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Digital Financial Intuition and AI-Driven Marketing: Enhancing Perceived Fairness to Improve Customer Retention in Malaysian Islamic Banks

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ABSTRACT

This study examines how Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) influence Customer Retention (CR) in Islamic banks, with Perceived Fairness (PF) as a mediating construct. Drawing on the Technology Acceptance Model (TAM), which emphasizes ease of use and usefulness, and Equity Theory, which highlights fairness in exchange relationships, the framework integrates usability and ethical evaluation in digital Islamic banking. Data were collected through a cross-sectional survey of 254 users of Islamic digital banking services in Malaysia and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Results show that both DFI and AIPM have significant positive effects on CR, directly and indirectly through PF, which acts as a key psychological mechanism linking digital service experiences to loyalty. These findings extend TAM by introducing intuitive cognition and enrich Equity Theory by demonstrating fairness as a mediating driver of behavioural outcomes in AI-mediated services. The integrated framework provides stronger explanatory power for loyalty than conventional trust- or satisfaction-based models. Practically, Islamic banks should prioritize intuitive, inclusive interfaces and transparent personalization to build long-term trust. Policymakers should also adopt fairness audits and algorithmic transparency guidelines to align digital transformation with Malaysia's Financial Sector Blueprint.

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1. Introduction

The increasing digitalization of financial services has fundamentally reshaped the global banking landscape, with Malaysia representing no exception. Islamic banks in Malaysia are actively directing investments toward mobile applications, artificial intelligence (AI), and digital marketing as strategic tools to enhance customer experience and maintain competitiveness with conventional banks. This shift toward digital platforms is imperative for sustaining relevance among the technologically adept population, particularly in the post-COVID-19 context where reliance on physical banking interactions has significantly diminished (Bank Negara Malaysia, 2023). Among the emerging technologies, AI-driven personalization tools, such as automated product recommendations, personalized chatbots, and data-informed promotional strategies, have garnered considerable traction as effective marketing solutions. Simultaneously, the delivery of an intuitive and inclusive user experience remains essential, especially within the Islamic banking sector, where adherence to ethical principles in service provision is of critical importance. Nonetheless, despite these advancements, digital transformation has not consistently resulted in enhanced customer retention within Islamic banks.

The central challenge lies in the widening disconnect between technological advancement and user perception. A substantial proportion of customers, particularly within the low- and middle-income segments (B40 and M40), struggle with the intuitiveness of digital platforms, leading to reduced satisfaction and eventual disengagement (Khazanah Research Institute, 2022). A recent survey by the Financial Education Network (FEN) reported that only 35% of Malaysians feel confident navigating digital financial services, a figure that declines to 20% among rural populations (FEN, 2023). While the integration of artificial intelligence in Islamic banking has enhanced efficiency in marketing, it has simultaneously raised concerns regarding fairness and the contextual appropriateness of algorithmic recommendations. Unlike conventional institutions, Islamic banks are bound to uphold principles of fairness, transparency, and ethical conduct across all customer interactions. Yet, many users perceive AI-generated engagement as impersonal or biased, creating the risk of violating Shariah principles of justice (*adl*) and benevolence (*ihsan*) (Dusuki & Abdullah, 2007). These dynamics contribute to persistently low customer retention, underscoring that strengthening perceived fairness and ensuring intuitive digital experiences are not only strategic imperatives but also moral obligations for Islamic banks.

Theoretically, the Technology Acceptance Model (TAM) (Davis, 1989) posits that users' behavioural intentions toward a technological system are shaped by their perceptions of its usefulness and ease of use. Within the context of this study, Digital Financial Intuition is conceptualized as a psychological extension of perceived ease of use, encapsulating users' instinctive comfort and navigational fluency within digital Islamic banking environments. In parallel, Equity Theory (Adams, 1965) asserts that individuals strive for fairness in exchanges, and when perceptions of inequity arise, dissatisfaction and disengagement are likely outcomes. In this framework, Perceived Fairness serves as a mediating construct between AI-driven personalization and customer retention; experiences of unfair treatment or depersonalized automation may undermine trust and loyalty, thereby compromising customer retention within Islamic banking settings.

Empirically, previous studies support each construct of this model. Digital literacy is widely recognized as a driver of digital banking use (Alalwan et al., 2018; OECD, 2022 b), but few have addressed users' intuitive engagement with financial technologies. Research in AI marketing highlights both benefits and risks, with personalized promotions sometimes backfiring due to privacy concerns or irrelevance (Bleier & Eisenbeiss, 2015; Chatterjee et al., 2020). Studies in Islamic banking stress the importance of trust and fairness as loyalty determinants (Amin, 2016; Echchabi & Aziz, 2012), yet none have tested Perceived Fairness as a psychological mediator in an AI context. Therefore, this study fills an essential gap by integrating a technological, marketing, and Islamic ethical perspective into a unified model which explains customer retention in Malaysian Islamic banks.

Recent scholarship underscores the critical role of Digital Financial Intuition (DFI), AI-Driven Personalized Marketing (AIPM), and Perceived Fairness (PF) in shaping customer retention within Islamic banking. Wan Nawang and Abdul Shukor (2023) demonstrated that digital financial literacy, a construct closely related to intuitive digital engagement, significantly enhances mobile banking adoption among young Malaysian adults, highlighting the behavioral relevance of intuitive comfort in digital finance. Similarly, Wang et al. (2023a) showed that rule-driven algorithms are perceived as fairer and more acceptable than opaque data-driven systems, emphasizing the psychological importance of fairness

in AI-mediated decision-making. Within Islamic finance, Ali et al. (2025) found that AI-powered sentiment tools and hyper-personalized services strengthen retention when aligned with Shariah principles, while Rane (2023) observed that AI-driven personalization fosters loyalty only when accompanied by transparency and responsible data practices. Despite these insights, no prior work has integrated these constructs within a unified framework to explain their combined influence on customer retention in Islamic banking. To address this gap, the present study examines the effects of DFI and AIPM on retention, with PF conceptualized as a mediating psychological mechanism.

Addressing this issue carries significant implications. Enhancing customer retention through the implementation of intuitive digital design and ethically aligned, AI-driven marketing strategies would contribute to increased user engagement, strengthened trust, and greater long-term value for Islamic financial institutions. Such advancements would also align with and support national objectives related to financial inclusion and digital empowerment, as articulated in Bank Negara Malaysia's Financial Sector Blueprint 2022-2026. Most critically, these measures uphold the ethical imperatives central to Islamic finance by ensuring transparency and justice in the customer experience, thereby reinforcing both institutional profitability and sustained public trust.

Accordingly, this study investigates the influence of Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) on Customer Retention (CR) in Islamic banking, with Perceived Fairness (PF) conceptualized as a mediating psychological mechanism. To guide this inquiry, the following research questions are advanced:

- **RQ1**: Does Digital Financial Intuition have a significant effect on Customer Retention in Islamic banks?
- **RQ2**: Does AI-Driven Personalized Marketing positively influence Customer Retention in Islamic banks?
- **RQ3**: Does Perceived Fairness mediate the relationship between Digital Financial Intuition and Customer Retention?
- **RQ4**: Does Perceived Fairness mediate the relationship between AI-Driven Personalized Marketing and Customer Retention?

This study contributes to the literature in three distinct ways. First, it introduces Digital Financial Intuition as a novel construct that extends the Technology Acceptance Model by incorporating cognitive fluency and instinctive user comfort in digital financial environments, especially among underserved segments. Second, it empirically integrates Equity Theory into Islamic fintech research by examining Perceived Fairness not merely as a consumer perception, but as a mediating ethical mechanism critical for digital service legitimacy. Third, it proposes a unified framework linking technological usability and Shariah-aligned AI personalization to behavioral loyalty, offering timely implications for banks and regulators aiming to advance digital inclusion, trust, and retention under Malaysia's Financial Sector Blueprint.

This article is structured as follows. Section 2 provides a review of the relevant literature and defines the key constructs that form the foundation of this study. Section 3 details the research methodology, encompassing the survey design, sampling strategy, and analytical procedures employed. Section 4 presents the study's empirical findings, including the outcomes of both the measurement and structural model evaluations. Finally, Section 5 concludes the paper by summarizing the principal results, discussing their broader implications, acknowledging methodological limitations, and proposing directions for future research.

2. Literature Review

2-1. Overview of the Literature

The transformation of financial services through artificial intelligence (AI), mobile platforms, and automation has significantly influenced how customers interact with banks. In the Malaysian context, Islamic financial institutions have embraced these technologies to attract younger demographics and streamline operations (Bank Negara Malaysia, 2023). However, as highlighted by recent studies, the adoption of AI-driven marketing strategies does not guarantee customer loyalty, especially when users encounter complex interfaces or perceive AI communications as lacking personalization and ethical transparency (Amin, 2016; Bleier & Eisenbeiss, 2015). This emerging tension between technological

innovation and user-centered design highlights a critical need for more nuanced models that address both the functional and emotional aspects of digital banking engagement.

A central concept in understanding digital engagement is digital financial literacy, defined as the ability to access, comprehend, and utilize financial services in digital environments (OECD, 2022). Although literacy is typically assessed through objective knowledge or skill measures, it fails to capture the psychological dimension of how users experience and feel during interactions with digital platforms. To address this gap, the present study introduces the construct of Digital Financial Intuition, conceptualized as a user's instinctive capacity to navigate digital financial services with comfort and confidence, even in the absence of formal instruction. This construct aligns with the Technology Acceptance Model (TAM), which identifies perceived ease of use as a key determinant of behavioral intention (Davis, 1989). Digital Financial Intuition is therefore framed as an affective and experiential extension of ease of use, reflecting not merely the absence of difficulty but also the presence of cognitive fluency and confidence in digital interaction.

