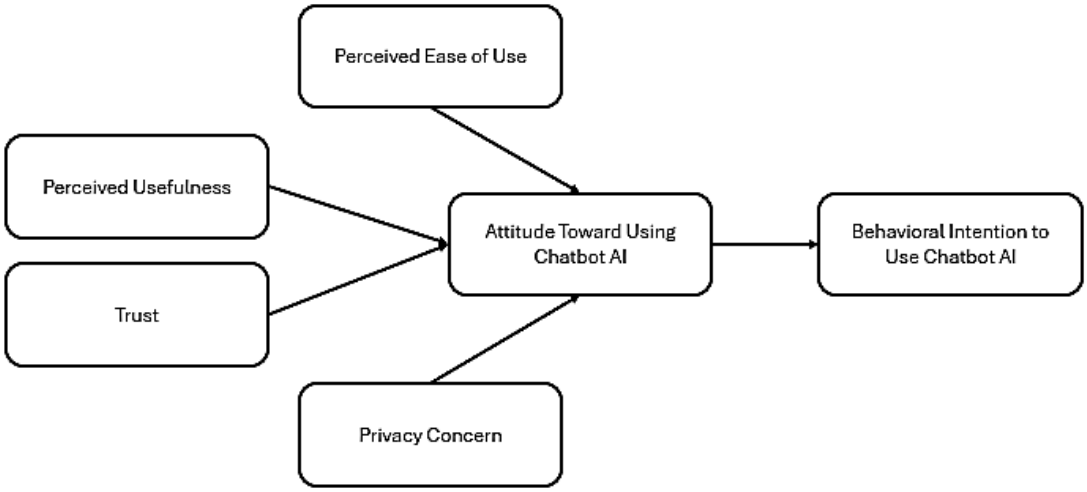


Figure 1. Research Model
Source: Author's own work (2026)

RESULTS AND DISCUSSION

Demographic Profile of Respondents

A total of 292 valid responses were collected from customers of Islamic banks in Greater Bandung, comprising Bandung City, Cimahi City, Bandung Regency, and West Bandung Regency. The demographic characteristics of the respondents were analyzed to provide an overview of the sample composition and to ensure that the collected data adequately represent various customer groups. The demographic information includes gender, age, education level, and occupation.

Table 1. Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	121	41.44%
	Female	171	58.56%
Age	< 25 years old	1	0.34%
	25 – 35 years old	221	75.68%
	36 – 45 years old	62	21.23%
	> 45 years old	8	2.74%
Education	High School/equivalent	43	14.73%
	Diploma	79	27.05%
	Bachelor	166	56.85%
	Postgraduate	4	1.37%
Jobs	Student	7	2.40%
	Private Employees	62	21.23%
	Civil Servants	149	51.03%
	Entrepreneurship	74	25.34%
Total Respond		292	100.00%

Source*:* Data that has been processed by the author (2026)

Based on Table 1, the majority of respondents were female, accounting for 58.56% (171 respondents), while male respondents represented 41.44% (121 respondents). This finding suggests that female customers were slightly more dominant in participating in the survey and may reflect the increasing involvement of women in utilizing digital banking services.

In terms of age, most respondents were between 25 and 35 years old, representing 75.68% (221 respondents) of the total sample. Respondents aged 36–45 years accounted for 21.23% (62 respondents), while those aged above 45 years represented only 2.74% (8 respondents). Respondents younger than 25 years constituted a very small proportion of the sample (0.34%). These results indicate that the respondents were predominantly within the productive and digitally active age group, which is generally more familiar with mobile banking technologies and AI-based digital services.

Regarding educational background, the majority of respondents held a bachelor's degree, accounting for 56.85% (166 respondents). This was followed by diploma holders (27.05%), high school graduates (14.73%), and postgraduate degree holders (1.37%). The relatively high educational attainment of respondents suggests that most participants possessed sufficient literacy and technological understanding to evaluate AI chatbot services in mobile banking applications.

With respect to occupation, civil servants (PNS/ASN) constituted the largest group of respondents at 51.03% (149 respondents), followed by entrepreneurs at 25.34% (74 respondents), private-sector employees at 21.23% (62 respondents), and students at 2.40% (7 respondents). This distribution indicates that the sample was dominated by individuals with stable employment and regular financial activities, making them relevant users of Islamic mobile banking services.

