



**A CRITICAL EVALUATION OF TECHNOLOGICAL  
INNOVATION AFFECTING ISLAMIC FINANCE,  
GOVERNANCE, AND EDUCATION IN BANGLADESH**

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**Abstract:**

Technological innovation is transforming Islamic finance, government, and education worldwide; Bangladesh presents opportunities and challenges for the transformation process. The article analyses closely how blockchain, artificial intelligence, and FinTech affect Bangladeshi Islamic institutions. Although new Islamic financial products like mobile banking and blockchain payments have improved financial inclusion, their broad use is hampered by regulatory risk and Shariah compliance. In governance, transparency via blockchain and fatwa issuing by artificial intelligence guarantee efficiency but generate ethical and academic challenges on legitimacy and jurisdiction to adjudicate. Internet-based learning platforms and AI-powered tutoring in Islamic studies improve access but are resisted based on standardization of curriculum and theological purity concerns. This research brings to the spotlight that Bangladesh, though progressing towards a technologically integrated Islamic model, lags behind Malaysia and the UAE because of regulatory gaps, technological infrastructure deficit, and reluctance against AI-driven administration. The research proposes sweeping regulatory reforms, higher digital literacy, and active engagement of Islamic scholars with technological integration. Future research must consider Islamic finance developments in the long run during the era of digitalization and the ethical implications of AI in religious decision-making.

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## 1. Introduction

### 1.1 Background & Context

Islamic institutions are scarcely an exception; developments in technology are changing worldwide systems of government, economics, and education. In Bangladesh, where Islam rules social policy, digitalization is already affecting Islamic banking, governmental systems, and education. FinTech, blockchain, and artificial intelligence bring issues on Shariah compliance, ethics, and government reaction, even if they offer great opportunities for greater financial inclusion, transparency, and access (Islamic Financial Service Board, 2023).

Over the past two decades, Bangladesh saw a considerable rise in Islamic financial and banking services under Al-Arafah Islami Bank and Islami Bank Bangladesh Limited (IBBL). Shariah-compliant e-banking, blockchain financial services, and AI-driven risk analysis technologies have broadened the financial service horizon to the unbanked majority (Bank, 2022). Notwithstanding all these developments, legal restrictions, critiques from traditional scholars, and cybersecurity issues discourage general acceptance. Bangladesh's Islamic banking sector has structural challenges to the acceptance of technology as contrasted to Malaysia and Saudi Arabia, which have introduced blockchain in Sukuk issuing and AI-based fatwa systems (Subhan *et al.*, 2022).

Beyond the corporate sphere, Islamic government and education are evolving as well. Online fatwa issuing systems, blockchain Islamic accounting systems, and AI-based Shariah advising systems should all help to increase efficiency. However, algorithmic bias, little human interaction, and the dwindling relevance of the traditional ulama question the legitimacy and acceptability of such technology (Ayman Abdalmajeed Alsmadi, 2025). Online educational sites and artificial intelligence-driven learning tools are also altering access to Islamic knowledge, but issues of authenticity and a lack of a standardized curriculum still challenge their broad acceptability. As much as Bangladesh is transforming into a technologically inclusive economy, the mix of technology and Islamic values promises as much as a mystery (Ayman Abdalmajeed Alsmadi, 2025).

This is a critical analysis of the technical innovation of Islamic banking, regulation, and education in Bangladesh, considering the probable, restricted, and long-term repercussions of such digitalization. Established on consumer attitudes, regulatory contexts, and consumer behaviour, as well as on the attitudes of Islamic scholars, this study presents a fair portrayal of how innovation is positioned. It addresses contemporary socio-economic needs in keeping with Islamic ideals.

### 1.2 Problem Statement

Innovation in Islamic systems—covering government, banking, and education—is radically changing Bangladesh. Blockchain banking, Islamic FinTech, artificial

intelligence-generated fatwas, and digital education platforms have created new opportunities for readily available learning, financial inclusion, and governance efficiency. Still, these changes create significant challenges, particularly in relation to regulatory control, Shariah compliance, and acceptance inside traditional Islamic institutions.

Including modern banking technologies in Islamic finance raises moral questions regarding ethical consequences and observance of interest-free standards (Md *et al.*, 2020). In government, the switch to digital fatwa systems and AI-supported legal interpretations has sparked debates about religious authority and jurisprudential validity. Using e-learning tools and AI-generated Quranic interpretations in the classroom runs against resistance from concerns of dishonesty and inadequate standards (Suzuki and Mohammad Dulal Miah, 2022).

Moreover, limiting the general application of these achievements are insufficient digital infrastructure, limited knowledge, and legal restraints. Emphasizing the need for balanced policies, intellectual involvement, and technical breakthroughs that match Islamic values while encouraging socioeconomic development, this paper tries to investigate the possibilities and constraints of including innovation inside (Ahmed and Mohamad, 2019).

### **1.3 Research Objectives & Questions**

#### **1.3.1 Research Objectives**

The study aims to investigate the impact of innovation in Islamic institutions in Bangladesh, focusing on finance, governance, and education.

- 1) To assess the influence of innovation on the evolution of Islamic finance, governance, and education.
- 2) To identify opportunities arising from advancements in Islamic financial institutions and governance structures.
- 3) To examine the impediments related to Shariah compliance, regulatory oversight, and societal receptiveness to innovation.
- 4) To evaluate policy proposals that ensure innovations align with Islamic principles while fostering economic advancement.

#### **1.3.2 Research Questions**

- 1) How is innovation transforming Islamic banking, government, and education in Bangladesh?
- 2) What options are there for enhancing efficiency, accessibility, and compliance through innovation?
- 3) What are the primary issues regarding Shariah conformity, regulatory frameworks, and societal acceptance?
- 4) How can policymakers and Islamic scholars guarantee that innovations align with Islamic principles while promoting socio-economic development?

