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Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

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THE ROLE OF DIGITAL FINANCIAL TECHNOLOGIES IN THE SUCCESS OF SHARIAH-COMPLIANT CROWDFUNDING PLATFORMS

Wassila Boutaa

Faculty of Economics, Commerce and Management Sciences, University of Alger 3, Algeria

Mokhtar Bengouia

Faculty of Economics, Commerce and Management Sciences, University of Alger 3, Algeria

ABSTRACT

Digital financial technologies play a pivotal role in enhancing the efficiency of Islamic crowdfunding platforms. Technologies such as blockchain and smart contracts contribute to greater transparency and security, while artificial intelligence is employed to ensure compliance with Shariah principles through contract verification and the avoidance of prohibited elements such as *riba*. Islamic crowdfunding is founded on the principles of risk- and profit-sharing and provides innovative financing solutions such as *murabaha* and *mudarabah*, thereby supporting entrepreneurship and socially impactful projects. However, these platforms face significant challenges, including the absence of unified regulatory frameworks, security risks such as cyberattacks, and limited public awareness of Islamic financial tools. Conversely, promising opportunities emerge through the development of digital financial products such as electronic *sukuk* and the promotion of financial inclusion by expanding access to financial services, particularly in emerging markets. Case studies highlight the success of platforms such as Saudi Arabia's "Ethraa" and Singapore's "Capital Boost" in integrating technology with Shariah principles, leveraging tools like blockchain and digital payment systems.

KEYWORDS

Islamic Digital Economy, Crowdfunding Platforms, Digital Financial Technologies

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Introduction

Crowdfunding has emerged as one of the most innovative financing mechanisms in the contemporary financial landscape, offering alternative solutions for funding entrepreneurial ventures and socially impactful projects. Its growing appeal stems from its ability to simplify fundraising processes, enhance efficiency, and bridge financing gaps often faced by startups and small enterprises. With the rapid advancement of financial technologies (FinTech), digital platforms have become indispensable tools in scaling the reach and effectiveness of crowdfunding models, providing speed in execution, flexibility in product development, and broad accessibility to investors across time and space.

Within the Islamic finance domain, the integration of digital financial technologies has been particularly significant, as it not only improves operational efficiency but also ensures compliance with Shariah principles. Technologies such as blockchain, smart contracts, and artificial intelligence enhance transparency, security, and trust, thereby creating a more robust environment for investors and entrepreneurs. However, despite these advantages, Islamic crowdfunding platforms face notable challenges, including fragmented regulatory frameworks, heightened cybersecurity risks, and the need for continuous innovation in Shariah-compliant financial solutions.

Accordingly, the central research problem of this paper can be articulated as follows: *How do digital financial technologies contribute to the success of Shariah-compliant crowdfunding platforms, and what challenges and opportunities define this sector?* This question will be addressed through the following sub-questions:

1. What are crowdfunding platforms, and how do they contribute to fostering entrepreneurship?
2. What is the role of digital financial technologies in enhancing the efficiency of Islamic crowdfunding operations?
3. What are the key challenges and future opportunities confronting digital Islamic crowdfunding platforms?

In line with these research questions, the study tests the following hypotheses:

1. Crowdfunding platforms support entrepreneurship by facilitating access to alternative financing sources for emerging projects.
2. Digital financial technologies enhance the efficiency of Islamic crowdfunding by promoting transparency, security, and transaction facilitation.
3. Islamic crowdfunding platforms encounter significant legal and technological challenges that influence their diffusion and sustainability.
4. FinTech provides promising opportunities for the development of innovative Islamic financial products that can reinforce the digital Islamic economy.

Significance of the Study

This research contributes to the growing body of literature on Islamic digital finance by examining the role of FinTech in supporting the development of Shariah-compliant crowdfunding. It provides valuable insights for policymakers, regulators, and investors on the integration of emerging financial technologies with Islamic finance principles. Furthermore, it highlights pathways for strengthening financial inclusion and developing innovative digital Islamic financial products, thereby contributing to the resilience and sustainability of the broader Islamic digital economy.

