

Original Article

Reimagining Islamic Microfinance in the Age of AI: A Qualitative Exploration of Human-Centric Sharia Banking

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This article contributes to:



Abstract. The rapid integration of artificial intelligence (AI) into global financial systems presents both transformative opportunities and profound ethical challenges for Islamic microfinance institutions. This study explores the intersection of AI-driven financial technologies and the foundational principles of Sharia-compliant banking, with particular emphasis on the preservation of human-centric values embedded in Islamic economic thought. Drawing on qualitative data gathered through in-depth interviews with Islamic microfinance practitioners, Sharia scholars, financial technology experts, and end-users in Indonesia, this research employs thematic analysis to identify critical tensions and synergies between algorithmic efficiency and the ethical imperatives of maqasid al-Shariah. Four principal themes emerge from the analysis: (1) the efficiency–humanity tension in AI deployment; (2) ethical concerns surrounding algorithmic bias and data privacy; (3) the dynamics of customer trust in digitised Islamic finance; and (4) the challenges of maintaining Sharia compliance within automated systems. The findings suggest that while AI holds considerable promise for enhancing financial inclusion and operational efficiency, its uncritical adoption risks eroding the relational, compassionate, and justice-oriented ethos that distinguishes Islamic microfinance. This article argues for a deliberate, values-driven framework that positions human welfare at the centre of any technological transition in Sharia banking.

Keywords: Islamic Microfinance, Artificial Intelligence, Sharia Banking, Human-Centric Finance, Financial Technology.

1. Introduction

Islamic microfinance has long occupied a distinctive position within the broader landscape of development finance, grounded as it is in a moral economy that transcends the purely transactional logic of conventional banking. Rooted in the Quranic injunction against *riba* (usury), the prohibition of *gharar* (excessive uncertainty), and the affirmative duty of *zakat* (obligatory almsgiving), Islamic financial institutions are mandated not merely to generate returns but to realise the higher objectives of Islamic law—commonly articulated as *maqasid al-Shariah*—which encompass the protection of life, intellect, progeny, wealth, and faith [1], [2]. Since the founding of Mit Ghamr Savings Bank in Egypt in 1963 and the subsequent institutionalisation of Islamic banking through Bank Islam Malaysia in 1983, the sector has matured into a globally significant industry, with assets estimated to exceed USD 3.8 trillion by 2024 [3]. Yet despite this growth, questions regarding outreach, accessibility, and the quality of service to marginalised communities remain persistently unresolved.

Concurrently, the digitalisation of financial services—often subsumed under the umbrella of financial technology, or fintech—has fundamentally altered the architecture

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of banking worldwide. Machine learning algorithms, natural language processing, robotic process automation, and big data analytics are increasingly deployed to assess creditworthiness, detect fraud, personalise financial products, and automate compliance procedures [4], [5]. Within Islamic banking and microfinance, these technologies offer the tantalising prospect of extending services to the unbanked and underbanked at drastically reduced operational costs, thereby aligning with the sector's redistributive ambitions. However, the algorithmic gaze is not inherently neutral; embedded within data-driven systems are assumptions, biases, and optimisation functions that may be structurally at odds with the relational and community-oriented character of Islamic financial practice [6], [7].

The notion of human-centric finance—broadly understood as a paradigm that places the dignity, agency, and wellbeing of the individual at the centre of financial service design—has attracted growing scholarly and policy attention in recent years [8]. Within Islamic economics, this concept resonates deeply with the *maqasid* framework, which demands that economic activity serve human flourishing rather than subordinate it to capital accumulation. However, the practical operationalisation of human-centricity in digitised microfinance environments remains theoretically underdeveloped and empirically under-examined. Existing studies tend to address either the technical dimensions of AI in banking [9], [10] or the normative principles of Islamic finance [11], [12] without adequately interrogating their interaction.

This article addresses that gap. The study asks: How do Islamic microfinance practitioners, experts, and users conceptualise the integration of AI technologies within a framework that privileges human values and Sharia compliance? More specifically, it investigates the perceived tensions and complementarities between algorithmic efficiency and the ethical imperatives of Islamic microfinance, with attention to issues of trust, fairness, transparency, and institutional accountability. Through a qualitative, phenomenologically informed inquiry situated in the Indonesian context—where Islamic microfinance is embedded in a rich landscape of Baitul Maal Wat Tamwil (BMT) cooperatives and state-sponsored syariah banking—this study generates theoretically grounded insights that are simultaneously responsive to global debates in AI ethics and Islamic finance.