### **1.4 Significance of the Study**

Particularly in finance, administration, and education, fast intellectual and technological advancement is changing Islamic systems in Bangladesh. Policymakers, Islamic academics, and financial institutions especially depend on this study since it offers an essential understanding of how to strike a balance between Shariah compliance and technological development. Through the identification of opportunities and challenges, the study helps legislators draft laws that promote innovation while preserving Islamic ethical standards by way of regulatory institutions.

This article offers an exhaustive analysis of how digital banking, fuelled by artificial intelligence, fatwa issuing, and online Islamic education platforms, is emerging for Islamic scholars. It examines issues of authenticity, legal interpretations, and the place of conventional education in a setting going increasingly digital.

The study especially addresses how blockchain, artificial intelligence, and digital financial technology could boost efficiency, financial inclusion, and market expansion in financial institutions—particularly Islamic banks and FinTech startups. Knowing Shariah-compliant technologies would enable individuals to preserve Islamic beliefs while yet adopting modern trends.

By bridging the gap between traditional Islamic principles and modern technological advancements, this study also advances the broader topic of Islamic economics and governance. It offers a framework for the next research on environmentally friendly innovation inside Islamic systems.

### **1.5 Brief of Methodology**

This article assessed the implications of innovation in Islamic architecture in Bangladesh using a secondary data-collecting approach. Scholarly publications, official government documents, financial statements by Islamic banks, and publications from organizations such as Bangladesh Bank, the IMF, and the Islamic Development Bank all provide data. The analysis includes industry studies, white papers, and media reports to assess trends in Islamic finance, government, and education.

Major themes, challenges, and possibilities in technological enhancements within Islamic architecture are found by a qualitative study approach. Analysing similar innovations in countries like Malaysia and Saudi Arabia helps one to make comparisons. The studies also evaluate Shariah compliance strategies and governmental policies. This study provides insights into the developing scene of Islamic finance, government, and education in Bangladesh and guarantees dependability by using well-documented sources.

## **2. Literature Review**

### **2.1 Islamic Structures in Bangladesh**

Three basic lines of description for Islamic institutions in Bangladesh are education, government, and Islamic finance. Demand for Shariah-compliant financial solutions,

digital education programs, and modern governance frameworks has helped these sectors grow drastically.

### **2.1.1 Islamic Finance**

Over the past twenty years, Bangladesh's Islamic finance sector has grown very conspicuously. Initially founded in 1983, Al-Arafah Islami Bank, EXIM Bank, and Social Islami Bank were eventually developed out of Bangladesh Limited (IBBL). Bangladesh Bank (2023) shows high public confidence in Shariah-compliant financial solutions, as Islamic banking now makes up more than 25% of Bangladesh's whole banking sector (Alamin and Bhuiyan, 2024). FinTech, blockchain transactions, and digital banking platforms have especially changed unbanked individuals and contributed to increased financial inclusion (Sarea, Elsayed, and Saeed Awadh Bin-Nashwan, 2021).

### **2.1.2 Islamic Governance**

Bangladesh's government system is a hybrid one combining Islamic concepts with conventional political and legal frameworks. The country bases its government on Islamic ideas even though it does not have any thorough Sharia law. The aim of Islamic law (Fiqh) has shifted to artificial intelligence-generated fatwas, and digital Shariah guiding systems have become more readily accessible and successful. Still, concerns regarding authenticity, ethical consequences, and political control remain rather major (Ghaly, 2024).

### **2.1.3 Islamic Education**

In Bangladesh, Islamic education has long been grounded in madrasa-based instruction. Using e-learning systems, artificial intelligence-driven Quranic readings, and online fatwa services has lately transformed the field. Computerized Islamic courses have been developed by governments and corporate companies, therefore improving access and conformity to modern teaching standards. Still, major obstacles are resistance from traditional academics and concerns about standards and false information (Ab Abdullah *et al.*, 2024).

The evolution of these Islamic paradigms emphasizes how much invention and technology are bringing about in Bangladesh's political, economic, and educational domains.

## **2.2 Innovation in Islamic Governance and Finance**

### **2.2.1 Islamic FinTech and Blockchain**

FinTech and Blockchain technology are revolutionizing Islamic banking, including in Bangladesh. Especially helping unbanked populations have improved financial access through Shariah-compliant mobile banking, digital wallets, and peer-to-peer (P2P) finance. Banks are using technology to provide seamless, interest-free financial services following Shariah criteria as Islamic digital banking evolves (Hasan, Hassan, and Aliyu, 2020).

By reducing fraud, mismanagement, and non-compliance, blockchain technology has greatly enhanced openness, security, and efficiency in Islamic banking. Smart contracts, specifically in Sukuk (Islamic bonds), Murabaha (cost-plus financing), and Ijarah (lease), assist in automatically constructing Shariah-compliant financial arrangements (Zulkeplin *et al.*, 2023).

Leading Bangladeshi banks, including Al-Arafah Islami Bank and Islami Bank Bangladesh Limited (IBBL), are using blockchain-based financial solutions and thinking about distributed finance (DeFi) applications to enhance their service providers. Notwithstanding its possibilities, issues with government oversight, Shariah compliance systems, and technological infrastructure still remain.

### **2.2.2 Islamic Government and AI**

Employing optimization of fatwa issuing, legal adjudications, and compliance assessments, artificial intelligence (AI) is transforming Islamic administration. Driven by artificial intelligence, fast Shariah advisory services help financial institutions, legislators, and people in keeping Shariah compliance in their transactions and governance systems (Hasan *et al.*, 2020). Examining many Islamic legal sources, automated fatwa-producing systems provide quick and complete responses to current ethical and financial issues.

Artificial intelligence-driven compliance tools help Islamic financial institutions monitor halal assets, find likely Riba (interest-based transactions), and guarantee Shariah compliance. Islamic legal systems include artificial intelligence to assist legislators and academics in creating Shariah-compliant, practically successful laws.

Notwithstanding these advances, problems regarding jurisprudential legitimacy, ethical artificial intelligence deployment, and acceptance among conservative specialists nevertheless remain unresolved. The absence of human judgment in the distribution of electronic fatwa calls interpretative accuracy and religious authority under doubt. Moreover, if we are to get more respect among Islamic intellectual and political circles, AI-driven governance solutions have to guarantee low algorithmic bias and openness in decision-making.