Research Methodology

The study adopts a descriptive and analytical approach. It reviews the existing literature on Islamic crowdfunding and financial technologies, examining their theoretical and practical intersections. Additionally, case studies of successful platforms are analyzed to evaluate the real-world impact of FinTech on performance, compliance, and sustainability in Islamic crowdfunding.

I. Conceptual and Theoretical Framework

1.1 Crowdfunding

1.1.1 Definition of Crowdfunding

Crowdfunding is defined as “*the process of raising funds through multiple contributions from individuals to support specific projects or organizations*” (Richard-Marc & Berthe, 2017). It is essentially a method of mobilizing relatively small amounts of capital from a large pool of individuals or legal entities to finance businesses, specific projects, personal consumption, or other funding needs (Jamous, 2024, p. 11). Typically facilitated through online platforms, crowdfunding relies on the power of collective participation, whereby small contributions, when aggregated, generate a significant financial impact.

This financing model is particularly oriented toward small and emerging enterprises, where entrepreneurs present their project ideas on crowdfunding platforms in order to convince investors to provide financial backing. In return, funders may receive rewards, benefits, or a share of the project’s profits, depending on the specific model adopted.

According to the *Crowdfunding Global Market Report (2023)*, crowdfunding has become one of the fastest-growing financing mechanisms worldwide. The report estimates that the global value of crowdfunding reached USD 2.14 billion in 2024 and is expected to record a compound annual growth rate (CAGR) of 17.6% during the period 2025–2030. The expansion of crowdfunding activities is considered a key driver of demand, contributing to greater investor awareness of emerging projects (Crowdfunding Market Report, 2023).

Moreover, the continuous technological development of crowdfunding platforms—particularly through the adoption of artificial intelligence and machine learning techniques—represents a critical factor in improving platform efficiency and global outreach. Such advancements further strengthen the role of crowdfunding in supporting entrepreneurship and fostering innovative ventures.

1.1.2 Types of Crowdfunding

Crowdfunding can be classified into several categories depending on the mechanisms through which funds are raised and distributed. The most prominent types include:

a. Donation-based Crowdfunding:

b. These platforms are primarily oriented toward charitable or social causes. In this model, contributors do not receive any tangible reward or material return for their support (Mellak & Boukhari, 2020, p. 256).

c. Reward-based Crowdfunding:

d. Under this model, funders receive non-financial rewards in exchange for their contributions, such as future products or services. The *Islamic Development Bank Report (2019)* highlights that reward-based crowdfunding promotes innovation by allowing entrepreneurs to test and validate their products before commercial launch (Islamic Development Bank, 2019).

e. Equity-based Crowdfunding:

f. This model enables investors to acquire equity stakes in the funded projects, thereby granting them ownership rights in startups or early-stage companies. According to Hassan and Ahmad (2021), equity-based crowdfunding enhances financial inclusion by creating opportunities for small investors to participate in financing entrepreneurial ventures (Hassan & Ahmad, 2021).

g. Debt-based Crowdfunding:

h. Also referred to as peer-to-peer (P2P) lending, this model allows investors to provide loans to projects in return for agreed-upon financial returns. Within the Islamic finance context, debt-based crowdfunding is adapted to ensure Shariah compliance through contractual structures such as *murabaha* and *mudarabah*. Ibrahim and Saeed (2021) argue that this model has significant potential to finance small and medium-sized enterprises while adhering to Islamic legal and ethical principles.