The remainder of this article is structured as follows. Section 2 reviews the relevant literature across the domains of Islamic microfinance, AI in banking, and human-centric financial design. Section 3 describes the qualitative methodology, including data collection and analytical procedures. Section 4 presents and critically discusses the four principal themes identified through thematic analysis. Section 5 concludes with key findings, policy implications, and directions for future research.

2. Literature Review

2.1 Principles of Islamic Microfinance

Islamic microfinance is not merely a Sharia-compliant variation of conventional microcredit; it constitutes a distinct theoretical and institutional assemblage that draws its normative coherence from the objectives of Islamic law. The foundational prohibition of *riba*, often translated as interest or usury, necessitates the development of alternative profit-and-loss sharing (PLS) instruments such as *mudarabah* (profit sharing), *musharakah* (joint venture), and diminishing *musharakah* as modes of enterprise financing [12]. Complementing these are asset-backed contracts such as *murabahah* (cost-plus financing) and *ijarah* (leasing), which are widely employed in the microfinance context due to their relative simplicity and suitability for small-scale productive activities [11].

Beyond contractual form, Islamic microfinance is distinguished by its embedding within a broader moral economy. The concepts of *takaful* (mutual assistance), *waqf* (endowment), and *qard hasan* (benevolent loan) reflect an understanding of financial intermediation as a social and communal practice rather than a purely commercial transaction [2]. This social orientation is particularly salient in the Indonesian context, where BMT cooperatives have historically functioned as community-anchored institutions serving low-income Muslim households excluded from formal banking channels [13], [14]. The *maqasid al-Shariah* framework, as elaborated by scholars such as Ibn Ashur and Al-Ghazali and contemporised by Chapra [1] and Dusuki and Abdullah [6], provides the overarching *telos* against which the performance of Islamic microfinance institutions ought to be evaluated.

Despite its normative richness, the Islamic microfinance sector faces structural challenges that have prompted exploration of technological solutions. High transaction costs, limited data infrastructures, geographic dispersion of clients, and dependency on loan officer relationships constrain scalability without necessarily compromising the quality of human engagement that the sector regards as intrinsic to its mission [15]. These tensions set the stage for the entry of AI-mediated solutions.

2.2 Artificial Intelligence in Banking and Fintech

The deployment of AI in financial services has accelerated markedly since the mid-2010s, driven by the convergence of improved computational capacity, the proliferation of digital data, and advances in machine learning methodologies. Key applications include credit scoring through alternative data [16], conversational AI for customer service, fraud detection via anomaly detection algorithms, and algorithmic compliance monitoring [10]. In developing country contexts, mobile money platforms and AI-enhanced credit products—such as those pioneered by M-Pesa in Kenya or GoPay in Indonesia—have demonstrated significant potential for financial inclusion [17].

Within Islamic banking and fintech, AI applications are emerging across multiple dimensions. Natural language processing tools are being developed for automated Shariah compliance review of financial contracts [18], [7]. Machine learning models are being tested for *murabahah* and diminishing *musharakah* pricing. Chatbot interfaces informed by Islamic jurisprudential logic are being piloted in Malaysia and the Gulf Cooperation Council states [19]. These developments signal that the Islamic finance industry is neither immune to nor uninterested in the technological currents reshaping global banking.

However, critical scholarship on AI in finance cautions against an uncritical embrace of algorithmic systems. Algorithmic bias—the tendency of machine learning models to reproduce and amplify historical patterns of discrimination embedded in training data—poses particular risks for marginalised communities who are already underserved by formal financial institutions [20], [21]. The opacity of many AI models, often characterised as "black boxes," raises serious concerns about accountability and the rights of individuals to understand and contest automated decisions affecting their financial lives. These concerns acquire heightened ethical salience within an Islamic framework that places transparency (*amanah*), justice (*adl*), and human dignity (*karamah*) at the centre of institutional conduct.