### **2.2.3 Global Comparison: Malaysia, Dubai, and Saudi Arabia**

While Malaysia, the UAE, and Saudi Arabia have well-established Islamic FinTech ecosystems distinguished by complex legislative structures and technology integration, Bangladesh's Islamic finance sector is still emerging in relative terms. These countries give models for Bangladesh's digital transformation inside Islamic finance and government.

Leading blockchain-based Sukuk issuing that supports openness, efficiency, and investor confidence, Malaysia has grown globally in Islamic FinTech (Hasan, Hassan and Aliyu, 2020). The country has approved comprehensive laws allowing Islamic banking, therefore encouraging the spread of financial tools following Shariah.

Using artificial intelligence-driven solutions in Islamic legal interpretations and fatwa issuing, Saudi Arabia has ensured Shariah compliance, hence simplifying

jurisprudential processes (Hasan *et al.*, 2020). By enabling scholars to study Islamic law literature, artificial intelligence helps fatwas to be more accurate and available.

The UAE has focused on digital banking innovations with digital wallets, peer-to-peer (P2P) funding strategies, and mobile banking, strengthening Islamic finance. Changing legal circumstances benefits Islamic FinTech firms and blockchain-based financial solutions (Hasan, Hassan and Aliyu, 2020).

By enhancing regulatory systems, supporting artificial intelligence-driven Shariah compliance, and using blockchain technology in Islamic banking, Bangladesh might pick some lessons from these models. By using these technologies, Islamic banking and finance can increase financial inclusion, governance efficiency, and international competitiveness.

## 2.3 Previous Studies and Research Gap

### 2.3.1 Summary of Key Studies on Islamic Innovation

Emphasizing efficiency, compliance, and accessibility inside Sharia-compliant models, scholarly research extensively looks at how technical developments impact Islamic banking, government, and education.

Hassan *et al.* (2022) examined how FinTech is changing Islamic banking, stressing how mobile banking, blockchain, and DeFi increase financial inclusion. Smart contracts enable Murabaha, Ijarah, and Sukuk transactions to be more efficient even while legal challenges limit general usage.

Ab *et al.* (2025) especially looked at AI-driven governance regarding fatwa issuing, legal rulings, and compliance validation. Though artificial intelligence enhances Shariah compliance systems, issues of algorithmic bias, authenticity, and the probable marginalization of traditional Islamic scholars in religious decision-making remain unsolved.

### 2.3.2 Identified Research Gap

- 1) **Inadequate Bangladesh-Focused Research:** The majority of studies on Islamic FinTech, AI-driven governance, and digital Islamic education mostly concentrate on nations such as Malaysia and Saudi Arabia, resulting in the oversight of Bangladesh.
- 2) **Regulatory and Compliance Challenges:** Bangladesh lacks definitive policies for Shariah-compliant FinTech, AI fatwa systems, and blockchain transactions, hindering implementation.
- 3) **Technological and Infrastructural Barriers:** Insufficient digital literacy, cybersecurity protocols, and financial technology integration impede extensive deployment.
- 4) **Public Awareness and Acceptance:** Numerous scholars and consumers exhibit skepticism regarding AI-generated fatwas, blockchain transactions, and digital Shariah instruments due to apprehensions concerning religion and technology.

- 5) **Ethical and Theological Concerns:** The application of AI in Islamic law presents issues of algorithmic bias, insufficient human monitoring, and the preservation of religious authenticity.

### 2.3.3 How This Study Fills the Gaps

This paper offers an overview of technological innovation in Islamic finance, governance, and education within the context of Bangladesh, addressing significant deficiencies in research, policy, and implementation. Analysing FinTech, AI-driven governance, and blockchain technologies within an Islamic framework provides novel insights into their viability and effects.

The study also assesses legislative barriers, public perceptions, and ethical implications, offering a comprehensive framework that aligns technological progress with Islamic law. This article proposes policies to improve Shariah-compliant innovation in Bangladesh by comparing worldwide Islamic economies, thereby aiding policymakers, financial institutions, and Islamic scholars.

## 3. Research Methodology

### 3.1 Research Methodologies and Approaches

The article investigates the effects of technological innovation on Islamic finance, governance, and education in Bangladesh using a qualitative research methodology anchored in secondary data analysis. Respecting Shariah laws, the study assesses how FinTech, artificial intelligence (AI), and blockchain affect several sectors (Islamic Financial Services Board, 2023).

#### 3.1.1 Research Design

The study makes a thorough assessment of institutional reports, case studies, and current data by means of a descriptive and analytical research methodology. While analytical approaches merely focus on challenges, benefits, and regulatory difficulties, descriptive analysis illustrates the existing level of technological use in Islamic institutions (Isb.org, 2019).

Bangladesh's achievements are juxtaposed with those of well-known Islamic nations such as Saudi Arabia, Malaysia, and the United Arab Emirates to underline their differences. This strategy helps Bangladesh to identify ideal strategies and ideas to enhance its Islamic banking and government systems.

### 3.2 Data Collecting Methods

Unlike surveys or questionnaires, this study relies on secondary data analysis instead of first data collection techniques. One needs trustworthy and authoritative sources to provide a comprehensive, evidence-based assessment of how technology transforms Islamic establishments.



### 3.2.1 Source of Secondary Data

The research data was collected from the following sources:

#### A. Academic Literature:

- Academic works on digital education, artificial intelligence governance, Islamic FinTech, blockchain technologies, and computer science under peer review.
- Academic papers and conference proceedings on technological advancements compliant with Shariah.

#### B. Policy Papers and Organizational Reports:

- Reports from Islamic financial institutions such as Islami Bank Bangladesh Limited (IBBL), Al-Arafah Islami Bank, and Bangladesh Bank.
- Files from the Islamic Development Bank (IDB), Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), and Islamic Financial Services Board (IFSB), among overseas regulatory authorities.

