

The Emergence of Islamic Fintech and Its Applications*

Gökmen KILIC

PhD Candidate, Bingol University, Business Administration Department, Accounting and Finance
182209202@bingol.edu.tr, [ORCID: 0000-0002-2462-1675](https://orcid.org/0000-0002-2462-1675)

Yavuz TÜRKAN

Assist. Prof. Dr., Bingol University, Business Administration Department, Accounting and Finance
yturkan@bingol.edu.tr, [ORCID: 0000-0002-0227-9346](https://orcid.org/0000-0002-0227-9346)

Abstract: Islamic Fintech is a disruptive force in the financial sector, promising increased financial inclusion, economic development, and a plethora of efficient, transparent, Shariah-compliant financial solutions due to its integration of technology with Islam's profound ethical principles. This paper examines "Islamic Fintech," a swiftly expanding component of the global financial ecosystem that combines financial technology with Shariah principles derived from the Holy Qur'an and the Sunnah. This burgeoning industry seeks to align finance with Islamic ethical and moral codes, with an emphasis on the prohibition of usury, speculation, and investments in immoral goods. This paper also examines the origins, applications, and regulatory governance of Islamic Fintech. It highlights the breadth of its innovative applications, such as Shariah-compliant digital banking, crowdfunding, and P2P lending platforms, as well as the incorporation of cutting-edge technology such as AI and machine learning for risk assessment and investment strategies, blockchain technology for Islamic cryptocurrencies, and Insurtech for the streamlined distribution of Islamic insurance products. In addition, the paper elaborates on the delineated role of RegTech in Islamic fintech, discussing its applications and potential. The emergence of Islamic Fintech highlights the global desire to combine ethical finance with modern technical advancements. The article considers Islamic Fintech's potential popular appeal as a preferred financial system, emphasising the balance between rapid technology innovation and deep-rooted Shariah norms.

Keywords: Islamic Fintech, Financial Computing Technologies, Regtech

JEL Codes: G23, O16, P40

*This study is derived from the doctoral thesis titled "Potential Impact of Open Banking on the Development of Islamic Fintechs: Portfolio Optimization with Machine Learning As An Islamic FinTech Application", conducted under the supervision of Assist. Prof. Dr. Yavuz TÜRKAN and supported under the Programme of International Research Fellowship 2214-A by The Scientific and Technological Research Council of Turkey.

Received/Geliş: 15.07.2023
Accepted/Kabul: 24.09.2023
Published/Yayın: 29.09.2023

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INTRODUCTION

The term “Islamic Fintech,” which refers to Islamic financial technology, has become more and more popular in the global financial ecosystem. The rising popularity of this industry is due to a desire to align financial services with Shariah principles, which are Islamic regulations drawn from the Holy Qur’an and the Sunnah (Prophet Muhammad’s (s.a.w) example). The advent of Islamic Fintech, its uses, and the regulatory systems that oversee it are all critically examined in this study.

Since the development of the internet and the spread of digital advances in the financial sector, the term “Fintech,” a portmanteau of “financial technology,” has been popular (Arner et al., 2015). Islamic Fintech is a highly specialized area that has recently gained popularity. Islamic Fintech, as opposed to conventional Fintech, is founded on Islamic financial principles, which forbid usury, speculation, and investing in things that are considered sinful (Iqbal & Mirakhor, 2011).

The concept of the Islamic moral economy is directly tied to the development of Islamic Fintech. Understanding that Shariah law encompasses a comprehensive moral and ethical framework that regulates economic activity is crucial (Asutay, 2007). We explain how Islamic Fintech fits with the Islamic moral economy approach, illuminating its fundamental principles and ethical ramifications.