Digital literacy, including its financial form, refers to the knowledge and skills required to access, evaluate, and use digital financial services, typically assessed through self-reports or performance-based measures (Ng, 2012; OECD, 2022; UNESCO, 2018). It includes technical, cognitive, and socio-emotional components and is linked to digital banking adoption (Alalwan et al., 2018). However, as digitalization evolves, exclusion increasingly stems from qualitative differences in usage such as confidence, anxiety, and ease rather than access alone (van Deursen & van Dijk, 2014). In contrast, Digital Financial Intuition (DFI) is defined here as an intuitive, affective, and subconscious fluency in using digital financial tools. It reflects low cognitive load, processing fluency (Alter & Oppenheimer, 2009; Reber et al., 2004), and felt efficacy (Compeau & Higgins, 1995), extending TAM's "perceived ease of use" (Davis, 1989) to include intuitive comfort and affective responses, such as those captured in TAM3 (Venkatesh & Bala, 2008). While literacy is what users know and can do, DFI is how naturally and confidently they experience doing it. This distinction is critical in inclusion-sensitive settings like Islamic digital banking, where intuitive ease, not just knowledge, reduces friction and shapes fairness perceptions among B40/M40 users.

Another growing trend in the digital banking landscape is the adoption of AI-driven personalized marketing. These technologies analyze user data to automate product recommendations, offer real-time promotions, and deploy chatbots for customer support. While studies have demonstrated that AI personalization can enhance perceived relevance and engagement (Bleier & Eisenbeiss, 2015; Chatterjee et al., 2020), the risks are also significant. Customers may experience algorithmic bias, data fatigue, or intrusions of privacy, particularly in contexts such as Islamic banking where transparency and ethical compliance are paramount (Amin, 2016). As these technologies increasingly replace human agents, the risk of perceived unfairness in digital interactions becomes critical. This is especially relevant for Islamic financial institutions, which are bound by Shariah principles to uphold justice (*'adl*) and equity (*ihsan*) in service delivery (Dusuki & Abdullah, 2007).

In this context, Perceived Fairness emerges as a key psychological construct influencing user satisfaction and retention. Drawing on Equity Theory (Adams, 1965), which posits that individuals assess fairness based on the balance between input and outcomes, customers are likely to withdraw or disengage if they perceive AI-generated decisions as opaque, impersonal, or unjust. Recent studies highlight that fairness perceptions significantly impact trust and loyalty in financial services (Komiak & Benbasat, 2006; Yoon, 2022). In Islamic banking, these perceptions take on even greater weight, as any perceived deviation from ethical principles can erode credibility and long-term relationships.

Despite the importance of digital engagement and fairness in customer retention, existing literature rarely integrates these concepts into a unified model, particularly within the context of Islamic banking in Malaysia. Research on digital financial literacy has largely focused on knowledge-based metrics (Alalwan et al., 2018; OECD, 2022), overlooking the intuitive, emotional aspects of user experience. Similarly, while AI marketing strategies have been studied for their effectiveness, limited attention has been given to how they influence perceived fairness and long-term customer behavior in faith-based banking environments.

Recent research has significantly advanced our understanding of how users form fairness judgments about AI. A systematic review by Starke et al. (2022) synthesizes empirical evidence, demonstrating that transparency, outcome favourability, and comparisons between human and

algorithmic decision-making collectively shape perceived fairness and its downstream consequences. Expanding on this foundation, Narayanan (2024) argues that perceptions of AI fairness are multi-dimensional, encompassing procedural, distributive, and interpersonal dimensions, and are highly context-dependent. Experimental studies further support these insights. For example, Wang et al. (2023a) found that applicants were more likely to perceive algorithmic decisions as fair when the underlying processes were rule-based and legible. Similarly, Ochmann et al. (2024) report that systems offering transparency cues and human-like affordances elicited higher fairness perceptions. In applied domains such as financial services and inclusive finance, Yang et al. (2024) demonstrates a positive association between perceived algorithmic fairness and both user satisfaction and recommendation intentions, underscoring fairness as a practical lever for customer loyalty.

This fragmented view has left a critical gap in understanding why many customers, especially those in Malaysia's B40 and M40 income segments, remain disengaged from digital Islamic banking platforms, despite ongoing investments in technology. According to the Financial Education Network (FEN, 2023), only 35% of Malaysians feel confident using digital financial tools, with significantly lower figures in rural areas. Many users struggle with interface complexity and distrust AI-driven messaging, which they perceive as manipulative or irrelevant. As a result, customer retention rates remain low, and many Islamic banks fail to convert digital interaction into long-term loyalty. This study addresses this critical issue by exploring how digital financial intuition and AI-driven personalized marketing influence customer retention, with perceived fairness as a mediating factor, thereby offering a holistic framework that responds to both technological and ethical imperatives in Islamic banking.

Furthermore, existing studies on digital banking adoption often emphasize digital literacy as a determinant of user engagement (Alalwan et al., 2018; OECD, 2022), typically treating it as a cognitive skillset or knowledge base. However, such a focus overlooks the affective and instinctive dimensions of user interaction, especially among populations with limited digital confidence. In contrast, the concept of Digital Financial Intuition (DFI), proposed in this study, captures an emergent layer of user experience that is not purely knowledge-based but rather experiential, subconscious, and emotional. This distinction responds to findings from van Deursen and van Dijk (2014), who argued that the digital divide has shifted from access to the quality and ease of digital engagement, with users often disengaging due to anxiety or cognitive overload rather than the lack of access per se. Recent studies specific to Malaysia further underscore this perspective. For instance, Wan Nawang and Abdul Shukor (2023) found that digital financial literacy among young Malaysian adults is driven more by confidence and intuitive use than formal digital education, especially among B40 and M40 users. Therefore, DFI extends the traditional "ease of use" dimension in TAM by capturing psychological fluency and instinctive comfort, filling a theoretical and empirical gap in current Islamic FinTech research.

Similarly, Perceived Fairness (PF) remains under-theorized as a mediating psychological construct in Islamic digital banking contexts. While the normative importance of fairness is well-established in Islamic finance through concepts such as *adl* (justice) and *ihsan* (benevolence) (Dusuki & Abdullah, 2007), few empirical studies explore how fairness is perceived and evaluated in AI-driven service environments. For instance, Ali et al. (2025) found that AI-generated financial services in Islamic banks can significantly enhance loyalty but only when users perceive these tools as transparent and religiously aligned. Moreover, Wang et al. (2023a) emphasized that algorithmic decision-making is more accepted when users understand the rules and fairness logic behind it. This study responds to these gaps by positioning PF as both a psychological outcome and a mediating mechanism through which users interpret the ethical legitimacy of AI-driven personalization. The mediation results add deeper explanatory insight to the model (Salem et al., 2024).

Previous literature has also tended to treat AI personalization and fairness as separate domains, which has led to repetitive or fragmented discussions. For instance, while Bleier and Eisenbeiss (2015) showed that personalization enhances engagement, and Chatterjee et al. (2020) highlighted potential privacy concerns, few studies have examined how fairness perceptions mediate the effectiveness of AI marketing, particularly within Shariah-compliant institutions. This study integrates both strands by proposing that AI-Driven Personalized Marketing only enhances customer retention when it is perceived as fair, culturally appropriate, and religiously aligned. This perspective addresses a key omission in earlier frameworks and consolidates scattered findings into a unified, theory-driven model.

2-2. Hypothesis Development

2-2-1. Digital Financial Intuition, AI-Driven Personalized Marketing, and Customer Retention

In the evolving landscape of digital Islamic banking, ensuring sustained customer retention hinges on both the intuitiveness of the digital interface and the relevance of AI-driven engagement strategies. Digital Financial Intuition, conceptualized in this study as an individual's instinctive confidence and cognitive ease in navigating digital banking platforms, captures a user's affective and behavioral response beyond functional literacy. This construct aligns with the Technology Acceptance Model (TAM), particularly the perceived ease of use dimension, positing that technology adoption is strongly influenced by how effortless users perceive its operation to be (Davis, 1989). When users can navigate banking platforms fluidly, especially those from the B40 and M40 segments who often lack formal training, the experience fosters trust and long-term engagement (Khazanah Research Institute, 2022; OECD, 2022).

Simultaneously, the rise of AI-driven personalized marketing, automated, data-informed recommendations tailored to user behavior, presents an opportunity to strengthen customer loyalty through relevance and responsiveness (Isidore & Arun, 2023). Within the Technology Acceptance Model (TAM), such personalized services enhance perceived usefulness, thereby improving customer satisfaction and long-term retention (Davis, 1989). In the context of Islamic banking, however, these benefits are conditional on strict adherence to Shariah-compliant marketing ethics, which emphasize respect for privacy, transparency, and appropriateness. Poorly executed or overly intrusive personalization can erode trust and alienate customers (Bleier & Eisenbeiss, 2015; Chatterjee et al., 2020). Accordingly, within the ethical and competitive environment of Malaysian Islamic banks, both digital financial intuition and ethically aligned AI-driven marketing are expected to exert a positive influence on customer retention by shaping perceptions and interactions within the digital ecosystem.

- **H1:** Digital Financial Intuition has a positive effect on Customer Retention in Islamic banks.
- **H2:** AI-Driven Personalized Marketing has a positive effect on Customer Retention in Islamic banks.