#### C. Case Studies about Islamic Economies:

- Comparative case studies on developments in blockchain-based Sukuk issuing executed effectively from Malaysia, Saudi Arabia, and the UAE, artificial intelligence-driven fatwa systems, and mobile banking technologies were also covered successfully.
- Research of governance of artificial intelligence in top Islamic nations and regulatory mechanisms for Islamic FinTech.

#### D. Governmental and Industry Reports:

- Policy tools concerning Bangladesh's financial inclusion, digital growth, and Shariah compliance.
- Technical application coming from Bangladesh's Ministry of Financing, Ministry of Religious Affairs, and Central Bank, together with documentation on national policy on Islamic financing.

Through various reliable sources, this study offers a thorough overview of technological innovations in Islamic finance and governance.

### 3.3 Sampling and Data Analysis

Methodological sampling, in effect in this study, does not require direct individual or primary data collecting; it relies on secondary data. It searches pertinent secondary data sources using a deliberate sampling method to fully grasp the study subject.

#### 3.3.1 Selection Criteria for Secondary Data

- **Relevance:** Included are case studies on Islamic FinTech, artificial intelligence-driven governance, and blockchain applications inside Islamic companies, as well as research and publications on Islamic FinTech.

- **Accuracy and Credibility:** The study depends on peer-reviewed journals, institutional records, and government releases.
- **Comparability:** Research on well-known Islamic financial markets, including Malaysia, Saudi Arabia, and the UAE, provides a standard for assessing Bangladesh's growth.
- **Recency:** The first to exhibit the most recent developments in Islamic finance and technology is data released during the past five to 10 years.

This study offers a thorough and academically strong analysis of technology developments in Bangladesh's Islamic institutions by selecting high-quality and diverse data sources.

### 3.3.2 Data Analysis Approach

The qualitative thematic study examines the acquired data, so involving:

### 3.3.3 Identifying Key Themes

Examining institutional reports and literature helps one to organize common topics on FinTech, artificial intelligence, blockchain, regulatory difficulties, and public opinion.

### 3.3.4 Comparative Analysis

Bangladesh's Islamic finance and governance structure, in line with world case studies, enables one to spot areas of strength, weakness, and likely policy suggestions.

### 3.3.5 Content Analysis

Analysing policy documents, industry publications, and regulatory reports enables one to evaluate ethical issues in new technologies, digital adoption rates, and Shariah compliance.

## 3.4 Ethical Consideration

This study follows ethical research standards since it guarantees truthfulness, openness, and respect for Islamic jurisprudential points of view. The study makes use of secondary data sources. Hence, ethical questions of human involvement, privacy, and informed permission have no relevance. Still, the moral ambiguities of tomorrow are under examination:

### 3.4.1 Academic Integrity and Credibility

According to the studies, all the content—including government publications, peer-reviewed papers, and institutional reports—was derived from respectable companies—including AAOIFI, 2023. Academic reputation and integrity thus are assured. Good recommendations and references help to uphold academic honesty and discourage plagiarism.

### 3.4.1.1 Objective and Bias Mitigation

Since the study uses theme and comparison analysis, measures are done to eliminate prejudice in data interpretation, so, objectivity and bias reduction are addressed. Included to guarantee a comprehensive investigation are many points of view, from those of academics, politicians, and regulatory authorities.

### 3.4.1.2 Respect for Islamic Values and Sensitivities

Examining the theological roots of Islamic finance and governance, the study follows Shariah guidelines and respects many scholarly opinions on FinTech, artificial intelligence, and blockchain. Every critical study is conducted in an academic environment that considers Islamic Sharia law.

## 4. Findings & Analysis

### 4.1 Impact of Innovation on Islamic Banking & Finance

#### 4.1.1 Case Studies of Islamic Banking Innovation

##### 4.1.1.1 Digital Wallets and Mobile Finance

Mobile banking has significantly improved financial inclusion in Islamic banking by enabling individuals to use banking services in a Shariah-compliant manner, free from the necessity of physical bank facilities. Consistent with Islamic financial principles, several Islamic institutions nowadays provide digital wallets and mobile banking services.

##### 4.1.1.1.1 Case Study: Islami Bank Bangladesh Limited (IBBL) & bKash

Working with well-known mobile financial service provider bKash, Islami Bank Bangladesh Limited (IBBL) has presented digital savings initiatives and interest-free transactions. In keeping with Islamic banking standards, this link permits consumers to transfer and get money, handle payments, and get financing possibilities (The Business Standard, 2022).

##### 4.1.1.2 Impact

- **Enhanced Accessibility:** Islamic financial solutions let many underbanked individuals—especially in rural areas—to now use them.
- **Increased Efficiency:** Faster and safer transactions replace the necessity for conventional financial systems.
- **Shariah Compliance:** Clients may discover their transactions lack riba and speculative components (gharar).

##### 4.1.1.2 Islamic Banking Blockchain Technology

Blockchain technology is a strong instrument for guaranteeing openness, security, and effectiveness in Islamic financial activities. It ensures complete respect for Islamic norms and supports smart contracts independently implementing financial agreements to run.

#### **4.1.1.2.1 Case Study: Sukuk Dubai Islamic Bank Powered by Blockchain**

Dubai Islamic Bank (DIB) has effectively adopted blockchain-based Sukuk, cutting related Sukuk issuing and administrative costs as well as processing time. Blockchain raises openness, reduces fraud concerns, and inspires investor confidence (Dubai Islamic Bank, 2024).

#### **4.1.1.2.2 Impact**

- **Enhance Security:** Deleted ledger transactions help to lower manipulation and fraud in augmented security.
- **Cost Reduction:** Automated smart contracts reduce transaction costs by removing the middlemen's needs.
- **Enhanced Market Confidence:** openness in Islamic contracts guarantees Shariah compliance.

#### **4.1.1.3 The Financial Technology of Islamic Banking**

FinTech has fundamentally transformed Islamic banking with peer-to-peer lending, robo-advisory services, and AI-enhanced Islamic investing platforms.

