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LEVERAGING ISLAMIC FINANCIAL TECHNOLOGY TO DEEPEN FINANCIAL INCLUSION

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ABSTRACT
The study aims at examining the impacts of Islamic Financial Technology on deepen financial inclusion. Hence, this study assessed the effect of online banking, mobile banking App, ATM of Noninterest bank on financial inclusion in Nigeria. The study adopted a survey research approach which assumes positivist paradigm using a cross sectional research design, self-administered questionnaire and analyzed the data collected from Lotus Bank Customers with Partial Least Square Structural Equation Model (Smart Pls 2). The results of the study revealed that online banking, mobile banking App and ATM have positive significant effect financial inclusion. The study therefore recommended to management of those bank to devote more time and resources to ensure significant improvement in service quality. Also, Government bodies and policy makers are advised to provide financial and nonfinancial support to those banks which in turn can upsurge economic growth and sustainability.
Keywords: Islamic Financial Technology, Financial Inclusion, Block Chain, Digital Currency.

1. INTRODUCTION

Financial inclusion is a global priority aimed at making formal financial services accessible and affordable to all segments of society, with the objective of reducing barriers and fostering economic well-being. The World Bank (2014) defines financial inclusion as the participation of households and firms in the use of financial services. Within the realm of research, financial inclusion also encompasses the provision of microcredits, micro-saving accounts, and insurance packages to individuals without access to financial services (Omar & Inaba, 2020).

Policymakers, international organizations, and agencies such as the United Nations Capital Development Fund (UNCDF) and The World Bank Group have recognized the pivotal role of financial inclusion in achieving Sustainable Development Goals by 2030 and reducing extreme poverty and income inequality (Massinissa & Othmane, 2020). Fintech holds the potential to facilitate sustainable economic growth by expanding access to financial services and enhancing cross-border transactions of products, payments, and information (Massinissa & Othmane, 2020; Woo, 2018).

Islamic finance can contribute significantly to including millions of unbanked individuals and households in the formal financial system (Massinissa & Othmane, 2020; WBG, 2016). While the literature discusses the intersection of Islamic finance and fintech, there remains much to explore regarding their convergence and future trends (Asutay, Mehmet, Hakim Ahmad, Abu Umar Faruq, 2021; Bashir, Usman, Abu Jafar Mohammad Sufian, Zeshaan Rasheed, 2020; Zulkhibri, 2019).

Islamic financial systems and financial technology represent two rapidly growing segments within the finance industry. Fintech leverages modern innovations to deliver financial services that are faster, more convenient, and more customized, all while being cost-effective (Nguyen, 2021). In contrast, Islamic finance adheres to Islamic law (Sharia), which governs the daily lives of Muslims. Sharia prohibits the giving and receiving of interest on loans and investments, emphasizing the necessity of real economic activities in all financial engagements. It also forbids investment in sectors such as gambling, tobacco, armaments, and alcohol.

The combination of Islamic finance and fintech creates a cutting-edge synergy that promotes financial inclusion and provides socially and morally acceptable investment opportunities (Karim, Rezaul, and Mohammad Hasan, 2019; Saba, Irum, Rehana Kouser, and Imran Sharif Chaudhry, 2019). This integration expands the definition of financial inclusion according to Islamic finance beyond individual investment, savings, payments, borrowing, and risk management. It encompasses wealth redistribution, risk-sharing, and

inheritance rules specified in the Quran Kareem (World Bank, 2020). Islamic finance offers unique redistributive instruments such as zakat, sadaqah, waqf, and qard al-hasan, which, in combination with risk-sharing instruments, play a vital role in poverty alleviation and enhancing financial inclusion among low-income populations (World Bank, 2020).

Financial Technology are Innovations which are motivated by the desire to overcome challenges in the business environment (Robert &Amit, 2016). The emergence of technology has resulted in the introduction of new financial products and services, such as Automated Teller Machine (ATM), mobile banking, internet banking, digital currencies, among others which have changed the way banks operate and interact with their customers.

The banking system has been evolving with technology breakthroughs and inventive goods. Banks started to transcend beyond their fundamental scope, deposit-credit binary and payment operations with birth of modern banking. This time has achieved development above expectations with the support of computer and internet technology, throwing constraints away. Fast expanding innovative investments and costly output generated a market in banking sector and the importance that banks connected to innovative activities just as traditional operations have steadily expanded.

Similarly, recently there has been a fundamental reorganization of the domestic and international monetary and payment systems. This is evidence by the emergence of central bank digital currency, in which Nigeria launched its 'e-Naira' in October 2021 to be the first to develop digital currency in Africa. In the same vein, Africa's largest economy, Nigeria joins a growing list of countries India, Turkey, China, and Brazil as leading examples who have launched successful domestic card schemes and harnessed the transformative benefits to their payments and financial systems, particularly for the underbanked. **This has been driven by rapid digital and technological innovation and changes which ushered in Fintech.**

This study explores the potential of leveraging Islamic Financial Technology to deepen financial inclusion in Nigeria. It serves as a guide for policymakers, offers insights to financial institution regulators, and provides a roadmap for non-interest institutions to effectively adopt Fintech in Islamic Finance in Nigeria. Hence, this study aimed at achieving the following objectives;

1. To assess the effect of online bankingof Non-interest bank on financial inclusion in Nigeria.
2. To examine the effect of mobile banking App of Non-interest bank on financial inclusion in Nigeria.
3. To evaluate the effect Automated Teller Machine of Non-interest bank on financial inclusion in Nigeria.

2. LITERATURE REVIEW

i. Conceptual Review

Financial Inclusion and Islamic Financial Technology

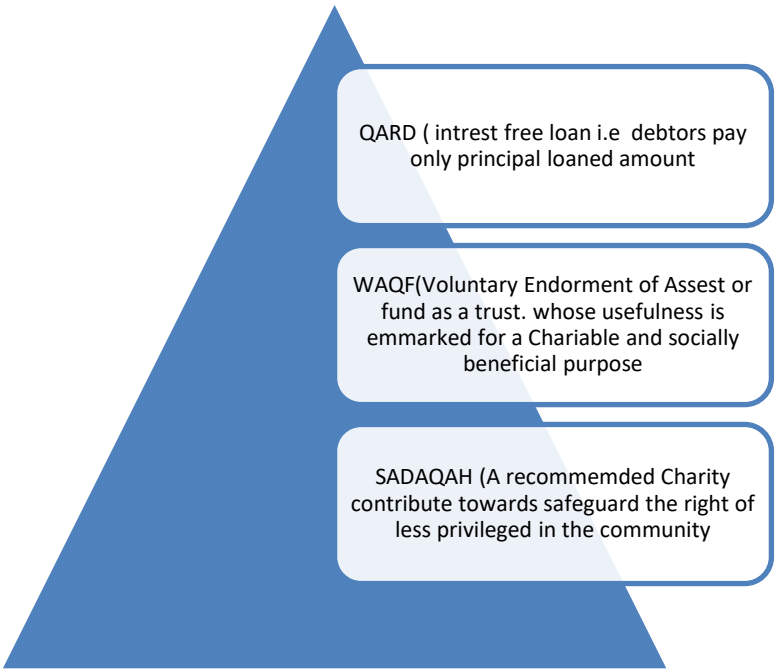
Financial inclusion is defined as the provision of available, accessible, and affordable financial services to individuals and businesses. It encompasses availability, accessibility, and usage of formal financial services, with the aim of achieving an affordable and sustainable economy (Yinusa, Arowona, Raimi, & Ilo, 2023).