2-2-2. Perceived Fairness as an Outcome of Digital Financial Intuition and AI-Driven Personalized Marketing

Perceived fairness has become a critical psychological outcome in the evaluation of digital service interactions, particularly in Islamic banking, where customer expectations extend beyond convenience to include ethical and equitable treatment. In this regard, both Digital Financial Intuition and AI-Driven Personalized Marketing are expected to significantly influence users' perceptions of fairness (Gopalsamy & Gokulapadmanaban, 2021). Digital Financial Intuition refers to a user's instinctive and confident ability to interact with digital banking platforms without the need for extensive training. When users experience digital services as intuitive and cognitively effortless, it signals that the institution has designed its systems with user accessibility and inclusivity in mind, which can promote perceptions of fairness and care. This interpretation aligns with the Technology Acceptance Model (TAM), where ease of use is not only a predictor of acceptance but also a potential antecedent to emotional responses, such as satisfaction, trust, and fairness (Davis, 1989; Gefen et al., 2003). In Islamic banking, intuitive design may signal ethical alignment with values such as *rahmah* (compassion) and *adl* (justice), reinforcing the perception of equitable service delivery.

Similarly, AI-Driven Personalized Marketing, when aligned with Islamic ethical standards, can strengthen fairness perceptions by demonstrating attentiveness and individualized treatment. Research shows that personalized content, if delivered in a timely, relevant, and respectful manner, increases users' belief that the organization is responsive to their needs (Bleier & Eisenbeiss, 2015; Chatterjee et al., 2020). This resonates strongly within the framework of Equity Theory (Adams, 1965), which posits that customers evaluate fairness by comparing what they contribute, such as time, information, or attention, to what they receive in return. In Islamic banking, this perceived fairness is elevated to a moral obligation, where the customer expects not just transactional balance but also values-based engagement rooted in transparency and mutual respect (Dusuki & Abdullah, 2007). Hence, both intuitive digital interaction and ethical personalization are likely to positively influence users' fairness perceptions in the Islamic financial context.

- **H3:** Digital Financial Intuition has a positive effect on Perceived Fairness in Islamic banks.
- **H4:** AI-Driven Personalized Marketing has a positive effect on Perceived Fairness in Islamic banks.

2-2-3. Perceived Fairness as a Mediator (Direct and Indirect Effects)

Beyond its role as an outcome of digital service interactions, Perceived Fairness is also a central predictor of Customer Retention, particularly in contexts where trust and ethical compliance are paramount. According to Equity Theory, customers evaluate the fairness of an exchange not only by outcomes but also by the transparency, equity, and respect embedded in the process (Adams, 1965). In digital Islamic banking, if users perceive the system as being just and respectful through intuitive design and personalized communication, they are more likely to form trust-based relationships that encourage continued engagement. Fairness here is both procedural and distributive: users expect transparency in how AI decisions are made and equitable access to banking features regardless of digital literacy level. Studies have consistently found fairness to be a significant antecedent of trust, satisfaction, and loyalty in service settings, including in financial services (Komiak & Benbasat, 2006; Yoon, 2022).

Furthermore, perceived fairness operates not only as a direct determinant of retention but also as a mediating mechanism that clarifies how digital financial intuition and AI-driven marketing shape customer loyalty. Within the Technology Acceptance Model (TAM), ease of use, reflected here through digital intuition, encourages favorable evaluations of technology. When this ease of use is interpreted through the lens of fairness, particularly in user-centered Islamic financial systems, it reinforces psychological commitment to remain with the service. Likewise, AI-driven marketing risks, being perceived as manipulative or intrusive, unless grounded in fairness and transparency, especially within Islamic banking where marketing practices are subject to rigorous ethical scrutiny. Perceived fairness therefore functions as a bridge between technological experience and ethical evaluation, ultimately driving retention. In its absence, even the most advanced digital tools may fail to deliver loyalty benefits, underscoring its indispensable role within the model.

- **H5:** Perceived Fairness has a positive effect on Customer Retention in Islamic banks.
- **H6a:** Perceived Fairness mediates the relationship between Digital Financial Intuition and Customer Retention in Islamic banks (Total Impact).
- **H6b:** Perceived Fairness mediates the relationship between AI-Driven Personalized Marketing and Customer Retention in Islamic banks (Total Impact).

2-3. Conceptual and Theoretical Framework

This study draws upon two established theories, the Technology Acceptance Model (TAM) and Equity Theory, to develop a framework explaining customer retention in the context of digital Islamic banking. TAM (Davis, 1989) posits that perceived usefulness and ease of use influence users' acceptance of technology. Recent FinTech meta-analyses confirm that TAM remains the most powerful explanatory lens for mobile and AI-enabled financial services but also recommend augmenting it with affective and trust-based constructs that capture the realities of ubiquitous banking (Dwivedi et al., 2023). Building on this, the construct of Digital Financial Intuition (DFI) is operationalised here as a second-order reflective factor encompassing cognitive fluency, affective assurance, and effortless navigation, extending TAM's "ease of use" into a psychological domain that has proven critical among Malaysian B40/M40 users (Wan Nawang & Abdul Shukor, 2023). Therefore, users with high DFI are more likely to experience smoother interactions and continue engaging with digital platforms, thereby enhancing customer retention.

As depicted in Figure 1, to address the ethical dimension of Islamic banking, the model integrates Equity Theory (Adams, 1965), which explains how perceptions of fairness affect behaviour. In this study, Perceived Fairness (PF) represents users' judgements about the justice and respect embedded in digital service delivery, especially relevant in AI-driven marketing contexts. Empirical work on algorithmic decision-making shows that transparency and rule-based recommendations significantly bolster users' fairness perceptions and continuance intentions (Wang et al., 2023a). In Islamic finance, fairness is not only a consumer expectation but a religious obligation, rooted in values such as '*adl*

(justice) and *ihsan* (benevolence) (Dusuki & Abdullah, 2007). Recent evidence further demonstrates that AI applications complying with Shariah governance and disclosing model logic foster higher loyalty and financial performance (Ali et al., 2025). When users perceive AI-generated services and digital interactions as fair, they are more likely to remain loyal. The resulting conceptual model proposes that Digital Financial Intuition and AI-Driven Personalized Marketing directly influence Customer Retention, with Perceived Fairness acting as a partial mediator.

Furthermore, the Technology Acceptance Model (TAM) conceptualizes "perceived ease of use" as a cognitive judgment of how effortless a system is to operate (Davis, 1989). The construct of Digital Financial Intuition (DFI), introduced in this study, extends beyond this definition by incorporating instinctive interaction, affective confidence, and subconscious fluency. DFI reflects a user's ability to navigate digital platforms intuitively, without deliberate learning or instruction, and is particularly relevant for individuals with limited formal digital training. This reconceptualization responds to recent calls to move beyond purely rational-cognitive models by integrating emotional and intuitive dimensions in the explanation of digital financial behavior (Dwivedi et al., 2023; van Deursen & van Dijk, 2014). Within the Malaysian Islamic banking context, this perspective is especially salient, as many users, particularly from the B40 and M40 segments, face digital exclusion not due to limited access, but rather to a lack of intuitive comfort in interacting with digital systems.

While the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the SERVQUAL model (Parasuraman et al., 1988) have been extensively applied in financial technology and service evaluation studies, they are not fully aligned with the aims of this study. UTAUT emphasizes constructs such as social influence and facilitating conditions which are more suited to explaining early-stage technology adoption rather than ongoing user experience or psychological engagement (Dwivedi et al., 2023). SERVQUAL focuses on perceived service quality dimensions but lacks consideration for digital interaction fluency and algorithmic fairness critical concerns in AI-driven Islamic banking environments. In contrast, the integration of the Technology Acceptance Model (TAM) and Equity Theory in this study provides a dual focus on cognitive fluency and ethical perceptions, enabling a more nuanced understanding of user retention shaped by both intuitive usability and perceived fairness. This approach is especially relevant in contexts where Islamic values of justice and inclusiveness are central to digital service delivery (Dusuki & Abdullah, 2007; Wang et al., 2023b).

By fusing contemporary TAM extensions with algorithmic-fairness insights, the framework captures both functional and moral drivers of customer behaviour in Malaysian Islamic banks and answers recent calls for multi-theoretical integration in Islamic FinTech research (Dwivedi et al., 2023).