##### **4.1.1.3.1 Case Study: Group on Ethics - Islamic Crowdfunding Platform**

This global Islamic FinTech platform enables Shariah-compliant crowdfunding for ethical real estate and small to medium-sized corporate finance. Profit-and-loss sharing plans let investors support adherence to Islamic financial values (Alois, 2022).

##### **4.1.1.3.2 Impacts**

- **Alternative Finance:** Offers Islamic a replacement for traditional banks.
- **Money Access:** Locates free from interest-bearing lending funds for businesses and SMEs.
- **Global Participation:** Investor support of moral investing all around.

#### **4.1.2 Advantages of Islamic Banking Innovation**

##### **4.1.2.1 Financial Inclusion**

- Digital banking and mobile wallets have opened Shariah-compliant financial services for millions of unbanked people—especially in Muslim-majority countries (The Business Standard, 2022).

##### **4.1.2.2 Operation Effectiveness**

- Automating contracts made possible by blockchain and artificial intelligence lessens the need for human approval, hence accelerating transactions (Dubai Islamic Bank, 2024).

#### **4.1.2.3 Market Growth**

- Islamic financial institutions can now grow their activities outside conventional banking systems, thanks to FinTech developments and changes in digital banking.

#### **4.1.3 Challenges in Implementing Innovations in Islamic Banking**

- Many countries lack clear legislative mechanisms for Islamic FinTech, blockchain contracts, and digital Sukuk.
- National financial rules and Shariah law could prove challenging.

##### **4.1.3.1 Risks from Shariah Compliance**

- Ensuring smart contracts, AI-driven investing platforms, and mobile banking applications routinely reflect Islamic ideals is always challenging.
- The differences in Shariah interpretations among nations could hinder the acceptance of new technologies.

##### **4.1.3.2 Consumer Acceptance and Trust Issue**

- Many traditional Muslim consumers object to blockchain contracts, digital financial services, and AI-generated fatwas.
- More awareness and education will help to build confidence in digital Islamic banking systems.

### **4.2. Role of Innovation in Islamic Government and Education**

#### **4.2.1 Innovation in Islamic Governance**

Technology—especially in artificial intelligence (AI), blockchain, and digital governance platforms—has profoundly revolutionized Islamic government by raising administrative efficiency, legal compliance, and decision-making processes. AI-driven technologies are used in Shariah compliance monitoring, legal decisions, and fatwa issuing, therefore limiting the time available for academics and Islamic groups to respond to challenging legal challenges (A. Fandir, 2024). By means of which human shortcomings and interpretation variances are reduced, real-time financial transaction evaluations made possible by computerized Shariah advising systems help to secure adherence to Islamic principles (A. Fandir, 2024).

The Islamic government is beginning to find quite significant the importance in blockchain technology. Smart contracts and distributed record-keeping systems improve openness and security in Islamic banking and governance, therefore reducing the fraud and illegal change risk (A. Fandir, 2024%). By publishing Sukuk and Murabaha contracts created using blockchain technology, Islamic institutions have been establishing financial transaction legitimacy and efficiency. Moreover, AI-powered regulatory compliance solutions assist financial organizations in matching their goods with Shariah rules and reduce human supervision.

Still, there are plenty of opportunities even with these advantages. The main challenges in artificial intelligence models are still algorithmic bias, ethical conundrums

produced by artificial intelligence, and opposition from the traditional priesthood. Conventional Islamic scholars contend that artificial intelligence lacks both contextual reasoning and complete knowledge of maqasid al-Shariah, goals of Islamic law—both of which are absolutely vital for valid jurisprudential determinations. Furthermore, dragging down complete integration with Islamic countries are artificial intelligence (IFS Institute, 2023) and regulatory uncertainties on blockchain use.

#### **4.2.2 Innovation in Islamic Education**

Using e-learning systems, artificial intelligence-driven Quranic interpretation, and virtual Islamic learning environments, the digital revolution of Islamic education is starting to rewrite information flow. Conveniently available, orderly Islamic education is offered to students all around by online learning resources, including Bayyinah TV and Islamic Online University. AI-powered programs aid in enhancing the educational procedure by means of Quranic reciter, interpretation, and Hadiths verification (Kismawadi, Aditchere and Libeesh, 2024).

The fundamental benefit of digital Islamic education is that it allows underprivileged people—especially in areas where access to Islamic groups and traditional madrasas is restricted—to partake. Thanks to smartphone apps and online courses, students can study religious studies anywhere it would be most convenient. Furthermore, suited to the level of expertise of the student and their interests, AI-enhanced learning environments customize educational materials (Yaqeen Institute for Islamic Research, 2024).

Still, many difficulties surround me even with these achievements. Two crucial issues are the accuracy and uniformity of online Islamic knowledge. Digital learning's networked design has generated variations in knowledge of Islamic ideas combined with various degrees of academic credibility. Moreover, expressing uncertainty regarding AI-generated religious interpretations, orthodox scholars and religious leaders contend that the contextual interpretation of Islamic texts and *ijtihad* (independent reasoning) depend on human scholars and are, hence, indispensable (LSE, 2024)

#### **4.2.3 Differentiating Islamic Economies Globally**

Countries such as Malaysia, the United Arab Emirates, and Saudi Arabia have made great progress toward including technological innovations in Islamic government and education. Using artificial intelligence-powered compliance technologies extensively, Islamic banking in Malaysia offers real-time monitoring of Shariah-compliant transactions, therefore enabling real-time control of Shariah-compliant transactions. Saudi Arabia has invested in AI-driven systems for religious rules and fatwa issuing; the UAE has used blockchain technology to boost the efficiency of Islamic financial contracts (Kudakwashe Muzoriwa, 2024).

Although it does not apply such technologies, Bangladesh has grown its Islamic banking industry. Still, major concerns are regulatory processes, public confidence, and the way traditional knowledge is mixed with modern technologies in conventional

Islamic government. By means of an analysis of the experiences of international Islamic economies, Bangladesh will be able to build a strong legal framework resolving ethical challenges and thus supporting technical advancement in Islamic administration and education (The Daily Star, 2024).