Financial Inclusion from an Islamic Perspective

Islamic financial inclusion ensures that individuals and businesses have access to Shariah-compliant financial products and services delivered transparently. Shariah-compliant financial instruments, including Qard, Waqf, and sadaqah, are utilized to promote social justice and risk-sharing, thereby enabling poverty alleviation and financial inclusion (IFSB, 2018).

In conclusion, the amalgamation of Islamic finance and Fintech has the potential to reshape financial inclusion, catering to the unbanked and underserved populations while adhering to ethical and Shariah-compliant principles. This study serves as a foundation for future research and policy development in the realm of Islamic Fintech and financial inclusion.

Figure 1: The Key Islamic Finance Social Solidarity Instrument



Islamic Financial Services Board, 2018

The principles of financial inclusion align harmoniously with the core values of Sharīʿah, the Islamic legal framework. However, Islamic finance distinguishes itself from conventional finance through its unique principles and governing rules, which are deeply rooted in Sharīʿah. These principles extend beyond conventional regulatory and supervisory measures, making it imperative for financial institutions to adhere to a set of guidelines that differentiate between halal (permitted) and haram (prohibited) activities. While numerous businesses are considered halal, activities related to gambling, liquor, and vice are strictly prohibited in Islamic finance. Therefore, those involved in Islamic financial inclusion activities must ensure that their operations are in line with these ethical and moral principles, only engaging with counterparties and financing activities permitted by Sharīʿah.

Furthermore, Islamic finance strictly prohibits interest and emphasizes the importance of contracts being free from maysir (zero-sum/gambling outcomes) and Gharar (excessive uncertainty). To facilitate financial intermediation activities, Islamic finance offers a range of Sharīʿah-compliant contracts, including mushārakah, murābahah, salam, ijārah, muḍārabah, and hybrid contracts. Each of these contracts is governed by a specific set of rules and operational mechanisms, with well-defined rights and responsibilities for all parties involved. To promote financial inclusion, these intermediation arrangements must adhere to the principles of Sharīʿah. Thus, Islamic finance not only provides a conceptual framework but also the necessary mechanisms and institutions to support financial inclusion (Knowledge and Research, 2020).

Islamic Financial Technology: Bridging the Gap with Transparency

Islamic financial technology has exhibited a higher adoption rate compared to conventional finance, largely driven by its adherence to Maqasid al-Shariah, the principal doctrines of Islam. Transparency is a cornerstone of Islamic finance, and it seeks to protect the wealth of Muslims worldwide. Financial technology, in this context, aims to reduce banking costs, making it a welcomed addition to Islamic finance operations (Laldin, 2018; Wintermeyer, 2022).

Following the Subprime Crisis, Islamic finance experienced significant growth, as it offered an alternative to the trust issues plaguing the conventional financial system. Islamic finance's strict adherence to transparency and ethical business practices attracted a growing number of financial users, who believed that it could create a more trustworthy financial environment. As a result, Islamic financial technology emerged as a potential solution for building trust in the financial world (Satyawati, Suroso; Suryanto, and Nurjannah, 2017).

Islamic financial technology is poised to shape the future of Islamic finance, but its operating platforms must conform to Sharīʿah principles (IFSB, 2018). The

growth of Islamic financial technology and its services can be attributed not only to increased trust among existing consumers but also to the substantial growth in the youth population of Muslim countries. By 2060, this population is projected to exceed 3 billion, leading to significant growth in Islamic financial resources and assets. However, to realize the full potential of Islamic financial technology and accommodate the rapidly growing Muslim population, clear vision and strategic planning are essential. Policymakers and regulatory authorities play a pivotal role in ensuring the success of Islamic financial technology (Rusydiana, 2018).

The Role of Blockchain, Digital Currencies, and DLT in Islamic Finance

The increasing trust in Islamic finance, bolstered by its commitment to honesty and transparency, finds a valuable ally in blockchain technology (Abu-Bakar, 2018). Blockchain technology has addressed a critical issue rooted in human nature, exemplified by the 2008 Subprime Crisis. Blockchain, particularly in the form of Bitcoin, emerged as a response to the need for a system where no party involved in an agreement is trusted more than others (Rabbani, Khan, Thalassinos, 2020). It achieves this through a decentralized ledger that records every transaction in block form, making it exceedingly difficult to manipulate (Nakamoto, 2022).

Blockchain technology can be seamlessly integrated with various other technologies, including rule-based systems, statistical analysis, artificial machine learning, image processing, artificial neural networking, machine translation, and chatbots (Shahnawaz, Mishra, 2013; Khan, Mir,;Shreem, Alamri, Al Amari, 2018; Aysan, Bergigui, 2021). This adaptability allows blockchain to address diverse needs within Islamic finance, such as crowdfunding and Islamic philanthropy management. Furthermore, blockchain and cryptocurrencies eliminate cross-border charges, facilitate instant transactions, and enhance trust in fundraising institutions, thus serving a vital role in crowdfunding (Aysan, Bergigui, Disli, 2021). Additionally, blockchain-based technologies bolster the enforcement of Maqasid al-Shariah principles worldwide by reducing costs and promoting financial inclusion (Abubakar, Hassan,; Haruna, 2019).

However, it's essential to recognize that cryptocurrencies, particularly Bitcoin, pose Shariah-related challenges, including issues related to Gharar (excessive uncertainty and risk), volatility, and unknown real value. As such, they may not be suitable for Islamic transactions. Alternative crypto assets that comply with Shariah principles are available for this purpose (Abedifar, Giudici, Hashem,2017; Coin Market Cap, 2022).

In conclusion, the convergence of Islamic finance with technology, transparency, and blockchain presents an exciting opportunity to create a more inclusive and ethical financial ecosystem. As the world embraces digitalization and blockchain's trust-building capabilities, Islamic finance is well-positioned to lead the way in responsible and transparent financial practices, promoting financial inclusion and ethical investments on a global scale.

Digitalization of Islamic Non-bank Financial Institutions

In the contemporary financial landscape, digitalization has permeated every layer of society, offering a plethora of opportunities to financial institutions. This digital revolution, borne out of the development of financial technology, seamlessly aligns with Islamic principles and is poised to attract over 150 million potential customers in the near future. Concurrently, financial institutions stand to gain from fintech and digitalization as they fortify their internal structures to ensure trustworthiness (Unal & Aysan, 2022). While Shariah law exhibits flexibility in adopting new financial products, its methodology remains steadfast and robust, paving the way for the development of AI-based systems capable of autonomous decision-making (Yu &AlSaud, 2021). Moreover, the digitalization of financial institutions offers substantial cost savings in terms of time, money, and labor (Unal & Aysan, 2022).

Harnessing Islamic Fintech for Financial Inclusion

Financial inclusion, as outlined in the Holy Qur'an (9:60), encompasses eight distinct groups of individuals who are to benefit from Zakat. These groups, including the needy, reverts, the impoverished, Zakat collectors, the enslaved, the friends of the Muslim community, stranded travelers, the indebted, and those who fight on behalf of Allah, are pivotal to achieving societal empowerment (Unal & Aysan, 2022). Technological advancements have birthed initiatives such as zakat collection, digital distribution, and blockchain-based fund management, capable of accurately identifying those in need and determining the appropriate allocation of funds for each category (Utami, Basrowi, Nasor, M, 2021).