2.3 Human-Centric Approaches in Financial Services

The concept of human-centric design in financial services has its intellectual roots in participatory design traditions, service-dominant logic, and, more recently, ethical AI discourse [22], [8]. At its core, a human-centric approach insists that financial products, processes, and institutions be designed around the needs, experiences, and values of the

people they serve, rather than around the internal logic of the technology or the optimisation imperatives of the institution. In the context of AI-mediated services, this translates into demands for explainability, fairness, user agency, and meaningful accountability mechanisms [23].

Within Islamic economics, the resonances between human-centric finance and the maqasid framework are apparent and well-noted in the literature [1], [6]. Yet the translation of these values into concrete institutional practice—particularly in digitised and AI-augmented environments—remains an active area of scholarly contention. Researchers such as Abdul Ghafar Ismail et al. [24] have argued for a "values-based banking" model that integrates social impact measurement with financial performance indicators, a framework that is broadly consistent with human-centric principles but does not yet engage substantively with the specific challenges posed by algorithmic systems. More recent contributions [7], [25] have begun to address this gap, though the empirical grounding of such arguments remains thin.

2.4 Previous Studies and Identified Research Gaps

A review of the extant literature reveals a productive but fragmented body of research. Studies on Islamic microfinance performance [15], [13] provide valuable institutional context but predate the significant digitalisation of the sector. Fintech studies in Islamic finance [18], [7], [25] tend to focus on product innovation and regulatory challenges, with limited attention to the experiential dimensions of AI adoption among frontline practitioners and end-users. AI ethics literature [20], [23], [21] is largely developed within secular Western frameworks and does not engage with Islamic ethical categories. Qualitative studies exploring how Islamic values are negotiated in practice within microfinance institutions are rare [26], and studies specifically addressing the human-technology interface in AI-augmented Islamic microfinance are, to the best of the authors' knowledge, non-existent.

This study therefore makes a threefold contribution. First, it extends the qualitative literature on Islamic microfinance by centring the perspectives of practitioners, experts, and users on a phenomenon—AI integration—that is rapidly reshaping their institutional context. Second, it contributes to AI ethics scholarship by introducing Islamic ethical categories as a substantive theoretical resource for evaluating human-centric AI in finance. Third, it provides empirically grounded insights relevant to policy debates on responsible innovation in Islamic financial services, with particular relevance to the Indonesian context.

3. Method

3.1 Qualitative Research Design

This study adopts a qualitative research design, drawing on interpretive phenomenological and constructivist epistemological traditions [27], [28]. Qualitative methods are appropriate for this inquiry because the central research questions concern meaning-making, value negotiation, and subjective experience rather than quantifiable outcomes—dimensions that resist capture through statistical instruments. Specifically, the study seeks to understand how diverse actors within the Islamic microfinance ecosystem make sense of and respond to the introduction of AI technologies in ways that are mediated by their professional expertise, cultural location, and ethical commitments. An interpretive approach allows the research team to attend to complexity, ambiguity, and context-dependency in ways that would be foreclosed by more positivist designs.

The research was conducted in Bengkulu Province, Sumatra, Indonesia, between January and August 2024. Bengkulu was selected as the primary fieldwork site because it

offers a microcosm of the broader Indonesian Islamic microfinance landscape, encompassing established BMT cooperatives, branches of national syariah banks (Bank Syariah Indonesia and Bank Muamalat), and a population with relatively high rates of financial exclusion, making it an instructive context for examining both the promises and the limitations of AI-enhanced inclusion strategies.

3.2 Data Collection

Data were collected through semi-structured in-depth interviews, which were selected as the primary instrument because they permit the exploration of complex, nuanced perspectives while retaining the flexibility to follow emergent lines of inquiry [29]. A purposive sampling strategy was employed to ensure representation across three participant categories: (1) Islamic microfinance practitioners, including BMT managers, loan officers, and syariah bank branch directors ($n = 14$); (2) subject matter experts, including Sharia scholars (ulama) with expertise in Islamic finance, fintech regulators from the Otoritas Jasa Keuangan (OJK), and academic economists specialising in Islamic finance ($n = 9$); and (3) microfinance clients and end-users, including small business owners and individual borrowers with experience using digital Islamic financial services ($n = 17$). In total, forty (40) interviews were conducted.