### 4.3 Challenges and Barriers to Innovation in Bangladesh

Growing active in Islamic banking, government, and education, Bangladesh faces great difficulty implementing technological innovations. Bangladesh has legal, infrastructure, and sociocultural issues that prevent the general acceptance of FinTech, artificial intelligence (AI), blockchain, and digital education platforms in the global Islamic economy, including Malaysia, UAE, and Saudi Arabia, despite their successful integration.

#### 4.3.1 Regulatory and Policy Barriers

Mostly impeding innovation in Bangladesh will not be a complete legislative framework for Islamic FinTech and AI-driven governance. While some clauses allow Shariah-compliant financial innovations, current financial regulations mostly address already established banks.

- **Absence of FinTech-Specific Regulations:** Bangladesh Bank rules the financial industry, there is no specific Islamic rule for FinTech, blockchain, or artificial intelligence in governance. This leaves financial companies confused when trying to fit smart contracts or distributed finance (DeFi) within an Islamic framework (Hossain, 2017).
- **Slow Policy Adaption:** Bangladeshi regulatory agencies manage technological integration reactively rather than forcefully. The delayed reaction discourages of financial institutions from supporting Shariah-compliant technology innovations (Hossain, 2017) and inhibits creativity.

The lack of clear legislative direction and government-supported Shariah compliance standards causes FinTech enterprises and Islamic banks in Bangladesh to struggle to develop and apply inventive financial solutions.

#### 4.3.2 Infrastructure and Technical Limitations

Bangladesh's digital infrastructure is still under development, which offers major challenges for the blockchain, digital education systems' integration inside Islamic sectors, and sophisticated artificial intelligence integration.

- **Limited Blockchain Adoption:** Bangladesh has not yet used it inside its Islamic banking industry, unlike Malaysia or the UAE, where blockchain allows smart contracts and Sukuk issuing to be viable. The lack of blockchain infrastructure and knowledge hinders openness and automation in Islamic financial transactions (Uddin, Tanvir Mohiuddin, Fazla, 2020).
- **Digital Divide and Internet Access:** Low-income and rural areas continue to suffer from internet access even as mobile banking is expanding over Bangladesh.

Lack of digital literacy and reliable internet access restrict the general implementation of mobile Islamic banking and e-learning systems. (Uddin, Tanvir, Mohiuddin, Fazle, 2020).

Bangladesh would challenge completely accepting innovation in Islamic finance and governance without large investments in technical infrastructure and digital financial understanding.

#### 4.3.3 Religious Scepticism and Sharia Compliance

The main impediment to technological advancement in Bangladesh's Islamic sectors is opposition from conventional academics and religious authorities questioning the validity and authenticity of AI-driven governance and digital Islamic banking.

- **Scholarly Resistance to AI-powered Fatwa Issuance:** Scholarly resistance to concerning AI-powered fatwa systems and automated Shariah compliance technology in its Fatwa Issuance, traditional Islamic academics have scepticism. Many contend that artificial intelligence lacks the contextual and jurisprudential thinking required for real religious verdicts, therefore raising issues about algorithmic prejudice and misinterpretation (Aysan and Unal, 2023).
- **Ethics Concern with Digital Transaction:** Islamic academics underline the need for human supervision in financial transactions, thereby creating ethical questions about the use of smart contracts and AI-driven risk evaluations in Islamic banking (Aysan and Unal, 2023).

Technical developments in Islamic finance and governance may encounter ongoing resistance and poor public trust without appropriate interaction with Shariah academics and Islamic legal professionals.

#### 4.3.4 Issues of Customer Trust and Adoption

Islamic finance is becoming more and more digital, and customer mistrust and lack of confidence remain fundamental obstacles in Bangladesh.

- **Lack of Awareness:** Not aware of Islamic FinTech solutions, mobile Shariah-compliant banking, or AI-driven governance tools are many Bangladeshi consumers. People could be reluctant to use new digital Islamic financial solutions without enough emphasis on financial literacy.
- **Concerns Over Security and Fraud:** Blockchain and Mobile banking, digital financial systems demand strong security mechanisms against fraud. Many Bangladeshis, where data breaches and financial fraud are problems, mistrust online banking services and would much prefer to make traditional in-person transactions.

If banks and other financial companies want to boost acceptance rates, they have to promise transparency, improve client education, and tighten cybersecurity standards.



#### 4.3.5 Institutional and Human Capital Constraints

For Bangladesh, the main obstacle is a dearth of qualified experts in Islamic FinTech, blockchain, and AI-driven governance.

- **Shortage of Experts in Islamic FinTech:** Unlike Malaysia and Saudi Arabia, Bangladesh lacks experts educated in both Islamic finance and digital technology, hence creating a shortfall in Islamic FinTech. This talent gap inhibits banks and regulatory authorities from properly fostering and combining innovations that conform to Shariah.
- **Limited Research & Development (R&D):** Bangladeshi Islamic banking institutions barely support innovation with their budgets. The lack of specific R&D facilities concentrating on Islamic financial technologies stunts industry development.

Bangladesh must make investments in academic research, specialist training courses, and public-private alliances to rise above these limitations and create a more tech-savvy Islamic financial sector.

### 5. Discussion

#### 5.1 Jey Insight from Findings

This research supports how blockchain, artificial intelligence, and FinTech are fundamentally changing Islamic finances, government, and education in Bangladesh. Still, political, infrastructure, and cultural aspects affect their reception.

Studies reveal that legal restrictions and the lack of a well-defined Islamic FinTech framework limit the mainstream use of blockchain and mobile banking, even if they may improve Shariah compliance and financial inclusion. This corresponds with earlier studies by Hassan (2022) and Khan (2023), which underline the transformational power of these technologies along with regulatory constraints (Hassan *et al.*, 2023). Regulating ambiguity and fear of AI governance cause Bangladesh to lag behind Malaysia and Saudi Arabia, which have introduced blockchain-based Sukuk issuing and AI-driven fatwa systems (EconBiz, 2022).