The Global Landscape of Islamic Financial Technology Platforms

The global landscape of Islamic financial technology has witnessed substantial growth in recent times, particularly in the realms of crowdfunding platforms, blockchain deployment, robo-advisors, and the utilization of user behavioral data for machine learning (Ali, Mohamed, Hashmi & Hassan, 2020).

Islamic Crowdfunding Initiatives

Islamic crowdfunding platforms have emerged as significant players in the financial landscape. Notable examples include the Beehive Platform, Commodity Murabahah Trading Platform (CMTP), Murabahah Platform, and Easi Up. These platforms play a pivotal role in providing accessible and expeditious funding for various ventures while ensuring strict adherence to Shariah compliance and ethical investment principles (Ali, et al., 2020). Ethis Crowd, specializing in real estate funding, stands out with a community of over 17,000 investors who actively support projects across Asia. Beyond the financial opportunities it presents, Ethis Crowd encourages ethical and Shariah-compliant projects, underscoring the fusion of finance and ethical considerations (Ali, et al., 2020).

Equity crowdfunding platforms, exemplified by Eureeca, cater to growth-oriented ventures and member-investors spanning Europe, the Middle East, and Southeast Asia. These platforms align with the principles of risk finance sharing, utilizing Musyarakah and Mudarabah to foster investment growth (Ali, et al., 2020).Empowering the underprivileged is a cornerstone of Funding Lab and Kapital Boost's missions. These platforms target less-privileged students and budding entrepreneurs in regions such as Bangladesh, Pakistan, and Palestine. Their innovative crowdfunding models serve as catalysts for entrepreneurship and offer invaluable support to Micro, Small, and Medium Enterprises (MSMEs) (Ali, et al., 2020).

Narwi is an Islamic crowdfunding platform that operates across several Middle Eastern and North African countries. This platform enables donors to support micro and small enterprises with modest endowments, making a substantial impact on employment opportunities and livelihoods in these regions (Ali, et al., 2020).Skola fund plays a pivotal role in bridging the education gap by crowdfunding the tuition fees of less-privileged students. It remains steadfast in its mission to ensure that education remains accessible and affordable for qualified individuals (Ali, et al., 2020).In 2016, Wahed made its mark as the first robo-advisor platform dedicated to offering Shariah-compliant asset management services to the global Muslim population. This platform employs automated analysis to allocate assets with substantial growth potential (Ali, et al., 2020).

'ETHIXS,' offered by International Turnkey Solutions (ITS), serves as a beacon of Shariah-compliant solutions in core banking, online banking, trade finance, and various other banking sectors. Its implementation enhances operational efficiency and extends a comprehensive array of functionalities (Ali, et al., 2020). Pioneering the domain of Islamic online finance, As-Sidq emerged in 2009 as Malaysia's first online platform for personal Islamic finance and banking. Operating in strict accordance with Shariah principles, As-Sidq provides liquidity and collaborates with key players in the sector to uphold its commitment to ethical finance (Ali, et al., 2020).

The Islamic Fintech Alliance, comprising eight prominent Islamic crowdfunding platforms, has coalesced with the shared objective of enhancing safety, developing industry standards, increasing accessibility, and expanding the global Islamic fintech ecosystem. This collective effort is firmly rooted in the promotion of financial inclusivity and the propagation of ethical investments (Ali, et al., 2020).

Islamic Fintech: A Path to Financial Inclusion in Nigeria

Islamic fintech has the potential to significantly boost financial inclusion in Nigeria, where only 45% of the population holds active bank accounts. With its low-cost, digitally-focused solutions, it can cater to the needs of the unbanked population, contributing to poverty alleviation and societal progress (Statista.com).

ii. Empirical Review

Hasnan (2019), conducted a study on financial inclusion and fin Tech. It is a comparative study which is aimed at comparing the performance of countries following Islamic and conventional finance system in terms of financial inclusion and fintech using data obtained from World Bank and Global Islamic Finance Report. The population of the study comprises ten countries from both financial systems which was selected based on the presence of Islamic finance and conventional finance in the country between 2011 and 2017. The findings found that Islamic finance countries are more inclusive in terms of financial inclusion and women are financially more empowered as compared to the counterpart. On the contrary, countries with conventional finance have a higher number of FinTech users.

Hasanulet al (2020) conducted a study on digital financial inclusion, islamicbanking stability and sustainable economic growth. This is an empirical paper which is aimed at examining the role, challenges and proper application the of digital financial inclusion (DFI) in promoting sustainable economic growth through Islamic banking stability using the unbalanced panel data by deploying panel corrected standard errors and two-stage least square-instrument variable techniques. The results of the finding showed that DFI endorsement may ensure sustainable economic growth and stability within banks, specifically Islamic banks, which is a step towards SDGs achievement.

Salampasis and Mention(2018) also conducted a study on how fintech can be used to harness innovationfor Financial Inclusion. This is conceptual paper which examined the role of fintech in global community and the process of accepting and adopting innovative financial inclusion models using a universal and systematic collaborationfinancial tools, models, and regulatory policies. The study therefore concludes that fintech is bound to play an integrative part into the development of radical value propositionsand innovative financial services, and products customized for underbanked and unbankedsocieties. So, It will become thekey prerequisite for social and economic development, leading to an unrestricted and universal access to basic financial services.

Demir et al (2020) also work on aempirical study on fintech, financial inclusion and income inequality. This study aimed at examining the potential of fintech to reduce financial exclusion and incomeinequality has been proposed by the UN and G20.and also, to access the role of FinTech directly on income inequality and indirectly on financial inclusion using quantile regression analysis. The result of the finding revealsthat financial inclusion is a key channel through which FinTech reducesincome inequality, at all quantile levels, primarily among higher-income countries.

Hollanders (2021) also conducted a study on fintech and financial inclusion: Opportunities and challenges. This paper is theoretical paper which access the crucial role played of transaction accounts on how stakeholders can promote access and use of these accounts. It also looked at recent fintech developments and also highlight the role of this innovations in broadening access to financial services while addressing the related risks using two reports on payment aspects of financial inclusion released by the Committee on Payments and Market Infrastructures and the World Bank. The framework developed to promote access and use of transaction accounts in the first report underpins the second report, which assesses the potential of FinTech developments for financial inclusion.

Daniela and Sally (2019) also work on the digital revolution in financial inclusion: international development in the fintech era. This study examined the growing importance of digital-based financial inclusion as a form of organizing development interventions through networks of state institutions, international development organisations, philanthropic investment and fintech companies. The fintech–philanthropy–development complex generates digital ecosystems that map, expand and monetize digital footprints. Its 'know thy (irrational) customer' vision combines behavioral economics with predictive algorithms to accelerate access to, and monitor engagement with, finance. The digital revolution adds new layers to the material cultures of financial(ised) inclusion, offering the state new ways of expanding the inclusion of the 'legible', and global finance new forms of 'profiling' poor households into generators of financial assets.

iii. Theoretical Review

Karim & Hasan (2019) — Islamic FinTech in Bangladesh: Challenges and Opportunities