1.1.3 The Importance of Crowdfunding in Supporting Entrepreneurship

Crowdfunding has emerged as a novel mechanism for securing financial resources for entrepreneurial projects, offering access to alternative sources of capital outside the constraints imposed by traditional banks and financial institutions. Its benefits for entrepreneurship can be summarized as follows:

a. Provision of Capital for Startups: Crowdfunding serves as an effective tool to raise seed capital or finance expansion for new ventures. Through crowdfunding platforms, entrepreneurs can present their projects directly to the public and attract investors who share their vision and aspirations (Mollick, 2014, p. 3).

b. Market Validation: Campaigns allow entrepreneurs to test the feasibility and market acceptance of their ideas or products before committing to full-scale investment.

c. Community Building: Crowdfunding acts as both a fundraising and marketing channel by raising awareness of new ventures. Platforms enable entrepreneurs to communicate their ideas globally through the internet, reaching potential investors in a relatively short time (Zaïmi & Ben Malek, 2023, p. 53).

d. Alternative Sources of Finance: Crowdfunding provides entrepreneurs with access to funding without the need for conventional guarantees or complex procedures.

e. Transparency and Trust: With the development of social networks, crowdfunding enhances trust in digital platforms by ensuring transparency, enabling funders to track project progress and receive regular updates.

f. Promotion of Financial Inclusion: Islamic crowdfunding, in particular, broadens financial inclusion by enabling individuals without access to traditional banks to invest in entrepreneurial ventures.

g. Encouragement of Innovation and Entrepreneurship: Crowdfunding incentivizes creative projects that might otherwise be neglected by the conventional financial system.

h. Economic and Social Development: By supporting projects that generate employment and improve living standards, crowdfunding contributes to both economic and social development. The *World Bank Report (2018)* emphasized its potential as a powerful instrument for advancing socio-economic goals, particularly in emerging markets.

i. Support for Socially-Oriented Projects: Crowdfunding offers effective financing for initiatives with social impact, including environmental, educational, and healthcare projects, thereby contributing to sustainable development.

j. Collaboration and Knowledge Exchange: Based on principles of cooperation, crowdfunding platforms benefit from collective intelligence by mobilizing specialized financial and industrial expertise adapted to each project (Boudane & Belghom, 2022, p. 48).

1.2. Islamic Crowdfunding

The Islamic finance industry has witnessed remarkable growth in recent decades, as reflected in the establishment of Islamic banks, *takaful* (cooperative insurance) companies, Islamic investment funds, hedge funds, and sukuk markets. Rooted in principles of fairness and equity, Islamic finance prohibits transactions involving *riba* (interest) and *gharar* (excessive uncertainty), while emphasizing risk-sharing, justice, and social welfare.

1.2.1 The Nature of Islamic Crowdfunding

Islamic crowdfunding is a financing model grounded in Shariah principles, which prohibit usury and excessive speculation. It enables collective participation whereby individuals pool their resources to finance specific purposes—whether business ventures, commercial activities, or services they value. It is a community-based mechanism that provides financing for individuals and projects in need, while ensuring that wealth circulates equitably within society.

As Ben Ali and Boumengar (2023, p. 326) argue, Islamic finance emphasizes the fair distribution of wealth, a principle embedded in the objectives (*maqasid*) of Shariah. Funds should flow from surplus holders to those in deficit to achieve social welfare (Chiyad, 2019, p. 246). Consequently, Islamic crowdfunding mechanisms avoid interest-based returns, focusing instead on risk- and profit-sharing. Key structures include *murabaha*, *mudarabah*, *musharakah*, and *ijara*, all of which ensure compliance with Shariah while providing innovative and ethical financing opportunities (Moussaoui, 2025, p. 159).

1.2.2 Challenges Facing Islamic Crowdfunding

Despite its growing popularity, Islamic crowdfunding faces several obstacles that hinder its wider adoption:

a. Shariah Compliance: The need to develop platforms supported by technologies that fully adhere to Islamic legal requirements. A well-defined legal framework is essential for regulating their operations in line with Shariah principles.

b. Lack of Awareness: Limited knowledge among entrepreneurs and investors about the existence and potential of Islamic crowdfunding platforms, particularly given that many users are more familiar with conventional digital and AI-based solutions.

c. Limited Technological Innovation: Islamic crowdfunding requires advanced technical solutions and strong digital infrastructure to expand its reach and attract clients. Continuous improvements in efficiency and service customization are necessary.

d. Regulatory Gaps: The absence of unified regulations and Shariah-oriented policies, alongside insufficient legal and supervisory frameworks, raises concerns about protecting the rights of stakeholders (investors, borrowers, and platforms).

e. Risk Factors: Islamic crowdfunding platforms are exposed to operational risks, campaign failures, liquidity risks, cyberattacks, fraud, loan defaults, and even money laundering, all of which require robust risk management mechanisms.