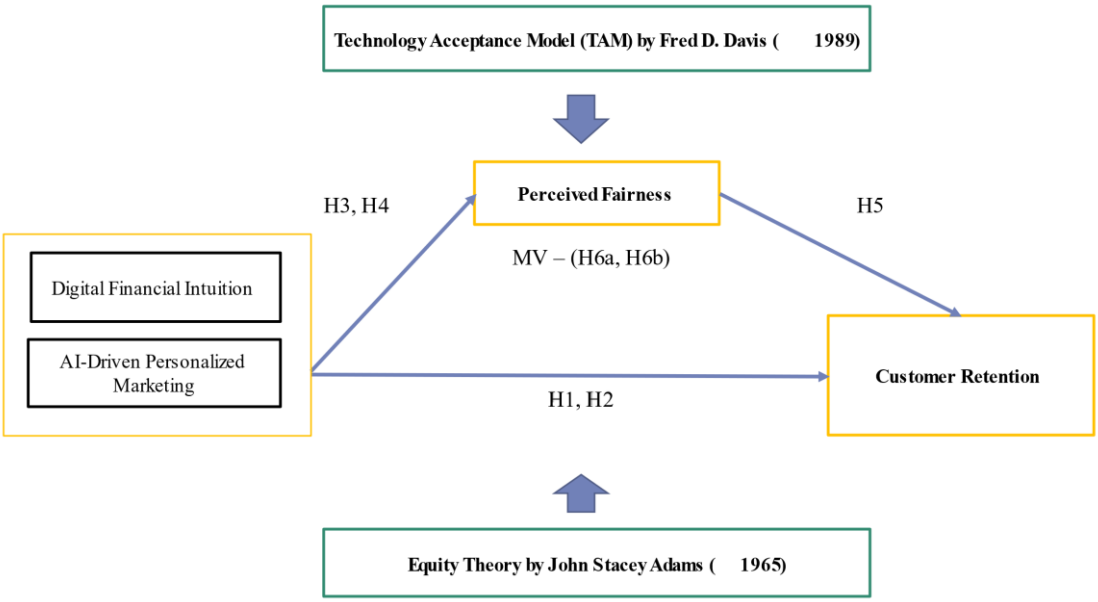

Fig. 1. Conceptual Framework

2-4. Concluding Synthesis: Conceptual Contributions and Research Positioning

This study contributes to the evolving literature on digital Islamic banking by reconceptualizing user experience and ethical alignment through an integrated lens of technology acceptance and perceived fairness. While established models, such as TAM (Davis, 1989) and UTAUT, provide strong predictive power in technology adoption, they often reduce user interaction to rational cost-benefit assessments, overlooking affective, intuitive, and justice-oriented dimensions that are particularly salient in Islamic financial ecosystems. By introducing Digital Financial Intuition (DFI) as a second-order psychological construct, the analysis extends the literature beyond conventional notions of "ease of use," capturing instinctive digital fluency, emotional comfort, and implicit confidence, dimensions especially critical for underserved B40 and M40 populations navigating AI-mediated interfaces (Wan Nawang & Abdul Shukor, 2023). This reframing aligns with calls to integrate non-rational and affective drivers into digital finance theory (Dwivedi et al., 2023). In parallel, by positioning Perceived Fairness (PF) as a mediating mechanism rather than a residual outcome, the study advances the application of Equity Theory in digital banking. Fairness is operationalized not as a normative obligation or reputational concern but as a cognitive-affective bridge through which technological interactions are assessed, internalized, and transformed into loyalty. This reconceptualization is particularly significant in contexts where algorithmic transparency, Shariah compliance, and relational equity constitute religious imperatives rather than optional service attributes (Dusuki & Abdullah, 2007; Wang et al., 2023).

Furthermore, the proposed model contributes to the epistemological repositioning of Islamic FinTech from being viewed primarily as a derivative of conventional finance constrained by Shariah requirements to being recognized as a generative paradigm that redefines trust, loyalty, and usability in AI-augmented financial systems. By integrating usability (DFI), ethics (PF), and behavioral outcomes (CR) into a single framework, the model advances an ontological shift toward value-based digital banking, offering an original blueprint that is both methodologically transferable and policy-relevant beyond the Malaysian context. At the methodological level, the work employs a theory-driven, measurement-validated mediation model that addresses persistent gaps in empirical research on digital justice and AI personalization within Islamic banking. From a practical perspective, it provides a foundation for the development of fairness-aware AI tools, inclusive digital interfaces, and ethically aligned personalization strategies capable of meeting commercial objectives while upholding religious obligations. Taken together, these contributions position the study as a timely response to the structural, ethical, and technological challenges shaping the future of financial services in Muslim-majority societies.

3. Methodology

3-1. Research Design

This study employs a quantitative, cross-sectional research design to empirically investigate the structural relationships among Digital Financial Intuition, AI-Driven Personalized Marketing, Perceived Fairness, and Customer Retention within the context of Islamic banking in Malaysia. A hypothesis-driven quantitative methodology is deemed appropriate, as it facilitates the empirical testing of theoretically grounded constructs through numerical data and statistical modeling, consistent with established methodological guidelines (Creswell & Creswell, 2018). The cross-sectional design enables the collection of data at a single point in time, which is well-suited for capturing consumer perceptions of digital service experiences and associated behavioral outcomes, such as retention.

Data were gathered through a structured survey instrument, a method widely recognized in marketing and consumer behavior research for its efficiency in eliciting self-reported information from a diverse and geographically dispersed population (Hair et al., 2022). This approach is particularly advantageous for assessing latent psychological constructs, such as perceived fairness and digital financial intuition, that necessitate the use of validated, multi-item psychometric scales. The methodological framework is explicitly aligned with the study's theoretical orientation, which integrates the Technology Acceptance Model (TAM) and Equity Theory to simultaneously examine technological enablers and ethical determinants of customer behavior in Islamic financial services.

Although perceptions of algorithmic fairness may evolve over time, a cross-sectional design is appropriate for the aims of this study, namely estimating theory-driven structural relationships and establishing a timely baseline in a rapidly developing context (Creswell & Creswell, 2018; Rindfleisch et

al., 2008). Cross-sectional surveys are commonly employed in early-stage model testing to evaluate nomological validity and mediating mechanisms, particularly when constructs such as Digital Financial Intuition and Perceived Fairness are newly operationalized (Hair et al., 2021). While longitudinal or experimental approaches would provide stronger causal inference and greater temporal sensitivity, future research is recommended to adopt panel or field designs to capture how fairness perceptions evolve as AI systems continue to mature (Ployhart & Vandenberg, 2010; Shadish et al., 2002).

3-2. Population and Sampling

The target population for this study comprises retail customers of Islamic banks in Malaysia who actively engage with digital banking services, including mobile and online platforms. The selection of this population is strategically aligned with the study's objective to explore digital service experiences, fairness perceptions, and behavioral outcomes, particularly customer retention within the framework of Shariah-compliant digital banking. This focus is especially pertinent given Malaysia's progressive national agenda to promote Islamic fintech innovation and broaden digital financial inclusion (Bank Negara Malaysia, 2023).

The study specifically targeted customers from five major Islamic financial institutions: Maybank Islamic, Bank Islam Malaysia Berhad, CIMB Islamic Bank, Bank Rakyat, and RHB Islamic Bank. These banks were purposively selected due to their substantial market share, extensive national footprint, and demonstrable commitment to digital transformation and the ethical deployment of AI within Islamic financial services.

A purposive sampling strategy was employed to recruit respondents who had used digital Islamic banking services within the preceding six months. This method is appropriate for behavioral and perception-based research that necessitates input from individuals with recent, direct experience of the phenomena under investigation (Etikan et al., 2016). Eligibility criteria included being at least 18 years of age and having accessed Islamic digital banking services via web or mobile platforms. Screening questions embedded in the survey ensured compliance with these inclusion parameters.

To determine the appropriate sample size, a power analysis was conducted using GPower 3.1 software (Faul et al., 2009), applying parameters of a medium effect size ($f^2 = 0.15$), a statistical power level of 0.95, and a maximum of five predictor variables. Following Cohen's (1992) guidelines, the analysis indicated a minimum required sample size of 138 respondents. However, in line with best practices in Partial Least Squares Structural Equation Modeling (PLS-SEM), which emphasize the importance of larger samples to improve statistical robustness, particularly in mediation and multi-path structural models (Hair et al., 2021), the final dataset comprised 254 valid responses. This not only exceeds the GPower requirement but also adheres to the "10-times rule," which recommends a minimum of 10 respondents per measurement indicator or structural path leading to a latent construct. Such methodological rigor enhances both the generalizability and the validity of the study's empirical results.

To address potential coverage and selection biases associated with purposive sampling, the study adopted a mixed-mode recruitment strategy that combined online surveys with in-person intercepts. Soft quotas were applied to ensure adequate representation of B40 and M40 income groups, while time-location sampling across weekdays, weekends, and multiple dayparts at bank-adjacent public venues enhanced heterogeneity and reduced the risk of over-representing urban users. This approach mitigated digital-access bias by extending participation beyond highly connected populations and ensured broader demographic diversity. Eligibility was further restricted to individuals who had engaged with Islamic digital banking services within the preceding six months, thereby aligning the sample with the population of interest (Bethlehem, 2010; Dillman et al., 2014; Etikan et al., 2016; Groves et al., 2009).

3-3. Measurement of Constructs

Table 1 outlines the latent constructs employed in this study. All variables were conceptualized as latent constructs and measured using multi-item reflective indicators adapted from previously validated instruments in the literature. A 7-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree), was applied, as this format is widely adopted in behavioral and perceptual research for its accessibility, interpretive clarity, and suitability for structural equation modeling (Hair et al., 2021; Joshi et al., 2015). Each construct was operationalized with a minimum of three items to ensure content validity and internal consistency. To strengthen the instrument's robustness, a pilot study with

30 participants was conducted to evaluate item clarity, wording, and reliability. All constructs achieved Cronbach's alpha values above 0.70, confirming acceptable levels of internal reliability in line with established psychometric standards (Hair et al., 2021).

The construct of Digital Financial Intuition (DFI) was developed by adapting items from TAM3 (Venkatesh & Bala, 2008), particularly subdimensions capturing perceived ease of use and self-efficacy, and extending them with intuitive-use indicators drawn from digital inclusion research (van Deursen & van Dijk, 2014). The items were refined to capture subconscious fluency and emotional comfort in navigating digital Islamic banking interfaces, consistent with recent conceptualizations of intuition-based interaction in financial technology contexts (Dwivedi et al., 2023). A pre-test with 30 Islamic banking users was undertaken to evaluate item clarity, cultural appropriateness, and dimensionality, followed by an internal reliability assessment that confirmed robust consistency (Cronbach's alpha > 0.80). The finalized scale consists of three reflective items measuring instinctive ease, intuitive confidence, and low-effort navigation, designed for inclusion-sensitive digital environments.

Table 2 presents the scale items for the constructs used in this study (7-point Likert scale: 1 = Strongly Disagree, 7 = Strongly Agree), along with the selected items for each construct and the prior studies supporting their conceptualization.