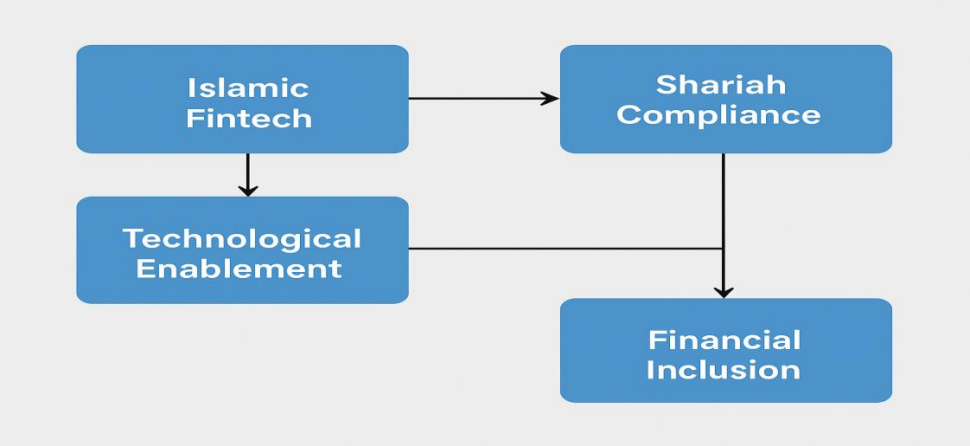
Karim and Hasan's 2019 study provides a vital contribution to the discourse on Islamic FinTech by grounding its analysis in the socio-economic and regulatory landscape of Bangladesh, a Muslim-majority country with a growing demand for ethical financial services. The authors frame their discussion within the broader theoretical intersection of Islamic economics, financial inclusion, and technological innovation. The paper explores how digital finance tools including mobile banking, blockchain, and crowdfunding can be adapted to the principles of Shariah-compliant finance. The theoretical underpinning is based on Islamic economic ethics such as prohibition of riba (interest), risk-sharing, and asset-backed financing. Karim and Hasan argue that FinTech can play a critical role in expanding financial inclusion in underserved communities across Bangladesh, especially those historically excluded from conventional banking systems.

A major highlight of the paper is its development of a conceptual framework that incorporates four key pillars: technological enablement, Shariah compliance, product innovation, and regulatory support. This model seeks to integrate modern financial technologies into the traditional structure of Islamic finance without compromising religious principles. However, the authors also note several persistent challenges. Regulatory ambiguity surrounding Shariah-compliant digital products, a shortage of expertise in Islamic financial technologies, and limited venture capital access for Islamic startups are seen as major obstacles to growth. Despite these challenges, the paper identifies promising opportunities, such as digitized zakat and waqf platforms, Islamic microfinance through mobile technologies, and Shariah-compliant crowdfunding platforms tailored for SMEs and entrepreneurs. In theoretical terms, the study merges institutional theory with the logic of Islamic financial jurisprudence, offering insights into how financial infrastructure must evolve to support a truly inclusive and ethical FinTech ecosystem in emerging economies like Bangladesh.

IFSB (2020) Islamic Financial Services Industry Stability Report

The 2020 Islamic Financial Services Board (IFSB) report presents a macro-level and globally oriented analysis of Islamic FinTech, with a strong emphasis on regulatory governance, systemic risk management, and financial stability. The report is positioned within the broader framework of macroprudential financial regulation and seeks to address the evolving challenges Islamic financial institutions face as they integrate advanced technologies. From a theoretical standpoint, the IFSB adopts a normative regulatory approach, combining insights from financial stability models, digital risk governance, and cross border compliance structures. It argues that while Islamic FinTech has the potential to revolutionize financial systems in Muslim-majority countries, it also introduces new layers of operational and systemic risk, particularly due to inconsistencies in Shariah interpretations, untested technologies, and insufficient supervisory frameworks. One of the report's core messages is the urgent need for global harmonization of Islamic FinTech standards. The IFSB calls for the development of regulatory sandboxes that accommodate Shariah-specific product innovation, as well as the formalization of Shariah tech boards that work alongside regulators to validate smart contracts and digital financial tools. The IFSB also warns about cybersecurity vulnerabilities, data protection challenges, and the risks posed by under-regulated digital platforms offering Islamic financial services. At the same time, it recognizes the potential of FinTech to build a more resilient financial system, especially in the post-COVID era where digital adaptability has become a necessity rather than a luxury. Overall, the IFSB (2020) report provides a comprehensive theoretical architecture that integrates Islamic ethical finance with risk-based digital regulation, offering a blueprint for policymakers across the Islamic finance world

Figure 2. Conceptual Pathway from Islamic fintech to financial inclusion



Source: Authors' Computation 2025

3. METHODOLOGY

A quantitative approach which assumes positivist paradigm was adopted in the present study using a cross sectional research design. The Survey method of research was used for this study. The data was collected using primary source through the use of structured five Likert scales questionnaire, which was administered by hand to the customers of the lotus Bank which were randomly selected. The questionnaire was adopted from the work of Amin, Rahim, & Rahman, (2011). It comprises two sections: the first section was designed to gather demographic and personal information about the respondent while the second section is meant to source the response of the respondent on the leveraging on Islamic fintech on financial inclusion using five-point Likert scale ranging from Strongly Disagree to Strongly Agreed. Most of this factor used in the questionnaire were adapted from previous study on online banking, mobile banking app, automated teller machine and financial inclusion like (Lajuni et al., 2017), (Ahmad, 2015) and (Amin et al., 2011).

The target population of the study made up of customers of Lotus bank Plc in Nigeria as at the end of the third quarter of this current year i.e. 30thSeptember, 2023 across twenty-two operating branches in Lagos state. The were chosen because the fact that it one of the recently licensed non-interest banks in 2021 and also on the fastest growing NIB in Lagos in term customer and operational branches and outlet. Because of the time and to ensure the respondents sampled matched the purpose of the study, non-probability convenience sampling technique was used to ensure the

collected data were from valid sources. This sampling technique was used in order to cover the large sample as adopted by previous similar studies of Lajuniet al. (2017), Audu (2016), and Abdullahi et al.(2017). Furthermore, Pallent, (2001) as sighted by Abubakar, (2014) suggested that for regression analysis, the sample can also be considered to fall between five and ten times the number of the independent variables.

A total of 100 questionnaires were administered to the customers of the selected Islamic bank as a pilot study, while 94 were returned fully and appropriately filled. This represents a response rate of 94%. After initial screening, 94 copies were retained for data entry and further analyses. Partial least squares structural equation modeling was adopted to perform measurement model and structural model assessments. The Likert scale were used to measure responses from 1= Strongly Disagreed to 5= Strongly Agree with the intent to investigate the factors that determine their perception on Islamic financing.

4. DATA PRESENTATION AND ANALYSIS

Questionnaire Rate of Response

The study considered distribution of 200 questionnaires to the Islamic Bank customers in at Lotus Bank in Lagos State. Ninety- Four (94) questionnaires were returned and valid with no missing value. Since it covers more than 60% of the distributed questioners therefore, is assumed sufficient for the analysis as seen in the work of (Lajuni et al., 2017) and (Audu, 2016). This is shown in the table below:

Table 1: Questionnaires response rate

Questionnaires	Frequency	Percentage
Total distributed questionnaires	100	94
Total returned questionnaires	94	94
Total valid questionnaires	94	94
Total rejected questionnaires	0	0
Total Number Analyzed	**94**	**94**

Demographic Profile of the Respondents

The data presented in the descriptive statistics are from the survey and these include gender, age, marital status, qualification and occupation as well as the percentage responses of the questionnaire returned from the respondent in Lagos State, Nigeria. For the purpose of clarity and ease of understanding, the data obtained from the field survey were presented in tables and charts.