One crucial insight is the need for consumer confidence in the adoption of Islamic digital money as well as comprehension. Public mistrust of AI-generated fatwas and automated Shariah compliance systems remains a key impediment, so reinforcing Rahman's (2023) conclusions on algorithmic bias and the marginalization of conventional experts in AI-facilitated decision-making (Ayman Abdalmajeed Alsmadi, 2025).

Although weak digital literacy and security issues limit its appeal in Bangladesh, globally, the increasing usage of mobile banking in Islamic finance fits trends. While standardization concerns still exist, Islamic educational institutions are increasingly embracing AI and e-learning techniques to improve access to religious content (Hassan *et al.*, 2023).

Although Bangladesh is advancing in Islamic digital transformation, the results reveal that the active participation of Shariah scholars in technology advances, increased consumer education, and robust regulatory frameworks are necessary for lasting success.

## **5.2 Theoretical and Practical Implications**

### **5.2.1 Theoretical Implication**

This work presents a Bangladesh-specific viewpoint, therefore augmenting the corpus of information already in publication on digital Islamic education, artificial intelligence governance, and Islamic FinTech. Unlike earlier studies concentrating on Malaysia, Saudi Arabia, and the UAE, this study stresses the several difficulties and prospects in a rising market (Ab *et al.*, 2025).

A major theoretical contribution comes from combining Islamic law with digital innovation to overcome the problem between legacy and modernism. The research claims that AI-driven governance in Islamic organizations demands a new jurisprudential framework ensuring ethical purity and technical efficiency. Moreover, it supplements the present corpus of research on financial inclusion by showing how blockchain and mobile banking could help Shariah-compliant financial development (Islamic Fintech, 2020).

### **5.2.2 Practical Implications**

This study underlines the need for Islamic financial institutions to quickly digitalize by means of blockchain for transaction transparency, mobile banking for maximum accessibility, and artificial intelligence for Shariah compliance verification. Dealing with global Islamic FinTech leaders would enable Bangladesh's digital Islamic banking sector to grow more rapidly, hence overcoming legal constraints (Alshater *et al.*, 2022).

Results underscore in Islamic governance the requirement of adding human monitoring into AI-driven fatwa issuing and compliance systems to keep legitimacy and public confidence by means of inclusion. Instead of replacing experts, artificial intelligence should be a tool for decision-support, therefore ensuring accordance with approved law (Ab *et al.*, 2025).

Particularly in remote locations, artificial intelligence-driven e-learning platforms can help to provide genuine Islamic knowledge access. The article highlights the requirement of a consistent curriculum and academic management to build credibility. Funding digital literacy campaigns will greatly assist in closing the difference between traditional and modern educational approaches (Ahmed, 2024).

The findings suggest that by using a rigorous and well-regulated strategy integrating technology, human knowledge, and regulatory clarity, Bangladesh can become a leader in Islamic digital banking, governance, and education.

### **5.3 Policy Recommendations**

#### **5.3.1 For Banks: Adoption of Shariah-Compliant FinTech Policies**

##### **5.3.1.1 Develop Islamic FinTech Models**

- Financial institutions should establish explicit rules for smart contracts, artificial intelligence-driven risk analysis, and blockchain transactions working with Shariah advisory boards and regulatory authorities.
- Match policies with boards of international Islamic financial services, such as the Islamic Financial Services Board (IFSB) and the Securities Commission of Malaysia.

##### **5.3.1.2 Increase Cybersecurity Measures**

- Strengthen policies for data security and fraud avoidance to inspire consumer trust in mobile Islamic banking.
- Install Islamic ethical-based artificial intelligence-based fraud detection mechanisms.

##### **5.3.1.3 Enhance Digital Financial Literacy Programs**

- Begin community outreach projects to inform customers about Islamic digital banking and FinTech tools.
- Provide certificates in Islamic digital banking working with Islamic research institutes and universities.

#### **5.3.2 For Government: Developing Regulatory Frameworks for Digital Islamic Banking**

##### **5.3.2.1 Create a National Islamic FinTech Regulatory Authority**

- Under the cover of Bangladesh Bank, Bangladesh should create a designated Islamic FinTech regulatory authority like to Malaysia's FinTech Regulatory Sandbox.
- This power should offer digital Shariah compliance, blockchain-based Islamic banking, and legal frameworks for artificial intelligence-produced fatwa issuing.

##### **5.3.2.2 Legalize and Standardize Blockchain for the Islamic Economy**

- Apply rules allowing the use of smart contracts, Murabaha contracts, Islamic microfinance for Sukuk issuing, and blockchain technology.
- Provide Shariah-compliant digital identity verification technologies to aid in lowering fraud in Islamic banking transactions.

##### **5.3.2.3 Public-private Collaboration Advanced**

- The government should cooperate with banks, universities, and Islamic financial institutions in order to support research and development in Islamic FinTech.
- Establish Islamic digital innovation hubs to assist Islamic educational technologies-based businesses, FinTech, and AI-driven government initiatives.

- Applied Islamic Education Using Digital Platforms and Artificial Intelligence for Teachers and Scholars.

### **5.3.3 For Scholars & Educators: Using AI & Online Platforms for Islamic Education**

#### **5.3.3.1 Develop Standardized AI-Assisted Learning Platforms**

- Working with artificial intelligence developers, Islamic academics and educators should create authentic, practical online Islamic learning environments.
- Install quality control mechanisms to stop misunderstandings of religious texts by artificial intelligence algorithms.

#### **5.3.3.2 Integrate AI into Islamic Legal Research & Fatwa Issuance**

- Artificial intelligence should be a tool for fatwa-issuing decision support instead of replacing conventional academics.
- Academics have to train artificial intelligence models to guarantee precise readings of Islamic philosophy.

#### **5.3.3.3 Promote Digital Inclusion into Islamic Education**

- Create Islamic learning settings that are mobile-friendly for remote areas without an internet connection.
- Provide customised Islamic studies AI-driven lessons to suit a spectrum of language and educational levels.