The variety of emerging cutting-edge applications and use cases is one of Islamic Fintech’s most fascinating features. We look at important applications such as Islamic finance-compliant payment methods and digital banking (Qudah et al., 2023). Businesses and entrepreneurs can now access funds in a Shariah-compliant manner thanks to the adaptation of crowdfunding and P2P lending platforms for Islamic financing (Dawood et al, 2022). Another industry where technology is essential is wealth management, particularly with robo-advisory services that guarantee investments adhere to Islamic standards (Saad et al, 2020). Technology and Takaful (Islamic insurance) have been combined to create Insurtech, which streamlines the distribution of insurance products that adhere to Shariah (Rammal & Zurbruegg, 2010). Finally, the emergence of cryptocurrencies and blockchain technology has had significant effects on Islamic finance, leading to the creation of Islamic cryptocurrencies (Gomber et al., 2018).

The use of computing methods is a fascinating component of Islamic Fintech that is also covered in this study. Islamic finance has undergone a revolution thanks to the incorporation of Artificial Intelligence (AI) for risk assessment that complies with Shariah, machine learning for investment strategies, and deep learning for fraud detection. In addition, big data analytics, cloud-based Islamic banking, high-frequency trading, and algorithmic trading meth-



ods have become essential elements for Shariah-compliant financial services (Gheeraert, 2014).

Regulatory Technology, or RegTech, is another notable component of Islamic Fintech. RegTech in the world of Islamic finance refers to the utilisation of cutting-edge technology to ensure that financial operations are both efficient and in accordance with the evolving Shariah rules. As fintech solutions continue to improve, it is more crucial than ever to monitor them and ensure they adhere to the norms of Islamic finance. RegTech tools that employ AI and blockchain enable real-time regulatory reporting and compliance reviews. They also facilitate the automation of complex Shariah audit processes. As the standards for Islamic financial operations become more complex, RegTech can play an even larger role in ensuring that innovation and compliance do not conflict (Syamlan & Antonio, 2023).

As a result of fusing technology with Islam's deep moral and ethical precepts, Islamic Fintech is a disruptive force in the financial sector. This industry can increase financial inclusion, promote economic growth, and offer a variety of effective and transparent financial solutions compliant with Shariah. Islamic Fintech can overcome obstacles and keep thriving as a powerful force in the global financial scene with constant innovation and cooperation among stakeholders.

1. DEFINITION AND FRAMEWORK OF ISLAMIC FINTECH

Islamic fintech is a new area that has attracted a lot of interest lately. Islamic Fintech is fundamentally the fusion of Islamic financial concepts with financial technology. Shariah law, which derives from the Qur'an and the Sunnah and attempts to ensure fairness, openness, and moral financial transactions, is the cornerstone of Islamic finance (Ahmed, 2011).

It's crucial to outline the ideas that set Islamic finance apart from traditional finance in order to comprehend Islamic Fintech. The prohibition of Riba (interest), Gharar (uncertainty), and Maysir (gambling) are among the fundamental precepts. Islamic finance also prioritizes risk-sharing, asset-backing, and the ban on investment in sectors that are deemed Haram, such as those that involve alcohol, gambling, and pork (Hassan & Lewis, 2007).

Islamic Fintech aims to offer financial services that are innovative, effective, and compliant with Shariah principles through the use of contemporary technologies. An overview of the main elements and guiding principles of Islamic Fintech is given in Table 1.



Table 1: Components and Principles of Islamic Fintech

Components	Principles	Description
Shariah Compliance	Riba (Interest)	Prohibition of fixed or floating payments or interests
	Gharar (Uncertainty)	Prohibition of excessive uncertainty and ambiguity
	Maysir (Gambling)	Prohibition of gambling and speculation
Risk Sharing	Profit and Loss Sharing	Both parties must share profits and losses in transactions
Asset Backing	Tangible Assets	Financial transactions must have an underlying asset
Ethical Investments	Haram Screening	Avoidance of investments in alcohol, gambling, etc.

Source: (Hassan & Lewis, 2007; Ahmed, 2011)

Islamic Fintech covers a wide range of services and applications in terms of its framework. These offerings are made to cater to the demands of Muslims and anyone else looking for an ethical substitute for traditional financial services. Shariah-compliant digital banking, peer-to-peer lending, crowdfunding, payments and money transfer services, and wealth management are a few of the services offered (Hasan et al., 2020).