Each interview lasted between forty-five and ninety minutes and was conducted in Bahasa Indonesia, with select interviews conducted in a mixture of Indonesian and local dialect to facilitate comfort and authenticity of expression. Interviews were audio-recorded with the informed consent of participants and subsequently transcribed verbatim. The interview guide was organised around four thematic domains: perceptions of AI in Islamic microfinance; values and ethical concerns; trust and customer experience; and Sharia compliance in algorithmic environments. The guide was iteratively refined following the first five interviews to address emergent themes and ensure saturation of key conceptual categories. In addition to interviews, documentary analysis was conducted on institutional policy documents, product brochures, and publicly available regulatory guidance from Bank Indonesia and OJK pertaining to syariah fintech. These documents served a triangulatory function, enabling the cross-referencing of participant accounts with institutional discourse.

3.3 Data Analysis

Data were analysed using reflexive thematic analysis [28], [30], which was selected for its theoretical flexibility and its capacity to generate rich, interpretive accounts of qualitative data. The analytical process proceeded through six phases: familiarisation with the data through repeated reading of transcripts; generation of initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the written analysis. Atlas.ti (version 23) was employed to support coding and theme management, though analytical decisions were made by the researchers rather than delegated to software logic. To enhance rigour, the research employed several quality assurance strategies. Member checking was conducted with eight participants who reviewed summary findings and provided feedback on the accuracy and completeness of the researchers' interpretations. A reflexivity journal was maintained throughout the fieldwork and analysis phases to document researcher positionality and analytical decisions. Inter-rater reliability was assessed through independent coding of a randomly selected 20% subsample of transcripts by a second researcher, achieving a Cohen's Kappa coefficient of 0.78, indicating substantial agreement. Thick description [31] was employed in the presentation of findings to enable readers to assess the transferability of findings to other contexts.

4. Results and Discussion

The thematic analysis yielded four principal themes, each of which reflects a dimension of the broader tension between technological efficiency and the human and ethical imperatives of Islamic microfinance. These themes are presented and critically discussed below.

4.1 Theme One: The Efficiency–Humanity Tension

The most pervasive theme across all participant groups concerned the fundamental tension between AI-driven efficiency and the relational character of Islamic microfinance. Practitioners consistently acknowledged the operational benefits of AI—particularly in credit scoring, loan processing, and customer query handling—while simultaneously expressing unease about the displacement of human relationships that they regarded as constitutive of the institution's identity and legitimacy. One BMT manager articulated this tension with particular clarity, noting that "the beauty of BMT is that we know our members—their families, their worries, their seasons of harvest and hardship. A machine can score their transactions but it cannot know their hearts." This sentiment recurred across practitioner interviews, suggesting that the informational richness of loan officer relationships is valued not merely instrumentally—as a means of risk mitigation—but intrinsically, as an expression of the Islamic principle of *ukhuwah* (brotherhood/sisterhood) and the ethic of care that practitioners regarded as inseparable from their institutional mission.

End-users echoed this perspective, though with additional nuances. Several clients expressed appreciation for the speed and convenience afforded by digital channels for basic transactions, while simultaneously insisting on the continued importance of face-to-face interaction for matters of significant financial consequence. "For sending money or checking my balance, the app is fine," offered one small trader. "But when I need to discuss financing for my business, I want to speak with a person who understands my situation." This finding resonates with research in conventional banking on the multi-channel preferences of customers [8] and suggests that the integration of AI should be conceived as supplementary to, rather than substitutive of, relational banking practices.

Critically, this tension is not merely a matter of customer preference but carries normative weight within the Islamic framework. The *maqasid al-Shariah* places the preservation of human intellect, dignity, and social bonds among its highest imperatives. An Islamic microfinance model that privileges algorithmic speed at the cost of meaningful human connection may be technically Sharia-compliant at the level of contractual form while violating the spirit of the *maqasid* at the level of institutional ethos. This distinction between formal and substantive compliance is a recurring preoccupation in the literature [11], [1] and is powerfully illustrated in the practitioner data.