1.3 Digital Financial Technologies (Fintech)

1.3.1 Definition and Importance in the Financial Sector

Digital financial technologies (Fintech) are a set of technological solutions designed to improve and develop financial services through digital innovation. These technologies include electronic banking systems, mobile payment applications, smart contracts, and big data analytics (Arner, Barberis, & Buckley, 2016, p. 1). They encompass a wide range of financial services such as lending, investment, payment, risk management, data analysis, insurance, and wealth management (Jamous, 2024, p. 5).

Fintech is considered a fundamental driver in enhancing financial inclusion, reducing operational costs, and increasing the efficiency of financial transactions (Phillippon, 2020, p. 3). Moreover, financial technologies contribute effectively to sustainable development in the financial sector by enabling innovative solutions, new tools, and financial products that respond to customers' needs and requirements.

1.3.2 Key Digital Financial Technologies (Blockchain, Smart Contracts, AI, Big Data)

a. Blockchain: Blockchain is a unique technology consisting of a chain of transaction records, commonly referred to as "blocks." These records grow independently and are linked together to form a chain secured through cryptographic techniques. Each block may contain one or more records, and includes a hash function (digital fingerprint) of the previous block, transaction data, and a timestamp. Once a block is completed and validated, it becomes immutable (Daoud, 2021, p. 35).

b. Smart Contracts: Smart contracts are reshaping traditional industrial and commercial processes, as they allow the automatic execution of contractual terms without the involvement of a trusted third party. They are more efficient, reliable, and secure in recording transactions, while reducing service costs and time, enhancing transparency, improving efficiency, and minimizing risks.

c. Artificial Intelligence (AI): AI is used in data analysis to provide personalized financial recommendations to investors (Nguyen et al., 2020).

d. Big Data: Big data helps improve financial decision-making by analyzing vast amounts of data (McKinsey & Company, 2018).

1.3.3 Key Fintech Applications in Islamic Finance

a. Islamic Crowdfunding Platforms: These provide financing opportunities in line with Shariah principles through instruments such as Murabaha and Musharakah (Islamic Fintech Report, 2021).

b. Digital Islamic Banking: Offers individuals access to Islamic financial products easily via online platforms (EY Global Islamic Banking Report, 2020).

c. Digital Sukuk: Utilized to facilitate the issuance and management of Sukuk through blockchain technology (IFSB, 2021).

d. Digital Zakat and Waqf: Enable charitable institutions to collect and manage donations electronically in a transparent, Shariah-compliant manner (Mohd Thas Thaker et al., 2019).

II. The Contribution of Digital Financial Technologies to the Development of Islamic Crowdfunding Platforms

2.1 Enhancing Operational Efficiency in Islamic Crowdfunding Platforms

2.1.1 Improving User Experience through Artificial Intelligence

Digital financial technologies improve user experience on Islamic crowdfunding platforms through AI, which analyzes investor preferences and suggests financing opportunities aligned with their investment orientation. Predictive analytics also provides personalized recommendations, facilitating decision-making and enhancing the efficiency of financing operations (Nguyen et al., 2020).

2.1.2 Strengthening Transparency and Security through Smart Contracts and Blockchain

The use of smart contracts and blockchain enhances transparency levels in Islamic crowdfunding platforms. Smart contracts ensure the automatic execution of financial agreements without intermediaries, reducing the risks of fraud and manipulation (Buterin, 2014). Additionally, blockchain technologies provide immutable records, strengthening investors' trust in the platform (Nakamoto, 2008).

2.2 Strengthening Shariah Compliance

2.2.1 Using Artificial Intelligence to Verify Shariah Compliance of Projects:

Artificial intelligence enables accurate analyses to ensure that proposed projects align with Islamic Shariah principles. AI can automatically review financial documents and contracts to verify that they are free from prohibited elements, such as interest-based transactions (riba) or unlawful investments (Islamic Fintech Report, 2021).