Evaluation of the Measurement Model

Before testing the proposed hypotheses, the measurement model was evaluated to assess the reliability and validity of the latent constructs. Following the recommendations of Hair et al. (2021), the evaluation of the reflective measurement model included an assessment of indicator reliability, internal consistency reliability, and convergent validity. Indicator reliability was assessed using outer loadings, while internal consistency reliability was examined through Composite Reliability (CR) and Cronbach's Alpha. Convergent validity was evaluated using the Average Variance Extracted (AVE).

Table 2. Results of Reliability and Convergent Validity Assessment

Variable/Item	Loading	AVE	CR	Cronbach's Alpha
Perceived Ease of Use (PEOU)				
PEOU1	0.817			
PEOU2	0.779	0.639	0.876	0.812
PEOU3	0.787			
PEOU4	0.815			
Perceived Usefulness (PU)				
PU1	0.814			
PU2	0.769	0.655	0.883	0.824
PU3	0.808			
PU4	0.844			
Trust (TR)				
TR1	0.816			
TR2	0.821	0.676	0.893	0.841
TR3	0.854			
TR4	0.798			
Privacy Concern (PC)				
PC1	0.833			
PC2	0.850	0.691	0.899	0.850
PC3	0.870			
PC4	0.768			
Attitude Toward Using (ATU)				
ATU1	**0.876**	0.730	0.915	0.877

Variable/Item	Loading	AVE	CR	Cronbach's Alpha
ATU2	**0.840**			
ATU3	**0.849**			
ATU4	**0.851**			
Behavioral Intention to Use (BI)				
BI1	**0.830**			
BI2	**0.832**	0.675	0.893	0.840
BI3	**0.827**			
BI4	**0.797**			

Source*:* Data that has been processed by the author (2026)

The results presented in Table 2 indicate that all measurement items achieved satisfactory outer loading values, ranging from 0.768 to 0.876. Since all indicator loadings exceeded the recommended threshold of 0.70, the indicators can be considered reliable measures of their respective constructs (Hair et al., 2021).

Regarding convergent validity, all constructs demonstrated Average Variance Extracted (AVE) values above the minimum criterion of 0.50. Specifically, the AVE values ranged from 0.639 for Perceived Ease of Use to 0.730 for Attitude Toward Using. These results indicate that each construct explains more than 50% of the variance of its indicators, thereby confirming adequate convergent validity.

The assessment of internal consistency reliability also yielded satisfactory results. Composite Reliability (CR) values ranged from 0.876 to 0.915, while Cronbach's Alpha values ranged from 0.812 to 0.877. All values exceeded the recommended threshold of 0.70, indicating a high level of internal consistency among the indicators measuring each latent construct.

Evaluation of the Structural Model

After establishing the reliability and validity of the measurement model, the structural model was evaluated to test the proposed hypotheses. The assessment focused on examining the significance and direction of the relationships among the latent variables using the bootstrapping procedure in PLS-SEM. Hypothesis testing was conducted based on the path coefficients (β) and p-values, with a significance level of 0.05.

Table 3. Results of Structural Model Assessment and Hypothesis Testing

Path	Path Coefficients (β)	p-value	Status
PEOU → ATU	0.030	0.747	Rejected
PU → ATU	0.431	0.000	Accepted
TR → ATU	0.171	0.052	Rejected
PC → ATU	0.208	0.013	Rejected*
ATU → BI	0.759	0.000	Accepted
PEOU → ATU → BI	0.022	0.747	Rejected
PU → ATU → BI	0.327	0.000	Accepted
TR → ATU → BI	0.130	0.052	Rejected
PC → ATU → BI	0.158	0.014	Accepted

*)The relationship is statistically significant but opposite to the hypothesized direction.