Table1. Measurement Constructs and Sources

Construct	Description	Sources
Digital Financial Intuition (DFI)	Reflects users' instinctive ability and cognitive ease in interacting with digital banking platforms. Based on perceived ease of use from TAM.	Venkatesh & Bala (2008); van Deursen & van Dijk (2014)
AI-Driven Personalized Marketing (AIPM)	Captures customer perceptions of AI-based marketing strategies (e.g., recommendation systems, automated messages, chatbots).	Bleier & Eisenbeiss (2015); Chatterjee et al. (2020)
Perceived Fairness (PF)	Multidimensional concept covering distributive, procedural, and interactional fairness in AI-based digital banking services.	Colquitt (2001); Dusuki & Abdullah (2007)
Customer Retention (CR)	Defined as the customer's behavioral intention and commitment to continue using digital Islamic banking services.	Zeithaml et al. (1996); Bansal et al. (2004)

Table 2. Scales and Items of the Constructs (7-point Likert)

Construct	Code	Item	Key sources informing the construct
Digital Financial Intuition (DFI)	DFI1	Using this bank's digital services feels instinctive for me.	Davis (1989); Venkatesh & Bala (2008); van Deursen & van Dijk (2014); Reber et al. (2004)
	DFI2	I can complete common tasks in the app without thinking much about the steps.	
	DFI3	I feel immediate, low-effort confidence when navigating the interface.	
	DFI4	The flow of menus and actions "just makes sense" to me.	
	DFI5	When I face a new feature, I quickly grasp how to use it.	
AI-Driven Personalized Marketing (AIPM)	AIPM1	The bank's AI recommendations are relevant to my needs.	Bleier & Eisenbeiss (2015); Aguirre et al. (2015); Komiak & Benbasat (2006)
	AIPM2	Automated messages/offers I receive feel timely and useful.	
	AIPM3	The chatbot's responses are tailored to my situation.	
	AIPM4	Overall, the bank's personalization improves my decision-making.	
	AIPM5	I trust the bank to use my data responsibly to personalize communications.	
Perceived Fairness (PF)	PF1	Outcomes from the bank's AI-based interactions are fair to customers like me.	Colquitt (2001); Wang et al. (2023a); Starke et al. (2022); Yoon (2022)
	PF2	The procedures behind offers/eligibility are applied consistently.	
	PF3	The bank explains the main reasons behind decisions that affect me.	
	PF4	I am treated with respect during digital interactions (including chatbot/service).	
	PF5	If an error occurs, the bank's correction process is fair and transparent.	
Customer Retention (CR)	CR1	I intend to continue using this bank's digital services.	Zeithaml et al. (1996); Gustafsson et al. (2005); Oliver (1999)
	CR2	I will choose this bank for future digital transactions.	
	CR3	I would recommend this bank's digital services to others.	
	CR4	I am unlikely to switch to another bank's digital services.	
	CR5	Even if competitors approach me, I would remain with this bank.	

3-4. Data Collection Procedure

Data for this study were collected through a structured, self-administered questionnaire, disseminated via both online and offline channels. The questionnaire was developed based on previously validated measurement scales (refer to Section 3.3) and refined through a pilot test involving 30 respondents to assess clarity, coherence, and reliability. The finalized survey was distributed online through platforms, such as Google Forms and messaging applications (e.g., WhatsApp), as well as physically administered at selected public locations in Kuala Lumpur, Selangor, and Penang to enhance geographical diversity and representativeness. A screening mechanism was embedded to ensure that only participants who had utilized digital Islamic banking services within the preceding six months were included in the final dataset.

All participants were provided with detailed information regarding the purpose and scope of the study, and were assured of anonymity and confidentiality. Informed consent was obtained prior to participation, and ethical clearance was secured from the researcher's affiliated institution in accordance with academic research protocols. The data collection period spanned six weeks, yielding a total of 297 responses. After screening for completeness, response consistency, and eligibility criteria, 254 valid responses were retained for analysis. This final sample exceeded the minimum sample size established in the power analysis (see Section 3.2) and was deemed sufficient for robust analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM).

To mitigate mode-related and digital-access bias, a mixed-mode design was implemented. The realized split comprised 158 online responses (62.2%) collected via Google Forms and WhatsApp, and 96 offline intercepts (37.8%) obtained at public locations in Kuala Lumpur, Selangor, and Penang. Screening procedures, informed consent, and identical survey instruments were applied across both modes to ensure comparability, while the offline arm broadened representation among users with intermittent internet access.

3-5. Data Analysis Techniques

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0 software. PLS-SEM was selected due to its effectiveness in handling complex models involving multiple latent constructs and mediation effects, particularly in situations where the data violate the assumption of multivariate normality (Hair et al., 2021). This analytical approach is widely endorsed in behavioral and marketing research for both theory development and predictive modeling, especially in exploratory contexts that involve emerging constructs such as Digital Financial Intuition. The data analysis followed a two-stage procedure. First, the measurement model was assessed to evaluate construct reliability, convergent validity, and discriminant validity. Reliability was examined using Cronbach's alpha and composite reliability (CR), while convergent validity was assessed through average variance extracted (AVE) and indicator outer loadings. Discriminant validity was evaluated using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio.

In the second stage, the structural model was evaluated to test the study's hypotheses by examining path coefficients, R^2 values, effect sizes (f^2), and predictive relevance (Q^2). The significance of direct and indirect effects was assessed through bootstrapping with 10,000 resamples, consistent with recommended practices in PLS-SEM. The mediating role of Perceived Fairness was also examined using this procedure. Prior to analysis, the dataset was screened for missing values, outliers, and distributional normality. Common method bias (CMB) was further assessed using Harman's single-factor test and the full collinearity VIF technique proposed by Kock (2015), with both approaches indicating no significant bias. The application of these analytical procedures ensured methodological rigor and reinforced the statistical validity of the study's findings.

4. Findings

4-1. Descriptive Statistics and Respondent Profile

Table 3 shows that a total of 254 valid responses were retained for analysis after data screening. Descriptive statistics were used to profile the respondents in terms of their gender, age, education level, monthly income, and digital banking usage experience. The demographic distribution ensures a broad representation of Islamic banking customers across key segments of the Malaysian population.

Out of the total respondents, 53.1% were male and 46.9% were female, indicating a balanced gender distribution. In terms of age, the majority (41.3%) fell within the 25-34 years age group, followed by 28.7% aged 35-44 years, 16.9% aged 18-24, and the remaining 13.1% aged 45 and above. These figures reflect the increasing adoption of digital Islamic banking among younger and middle-aged consumers.

With respect to education, 52.4% of respondents held a bachelor's degree, while 23.2% had completed postgraduate studies. About 18.5% reported having a diploma or equivalent qualification, and 5.9% had completed secondary education. This distribution suggests a relatively educated sample, consistent with the profile of digitally engaged banking users. Regarding monthly income, 31.5% of respondents earned between RM3,001 and RM5,000, followed by 26.8% earning between RM5,001 and RM8,000, and 21.7% below RM3,000. The remaining 20% earned above RM8,000. These income levels reflect a broad coverage of both the M40 and B40 income groups, in line with the study's interest in financial inclusion and digital accessibility in Islamic banking.

In terms of digital banking usage, 84.6% of respondents reported using mobile banking platforms weekly or more frequently, indicating high engagement levels. A majority (76.4%) confirmed having interacted with AI-driven tools, such as chatbots or automated product recommendations, supporting the relevance of the constructs examined in the study. This demographic profile provides a solid foundation for assessing the structural model, as the sample includes a diverse range of Islamic banking users with varying degrees of digital engagement and income backgrounds critical for evaluating fairness, personalization, and customer retention.

To reflect the study's emphasis on financial inclusion, income and location-based segmentation were reported. Respondents earning ≤ RM5,000 comprised 53.2% of the sample (B40), those within the RM5,001-8,000 range accounted for 26.8% (M40), and those earning above RM8,000 represented 20.0% (T20). By geographical distribution, 71.7% of respondents resided in urban areas, while 28.3% were from semi-urban and rural locations. This distribution ensured meaningful representation of digitally underserved groups, a consideration particularly relevant to the assessment of fairness and inclusion in Islamic digital banking.

Table 3. Respondent Demographic Profile (N = 254)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	135	53.1
	Female	119	46.9
Age	18-24	43	16.9
	25-34	105	41.3
	35-44	73	28.7
	45 and above	33	13.1
Education	Secondary school	15	5.9
	Diploma	47	18.5
	Bachelor's degree	133	52.4
	Postgraduate degree	59	23.2
Monthly Income (MYR)	Below 3,000	55	21.7
	3,001 - 5,000	80	31.5
	5,001 - 8,000	68	26.8
	Above 8,000	51	20.0
Mobile Banking Frequency	Weekly or more	215	84.6
	Less than weekly	39	15.4
AI Tool Usage	Yes	194	76.4
	No	60	23.6
Monthly Income	≤ RM5,000 (B40)	135	53.2
	RM5,001 - RM8,000 (M40)	68	26.8
	> RM8,000 (T20)	51	20.0
Location	Urban	182	71.7
	Semi-urban/Rural	72	28.3

4-2. Measurement Model Assessment

Before testing the structural relationships among the study's constructs, the measurement model was assessed for reliability and validity, following the standard PLS-SEM two-step approach (Hair et al., 2021). All constructs in the model were reflective and evaluated based on internal consistency reliability, convergent validity, and discriminant validity.

4-2-1. Reliability and Convergent Validity

Internal consistency was assessed using Cronbach's alpha and composite reliability (CR). As shown in Table 4, all constructs achieved Cronbach's alpha and CR values above the recommended threshold of 0.70, indicating satisfactory internal reliability (Hair et al., 2021).