2.2.2 The Role of Technology in Providing Self-Regulatory Solutions for Platforms:

Digital financial technologies provide self-regulatory solutions through big data analytics systems, enabling regulators to monitor financial operations and detect potential violations in real time. Additionally, blockchain can establish self-governing platforms, ensuring sustainable Shariah compliance (IFSB, 2021).

2.3 Enhancing Trust and Financial Sustainability

2.3.1 The Role of E-Payment Systems and Digital Wallets in Facilitating Transactions:

E-payment technologies and digital wallets offer effective tools to simplify transactions within Islamic crowdfunding platforms. They allow investors to conduct financial operations easily and quickly through financial applications, thereby improving the efficiency of financing operations and broadening financial inclusion (Philippon, 2019).

2.3.2 Mechanisms for Protecting Investors Against Financial Risks:

Digital financial technologies provide advanced mechanisms to safeguard investors from financial risks. These include electronic verification systems to assess project credibility and smart insurance features based on smart contracts, ensuring the recovery of funds if a project fails to achieve its financing objectives (McKinsey & Company, 2018).

III. Challenges and Future Opportunities

The primary objective today is to adopt a wide range of innovations in financial services under one technological framework, regardless of type, size, or regulatory status. Such innovations are valuable in predicting and assessing the growth of the financial industry alongside its challenges and opportunities. According to EU Banking Federation (2015) and London Business School Review (2015), new market entrants are offering internet- and app-based products, making fintech synonymous with attracting customers through more user-friendly, efficient, effective, and transparent products compared to existing ones.

According to PwC (2017), more than 83% of financial institutions believe their operations face challenges and risks due to fintech startups. Consequently, companies need to invest in capacity-building and fintech-related projects to remain competitive in the market.

3.1 Challenges Facing Digital Islamic Crowdfunding Platforms

Despite the challenges faced by digital Islamic crowdfunding platforms, future opportunities remain significant and promising. By embracing modern technologies and reinforcing transparency and trust, these platforms can play a pivotal role in promoting financial inclusion and supporting the Islamic economy. With continuous legal and regulatory advancements, they can become powerful tools for financing small and medium-sized enterprises (SMEs) and fostering economic development in the Islamic world.

3.1.1 Regulatory and Legal Obstacles

Regulatory frameworks and legal environments remain among the most critical challenges facing Islamic fintech startups. Operating in this sector requires a clear understanding of financial regulations, which vary significantly across jurisdictions. As a result, startups must adapt to diverse and sometimes fragmented legal systems.

A. Key Regulatory Approaches to Crowdfunding Platforms

According to the Cambridge Center for Alternative Finance (2017), four main regulatory approaches can be identified:

- **Absence of a Specific Regulatory Framework:** Some countries refrain from issuing tailored regulations for crowdfunding platforms, applying instead general investor protection laws.
- **Application of Financial Intermediation Regulations:** In certain cases, crowdfunding platforms—especially lending- and equity-based models—are treated like financial intermediaries. This includes requirements such as registration, governance standards, disclosure obligations, and periodic reporting.
- **Banking Regulation Approach:** In some jurisdictions, lending- and equity-based platforms must obtain banking licenses to conduct specific operations.
- **Dual-Level Regulation:** In the United States, for example, crowdfunding platforms are regulated at both the federal and state levels. This dual approach leads to variation, as some states prohibit certain activities (e.g., equity crowdfunding), while others introduce exemptions to encourage platform growth.

At the international level, certain countries have adopted more favorable regulations to foster crowdfunding activities. The United Kingdom, the Netherlands, Germany, and the United States have implemented significant reforms. Notably, the UK and Sweden have undergone multiple rounds of regulatory adjustments to better adapt their frameworks.