Table 2: Demographic Distribution of the Respondents

A, Gender Distribution

Gender Distribution	Frequency	Percentage	Cumulative Percentage
Male	57	60.6	60.6
Female	**37**	**39.4**	**100**
Total	**94**	**100.0**	

Source: Field Survey (2023)

B. Age Distribution

Age Distribution	Frequency	Percentage	Cumulative Percentage
18-25	22	23.4	23.4
26-35	23	24.5	47.9
36-45	32	34.0	81.9
46 and Above	17	18.1	100
Total	**94**	**100**	

Source: Field Survey (2023)

C. Qualification Distribution

Academic Qualification	Frequency	Percentage	Cumulative Percentage
O' Level	16	17.1	17.1
ND/NCE	13	13.8	30.9
HND/B.Sc.	32	34.0	64.9

Postgraduate	11	11.7	76.6
Other	22	23.4	100
Total	**94**	**100**	

Source: Field Survey (2023)

D. Occupation Distribution

Occupation	Frequency	Percentage	Cumulative Percentage
Government sector	**42**	**44.7**	**44.7**
Private Sector	**7**	**7.5**	**52.2**
Self-employment	**45**	**47.8**	**100**
Total	**94**	**100**	

Source: Field Survey (2023) Status Distribution

Status	Frequency	Percentage	Cumulative Percentage
Married	78	83.0	83.0
Single	12	12.8	95.8
Divorce	4	4.2	100
Total	**94**	**100**	

Source: Field Survey (2023)

From table 2a above, gender of the respondents is evenly distributed between male and female. It reveals that 57 representing 60.6% of the respondents were male while 37 of the respondents which represent 39.4% were female. This implies that majority of respondents in Lagos are more of male than the female. This shows the interest of men compared with that of female in this study.

Table 2b above shows the age distribution of respondents. Out of the 94 respondents, 22 representing 23.4% fell in between 18-25years old while 23 people representing 24.5% of the respondents were within the age group of 26-35years. The respondents that fall within the age limit of 36-45years were 32 which represent only 34.0% of the respondents while those above 46 years were 17 respondents which represent 18.1%. This implies that majority of the respondents fall within the age category of 36-45years and the least participants were 46 years and above.

In this survey as seen table 2c above, at least 16 of the respondents have completed secondary education which represents 17.1% while the level of technical education (NCE/ND) accounts for 13.8% representing 13 respondents. Also, majority of the respondents have attained tertiary education accounted 32 respondents which represent 34.0% of the respondents.

Measurement Model

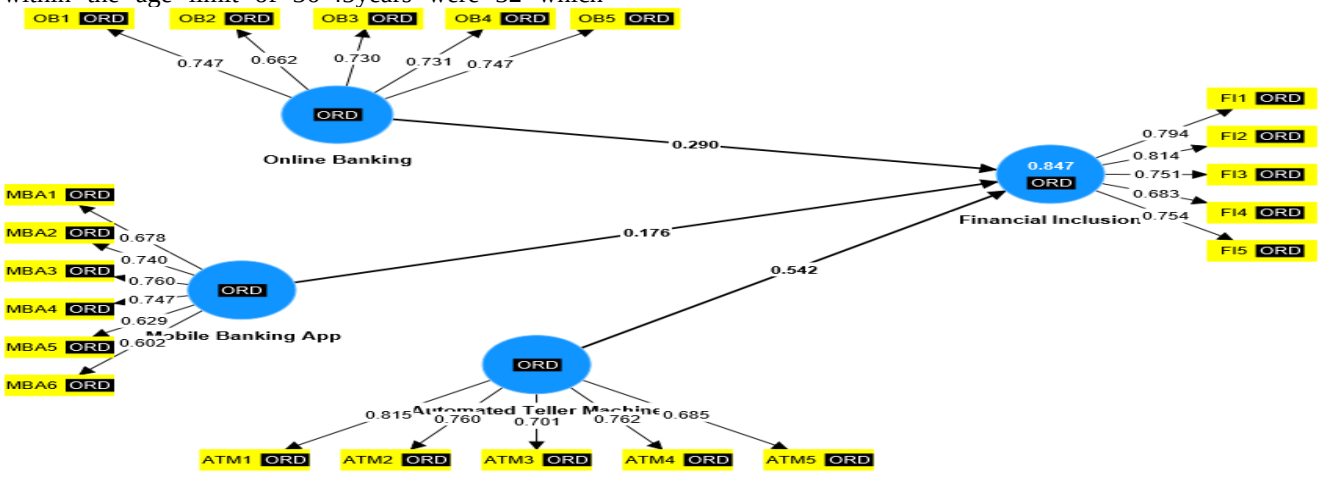


Figure 1: *Measurement Model*

The measurement model shows the indicators loading on their intended factors. The simple factor structure, by rule of thumb taken to mean that composite reliability should be greater than 0.7 and average

variance extracted should be greater than 0.5. (Garson, 2016).

Table:3 *Construct Reliability and Validity*

Construct	Items	Loadings	AVE	CR	CA
Financial Inclusion	FI1	0.794	**0.708**	**0.923**	**0.896**
	FI2	0.814			
	FI3	0.751			
	FI4	0.683			
	FI5	0.754			
Online Banking	OB1	0.747	**0.795**	**0.921**	**0.870**
	OB2	0.662			
	OB3	0.730			
	OB4	0.731			
	OB5	0.747			
Mobile Banking App	MBA1	0.678	**0.504**	**0.742**	**0.708**
	MBA2	0.740			
	MBA3	0.760			
	MBA4	0.747			
	MBA5	0.629			
	MBA6	0.602			
Automated Teller Machine	ATM1	0.886	**0.531**	**0.763**	**0.746**
	ATM2	0.753			
	ATM3	0.692			
	ATM4	0.750			
	ATM5	0.942			

Note: AVE represents Average Variance Extracted; CR represents Composite Reliability; CA represents Cronbach's Alpha

Table 3 above shows the Factor Loading, Cronbach Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) values for all latent constructs after Pooled CFA has been performed. All constructs have achieved the minimum estimation required; 0.70(Cronbach Alpha), 0.60 (CR) and 0.50 (AVE). Therefore, it can be concluded that Convergent Validity (AVE _ 0.5), Internal Reliability (Cronbach Alpha _ 0.6) and Construct Reliability (CR _ 0.60) of all constructs had been achieved. Therefore, the model is good enough for the analysis.

Table 4: *Fornell-Lacker Discriminant Validity*

Construct	Automated Teller Machine	Financial Inclusion	Mobile Banking App	Online Banking
Automated Teller Machine	**0.946**			
Financial Inclusion	**0.872**	**0.912**		
Mobile Banking App	**0.737**	**0.802**	**0.895**	
Online Banking	**0.690**	**0.801**	**0.778**	**0.724**

The Fornell-Lacker criterion (1981) is a common and conservative approach to assess discriminant validity and it can be applied in PLS-SEM. The diagonal value (in bold) is the square root of AVE, while other values are the correlations between the respective latent construct. The discriminant validity is achieved when a diagonal value (in bold) is higher than the values in its row and column. Referring to the above table 4, it can be concluded that discriminant validity for all constructs are achieved.

Bootstrapping Analysis (Structural Model)

Bootstrapping analysis is conducted to determine the direct effect size of each endogenous latent construct on the predictor variable.This was done by using 5000 subsamples with 94 cases as presented in figure 1.