Table 4. Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digital Financial Intuition	0.84	0.89	0.68
AI-Driven Personalized Marketing	0.87	0.91	0.72
Perceived Fairness	0.89	0.92	0.75
Customer Retention	0.85	0.90	0.70

4-2-2. Convergent Validity

Convergent validity was assessed through factor loadings and average variance extracted (AVE). Table 5 shows that all individual item loadings exceeded 0.70, and the AVE for each construct was above the recommended threshold of 0.50, confirming that the items adequately represent their respective constructs (Fornell & Larcker, 1981).

Table 5. Outer Loadings and Convergent Validity Indicators

Construct	Item Code	VIF
Digital Financial Intuition (DFI)	DFI1	0.82
	DFI2	0.80
	DFI3	0.76
AI-Driven Personalized Marketing (AIPM)	AIPM1	0.85
	AIPM2	0.81
	AIPM3	0.79
Perceived Fairness (PF)	PF1	0.89
	PF2	0.84
	PF3	0.80
Customer Retention (CR)	CR1	0.83
	CR2	0.78
	CR3	0.75

4-2-3. Discriminant Validity

Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT). As presented in Table 6, the square roots of the average variance extracted (AVE) for each construct (diagonal values) are greater than their corresponding inter-construct correlations (off-diagonal values), thereby satisfying the Fornell-Larcker criterion (Fornell & Larcker, 1981).

Table 6. Discriminant Validity - Fornell-Larcker Criterion

Construct	DFI	AIPM	PF	CR
Digital Financial Intuition (DFI)	0.82			
AI-Driven Personalized Marketing (AIPM)	0.61	0.85		
Perceived Fairness (PF)	0.54	0.59	0.87	
Customer Retention (CR)	0.49	0.57	0.62	0.84

Additionally, as shown in Table 7, all HTMT values were below the conservative threshold of 0.85, further confirming adequate discriminant validity (Henseler et al., 2015). Together, these findings indicate that the constructs in the model are empirically distinct and that the measurement model meets the requirements of discriminant validity, supporting its suitability for structural path analysis.

Table 7. Discriminant Validity - HTMT Ratio

Construct	DFI	AIPM	PF	CR
Digital Financial Intuition (DFI)	-			
AI-Driven Personalized Marketing (AIPM)	0.68	-		
Perceived Fairness (PF)	0.60	0.65	-	
Customer Retention (CR)	0.55	0.63	0.70	-

4-3. Structural Model Assessment

4-3-1. Coefficient of Determination (R^2)

In Table 8, the coefficient of determination (R^2) was used to evaluate the explained variance of the endogenous (dependent) constructs in the model. R^2 indicates how well the independent variables account for variation in the dependent variables, and it is a key indicator of model quality in PLS-SEM (Hair et al., 2021). As shown in Table 10, the R^2 value for Perceived Fairness (PF) was 0.52, indicating that 52% of the variance in fairness perception was explained by Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM). The R^2 value for Customer Retention (CR) was 0.63, suggesting that 63% of the variance in customer retention was explained by the combined effects of DFI, AIPM, and PF. Both values exceed the threshold of 0.26, which is considered substantial in behavioral research (Cohen, 1988). These results support the model's explanatory power and confirm that the selected predictors meaningfully account for variations in both fairness perception and customer retention.

Table 8. Coefficient of Determination (R^2)

Endogenous Construct	R^2 Value	Interpretation
Perceived Fairness (PF)	0.52	Moderate explanatory power
Customer Retention (CR)	0.63	Substantial explanatory power

4-3-2. Predictive Power and Predictive Relevance of the Proposed Model

In Table 9, Bootstrapping results demonstrate that the model exhibits moderate to substantial predictive power (R^2) and medium to large predictive relevance (Q^2) for the two key endogenous constructs. These results confirm that the model not only explains a significant portion of variance in Customer Retention and Perceived Fairness but also has strong predictive capability (Chin, 1998; Hair et al., 2021).

Table 9. Predictive Power and Predictive Relevance of the Proposed Model

Construct	R^2	Predictive Power	Q^2	Predictive Relevance
Perceived Fairness	0.520	Moderate	0.310	Medium
Customer Retention	0.630	Substantial	0.410	Large

4-3-3. Effect Size Assessment

The f^2 analysis in Table 10 indicates that both Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) have medium-sized effects on Perceived Fairness (PF), confirming that both digital usability and personalized communication meaningfully shape fairness perceptions. Meanwhile, their direct effects on Customer Retention (CR) are smaller, suggesting that their influence is more strongly mediated through PF than exerted directly.

Perceived Fairness (PF), in turn, exhibits a medium effect size on Customer Retention, reinforcing its central role as a psychological mechanism in customer loyalty within Islamic banking. These results underscore the importance of integrating fairness-centered strategies into digital banking platforms to maximize retention outcomes.

Table 10. Effect Sizes (f^2) of Predictor Variables

Path	f^2 Effect Size	Interpretation
DFI → PF	0.15	Medium
AIPM → PF	0.25	Medium
DFI → CR	0.06	Small
AIPM → CR	0.12	Small to Medium
PF → CR	0.18	Medium

4-3-4. Path Coefficients and Hypothesis Testing

- **Direct Relationships**

The analysis in Table 11 confirms that all five hypothesized direct relationships (H1 to H5) are statistically significant. Both Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) have significant positive effects on Customer Retention (CR) at the 0.001 level, indicating that customers are more likely to stay with Islamic banks when digital services are intuitive and when marketing efforts are personalized and ethically aligned. Additionally, both DFI and AIPM are significantly associated with Perceived Fairness (PF) at the 0.001 level, suggesting that intuitive platforms and responsible AI-driven communication foster fairness perceptions among users. Finally, PF also has a significant positive influence on CR at the 0.001 level, emphasizing its role as a key determinant of customer loyalty in Islamic digital banking contexts. These results align with the theoretical foundations of Technology Acceptance Model (TAM) and Equity Theory, reinforcing the importance of both technological design and ethical interaction in enhancing customer retention.

The structural model results in Figure 2 indicate that all hypothesized paths are statistically significant ($p < 0.01$), with varying magnitudes of effect sizes. Specifically, Digital Financial Intuition (DFI) demonstrates a modest but meaningful influence on Customer Retention (CR) ($\beta = 0.21$, $p = 0.002$), suggesting that while DFI contributes to retention, its role is likely complementary, enhancing rather than driving customer loyalty outcomes on its own. In contrast, AI-Personalized Marketing (AIPM) exerts a stronger impact on CR ($\beta = 0.27$, $p < 0.001$), indicating that personalized AI interventions play a more central role in sustaining customer engagement and loyalty.

When examining the direct effects on Perceived Fairness (PF), DFI again shows a moderate and significant effect ($\beta = 0.34$, $p < 0.001$), highlighting its relevance in shaping users' subconscious evaluations of fairness in AI-enabled financial interactions. AIPM has the strongest direct effect on PF ($\beta = 0.41$, $p < 0.001$), underscoring the salience of AI-driven personalization in reinforcing fairness perceptions. Lastly, PF significantly predicts CR ($\beta = 0.36$, $p < 0.001$), implying that users' fairness perceptions mediate and amplify the effects of both DFI and AIPM on retention. Overall, the effect sizes reveal a hierarchy of influence, where AIPM plays a leading role in shaping both PF and CR, while DFI supports these outcomes through perceptual fluency and experiential ease.

Table 11. Direct Effects and Hypothesis Testing

Hypothesis	Path	Path Coefficient (β)	p-value	Status
H1	DFI → CR	0.21	0.002	Significant
H2	AIPM → CR	0.27	0.000	Significant
H3	DFI → PF	0.34	0.000	Significant
H4	AIPM → PF	0.41	0.000	Significant
H5	PF → CR	0.36	0.000	Significant

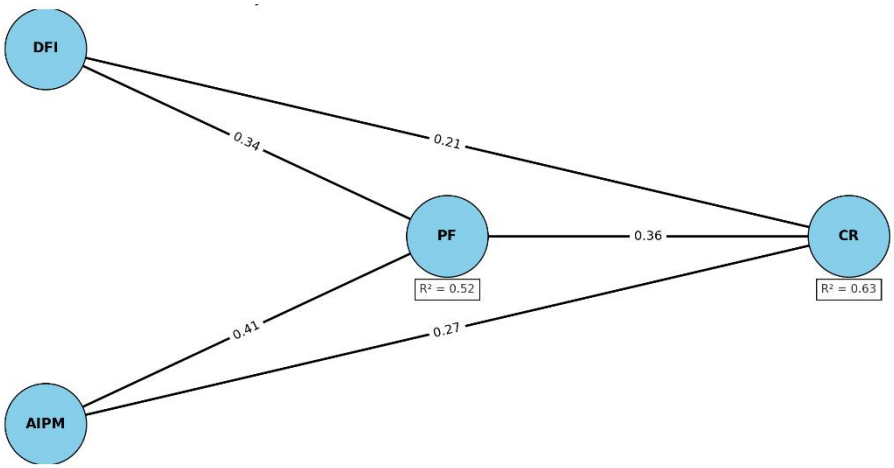

Fig. 2. Structural Model with Standardized Path Coefficients and R^2 Values

- **Mediating Results**

The mediation analysis in Table 12 confirms that Perceived Fairness (PF) significantly mediates the relationships between both independent variables and Customer Retention (CR). For H6a, the mediation between Digital Financial Intuition (DFI) and CR through PF is statistically significant at the 0.001 level, with both the direct and indirect effects being significant. This indicates partial mediation, suggesting that while intuitive digital platforms directly encourage retention, a substantial portion of their influence also operates through enhancing fairness perceptions.