B. Overview of Regulatory Frameworks Across Regions

- **European Union:** Member states maintain country-specific rules with limited coordination, while the European Commission is working to evaluate national frameworks to identify best practices.
- **United States:** Reward- and donation-based crowdfunding are widely accepted, while equity-based platforms are subject to U.S. Securities and Exchange Commission (SEC) regulations.
- **Asia:** Regulatory environments are diverse and dynamic. Some countries (e.g., Singapore and Thailand) place crowdfunding under existing regulatory frameworks, while others (e.g., Malaysia, New Zealand, and South Korea) have established detailed regulations governing lending- and equity-based crowdfunding.
- **Latin America and the Caribbean:** Many countries lack formal regulatory frameworks, and in some cases, crowdfunding remains illegal. For example, Mexico has no supportive legislation, while Brazil is working on identifying necessary reforms (Finance, 2016).
- **Middle East and Africa:** The UAE offers one of the most advanced regulatory frameworks in the region. In Africa, South Africa and Kenya lead regulatory progress, but overall, crowdfunding activities remain loosely regulated.

Since crowdfunding platforms often operate across borders, international regulatory frameworks also apply, particularly anti-money laundering (AML) and counter-terrorism financing (CTF) standards. As a

result, leading crowdfunding platforms such as *Kickstarter* and *RocketHub* have sought compliance with international AML laws.

C. Regulatory Frameworks by Crowdfunding Model (Jenik, 2017)

- **Donation-based platforms:** Typically unregulated unless offering additional regulated services (e.g., payment services). Operators must nonetheless comply with general laws, such as contract, tax, charity, consumer protection, data protection, and criminal law (particularly in cases of fraud or cyberattacks).

- **Reward-based platforms:** Generally not subject to strict regulation like financial intermediaries. They mainly act as facilitators between backers and beneficiaries, bearing limited liability in cases of contract violations. Enforcement largely depends on beneficiaries' compliance with intended use, and while platforms may mediate disputes, donors often face difficulties in pursuing legal claims due to small amounts and cross-border complexities.

- **Lending-based platforms:** Regulations vary across countries and business models. Given the diversity and dynamic growth of the industry, no single regulatory framework applies universally. The International Organization of Securities Commissions (IOSCO) highlights regulatory approaches such as:

- Exemption from regulation or absence of a specific framework
- Prohibition of activity
- Regulation similar to financial intermediaries
- Regulation equivalent to banking institutions

3.1.2 Technical Challenges and Cybersecurity

A. Technical Challenges:(M. & Al-Zahrani)

Islamic digital crowdfunding platforms require advanced technological infrastructure to ensure efficient and reliable performance. However, many of these platforms face difficulties in developing and upgrading the necessary technological systems. The most prominent technical challenges include:

- **Integration with traditional financial systems:** Islamic crowdfunding platforms need to be integrated with conventional banking systems to ensure smooth financial transactions. However, technological gaps between the two systems may lead to complexities in financing and money transfer processes.

- **Software development:** Building an effective crowdfunding platform requires advanced software that allows users to conduct transactions easily and securely. Many platforms struggle to attract highly skilled developers, which impacts the quality of the services provided (Al-Jubaili).

- **Scalability challenges:** With the increasing demand for Islamic crowdfunding, platforms must have the capacity to scale rapidly to meet this demand. This requires significant investments in technology and infrastructure, which may pose major challenges, especially for start-ups.

- **User experience:** User experience is a critical factor in the success of any digital platform. Platforms need to design simple and user-friendly interfaces, which requires investment in market research and user experience studies.

B. Cybersecurity

Cybersecurity is one of the most critical issues facing Islamic crowdfunding platforms. With increasing reliance on technology, the risks associated with cyberattacks also rise. The key cybersecurity challenges include:

- **Protection of personal data:** Crowdfunding platforms handle vast amounts of personal and financial data. Effective strategies must be in place to protect this data from leaks or breaches, requiring investment in encryption and security technologies.

- **Cyberattacks:** Platforms are exposed to various types of attacks, such as Distributed Denial of Service (DDoS) and hacking. Addressing these threats requires developing advanced security strategies and employing cybersecurity experts.