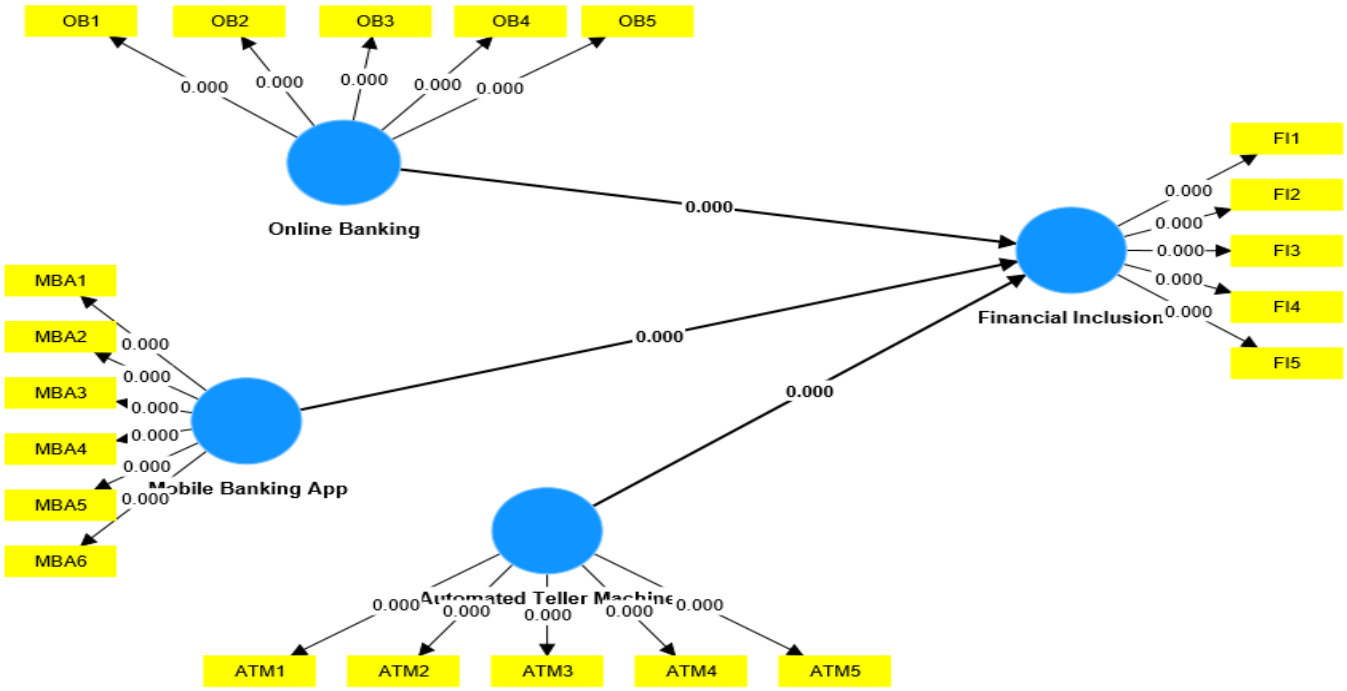


Figure 1: *Structural Model*

Structural equation model was used to determine the relationship between financial inclusion, mobile banking app, automated teller machine and online banking in Nigeria.

Table 5: Direct Path Coefficient i.e. Test of Hypothesis

R Square: 0.847

Hypothesis	Beta Value	Standard Deviation	T statistics	P values	Decision
ATM-> Financial Inclusion	**0.542**	**0.058**	**9.420**	**0.00**	Reject.
MBA -> Financial Inclusion	**0.176**	**0.037**	**4.705**	**0.00**	Reject.
OB -> Financial Inclusion	**0.290**	**0.053**	**5.436**	**0.00**	Reject.

Note: IF represents Financial Inclusion; ATM represents Automated Teller Machine; OB represents Online Banking; MBA represent Mobile Banking App

The empirical findings from Table 5 reveal that automated teller machines (ATMs), mobile banking applications, and online banking platforms each demonstrate a **positive relationship with financial inclusion** with ATMs and online banking showing statistically significant effects (p<0.1), while mobile apps showed a positive but non-significant impact (p = 0.20). The **R^2 value of 0.847** suggests that these three fintech constructs jointly explain 84.7% of the variance in financial inclusion, indicating strong explanatory power (Hair et al., 2013). From an **Islamic ethical perspective,** these technological tools are generally seen as **permissible and even beneficial**, provided they comply with core Shariah principles, such as transparency, prohibition of *riba* (interest), and ethical use of data and funds. Several scholars affirm that fintech tools like ATMs and digital banking have enhanced **financial outreach in Muslim-majority countries** without compromising Shariah principles (Unal & Aysan, 2022). In this view, financial technologies, when Shariah-compliant, can **uphold maqasid al-Shariah** (objectives of Islamic law) by promoting economic justice, access, and welfare (Kılıç & Türkan, 2023).

For instance, **Rabbani (2022)** highlights that ATMs and online banking interfaces reduce human error, improve trust in digital systems, and support inclusive finance, aligning with Islamic principles when devoid of exploitative elements. **Saepulloh (2023)** further emphasizes that mobile banking can facilitate zakat distribution and waqf contributions, expanding access to ethical financial services and alleviating poverty—one of Islam's core social mandates. However, **some critiques emerge** within Islamic scholarship. **Alsaghir (2023)** warns that fintech services, though operationally efficient, may introduce digital risks, data misuse, or inadvertent exposure to prohibited activities like interest-bearing transactions if not carefully governed. Similarly, **Seman and Noh (2024)** argue that while

tools like online banking enhance inclusion, they often embed conventional credit scoring models or interest-linked functionalities, which conflict with Islamic tenets unless Shariah filters are applied. Another concern involves **technology access disparities**. According to **Ahmad and Yahaya (2023),** fintech tools like mobile apps can inadvertently **exclude rural or elderly Muslim populations** who may lack digital literacy or access to smartphones, thus challenging the Islamic principle of equitable treatment (*'adl*). In such cases, inclusion via technology must be designed with **social justice and accessibility** in mind not only technical scalability.

Effect Size

The effect size of the exogenous variable on the endogenous variable was assessed by means of *f2* proposed by Cohen (1988), this was analyzed in the table below using the formula stated below;

$$\text{Effect size: } f^2 = \frac{R^2_{Included} - R^2_{Excluded}}{1 - R^2_{Included}}$$

Table 6**:** *R-square Change and F-square Effect Size of Exogenous Factors*

Construct	R2 Included	R2 Excluded	F Square	Effect Size
ATM	**0.847**	**0.724**	**0.804**	Strong
MBA	**0.847**	**0.837**	**0.065**	Weak
OB	**0.847**	**0.817**	**0.196**	Moderate

Based on the threshold values of 0.02, 0.15, and 0.35 commonly used to classify effect size strength (Cohen, 1988), the observed values in this study reflect a spectrum of explanatory power. Specifically, an effect size of 0.804 is considered *strong*, 0.196 *moderate*, and 0.065 *weak*. From Table 6, the analysis shows that excluding the automated teller machine (ATM) variable would cause the greatest drop in explained variance. Hence, the ATM emerges as the most influential explanatory variable in the model, signifying its central role in advancing financial inclusion within the studied context. From an Islamic ethical lens, the prominence of ATMs in promoting inclusion is widely supported in scholarly literature, particularly due to their value neutral design, physical accessibility, and compatibility with Shariah norms when not tied to interest bearing instruments. For instance, Unal and Aysan (2022) argue that ATMs serve as *Shariah-compliant gateways* to basic financial services, especially for communities that avoid conventional banks due to religious concerns. Their utility aligns with Islamic objectives (*maqasid al-Shariah*) of facilitating access to wealth and reducing hardship (*raf' al-haraj*).