The potential effect of Islamic Fintech on global financial inclusion is likewise considerable. According to the World Bank, there are more than 1.7 billion unbanked adults worldwide, with a sizable fraction living in countries with a majority of Muslims (Demirgüç-Kunt et al., 2018). These people may be able to receive financial services that are in line with their religious convictions thanks to Islamic Fintech.

Islamic Fintech is also a component of the larger Islamic economy, which also includes modest clothing, halal food, Islamic tourism, and Islamic media and entertainment. These industries frequently need certain financial services and goods that adhere to Islamic values. As a result, Islamic Fintech can significantly contribute to the development of these industries (Wilson, 2014).

Nevertheless, there are obstacles to the growth of Islamic Fintech, such as the requirement for regulatory frameworks that uphold both technology innovation and Shariah standards. Additionally, it's crucial to inform consumers and investors about Islamic Fintech and make sure that technology is used in a way that truly supports Islamic financial principles.

In conclusion, Islamic Fintech is a fast-developing industry that has the



potential to advance economic growth, financial inclusion, and moral financial conduct in conformity with Shariah law. It is an inventive marriage of modern technology with conventional Islamic financial concepts that have the power to change the way in which finance is conducted.

2. THE EMERGENCE OF ISLAMIC FINTECH: ALIGNING WITH THE ISLAMIC MORAL ECONOMY PERSPECTIVE

The intricacies of the Islamic fintech framework, it becomes evident that it is not an isolated entity, but rather intertwined with the ethical framework rooted in Islamic values. The fundamental objective of Islamic fintech is to offer financial solutions that align with the ethical principles of Islam, hence being intrinsically linked to the moral economy of the Islamic faith.

The intersection of technology and Islamic moral economy presents an opportunity for Islamic fintech to emerge as a significant domain. This field enables the provision of financial transactions and services that adhere to Sharia law while also aligning with the elevated moral principles advocated by Islamic teachings. The aforementioned concept can be interpreted as a manifestation of Islamic moral economy facilitated by technology, with the aim of ensuring that contemporary financial solutions adhere to the moral and ethical principles mandated by Islamic philosophy.

The notion of the Islamic moral economy, which includes the ethical, social, and economic pillars supporting Islamic financial principles, and the development of Islamic Fintech are closely related (Asutay, 2012). With an emphasis on justice, equity, and welfare in economic operations, the Islamic moral economics framework offers an alternative to traditional economic theories (Chapra, 2000).

The Islamic moral economy's ban of Riba (interest), Gharar (uncertainty), and Maysir (gambling) serves as one of its guiding principles. According to El-Gamal (2006), these factors are thought to contribute to unfairness and inequality in economic interactions. By adhering to these criteria, Islamic Fintech can seek to harmonize financial innovation with the morals and ideals of the Islamic moral economy.

The emphasis on financial inclusion is another indication of how Islamic Fintech is in line with the Islamic moral economy. Particularly in emerging nations, a sizable percentage of the population is frequently excluded from traditional financial services. According to the World Bank (2022), approximately 29% of people worldwide do not have access to banking services. By providing digital financial services that adhere to Shariah, Islamic Fintech can increase financial inclusion for people who were previously excluded from the banking



system for ethical reasons.

Table 2: Comparison of Islamic Moral Economy and Conventional Economy

Aspect	Islamic Moral Economy	Conventional Economy
Basis of Transactions	Asset-backed, Profit and Loss Sharing	Interest-based
Ethical Considerations	High (Shariah Compliance)	Generally Low
Risk Sharing	Emphasized	Not emphasized
Financial Inclusion	Strong Focus	Weak Focus
Social Welfare	Integral	Often secondary

Source: (Chapra, 2000; El-Gamal, 2006)

Additionally, Islamic Fintech projects like P2P financing platforms and crowdfunding can be using at the forefront of advancing social welfare and entrepreneurship development. The emphasis on social welfare and economic justice in the Islamic moral economy is congruent with these platforms' provision of alternative funding sources for small- and medium-sized enterprises (SMEs) and social projects.