- **Compliance with legal standards:** Crowdfunding platforms must comply with local and international regulations regarding data protection and cybersecurity. This requires additional investments in legal compliance, which may burden start-ups.

- **User trust:** User trust in platforms is highly influenced by cybersecurity. If users feel insecure, they may hesitate to use these platforms, which negatively affects their growth.

3.1.3 Weak Societal Awareness of These Financial Tools

Research indicates that financial literacy plays an important role in enhancing awareness of Islamic crowdfunding. According to Al-Ghamdi (2021), strengthening financial literacy in society can increase awareness of Islamic financing tools, thereby boosting the use of these platforms. Hence, it is crucial for platforms to develop awareness campaigns targeting communities to highlight the benefits of Islamic

crowdfunding and how to use it effectively (Al-Ghamdi, pp. 23–37). Among the challenges related to weak societal awareness are the following:

a. Financial education: Society needs educational programs to familiarize individuals with the concepts of Islamic crowdfunding and how to use these tools effectively. This includes understanding investment methods, associated risks, and how to choose suitable projects.

b. Awareness of benefits: Platforms should run campaigns that emphasize the advantages of Islamic crowdfunding, such as supporting local projects and promoting sustainable development. Highlighting these benefits may encourage participation.

c. Challenges of traditional culture: In some communities, there may be resistance to the idea of crowdfunding, particularly if it is associated with new or unfamiliar concepts. Overcoming such challenges requires efforts to shift prevailing cultural attitudes and foster acceptance of these tools.

d. Partnerships with educational institutions: Awareness can be enhanced through partnerships with educational institutions to integrate Islamic crowdfunding topics into academic curricula. This can help build a new generation of informed investors and users.

3.2 Future Opportunities and Recommendations

3.2.1 The Potential for Developing New Financial Products Using FinTech

Financial technology (FinTech) is defined as the use of digital technologies to improve and transform financial services. According to Arner et al. (2016), FinTech encompasses a broad spectrum of applications, ranging from digital payments to crowdfunding and InsurTech solutions. These innovations contribute to greater efficiency and reduced costs, making them attractive to both established financial institutions and start-ups.

- **Innovation in financial products:** Literature highlights that innovation is a cornerstone in the development of new financial products. As Gomber et al. (2018) argue, FinTech innovation may take various forms, including the creation of entirely new services, the optimization of existing processes, or delivering more interactive user experiences. For example, digital payment solutions accelerate transactions while minimizing human error (Gomber, 2018).

- **Applications of emerging technologies:** Blockchain technology can be leveraged to develop more secure and transparent payment systems (Catalini & Gans, 2016). Likewise, artificial intelligence and big data analytics can improve marketing strategies and enable the personalization of financial products to meet customer needs (Chuen et al., 2017).

- **Challenges to new product development:** Despite the opportunities, there are significant challenges. Regulatory and compliance issues remain central, as traditional frameworks often lag behind technological innovation, restricting start-ups from entering the market (Zetzsche et al., 2017).

- **Security issues:** The rise of digital financial services increases the risks of fraud and data theft. Kshetri (2017) stresses that firms must invest in advanced security technologies to mitigate these threats.

- **Market opportunities:** Studies show a growing demand for digital financial services in emerging markets, where FinTech can enhance access to finance for the unbanked population (Demirgüç-Kunt et al., 2018).

- **Financial inclusion:** As Ozili (2018) notes, FinTech can play a crucial role in advancing financial inclusion by offering innovative solutions for underserved groups, such as microloans and affordable insurance through mobile applications.