Source*:* Data that has been processed by the author (2026)

The results presented in Table 3 indicate that not all proposed relationships were statistically supported. The effect of Perceived Ease of Use (PEOU) on Attitude Toward Using AI Chatbots (ATU) was positive but insignificant (β = 0.030, p = 0.747), indicating that perceived ease of use did not significantly influence customers' attitudes toward AI chatbot usage. Therefore, H1 was not supported. In contrast, Perceived Usefulness (PU) demonstrated a significant positive effect on Attitude Toward Using AI Chatbots (β =

0.431, $p < 0.001$). This finding suggests that customers are more likely to develop favorable attitudes toward AI chatbots when they perceive clear benefits from using the technology. Accordingly, H2 was supported. Among all antecedent variables, perceived usefulness exhibited the strongest effect on attitude.

The relationship between Trust (TR) and Attitude Toward Using AI Chatbots was positive but statistically insignificant ($\beta = 0.171$, $p = 0.052$). Although the coefficient indicates a positive tendency, the relationship did not reach the conventional significance threshold of 5%. Therefore, H3 was not supported. Interestingly, Privacy Concern (PC) showed a positive and significant effect on Attitude Toward Using AI Chatbots ($\beta = 0.208$, $p = 0.013$). This finding indicates that privacy concern significantly influences customers' attitudes toward chatbot usage. However, the direction of the relationship is opposite to that hypothesized. Therefore, H4 is not supported. However, the positive direction of the relationship differs from the commonly expected negative effect reported in previous studies, suggesting that respondents may perceive privacy protection mechanisms implemented by Islamic banks as adequate.

The results further revealed that Attitude Toward Using AI Chatbots strongly influenced Behavioral Intention to Use AI Chatbots ($\beta = 0.759$, $p < 0.001$). This finding confirms the central proposition of the Technology Acceptance Model that favorable attitudes lead to stronger intentions to adopt a technology. Therefore, H5 was supported.

The mediation analysis showed that Attitude Toward Using AI Chatbots significantly mediated the relationship between Perceived Usefulness and Behavioral Intention ($\beta = 0.327$, $p < 0.001$), as well as the relationship between Privacy Concern and Behavioral Intention ($\beta = 0.158$, $p = 0.014$). However, the indirect effects of Perceived Ease of Use ($\beta = 0.022$, $p = 0.747$) and Trust ($\beta = 0.130$, $p = 0.052$) on Behavioral Intention through Attitude were not statistically significant.

The findings of this study provide empirical evidence regarding the factors influencing Islamic bank customers' attitudes and intentions toward using AI chatbots in mobile banking applications. Overall, the results partially support the extended Technology Acceptance Model (TAM), indicating that perceived usefulness and privacy concern significantly influence attitude toward using AI chatbots, while attitude strongly predicts behavioral intention to use the technology.

The first important finding is that perceived usefulness significantly and positively influences attitude toward using AI chatbots. This result is consistent with the original TAM proposed by Davis (1989), which identifies perceived usefulness as one of the most influential determinants of technology acceptance. The finding also supports previous studies in mobile banking and AI adoption contexts (Park et al., 2024; Suhartanto et al., 2019). For Islamic bank customers, AI chatbots appear to be valued primarily because of the practical benefits they offer, including rapid access to information, real-time customer support, transaction assistance, and service availability beyond normal banking hours. This finding suggests that customers are more concerned with the functional value delivered by AI chatbots than with their technological characteristics.

Contrary to expectations, perceived ease of use did not significantly affect attitude toward using AI chatbots. This finding differs from many previous TAM studies that reported a positive relationship between ease of use and technology acceptance, a pattern also reported by Çelik and Özköse (2023) in their extended TAM study of mobile banking, where ease of use likewise showed little effect once trust and perceived risk were included. One plausible interpretation, offered here as a possible rather than definitive explanation, is that most respondents belonged to the 25–35 age group and possessed relatively high educational backgrounds. Such users are generally familiar with digital applications and mobile banking services, which may mean ease of use no longer serves as a critical factor in shaping their attitudes. Instead, customers may focus more on whether the chatbot provides meaningful benefits rather than whether it is easy

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to operate. Similar observations have been reported in studies suggesting that as users become more digitally literate, the importance of perceived ease of use tends to diminish.