4.2 Theme Two: Ethical Concerns—Algorithmic Bias, Transparency, and Data Privacy

A second major theme concerned the ethical dimensions of AI adoption, with participants raising concerns across three interrelated domains: algorithmic bias, the opacity of AI decision-making, and the privacy implications of data collection. Sharia scholars and academic experts were notably articulate in their concerns about algorithmic bias, drawing explicit connections between the Islamic prohibition of *zulm* (injustice or oppression) and the risk that AI systems may systematically disadvantage already-marginalised communities. One *ulama* consultant observed that "if the machine is trained on data from a banking system that has historically excluded the poor and the rural, it will continue to exclude them. This is not just a technical failure; it is an injustice (*zulm*) that we are automating." This framing reinterprets the problem of algorithmic bias

not merely as a technical artefact to be corrected through better data engineering, but as a moral failure with specific resonance within Islamic ethical categories—a contribution that enriches existing AI ethics discourse in the critical vein of O'Neil [20] and Eubanks [21].

Concerns about transparency were closely related. Several practitioner participants reported difficulty in explaining to clients the basis on which AI-generated credit decisions had been made, a challenge that they experienced as ethically troubling given the Islamic emphasis on full disclosure (*tabyin*) in financial transactions. One branch director from a syariah bank noted that "when a member asks me why their application was declined, I need to be able to give them an honest and comprehensible answer. If the algorithm decides, I cannot do that." This experience maps directly onto scholarly debates about the "right to explanation" in AI-assisted decision-making [23] and underlines the practical urgency of explainable AI (XAI) development for Islamic finance contexts.

On data privacy, client participants expressed a spectrum of responses. A minority were largely unconcerned, particularly younger urban users who were accustomed to sharing personal data through social media platforms. The majority, however, expressed significant unease about the extent and nature of data collection in digital Islamic finance applications, with several invoking the Islamic concept of *amanah* (trustworthiness) to articulate their expectation that institutions would be stewards of their personal information. "They know everything about me—my purchases, my salary, my family. I trusted them with that information because they are an Islamic bank. They have an *amanah* to protect it," said one female microfinance client. This spontaneous recourse to Islamic ethical language in discussing data governance is a notable finding that suggests the potential for *amanah*-based data ethics as a distinctive framework for Sharia-compliant digital finance.

4.3 Theme Three: Customer Trust in AI-Augmented Islamic Finance

Trust emerged as a third overarching theme, with participants across all groups identifying it as both the central asset of Islamic microfinance institutions and the variable most at risk from poorly managed AI integration. The analysis revealed that trust in AI-augmented Islamic finance is constructed through at least three distinct but interrelated mechanisms: institutional trust, interpersonal trust, and theological trust.

Institutional trust—confidence in the integrity, competence, and good faith of the financial institution as an entity—was found to be strongly influenced by perceptions of AI use. Participants who reported positive experiences with AI-enhanced services (notably mobile banking interfaces and automated zakat calculation tools) tended to view AI as an enhancement of institutional capacity that reflected positively on institutional competence. Conversely, participants who had encountered opaque AI decisions or unexplained service disruptions reported significant erosion of institutional trust, sometimes to the point of considering switching to non-digital alternatives. This finding suggests that the relationship between AI and institutional trust is not monotonic but contingent on the quality of the user experience, a point that has implications for UI/UX design in Islamic fintech.

Interpersonal trust—the relational bond between individual client and loan officer or institution representative—was identified by practitioners and clients alike as the most durable and irreplaceable form of trust in the Islamic microfinance context. AI was perceived as a threat to interpersonal trust primarily when it was seen to replace rather than support human interactions. Several practitioners noted strategies that appeared to mitigate this risk: retaining human touchpoints at decision-critical moments, using AI to

free up loan officer time for relational engagement rather than routine tasks, and communicating proactively with clients about the role of technology in service delivery.

Theological trust—confidence that the institution's AI systems are genuinely operating within Sharia parameters—constituted a distinctive dimension of trust unique to the Islamic finance context. Client participants, particularly older and more religiously observant respondents, expressed concern that algorithmic systems might inadvertently introduce elements of *riba*, *gharar*, or *maysir* (gambling) into financial products without the knowledge of customers or even the institution itself. One retired civil servant voiced a concern that was expressed by several participants: "How do I know the machine is not doing something haram without anyone realising?" This question—which may initially appear naïve from a technical standpoint—reflects a sophisticated intuition about the emergent properties of complex algorithmic systems and points to the importance of continuous, expert Sharia audit of AI-mediated financial processes.