Islamic Fintech wealth management is uniquely different from other conventional wealth management tools since it adheres to Shariah rules. Islamic ethical factors, which include the impact on society and the environment, are taken into account when evaluating investments in addition to their financial returns.

Islamic Fintech must continually analyze and reevaluate its methods to ensure that technological advancements do not deviate from the core values and tenets of the Islamic moral economy. Industry stakeholders, including regulators, academics, and practitioners, must collaborate to ensure that Islamic Fintech adheres to its ethical foundations while utilizing the benefits of financial technology (Raza Rabbani et al., 2021).

Islamic fintech cultivates a financial ecosystem that can prioritize moral economy, hence can boost inclusion and enhance financial stability. The concept envisions a societal framework in which financial institutions can serve not only as instruments for economic advancement, but also as channels for promoting ethical values and communal welfare.

As we delve deeper into the realm of Islamic fintech, it becomes clear to uphold a strong ethical framework and recognize that the rise of Islamic fintech



serves as a promising indication of the potential to harmonize contemporary technologies with ethical economic principles. This convergence has the potential to cultivate a society that not only achieves economic prosperity but also upholds moral integrity.

In conclusion, by merging moral, social, and economic factors into financial innovation, Islamic Fintech represents an alignment with the Islamic moral economy. This alignment has the potential to improve social welfare, economic justice, and financial inclusion.

3. KEY APPLICATIONS OF ISLAMIC FINTECH: INNOVATIONS AND USE CASES

Islamic Fintech is quickly developing as it combines modern technology with Islamic financial principles as we can see in the Global Islamic Fintech Report 2022 (GIFT, 2022). This union has the opportunity to produce a wide range of apps that cater to numerous industries while upholding Shariah standards.

This section explores the exciting and diverse ways in which Islamic fintech has been orchestrating a new era of financial solutions that are not just innovative but also ethically grounded. Herein, we delve into the pivotal realms of digital banking and payment solutions, crowdfunding and P2P lending platforms, Takaful Insurtech, wealth management and robo-advisory services, and the integration of blockchain technology and cryptocurrencies into the Islamic financial sector. Through this exploration, we seek to uncover the unique functionalities and use cases that stand as a testament to the rich potential of Islamic fintech in fostering a financial ecosystem that is robust, modern, and morally grounded.

3.1. Digital Banking and Payment Solutions

Digital banking and payment solutions in Islamic fintech enable safe, fast and convenient transactions while preserving the fundamental principles of Islamic finance, which emphasize transparency.

Contemporary Islamic financial institutions provide mobile banking services. These mobile platforms include services like as transferring funds, making bill payments, and accessing account statements, all in accordance with Sharia-compliant financial products and services.

The Islamic fintech sector is also currently experiencing adoption of contactless payment methods. These payment methods prioritise ethical transactions and utilise technology to offer enhanced convenience and safety. We also can see that QR code payments involve the scanning of a QR code Islamic fin-



tech companies have successfully included QR code payment solutions into their platforms. This integration has enabled the provision of efficient and secure payment choices, resulting in reduced transaction durations and enhanced convenience in sharing payment details.

Digital payment systems, which enable customers to execute transactions via mobile devices, are another important component. “Zilzar Life,” which facilitates Halal transactions and has attracted users from all around the world, is one such application (Zilzar Life, 2021).

Digital wallets guarantee conformity to ethical principles and compliance with Islamic law during the execution of transactions and provision of services. These wallets provide a transaction experience while connect to Halal principles by refraining from engaging in businesses such as gambling, alcohol, or arms.

The digitalization of banking services is a component of digital banking. In terms of Islamic finance, this entails the development of websites that provide services like financing, investing, and savings in accordance with Shariah. One such is Maybank Islamic in Malaysia, which provides numerous online services that adhere to Shariah (Maybank, 2021).

These digital alternatives to traditional banking offer accessibility, effectiveness, and convenience while also having ability to address the Shariah concerns of a sizable Muslim population.