The study also found that trust did not significantly influence attitude toward using AI chatbots. Although the relationship was positive, it failed to reach the conventional significance threshold. This finding is somewhat unexpected because trust is frequently identified as a key determinant of technology adoption in financial services. One possible explanation is that respondents may already possess a baseline level of trust toward Islamic banking institutions, reducing the variability of trust perceptions among respondents. In other words, customers may differentiate between trust in the bank and trust in the chatbot technology itself. Consequently, trust in the institution may not automatically translate into favorable attitudes toward AI-based services.

Contrary to H4, privacy concern was found to positively influence attitude toward using AI chatbots. This finding contradicts the prediction derived from privacy calculus theory and much of the existing literature, which generally suggests that privacy concerns discourage technology adoption. The result indicates that privacy-conscious customers may not necessarily reject AI chatbot services. Instead, they may develop more favorable attitudes when they perceive that Islamic banks provide adequate privacy protection mechanisms and responsible data governance practices. However, in the context of Islamic banking, customers who are more aware of privacy issues may also be more attentive to the security and governance mechanisms implemented by banks. As a result, privacy-conscious users may evaluate chatbot services more carefully and develop positive attitudes when they perceive that adequate safeguards are in place. Another possible explanation is that respondents recognize the importance of privacy protection and consequently appreciate institutions that provide secure AI-based services. Nevertheless, this finding warrants further investigation in future studies because it differs from the dominant findings reported in previous banking and fintech research.

The results further confirm that attitude toward using AI chatbots is the strongest predictor of behavioral intention. This finding is fully consistent with the central proposition of TAM and reinforces the notion that customers' overall evaluations of a technology play a decisive role in determining future usage intentions. The substantial path coefficient indicates that favorable attitudes significantly increase customers' willingness to continue using AI chatbots within Islamic mobile banking applications. Therefore, improving customer attitudes should be considered a strategic priority for Islamic banks seeking to enhance chatbot adoption.

The mediation analysis provides additional insights into the mechanism through which customer perceptions influence behavioral intention. Attitude successfully mediated the effects of perceived usefulness and privacy concern on behavioral intention, indicating that these factors shape customers' intentions primarily by influencing their attitudes toward AI chatbots. In contrast, attitude did not significantly mediate the effects of perceived ease of use and trust. This result further emphasizes that functional value and privacy-related perceptions are more influential than ease-of-use considerations and trust perceptions in explaining AI chatbot acceptance among Islamic bank customers.

CONCLUSION

The results show that Perceived Usefulness is the strongest determinant of Attitude Toward Using AI Chatbots, indicating that customers evaluate chatbot services primarily based on their practical benefits. In contrast, Perceived Ease of Use and Trust do not significantly influence customer attitudes. Interestingly, Privacy Concern has a significant positive effect on attitude, contrary to the initial hypothesis and previous studies that typically identify privacy concerns as barriers to technology adoption. This

finding suggests that privacy-conscious customers in Islamic banking may place greater value on the security and governance mechanisms implemented by banks, resulting in more favorable evaluations of AI chatbot services. The study also confirms that Attitude Toward Using AI Chatbots significantly enhances Behavioral Intention to Use AI Chatbots, consistent with the core proposition of the Technology Acceptance Model (TAM). Furthermore, attitude mediates the effects of Perceived Usefulness and Privacy Concern on behavioral intention, whereas the indirect effects of Perceived Ease of Use and Trust are not significant. These findings extend TAM by demonstrating that privacy concern plays a unique role in the Islamic banking context, functioning as an indicator of customers seeking stronger security safeguards rather than as a barrier to technology adoption. From a practical perspective, Islamic banks should emphasize the functional benefits of AI chatbots while strengthening and clearly communicating their data protection and privacy measures. Rather than treating chatbot trust as a separate construct, banks should leverage their established institutional reputation to enhance customer confidence in AI-enabled services. This study is limited by the use of incidental sampling, a cross-sectional research design, and self-reported data, which may restrict the generalizability of the findings and introduce common method bias. Future research should employ probability sampling, longitudinal designs, objective usage data, and additional Sharia-related variables, such as religiosity and perceived Sharia compliance, to provide a more comprehensive understanding of AI chatbot adoption in Islamic banking.

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