4.4 Theme Four: Sharia Compliance in Algorithmic Environments

The fourth theme addresses the structural and procedural challenges of maintaining authentic Sharia compliance when financial processes are mediated by AI systems. This theme was most pronounced in the accounts of Sharia scholars, regulatory experts, and senior practitioners, who identified a range of challenges that have not been adequately addressed in existing regulatory frameworks. A central concern was the need for dynamic Sharia oversight of AI systems throughout their life cycle, rather than the static approval of products at the point of launch. Sharia Supervisory Boards (SSBs), which conventionally audit financial products and practices against Sharia standards, are largely configured for a world of discrete, human-executed transactions. The continuous, adaptive nature of machine learning systems—which update their parameters as they process new data—poses a fundamentally different compliance challenge. As one Sharia scholar and SSB member observed, "We review a contract once and certify it. But an AI system that learns from data is not the same contract every day. Who is responsible for what it becomes?"

This observation highlights an important gap in Islamic financial governance: the need for real-time or continuous Sharia monitoring of AI-driven financial systems. Expert participants proposed several potential responses, including the embedding of Sharia compliance logic directly into algorithmic design (so-called "Sharia-by-design" approaches), the development of AI-specific auditing protocols by national Sharia supervisory bodies such as the Dewan Syariah Nasional (DSN) in Indonesia, and the creation of multidisciplinary teams combining Sharia expertise with data science competence to provide ongoing oversight.

A further compliance challenge concerned the application of Islamic profit-and-loss sharing principles within AI-mediated credit systems. The prevailing deployment of AI for credit scoring in Islamic microfinance is, as several practitioners noted, largely borrowed from conventional banking models oriented toward fixed-return debt instruments. The scoring logics, risk parameters, and optimisation objectives embedded in these systems may be structurally misaligned with the *mudarabah* or *musharakah* frameworks that Islamic microfinance regards as its ideal financing modes. Practitioner participants identified a pressing need for the development of AI models specifically designed to support PLS-based financing, calibrated to the risk-sharing principles and data patterns characteristic of Islamic microfinance portfolios.

Taken together, the four themes delineated above converge on a single overarching finding: the integration of AI into Islamic microfinance is characterised by a set of tensions—between efficiency and humanity, transparency and opacity, trust and

uncertainty, formal and substantive compliance—that cannot be resolved by technical means alone. They require what this article proposes to call a values-aligned AI framework: a governance architecture in which Islamic ethical principles are not merely applied as constraints to technology, but are embedded as generative values in the design, deployment, and oversight of AI systems from the outset.

5. Conclusion

This article has presented a qualitative exploration of the intersection between artificial intelligence and Islamic microfinance, centred on the perspectives of practitioners, Sharia experts, and end-users in Bengkulu, Indonesia. Four principal themes were identified through reflexive thematic analysis: the efficiency–humanity tension; ethical concerns about algorithmic bias, transparency, and data privacy; the multi-dimensional character of customer trust; and the structural challenges of Sharia compliance in algorithmic environments. Together, these findings illuminate a landscape of significant promise—AI offers real potential to extend financial inclusion, reduce costs, and enhance service quality in Islamic microfinance—alongside equally significant peril, particularly if technological adoption is pursued without adequate attention to the ethical and relational dimensions that give Islamic microfinance its distinctive character and moral authority.

The central argument of this article is that the human-centric imperative of *maqasid al-Shariah* offers a robust and theoretically coherent framework for navigating the integration of AI in Islamic banking, one that is not hostile to technology but insists on its subordination to the higher objectives of human welfare, justice, and dignity. This framework has several concrete implications for policy and practice. For regulatory bodies such as OJK and Bank Indonesia, the findings point to the need for Islamic fintech governance frameworks that go beyond product-level Sharia certification to encompass continuous, life-cycle oversight of AI systems, with specific attention to algorithmic bias, explainability, and data stewardship. The development of national-level guidelines for Sharia-compliant AI—in dialogue with international bodies such as the Islamic Financial Services Board—is an urgent priority.

6. Declaration

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