3.2. Crowdfunding and P2P Lending Platforms

In the dynamic and ever-changing field of Islamic fintech, crowdfunding and peer-to-peer (P2P) lending platforms emerge as effective mechanisms for investments and financial transactions. These platforms promote inclusiveness, transparency and socioeconomic empowerment by combining Islamic principles with contemporary financial technology. We can categorize crowdfunding in three types as Table 3.

Table 3: Types of Crowdfunding

Type	Features
Donation-Based	Platforms where people can give money to campaigns without expecting any money back. This is in line with the Islamic concept of charity.
Reward-Based	Backers get a good or service in exchange for their money, making the deal halal and moral.
Equity-Based	Investors get shares in an enterprise or venture, which encourages equity participation that is in line with the law of the Sharia.



EthisCrowd, a platform for financing Islamic real estate, serves as an illustration. It enables people to pool their money and participate in profitable social housing projects that also benefit society (EthisCrowd, 2021).

Peer-to-peer lending and Islamic crowdfunding are financial intermediation approaches that match lenders and borrowers in a way that complies with Shariah. They are designed to adhere to Islamic finance’s fundamental concepts of profit and loss sharing and asset-backed financing (Muryanto et al., 2021). P2P lending can be put into three groups, as shown in Table 4.

Table 4: Types of P2P Lending and Their Principles

Type	Features
Qard Hassan	Loans with no interest that emphasise kindness and where the lender only wants the capital amount back.
Mudarabah	Profit-sharing agreements in which the gains are split in a way that has already been decided.
Musharakah	There are joint venture deals in which the profits and losses are shared.

Blossom Finance (2023) is an Islamic peer-to-peer (P2P) microfinance platform that aims to facilitate Sharia-compliant microfinancing options. The site is designed to promote ethical financing practices and contribute to economic growth.

Platforms for Islamic crowdfunding and peer-to-peer financing can have opened up a new frontier in the Islamic financial ecosystem. These platforms point to an encouraging future for Islamic financial technology, as they create potential for halal and inclusive investments that are founded on the Islamic principles of economic justice and welfare.

Islamic fintech envisions a future in which finance is not just a tool for fostering economic progress, but also a way of fostering social harmony, transparency, and economic justice. This future can be envisioned by cultivating a financial landscape that places an emphasis on ethical investments and collaborative financial engagements.

3.3. Takatech

The Islamic equivalent of traditional insurance, takaful is founded on the concepts of risk sharing and collaboration. Applications like automated underwriting, claim management systems, and customer support chatbots are examples of Insurtech in Takaful.

The Islamic financial ecosystem has experienced the emergence and ex-



pansion of Takaful, a Sharia-compliant alternative to conventional insurance. Takaful operates based on the concepts of mutual help and risk-sharing. In recent times, there has been a notable potential in the adoption of technology in the Takaful industry, commonly referred to as 'Insurtech.' This integration can result in the advancement and improved effectiveness of Takaful services. This section examines the phenomenon of Takaful Insurtech, its global competitive landscape, and its significance in catering to the financially underserved community.

Takaful is based on Islamic concepts that advocate for the practise of cooperative risk-sharing and the prohibition of uncertainty (gharar) and gambling (maysir). Participants make financial contributions to a collective fund that is utilised to compensate for any losses experienced by any member of the group. We can state takaful's model in four models as Table 5.

Table 5: Takaful Models

Models	Description
Mudarabah (Profit-Sharing Model)	The participants and owners have reached a consensus to jointly distribute both financial gains and losses.
Wakalah (Agency Model)	In a pure agency contract, the operator receives compensation in the form of a fee.
Wakalah - Waqf Model	Taking the wakalah plan for funding and adding an endowment fund (waqf) to hold takaful donations. Extra money isn't given back to the players; it's kept for future use or to help good causes.
Hybrid (Wakalah & Mudarabah)	Contains parts of both the Wakalah and Mudarabah types. For underwriting and running costs, a wakalah fee is charged, and investments are handled on a mudarabah basis.