Similarly, for H6b, the mediation between AI-Driven Personalized Marketing (AIPM) and CR through PF is also significant at the 0.001 level, with both direct and indirect effects showing significance. This confirms another case of partial mediation, highlighting that AI personalization impacts retention not only directly but also indirectly by shaping users' perceptions of fairness in service delivery. These findings reinforce the dual role of Perceived Fairness as both an outcome of technological and communication experiences and a crucial mechanism in strengthening customer loyalty, particularly within Islamic banking where fairness is central to both operational and ethical performance.

Table 12. Mediation Analysis Summary

Hypothesis	Mediated Path	Direct Effect (β)	p-value	Status	Indirect Effect (β)	p-value	Status	Total Effect (β)	p-value	Mediation Type
H6a	DFI → PF → CR	0.21	0.002	Significant	0.12	0.000	Significant	0.33	0.000	Partial mediation
H6b	AIPM → PF → CR	0.27	0.000	Significant	0.15	0.000	Significant	0.42	0.000	Partial mediation

4-4. Discussion

This study examined the structural relationships between Digital Financial Intuition (DFI), AI-Driven Personalized Marketing (AIPM), and Customer Retention (CR) in the context of Islamic digital banking, with Perceived Fairness (PF) as a mediating construct. All hypothesized paths were empirically supported, offering strong validation for the integrated theoretical framework, combining the Technology Acceptance Model (TAM) (Davis, 1989) and Equity Theory (Adams, 1965). The findings not only align with prior empirical work in the digital finance literature but also advance theoretical boundaries by highlighting intuitive cognition and fairness as essential antecedents to customer loyalty in Shariah-compliant financial ecosystems.

The significant direct path between DFI and CR ($\beta = 0.21$, $p < 0.01$) underscores the centrality of intuitive user interaction in sustaining digital engagement. This finding extends TAM's original construct of perceived ease of use (Davis, 1989) by reframing it as a psychological dimension rooted in affective fluency and instinctive digital comfort. Such reconceptualization aligns with the paradigm shift identified by Dwivedi et al. (2023), who emphasized the need to incorporate non-cognitive experiential factors in explaining behavioral intention and continuance. The result is also consistent with Alalwan et al. (2018), who reported that digital usability positively influences mobile banking adoption, although their interpretation remained limited to cognitive proficiency. By contrast, the present evidence indicates that intuitive comfort, rather than technical competence alone, functions as a more inclusive and psychologically meaningful antecedent of customer retention, particularly within underserved B40/M40 populations.

The significant direct effect of AIPM on CR ($\beta = 0.27$, $p < 0.001$) corroborates prior evidence that AI-enabled personalization enhances consumer engagement through perceived relevance and responsiveness (Bleier & Eisenbeiss, 2015; Chatterjee et al., 2020). This study extends existing knowledge by situating the effect within the ethical imperatives of Islamic banking. Whereas personalization in conventional contexts often emphasizes efficiency and convenience, Shariah-compliant systems place ethical legitimacy at the center of customer evaluations. As noted by Ali et al. (2025), AI-enhanced financial services generate positive behavioral outcomes only when algorithms are perceived as ethically aligned and transparently governed. The results affirm that AIPM must not only provide personalization but must also do so with transparency, consent, and alignment with Islamic principles to foster sustained loyalty.

Perceived Fairness was found to significantly mediate both the DFI–CR and AIPM–CR relationships, supporting its hypothesized role as the psychological mechanism through which digital experiences are translated into customer loyalty. These findings substantiate Equity Theory (Adams, 1965), which posits fairness as a fundamental determinant of reciprocal behavior. The indirect effects ($\beta = 0.12$ for DFI → PF → CR; $\beta = 0.15$ for AIPM → PF → CR) indicate that neither intuitive design nor AI-driven personalization alone is sufficient; both must be perceived as fair, respectful, and non-discriminatory to influence retention outcomes. Moreover, the mediation effects in this model exceed those reported in comparable non-Islamic contexts (e.g., Lee & Shin, 2020; Jiang & Benbasat, 2007), underscoring the heightened salience of fairness in Islamic finance, where justice (‘*adl*) and benevolence (*ihsan*) are institutional imperatives rather than optional attributes (Dusuki & Abdullah, 2007).

Importantly, the mediation effect positions PF as more than a perceptual outcome; it serves as a cognitive–affective bridge (Cropanzano & Mitchell, 2005) through which digital interactions are morally evaluated and internalized. The findings also align with the growing body of literature on algorithmic justice in financial services, where customer retention increasingly depends on the perceived fairness of automated decision-making systems (Wang et al., 2023b). This reflects a broader epistemic transition in financial services theory, in which fairness is no longer treated as a residual outcome but as a strategic mechanism embedded within user experience architecture.

These results extend the work of Alalwan et al. (2018), who identified digital literacy as a determinant of mobile banking adoption. While their study emphasized technical proficiency, the current analysis advances the construct of Digital Financial Intuition (DFI) as a more inclusive dimension that encompasses instinctive interaction and psychological comfort. This distinction is particularly significant in Islamic digital banking, where ethical usability rather than technical competence governs user engagement. Whereas digital literacy implies learned capabilities, DFI reflects a seamless, almost subconscious ability to interact with digital interfaces, thereby offering a more accurate predictor of behavioral loyalty in value-sensitive financial ecosystems (Dwivedi et al., 2023; Wang et al., 2023).

The present findings build upon and advance prior research on loyalty antecedents in Islamic banking. For instance, Amin (2016) emphasized that internet banking service quality, anchored in usability, responsiveness, and assurance, plays a significant role in driving e-customer satisfaction and loyalty. While our results are consistent with this foundational insight, they extend the discussion by introducing psychological and ethical constructs that are increasingly relevant in AI-mediated financial environments. Specifically, both Digital Financial Intuition and AI-Driven Personalized Marketing demonstrated significant positive effects on customer retention, underscoring that intuitive interaction and ethical personalization are no longer peripheral but central to shaping behavioral outcomes in digital Islamic banking. Importantly, Perceived Fairness emerged as a key mediating mechanism, suggesting that customer loyalty is not only influenced by functional service attributes but also by users’ cognitive ease and their perception of justice and transparency within AI systems. This reconceptualization aligns with recent calls to integrate affective and justice-based dimensions into loyalty models within Islamic financial services (Ali et al., 2025; Wang et al., 2023a; Dwivedi et al., 2023), offering a broader theoretical lens beyond traditional service quality frameworks.

Theoretically, these findings extend the Technology Acceptance Model (TAM) by demonstrating that intuitive engagement, distinct from procedural knowledge, possesses explanatory power in faith-based digital contexts. This addresses recent critiques of TAM’s cognitive determinism and supports calls for a more nuanced perspective on user–technology interaction (Dwivedi et al., 2023). Moreover, by establishing fairness as a mediating construct, the analysis broadens the operational scope of Equity Theory, particularly in contexts where algorithmic ethics intersect with religious values. The integrated model therefore offers a novel interpretive lens that bridges usability, ethical personalization, and behavioural loyalty. Empirically, the model’s explanatory power ($R^2 = 0.63$ for CR) exceeds that of most existing frameworks in Islamic digital banking, suggesting that the combined constructs of DFI, AIPM, and PF provide a more comprehensive account of customer behaviour than traditional models built primarily on trust or satisfaction (Amin, 2016; Echchabi & Aziz, 2012). Conceptually, the study reframes Islamic FinTech not as a derivative of conventional FinTech with ethical modifications, but as an original paradigm that generates its own behavioral logic, rooted in usability and fairness.

While all hypothesized relationships in the model were statistically significant and directionally consistent with theoretical expectations, some findings warrant deeper reflection. For instance, the relatively stronger influence of AI-driven personalized marketing (AIPM) on perceived fairness compared to Digital Financial Intuition (DFI) may initially appear counterintuitive, given the increasing emphasis on intuitive user interfaces in digital banking. However, this result suggests that users may place greater ethical weight on the perceived fairness of algorithmic outreach than on interface fluency alone, a nuance not extensively addressed in prior literature. Although no direct contradictions with existing research emerged, the findings underscore the need for future studies to explore potential boundary conditions or moderating variables (e.g., digital maturity or AI skepticism) that may shape these dynamics differently across user segments or regions.

4-5. Implications

4-5-1. Managerial and Practical Implications

The findings demonstrate that Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) enhance Customer Retention (CR), with Perceived Fairness (PF) serving as a critical mediating mechanism. This underscores the need for Islamic banks to design digital services that are both cognitively effortless and ethically transparent. Managers should prioritize low-cognitive-load user interfaces that reduce friction in routine transactions and incorporate explainable, rule-based personalization within chatbots and recommendation systems.

In operational practice, several strategies are recommended. First, banks should embed fairness indicators into performance dashboards, such as transparency prompts delivered, the speed of complaint resolution, and the outcomes of appeal processes. Second, institutions ought to conduct pre-deployment fairness audits of AI-driven marketing tools to ensure that personalization strategies do not disproportionately disadvantage B40 or M40 users relative to higher-income groups. Third, PF measures should be systematically integrated into customer satisfaction monitoring frameworks, alongside conventional tools such as Net Promoter Scores (NPS) and Customer Satisfaction Indices (CSAT), to identify and address fairness perceptions most strongly associated with retention. These measures are consistent with evidence that transparent, rule-based algorithmic systems foster perceptions of fairness and strengthen user continuance intentions (Ochmann et al., 2024; Starke et al., 2022; Wang et al., 2023b). By institutionalizing fairness as a strategic design and monitoring priority, Islamic banks can translate digital investments into long-term loyalty while simultaneously aligning with Shariah principles of justice and equity.