Furthermore, Rabbani (2022) notes that ATMs are instrumental in extending outreach in both urban and rural Muslim communities by offering cash withdrawal and account access without engaging in speculative or unethical contracts a concern central to Islamic jurisprudence. The findings here substantiate this ethical alignment by empirically validating ATMs as key drivers of equitable inclusion. On the other hand, some scholars urge caution in interpreting the ethical neutrality of technology. Alsaghir (2023) critiques the assumption that all fintech interfaces, including ATMs, are ethically benign. He argues that when linked to conventional interest-based accounts or credit instruments, even neutral delivery channels can inadvertently violate Islamic prohibitions against *riba* and lack transparency in fee structures. Hence, Islamic financial institutions must ensure Shariah compliance at both the interface and product levels. Moreover, Ahmad and Yahaya (2023) raise equity concerns regarding ATM-based access models, particularly where geographic or socioeconomic disparities exist. In rural or underserved areas, limited ATM infrastructure or lack of digital literacy may inadvertently exclude segments of the Muslim population, contradicting Islamic principles of *adl* (justice) and *inclusion of the weak*. Therefore, while the statistical results reinforce the centrality of ATMs in explaining financial inclusion outcomes especially within digital models the Islamic ethical framework demands a layered interpretation. This requires institutions to ensure Shariah-compliant products, transparent fee disclosures, and equal physical access to technological infrastructure.

5. CONCLUSION AND RECONMENDATION

The convergence of Islamic principles with digital technologies and financial innovation is shaping a new frontier in the global financial landscape. This fusion is not simply about integrating faith into finance it represents a profound transformation that reimagines the purpose and practice of financial inclusion. While conventional fintech efforts have largely focused on expanding access through affordability, convenience,

and efficiency, Islamic fintech offers a deeper, values-driven alternative. It seeks to promote financial inclusion in a manner that is ethically sound, socially responsible, and compliant with the moral and legal framework of Shariah.

By embedding principles such as risk-sharing, prohibition of interest (riba), and avoidance of excessive uncertainty (gharar), Islamic fintech platforms go beyond mere service delivery. They aim to empower individuals and communities through mechanisms that uphold justice, transparency, and spiritual accountability. This approach is not only relevant for Muslim populations but offers a broader model of responsible finance that resonates with global calls for ethical and inclusive economic systems.

As Islamic fintech continues to grow and evolve, it holds immense potential to improve the lives of millions particularly those who have historically remained excluded from conventional financial systems due to religious or ethical concerns. However, realizing this potential will require more than technological advancement. It calls for strategic alignment across policy, regulation, scholarship, and industry practice.

To this end, several recommendations emerge. First, regulatory bodies and policymakers should work toward creating enabling environments that both support fintech innovation and ensure compliance with Shariah principles. This includes the development of tailored regulatory frameworks and the inclusion of Shariah governance mechanisms within fintech oversight structures. Second, there is a need for deeper collaboration between Shariah scholars and fintech developers. Such partnerships can ensure that financial products remain true to Islamic legal and ethical principles while meeting the practical needs of modern consumers.

Third, financial institutions should actively incorporate Islamic fintech solutions to serve Muslim communities that remain unbanked or underbanked due to a lack of Shariah-compliant alternatives. By doing so, they not only expand their customer base but also contribute to financial empowerment in a meaningful and culturally sensitive manner. Lastly, harmonization of Shariah standards across jurisdictions should be prioritized to facilitate cross-border expansion and scalability of Islamic fintech models. Academic research also plays a critical role in this ecosystem, providing insights into the socioeconomic impact, risks, and long-term viability of Islamic fintech initiatives.

Limitations and Future Research

This study is subject to certain limitations, primarily due to constraints in sampling and the scope of available data. These limitations restrict the generalizability of the findings and highlight several avenues for future investigation. Future research could benefit from the use of instrumental variable approaches to control for potential endogeneity issues and to better isolate causal relationships. Adopting a longitudinal design that tracks behavioral changes following the adoption of Islamic FinTech particularly in the post-Naira redesign context would offer richer insights into evolving user patterns over time.

Moreover, expanding the dataset to include multiple Islamic banks, such as Jaiz Bank and Taj Bank, would improve the external validity of the results and allow for more robust comparative analysis. To add further depth, future studies could incorporate qualitative methods, such as interviews with bank managers and key stakeholders. This would help contextualize quantitative findings particularly those derived from PLS-SEM by addressing real world challenges (e.g., limited ATM access in rural regions). Finally, comparing Islamic FinTech performance indicators with those of conventional banks (e.g., benchmarking Lotus Bank against GTBank) could reveal key differentiators in financial inclusion strategies. Additionally, future studies should consider integrating insights from global Islamic FinTech initiatives, thereby enriching the theoretical and empirical understanding of Shariah-compliant digital finance across diverse economic environments.

REFERENCES

Abedifar, P.; Giudici, P.; Hashem, S.Q(2017). Heterogeneous market structure and systemic risk: Evidence from dual banking systems.J. Financ. Stab.33, 96–119.

Abubakar, M.; Hassan, M.K.; Haruna, M.A(2019). Cryptocurrency Tide and Islamic Finance Development: Any Issue? In Disruptive Innovation in Business and Finance in the Digital World; Emerald Publishing Limited: Bingley, UK,

Abu-Bakar, M.M (2018). Shariah Analysis of Bitcoin, Cryptocurrency, and Blockchain; Blossom Labs, Inc.: Oakland, CA, USA,.

Ahmad, K., & Yahaya, M. H. (2023). *Islamic social financing and efficient zakat distribution: Impact of fintech adoption among the asnaf in*

Malaysia. *Journal of Islamic Marketing*. https://doi.org/10.1108/jima-04-2021-0102

Ali.H ,Mohamed.H ,Hashmi.H.S ,Hassan.M, 2020, Global Landscape of the Islamic Fintech: Opportunities, Challenges and Future Ahead, COMSATS Journal of Islamic Finance ,DOI:10.26652/cjif.4201923

Alsaghir, M. (2023). *Digital risks and Islamic FinTech: A road map to social justice and financial inclusion*. *Journal of Islamic Accounting and Business Research*. https://doi.org/10.1108/JIABR-10-2022-0262

Ameer, R.(2022) What Is Cryptocurrency: 21st-Century Unicorn—Or the Money of the Future? Blockgeeks. 2018. Available online: https://randles.co.za/2018/06/19/what-is-cryptocurrency-21st-century-unicorn-or-the-money-of-the-future

Asutay, Mehmet, Hakim Ahmad, and Abu Umar Faruq. 2021. Blockchain and Smart Contracts for Islamic Finance: A CriticalAssessment. International Journal of Financial Studies 9: 62.

Aysan, A.; Bergigui, F.; Disli, M(2021). Blockchain-Based Solutions in Achieving SDGs after COVID-19. J. Open Innov. Technol. Mark. Complex. 2021, 7, 151.

Aysan, A.F.; Bergigui, F. (2021) Sustainability, Trust, and Blockchain Applications in Islamic Finance and Circular Economy: Best Practices and Fintech Prospects. In Islamic Finance and Circular Economy; Springer: Singapore, pp. 141–167.

Bashir, Usman, Abu Jafar Mohammad Sufian, and Zeshaan Rasheed. 2020. Fintech and IslamicFinance: Digitalization, Development, and Disruption. Journal of Risk and Financial Management 13: 15.