3.2.2 The Role of Governments and Financial Institutions in Supporting the Sector

Governments play a vital role in creating an enabling environment for Islamic crowdfunding. This involves establishing legal and regulatory frameworks that protect investors and build trust in these platforms. According to Bashir and Shah (2021), governments that adopt innovation-friendly policies and provide financial and technical support significantly enhance the success of crowdfunding initiatives.

a. Legal and regulatory frameworks: Clear regulatory guidelines are essential to ensure the integrity of financial operations and safeguard investors' rights. These include transparency requirements and disclosure obligations (El-Gamal, 2018).

b. Financial and technical support: Governments can provide grants or concessional loans to projects relying on Islamic crowdfunding, while also offering training and technical resources to emerging platforms (Hassan & Ali, 2020).

c. The role of financial institutions: Financial institutions complement governments by developing Shariah-compliant financial products that strengthen the appeal of crowdfunding platforms (Zarif, 2021).

d. Product development: Islamic financial institutions can design innovative instruments—such as Shariah-compliant guaranteed loans or equity investments—that increase the competitiveness of crowdfunding platforms (Sadiq & Kader, 2022).

e.Strategic partnerships: Financial institutions may establish partnerships with crowdfunding platforms, enhancing their ability to expand market reach and secure both financial and technical resources (Mohammed & Abubakar, 2021).

3.2.3 Case Studies of Successful Platforms

a. Ethraa (Saudi Arabia): Specializes in financing SMEs through Mudarabah and Murabaha models.

- *Technologies used:* Blockchain for transparent fund flows; AI for risk assessment and Shariah compliance checks.

- *Shariah compliance:* Operates under supervision of Shariah boards to avoid riba and gharar.

b. Kapital Boost (Singapore): Focuses on start-ups and social enterprises via Musharakah.

- *Technologies used:* Integrated e-payment systems (e.g., Stripe, PayPal) modified for Shariah compliance; cloud-based crowdfunding platforms.

- *Shariah compliance:* Emphasizes asset-backed financing such as equipment and property.

c.Ethis Ventures (Malaysia & Indonesia): Among the earliest adopters of Islamic FinTech, specializing in real estate and social projects.

- *Technologies used:* Smart contracts on Ethereum for automated profit distribution; mobile apps for real-time investment tracking.

- *Shariah compliance:* Regularly reviewed by Shariah supervisory boards.

d. Blossom Finance (Indonesia): Provides microfinance using Mudarabah, with advanced credit scoring technologies.

- *Technologies used:* Machine learning for financial data analysis; chatbots for Shariah-related inquiries.

- *Shariah compliance:* Engages scholars in the design of financial products.

e.Salam (UAE): Focuses on real estate financing using Salam (forward sale).

- *Technologies used:* Advanced encryption for data protection; Shariah-compliant digital accounting systems.

- *Shariah compliance:* Emphasizes physical asset-based financing.

f.Yielders (UK): Pioneers fractional ownership in Islamic real estate investment.

- *Technologies used:* Blockchain for asset ownership records; digital trading platforms for share transactions.

- *Shariah compliance:* Avoids all interest-based dealings, relying solely on asset-generated revenues.

Shared FinTech Enablers:

- Blockchain for transparency and fraud prevention.
- Artificial intelligence for data analysis and decision-making.
- Smart contracts for automation and cost reduction.
- Digital payment systems for cross-border participation.

Conclusions

In light of rapid digital transformations in the global financial sector, Shariah-compliant crowdfunding platforms emerge as pioneering models that successfully integrate Islamic principles with modern technological innovation. The study has shown that digital financial technologies—such as blockchain, artificial intelligence, and smart contracts—are not merely tools for efficiency but essential pillars for ensuring transparency, enhancing Shariah compliance, and building investor trust in a secure participatory financial ecosystem.

While platforms such as *Ethraa* and *Kapital Boost* illustrate successful implementation, challenges persist, particularly in regulatory frameworks, cybersecurity, and limited societal awareness. However, these challenges simultaneously represent opportunities for innovation, including the development of flexible legislative frameworks, stronger government–institution partnerships, and advanced technological adoption.

Ultimately, the integration of Islamic finance principles with digital innovation represents a promising pathway for advancing the Islamic digital economy, supporting entrepreneurship, and achieving financial inclusion. Realizing this vision requires the combined efforts of technology developers, regulators, financial institutions, and civil society to build a comprehensive ecosystem that meets the needs of the modern era while upholding the core values of justice and transparency embedded in Islamic finance.

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