## **6. Final Thought and Suggestive Future Research Topics**

### **6.1 Summary of Key Findings**

This kind of research methodically investigates how technological innovation influences Islamic finance, government, and education in Bangladesh. The results reveal that although digital transformation presents significant advantages, institutional, cultural, and legal, legal, legal, barriers limit its deployment (Subhan *et al.*, 2022).

Operating efficacy and financial inclusion can be raised by Islamic financial technologies, including mobile banking, blockchain, artificial intelligence-driven Shariah compliance, and mobile banking. Still, Bangladesh lacks a solid Islamic FinTech legal framework, which makes it impossible for blockchain-based Sukuk issuing to be generally used and AI-driven financial decision-making feasible. Bangladesh lags behind Malaysia and Saudi Arabia, where comparable technologies are already applied, due to regulatory uncertainty and disagreement among Shariah scholars over AI-driven compliance approaches (Islamic Fintech, 2020).

Blockchain for record-keeping and artificial intelligence for fatwa issuing could increase openness and efficiency in Islamic rule. Acceptance of religious rules produced by artificial intelligence is controversial and begs issues about algorithmic bias, ethical implications, and marginalization of conventional scholars. The research emphasizes

how crucial human supervision is for artificial intelligence governance if we are to uphold public confidence and legitimacy (Molla, 2024).

Digital learning platforms, AI-assisted tutoring, virtual classrooms, and Islamic education are increasing access to religious knowledge. Notwithstanding these developments enhancing access, problems still exist, including a lack of standardized curricula, insufficient digital literacy, and worries about artificial intelligence misreading Islamic values. Unlike global Islamic educational paradigms that appropriately embrace artificial intelligence, Bangladesh's progress is uneven and erratic (Molla, 2024).

Bangladesh lags behind world leaders even as it is progressing in the integration of digital solutions into Islamic banking, government, and education due to legal uncertainties, inadequate technological infrastructure, and a dislike of artificial intelligence-driven decision-making. More cooperation among Shariah scholars and technology specialists, comprehensive legislative changes, and more digital literacy are needed to close this disparity.

## **6.2 Limitations of this Study**

This article presents an interesting analysis. Various elements constrain it.

First, Data openness and availability first present problems. The complete dependence of the research on secondary sources limited access to thorough and current knowledge regarding the growing usage of artificial intelligence and Islamic FinTech in Bangladesh. Many financial institutions overlook public disclosure of comprehensive analysis of their efforts at digital transformation, therefore compromising data accuracy and completeness.

Second, the narrow geographic extent of the research— Bangladesh—restricted the generalizability of the results. Although relative comparisons with Malaysia, the UAE, and Saudi Arabia gave interesting data, more comprehensive multi-country research would have enhanced the results. Islamic finance functions under varied legislative and cultural settings, so findings from Bangladesh might not be applicable everywhere else in Islamic economies.

Third, the study lacked primary data collecting—that is, surveys, interviews with Islamic scholars and financial experts—which would have directly exposed industry attitudes, issues, and future projects. Including expert comments would have strengthened the argument on the positive results of the Islamic digital revolution.

Ultimately, there is not much longitudinal evidence on how creatively modern technology is influencing Islamic banking and governance. Future studies should follow the long-term development of these patterns to offer a more nuanced knowledge of invention inside Islamic organizations since digital transformation is an ongoing process.

## **6.3 Recommendation for Future Research**

This article provides a critical analysis of how technological innovation influences Islamic banking, government, and education in Bangladesh. Although it highlights significant

trends and issues, other fields require more research to help to better grasp this dynamic environment.

### **6.3.1 Comparative Study Including Other Islamic Economies**

- Future research should examine how Bangladesh's policies in Islamic financial technology, governance, and education differ from those of well-known Islamic countries such as Malaysia, Indonesia, and the United Emirates.
- A cross-country study helps one to grasp legislative frameworks and best practices Bangladesh could employ to speed up its digital transformation (Qudah *et al.*, 2023).

### **6.3.2 The Longitudinal Impacts of Technological Innovation**

- Later research should investigate how artificial intelligence, blockchain, and FinTech change financial inclusion, Shariah compliance, and governance structures.
- Longitudinally analyzing the evolution of Islamic digital banking and AI-assisted governance could offer significant fresh insights into environmental problems and legal challenges.

### **6.3.3 Ethological and Theological Considerations of Islamic Governance Concerning Artificial Intelligence**

- Given the growing influence of artificial intelligence in fatwa issuing and automated Shariah compliance, a study on the ethical and theological ramifications of AI-driven decision-making inside Islamic institutions is necessary.
- Future research on forms of Islamic government integrating artificial intelligence should preserve intellectual honesty and religious authenticity while including artificial intelligence (Elmahjub, 2023).

### **6.3.4 Consumer Behaviour and Digital Acceptance in Islamic Finance**

- More research is needed to completely grasp customer trust, adoption patterns, and usability issues with Islamic digital money in Bangladesh.
- Polls and qualitative research looking at client perceptions on artificial intelligence-driven banking, blockchain transactions, and digital Shariah compliance procedures would provide important data for governments and financial companies.

### **6.3.5 Possibilities of Digital Islamic Education**

- Future research should evaluate if e-learning systems driven by artificial intelligence and virtual classrooms assist in increasing access to actual Islamic knowledge.

- Standardizing online curriculum, government monitoring, and scholar involvement in the development of AI-assisted education are critical areas for future study (Mmahamudulhasan *et al.*, 2024)

By addressing these research gaps, academics and legislators may produce more well-informed policies to ensure that technological innovations complement Islamic ideals while fostering innovation and expansion in Bangladesh's Islamic banking, government, and educational sectors.

### Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article. The research was conducted independently, without any financial, personal, or professional affiliations that could influence the findings or interpretations. No external funding was received for this study.

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BASED SMART CONTRACT IN ISLAMIC FINANCIAL INSTITUTIONS ISS  
UE AND RELEVANT SOLUTION](#)

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