The incorporation of technology into the Takaful industry has facilitated the development of inventive solutions, including the use of digital platforms for policy management, the implementation of blockchain technology for claim processing, and the adoption of artificial intelligence-driven risk assessment tools. These advancements have contributed to enhanced operational efficiency and improved user comfort.

Noor Takaful in the UAE is one such; it has adopted Insurtech to provide customers with a streamlined online experience for Takaful products, including automating the claims process (Noor Takaful, 2021).

Takaful faces strong competition from well-established insurance companies in a global context. We can examine the comparison of Takaful and global



insurance in Table 6.

Table 6: Takaful vs Conventional Insurance

Aspects	Takaful	Conventional Insurance
Foundation	Cooperative risk-sharing	Commercial risk transfer
Investments	Sharia-compliant	Can be non-compliant
Revenue Model	Based on helping each other and giving back to the community	Based on premiums

Takaful Insurtech is a keyway to reaching people who don't have bank accounts because it provides easy-to-use, digitalized, and affordable insurance options that follow Islamic principles. Two main strategies can be suggested to reach the Unbanked population in Table 7.

Table 7: Strategies to Reach Unbanked Population

Strategy	Description
Micro-Takaful	Designed for low-income individuals, it provides inexpensive payments while covering essential risks.
Mobile Applications	Providing easy access to Takaful services via smartphones, hence reaching a larger clientele.

An Insurtech company in Malaysia can be given as an example of digital Takaful services through an intuitive mobile app, ensuring accessibility for the unbanked population (Salam Takaful, 2023).

Takaful Insurtech is a harmonic blend of tradition and modernity, creating a system based on mutual aid, risk-sharing, and ethical considerations and a beacon of hope in promoting financial inclusion and providing security to the weakest sectors of society, with a focus on harnessing technology to reach the unbanked people. It can envision a future in which insurance is more than just a financial tool, but also a medium for fostering community well-being, based on the rich principles of Islamic finance.

3.4. Wealth Management and Robo-Advisory Services

Islamic wealth management involves Shariah-compliant financial planning, portfolio management, and investment guidance. Robo-advisory services, which use algorithms to provide investment advice, have had a disruptive impact.

Robo-advisors refer to digital platforms that employ algorithms and artificial intelligence to deliver automated financial advising and investment management services. The mentioned platforms have been designed in accordance



with Islamic principles in order to provide robo-advisory services that are compliant with Sharia law. We can categorize its components as Table 8.

Table 8: Components of Robo-Advisory Services

Components	Descriptions
Algorithm-Based Advice	Using algorithms to analyse market data and give financial advice that is in line with Sharia.
Automated Portfolio Management	Using automated tools to keep an eye on portfolios and make sure purchases follow Sharia rules.

Wahed Invest is an example of a Robo-advisor, using algorithms to build and manage diversified portfolios of Shariah-compliant assets. It ensures that the investments are in line with Islamic ethical concerns while taking into account the individual's risk tolerance and investment goals (Wahed Invest, 2021).

The integration of technology with Islamic principles in the form of Islamic wealth management and robo-advisory services can significantly transform the financial industry. Furthermore, it can promote inclusivity by expanding its reach to a wider range of individuals, such as the technologically proficient younger demographic and those residing in geographically isolated areas. This enables them to conveniently participate in halal investments, therefore providing them with a chance to be involved in this financial activity.

It can present a comprehensive analysis of select Islamic fintech enterprises specialising in robo-advisory and wealth management in Table 9. The table highlights the distinctive areas of expertise of each company and provides a concise overview of their respective service offerings.