Coinmarket cap (2022) Number of Cryptocurrencies Circulating, August. 2022. Available online: Coinmarketcap.com

Fouejieu, A., Sahay, R., Cihak, M., & Chen, S. (2020). Financial inclusion and inequality: A cross-country analysis. *The Journal of International Trade & Economic 9.*

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). *Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance*. *Long Range Planning, 46*(1–2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001

IFSB. (2018). exposure draft technical note 3 financial inclusion and islamic finance. Islamic financial services board. Development, 29(8), 1018-1048.

Islamic Financial Services Board. (2020). *Islamic Financial Services Industry Stability Report 2020*. Kuala Lumpur: Islamic Financial Services Board (IFSB).https://www.ifsb.org/sec03.php

Karim, A. K. M. Rezaul, and Mohammad Hasan. 2019. Islamic Finance and Fintech: A Critical Review. Journal of Islamic Accounting and Business Research 10: 296–311.

Karim, S., & Hasan, R. (2019). *Islamic FinTech in Bangladesh: Challenges and Opportunities*. ISRA International Journal of Islamic Finance, 11(2), 159–172. https://ifikr.isra.my/library/pub/9142

Khan, S.; Mir, U.; Shreem, S.S.; Alamri, S.; Al Amari, S(2018). Translation Divergence Patterns Handling in English to Urdu Machine Translation. Int. J. Artif. Intell. Tools , 27, 1850017.

Khan, S.N.; Mishra, R.B(2011). Translation rules and ANN-based model for English to Urdu machine translation. INFOCOMP , 10,36–47.34.

Khan, S.N.; Rabbani, M.R(2020). Artificial Intelligence and NLP-based Chatbot as Islamic Banking and Finance Expert. In Proceedings of the 2020 International Conference on Computational Linguistics and Natural Language Processing (CLNLP 2020), Seoul, South Korea, 20–22 July 2020.

Kılıç, G., & Türkan, Y. (2023). *The emergence of Islamic fintech and its applications*. *International Journal of Islamic Economics and Finance*. https://dergipark.org.tr/en/download/article-file/3267023

Knowledge and Research (2020) Malaysia Development Experience series)

Laldin, M.A(2018). FinTech and Islamic Finance; IFN Islamic Finance News; Routledge: London, UK; Volume 3, p. 67.

MassinissaAmeziane, TouatOthmane (2020) The role of Islamic Fintech in accelerating financial inclusion

Nakamoto, S (2022). Bitcoin: A Peer-to-Peer Electronic Cash System. 2008. Available online: Bitcoin.org

Nguyen, Quang Khai. 2021. Oversight of bank risk-taking by audit committees and Sharia committees: Conventional vs. Islamic banks. Heliyon 7: e07798.

Niforos, M.; Ramachandran, V.; Rehermann, T(2017). Block Chain: Opportunities for Private Enterprises in Emerging Market; International Finance Corporation: Washington, DC, USA, 2017; Available online: https://openknowledge.worldbank.org/handle/10986/28 962 (accessed on 4 September 2022).

Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. Journal of economic structures, 9(1), 37.

Othman, A.H.A.; Alhabshi, S.M.; Kassim, S.; Sharofiddin, A (2019). The impact of cryptocurrencies market development on banks' deposits variability in the GCC region. J. Financ. Econ. Policy 2019, 12, 161–184.

Rabbani, M. R. (2022). *Fintech innovations, scope, challenges, and implications in Islamic finance: A systematic analysis*. *International Journal of Computing and Digital Systems*. https://www.researchgate.net/publication/359040780

Rabbani, M.R.; Khan, S.; Thalassinos (2020), E. FinTech, Blockchain and Islamic Finance: An Extensive Literature Review. Int. J. Econ. Bus. Adm. 8, 65–86.

Rusydiana, S.A(2018) . Developing Islamic Financial Technology in Indonesia. Hasanuddin Econ. Bus. Rev., 2, 143–152.

Saba, Irum, Rehana Kouser, and Imran Sharif Chaudhry. 2019. FinTech and Islamic finance-challenges and opportunities. Review of Economics and Development Studies 5: 581–890.

Saepulloh, A. (2023). *Fintech-driven inclusion: Ethical challenges and digital opportunities in Islamic financial transformation*. *Oikos Journal*. http://journal.uinsgd.ac.id/index.php/oikos/article/view/46854

Sarma, M. (2012). Index of Financial Inclusion – A measure of financial sector inclusiveness. Berlin.

Satyawati, I.; Suroso, S.; Suryanto, T.; Nurjannah, S.D(2017). Does Financial Performance of Islamic Banking is better? Panel Data Estimation. Eur. Res. Stud. J. 2017, 20, 592–606. [CrossRef]

Seman, A. C., & Noh, M. S. M. (2024). *Concept of fintech and financial inclusion in the light of Shariah*. *Al-Basirah Journal*. https://sare.um.edu.my/index.php/ALBASIRAH/article/view/50796

Shahnawaz, A.P(2017). Sentiment Analysis: Approaches and Open Issues. In Proceedings of the International Conference on Computing,Communication, and Automation (ICCCA), Greater Noida, India, 5–6 May pp. 154–158.

Shahnawaz, N.; Mishra, R (2013). Rule-based approach for handling of case markers in English to Urdu/Hindi translation. Int. J. Knowl. Eng. Soft Data Paradig. 2013, 4, 138.

Shahnawaz, N.; Mishra, R(2013). Statistical machine translation system for English to Urdu. Int. J. Adv. Intell. Paradig. 2013, 5, 182.

Unal, I. M., & Aysan, A. F. (2022). *Fintech, digitalization, and blockchain in Islamic finance: Retrospective investigation*. *FinTech*, *1*(4), 29. https://www.mdpi.com/2674-1032/1/4/29

Unal, I.M.; Aysan, A.F (2022), Fintech, Digitalization, and Blockchain in Islamic Finance: Retrospective Investigation. FinTech 2022, 1, 388–398. https://doi.org/10.3390/fintech1040029

Utami, P.; Basrowi, B.; Nasor, M(2021). Innovations in the Management of Zakat in Indonesia in Increasing Entrepreneurial Interest and Poverty Reduction. IJISH Int. J. Islam. Stud. Humanit.

WBG. (2016). Global report on Islamic Finance A Catalyst for Shared Prosperity? Washington: Islamic Development Bank Group.

Wintermeyer, L(2022). The Future of Islamic FinTech Is Bright. 2017. Available online:

https://www.forbes.com/sites/lawrencewintermeyer/2017/12/08/the-future-of-islamic-fintech-is-bright/?sh=36e5709565fa

Woo, P. (2018). Fintech: a game changer Transforming sustainable Finance across Asia. The Asia-Pacific Business forum. KPMG.

World Bank (2020) International Bank for Reconstruction and Development, MALAYSIA Islamic Finance & Financial Inclusion

World Bank 2014. Global Financial Development Report 2014: Financial Inclusion [Online]

www. Statista.com

Yiunsa,.Arowona, Raimi &Ilo (2023), Does Financial Inclusion Reduce Poverty and Income Inequality? Evidence from Nigeria (2004-2021) – Submitted Article

Yu, S.; AlSaud, S. A(2021) Deep Learning Robo-Advisor Framework for Shariah-Compliant Investment into Chinese A-Shares. J. Islamic Financ. , 10, 18–25.

Zhu, Z.; Zhou, Z.Z (2016). Analysis and outlook of applications of blockchain technology to equity crowdfunding in China. Financ. Innov. 2016, 2, 29–36. [CrossRef]

Zulkhibri, Muhamed. 2019. Fintech and the Future of Islamic Finance: Opportunities and Challenges. Journal of Islamic Monetary Economics and Finance 5: 629–52.