4-5-2. Policy and Regulatory Implications

The mediating role of Perceived Fairness (PF) highlights the need for regulators to treat algorithmic fairness as a core element of market conduct oversight. Supervisory bodies should adopt three actionable measures. First, banks should be required to disclose the underlying decision logic behind marketing offers and eligibility assessments through concise “Why this offer?” explainers that enhance transparency and customer understanding. Second, regulators should mandate periodic audits of AI-driven marketing pipelines to assess and mitigate potential biases while ensuring alignment with principles of transparency and accountability. Third, the establishment of regulatory sandboxes dedicated to fairness-by-design guidelines would allow Islamic financial institutions to experiment with, and refine, ethical AI applications under controlled conditions. Empirical evidence from financial services indicates that transparency and rule-legibility significantly enhance fairness perceptions and strengthen user trust (Wang et al., 2023; Yoon, 2022). Within the framework of this study, PF emerged as a high-leverage determinant of customer retention, implying that regulatory initiatives institutionalizing transparency and fairness can simultaneously reinforce ethical compliance and deliver measurable gains in loyalty and long-term engagement.

4-5-3. Theoretical Implications

The findings extend the Technology Acceptance Model (TAM) by reconceptualizing perceived ease of use as Digital Financial Intuition (DFI), an affective-intuitive construct that reflects effortless navigation and user confidence in digital interactions. These reframing highlights that technology acceptance is not only cognitive but also shaped by subconscious fluency and emotional assurance,

particularly in inclusion-sensitive financial environments. In parallel, positioning Perceived Fairness (PF) as a mediating mechanism between DFI, AI-Driven Personalized Marketing (AIPM), and Customer Retention (CR) advances the scope of Equity Theory within AI-mediated financial services. Fairness emerges not simply as a downstream perception but as a cognitive-affective bridge that links usability and personalization to enduring loyalty (Komiak & Benbasat, 2006; Starke et al., 2022). Collectively, these insights affirm the value of dual-lens models that integrate usability and ethics, an especially pertinent approach in Islamic digital banking, where fairness perceptions hold elevated behavioral significance.

4-5-4. Social and Ethical Implications

Within Islamic banking, enhancing customer retention must be achieved without compromising principles of justice and equity. Since users are more likely to remain loyal when interactions are perceived as fair, institutions should adopt ethically grounded design choices. First, preference should be given to rule-driven or rule-legible algorithms in eligibility assessments and offer targeting, ensuring that decision logic is transparent and comprehensible. Second, banks should establish accessible appeal and override mechanisms for AI-based decisions to safeguard against perceived arbitrariness. Third, inclusive segmentation strategies are essential to prevent personalization systems from systematically privileging higher-income segments while marginalizing B40 and M40 users. Empirical evidence confirms that such fairness-oriented designs strengthen both perceived justice and trust in financial services (Wang et al., 2023; Yoon, 2022). By embedding inclusivity and transparency into digital service delivery, Islamic banks can uphold their ethical mandate while leveraging fairness as a pivotal pathway to sustained customer loyalty.

5. Conclusion

This study aimed to examine the influence of Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) on Customer Retention (CR) within the context of Islamic banking in Malaysia, with Perceived Fairness (PF) as a mediating psychological mechanism. The study was grounded in the Technology Acceptance Model (TAM) and Equity Theory, offering a dual-theoretical foundation to explore both technological engagement and ethical evaluation in digitally delivered Islamic financial services.

The structural equation modeling results, based on data from 254 respondents, provide robust empirical evidence that both DFI and AIPM are significant predictors of customer retention, operating directly and indirectly through perceived fairness. The mediating role of PF confirms its centrality as a cognitive–affective conduit through which customers assess digital service legitimacy and develop loyalty. These findings emphasize that customer retention in Islamic digital banking is not merely a function of technological efficiency but is strongly shaped by intuitive usability and perceptions of fairness.

Although this analysis is situated within Islamic banking, the proposed framework holds broader applicability for ethical digital finance systems worldwide. The integration of intuitive usability (DFI) with perceived fairness (PF) offers a transferable model for financial institutions in both religious and non-religious contexts where digital trust, transparency, and inclusiveness are critical. In underserved markets or regulatory environments emphasizing algorithmic accountability, this model can inform the ethical deployment of AI personalization across sectors such as digital banking, insurance, and government fintech platforms. Future research may apply the framework to explore fairness-driven loyalty mechanisms in non-Islamic but value-sensitive industries.

From a theoretical perspective, the study extends TAM by reconceptualizing ease of use as intuitive cognition, a dimension particularly relevant to financially and digitally underserved groups. It also advances Equity Theory by operationalizing fairness as a mediating construct in AI-driven financial contexts, an area where empirical work has remained limited, especially within Islamic finance. Collectively, the integration of DFI, AIPM, and PF offers a novel framework that links functional digital design and Shariah-aligned personalization to behavioral loyalty outcomes.

Practically, within the Malaysian context, the findings provide meaningful guidance for Islamic banks and regulators. Enhancing user-centric digital interfaces and adopting ethically transparent AI marketing systems are essential for strengthening customer retention and sustaining ethical credibility.

The results also offer timely support for policy frameworks such as Bank Negara Malaysia's Financial Sector Blueprint, which emphasizes digital inclusion and value-based intermediation.

Beyond Malaysia, the findings carry global relevance for Islamic financial institutions in digitally advancing economies. The integration of Digital Financial Intuition and AI-driven personalization presents a replicable framework for improving customer retention in markets such as the Gulf Cooperation Council (GCC), Indonesia, and North Africa, where Shariah-compliant fintech adoption is expanding. To translate these insights into actionable strategies, financial institutions should implement AI fairness audit protocols, including algorithmic transparency reviews, stakeholder-inclusive testing, and fairness-by-design guidelines. These measures not only strengthen trust in AI systems but also align digital banking strategies with the ethical principles of Islamic finance, thereby enhancing long-term loyalty and institutional credibility.

Despite these contributions, the study is not without limitations. Its cross-sectional design precludes causal inference, potentially limiting the ability to capture temporal shifts in fairness perception and retention behavior. Additionally, the exclusive focus on Malaysian Islamic banks may constrain the generalizability of the findings to other cultural or regulatory contexts, particularly where digital infrastructure, financial literacy, or interpretations of Shariah compliance differ. These limitations may have influenced the scope of observed relationships and call for cautious interpretation when applying the results beyond the studied context.

Future research should also consider adopting longitudinal and experimental designs to establish causal relationships more robustly. For instance, panel data can help capture evolving perceptions of fairness and digital engagement over time, while experimental methods such as A/B testing or quasi-experimental designs (e.g., difference-in-differences) can provide stronger identification of the effects of AI personalization features. These methods would complement the current model and address temporal and treatment-based causality more rigorously.

5-1. Actionable Insights

The strategic recommendations outlined in Table 13 emphasize the critical role of intuitive design, ethical AI application, and fairness management in enhancing customer retention in Islamic banks. Findings from the study reveal that Digital Financial Intuition (DFI) and AI-Driven Personalized Marketing (AIPM) significantly influence customer loyalty, both directly and through the mediating role of Perceived Fairness (PF). Therefore, banks must invest in user-friendly digital interfaces, particularly for underserved segments like B40 and M40, while also ensuring AI systems are ethically aligned with Shariah principles. Embedding fairness metrics into performance evaluations, offering digital literacy support, and using inclusive targeting strategies are essential to building trust. Finally, continuously integrating customer feedback into system updates ensures that perceived fairness remains strong and relevant over time. These actions collectively support a more ethical, inclusive, and loyalty-driven digital banking ecosystem.

Table 13. Plan of Action for Islamic Banks: Strategic Recommendations Based on Findings

Strategic Area	Actionable Recommendation	Findings Base
1. Digital Interface Design	Invest in intuitive, low-cognitive-load UI/UX tailored for B40 and M40 segments.	DFI significantly impacts retention; intuitive design enhances engagement and trust among digitally vulnerable users.
2. Ethical AI Personalization	Implement AI fairness audits and align automated marketing with Shariah principles and user preferences.	AIPM influences PF and CR; fairness perception is essential in Islamic banking's ethical obligations.
3. Perceived Fairness Management	Develop digital fairness indicators (e.g., transparency scores, complaint ratios) and integrate them into KPIs.	PF significantly mediates CR; fairness is not incidental, but a key loyalty driver.
4. Digital Financial Literacy Support	Provide onboarding tutorials, chatbot guidance, and community workshops focused on digital intuition development.	DFI is critical for CR; improving instinctive use supports retention, especially in low-literacy groups.
5. Inclusive Targeting Strategies	Use AI segmentation to avoid over-targeting high-income groups and ensure the inclusion of underserved users.	AIPM must be ethically executed; perceived bias in AI undermines trust and violates Islamic fairness norms.
6. Customer Feedback Integration	Institutionalize feedback loops to capture fairness perceptions in real time and adjust systems accordingly.	PF is dynamic; continuously assessing and improving perceived fairness strengthens long-term loyalty.

Declarations

Ethical Approval and Consent to Participate

This study was reviewed and approved by the Research Ethics Committee of Universiti Kebangsaan Malaysia (UKM), under the reference number JEP-2024-652. Informed consent was obtained from all participants.

Consent for Publication

Not applicable.

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Competing Interests

The author declares no competing interests.

Data Availability

The data supporting the findings of this study are available upon reasonable request from the corresponding author.

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