Table 9: Components of Robo-Advisory Services

Company Name	Specialty	Brief Description
Wahed Invest	Robo-Advisory Services	A global halal robo-advisor that gives people access to halal investment possibilities through an automated platform and a diversified portfolio.
Sarwa	Robo-Advisory Services	It is the first robo-advisory tool in the Middle East. Its goal is to make investing in globally diversified portfolios of low-cost index funds easier and more accessible.
Qardus	Wealth Management	Even though Qardus is mostly a P2P lender, it also has investment chances where people can invest in asset-backed halal products.
Yielders	Wealth Management	A UK-based Islamic financial company that follows ethical and Sharia-compliant principles and makes it easier for people to invest in real estate. It gives people a chance to take part in real estate projects that are funded by crowd-sourcing.
Elipsa	Wealth Management	A platform that helps ensure Sharia compliance in the wealth management field by giving personalised financial advice and investment solutions that are powered by AI.
Simply Ethical	Robo-Advisory Services	Offers a wide range of financial goods and services that are in line with Sharia, including an automated advisory platform that helps investors make smart halal investments.
Islamicly	Wealth Management & Advisory	An app that helps find and track Shariah-compliant securities around the world. This helps investors keep a halal portfolio and make sure their investment plans are in line with Islamic law.
Sharia-Portfolio	Wealth Management	Offers wealth management services that are in line with Sharia, as well as personalised financial advice.
Habib Bank AG Zurich (HBZ)	Robo-Advisory Services	Offers a range of Sharia-compliant products and has recently gotten into robo-advisory, using technology to make halal investments easier through investment strategies that are driven by algorithms.

Wealth management and robo-advisory services are being provided by the mentioned firms using cutting-edge technological tools. These marketplaces can play a critical role in promoting ethical investing options that are in line with Islamic beliefs, as well as boosting financial inclusion. It's important to keep in mind that certain firms' service offerings may extend beyond wealth management and robo-advisory to include other forms of financial guidance as well.



3.5. Islamic Cryptocurrencies and Blockchain Technology

The emergence of cryptocurrencies and blockchain technology has fundamentally can transform the worldwide financial environment, yielding noteworthy ramifications for the field of Islamic banking. The advent of cryptocurrencies poses both obstacles and opportunities within the realm of Islamic banking. The inherent characteristics of cryptocurrencies, such as decentralisation and digitization, can fit with the principles of Islamic finance, hence facilitating financial inclusion. The ongoing discourse revolves around how the suitability of cryptocurrencies can use a financial tool within the framework of Islamic fintech.

In light of the inherent volatility observed in cryptocurrencies, the adoption of stable coins, which are supported by actual assets such as gold or fiat currency, could potentially present a more congruent solution with the principles of Islamic finance.

Islamic Fintech has incorporated blockchain and cryptocurrency technology. For instance, Stellar is a cryptocurrency platform that may be used by Islamic financial institutions because it has received certification as Shariah-compliant (Stellar, 2021). We can see some other Islamic cryptocurrencies in Table 10.

Table 10: Examples of Islamic cryptocurrencies

Name	Description	Unique Function/Application
HB Token (Halal-Chain)	Built on the Ethereum platform and geared towards the supply chain of the Halal food business.	Ensures the authenticity and traceability of Halal foods.
ADAB Solutions	Only Shariah-compliant initiatives are listed on the First Islamic Crypto Exchange (FICE).	A Shariah-compliant cryptocurrency trading facility.
Noorcoin	Halal-centric cryptocurrency based on Islamic principles.	Integrates blockchain technology for Halal sector transparency and traceability.

Additionally, blockchain technology is being investigated for uses in Islamic finance. Integrating Blockchain into Islamic fintech has transformative potential, as it aligns perfectly with the emphasis on transparency, trustworthiness, and equity in Islamic finance principles. Its immutable record-keeping can streamline the zakat collection and distribution processes, thereby nurturing donor confidence. Moreover, the technology facilitates the automation of Shariah-compliant contracts, efficient cross-border remittances, and the tokenization of tangible assets, which is essential for fields such as Islamic real estate investments and sukuk (Selcuk & Kaya, 2021). Some of examples about blockchain-based Islamic fintech projects given in Table 11.



Table 11: Examples of blockchain-based Islamic fintech projects

Financial Institution	Country	Blockchain Initiative/Use-case
Al Rajhi Bank	Saudi Arabia	Services for international money transfers utilising blockchain technology.
Abu Dhabi Islamic Bank (ADIB)	UAE	Utilise blockchain for trade finance and intelligent contracts.
Islamic Development Bank (IsDB)	Multinational	Partnered with entrepreneurs to investigate the potential of blockchain for Islamic finance solutions.
Kuwait Finance House (KFH)	Kuwait	Ripple's blockchain-based solution for international transactions was evaluated.
Emirates Islamic Bank	UAE	Using blockchain technology to improve finance services and security.
Finterra	Singapore	Provides a blockchain-based platform for administering end-to-end Islamic financial services, including waqf (charitable trust) and crowdfunding.

In summary, Islamic Fintech is a developing industry that combines financial technology breakthroughs with the moral and ethical tenets of Islamic banking. These technologies, which range from blockchain to digital banking, aim to offer effective, open, and moral financial services to a large worldwide audience.

4. APPLICATIONS OF ISLAMIC FINTECH: FINANCIAL COMPUTING PERSPECTIVE

Numerous applications that enhance efficiency, security, and customer experience have emerged as a result of the integration of computing technologies with Islamic fintech. In the context of Islamic finance, this section examines a number of such applications and their ramifications.

The field of Islamic finance currently has a significant capacity for change as it incorporates financial technology (fintech) developments that comply with Sharia law. This integration can reach incredible levels, involving the use of three powerful technologies: Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL). Artificial intelligence (AI) can help achieve this by automating the tracking of Islamic investments and transactions and providing predictive assessments to help make real-time decisions. In contrast, machine



learning (ML) can serve as a powerful tool for formulating Islamic investment strategies as it has the capacity to analyze comprehensive datasets, adapt and improve its methods, and distinguish investment opportunities that comply with ethical principles mandated by Islamic law.

Deep Learning has the ability to solve critical problems in maintaining the integrity of Islamic finance using fraud detection and compliance measures. It rigorously examines transaction data to identify anomalies and ensure compliance with regulatory standards. Automating compliance monitoring through the interpretation of complex Shariah laws and regulations can contribute to establishing a transparent and secure ecosystem. The integrated use of artificial intelligence (AI), machine learning (ML) and deep learning (DL) in the Islamic fintech space not only guarantees adherence to Sharia principles and ethical standards in financial operations, but also marks a unique, remarkable era.

4.1. AI for Shariah-Compliant Risk Assessment

Artificial Intelligence (AI) plays a crucial role in risk assessment in the financial industry, enabling financial institutions to make informed decisions through the analysis of enormous datasets and the provision of accurate risk forecasts (Gai, Qiu, & Sun, 2018). In the context of Islamic finance, artificial intelligence has been effectively integrated to ensure Shariah-compliant risk assessment, thereby contributing to the efficiency, transparency, and resiliency of Islamic financial system.

Due to its adherence to Islamic laws that prohibit interest (riba), uncertainty (gharar), and wagering (maysir), risk assessment in Islamic finance differs from that of conventional finance (Hassan, Antoniou, & Paudyal, 2005). Therefore, AI in Islamic finance must take these prohibitions into consideration when assessing risk.

Risk assessment using artificial intelligence (AI) has been done in Shariah-compliant frameworks. Islamic financial institutions may make sure that investments and products are compliant with Shariah law and risk appetites by utilizing AI. For example, banks can automate the process of stock screening for Shariah compliance by employing AI.

4.2. Machine Learning for Islamic Investment Strategies

Machine Learning (ML), a subset of Artificial Intelligence, is essential to the development of optimal investment strategies. ML algorithms can predict future trends and make informed investment decisions by learning from historical data and patterns.

ML algorithms can be used to filter Shariah-compliant equities based on business activities and financial ratios of the companies analyzed according to



Shariah-screening rules. On the basis of these factors, support vector machines and decision tree algorithms can categorize equities as Shariah-compliant or non-compliant.

Machine learning can optimize portfolio selection in Islamic finance. ML algorithms can recommend optimal portfolio compositions that maximize returns while maintaining Shariah compliance by analyzing past performance, market trends, and risk factors (Gai, Qiu, and Sun, 2018).

Robo-advisors are a notable application of machine learning in Islamic investment strategies. Robo-advisors are digital platforms that offer algorithm-driven, automated financial planning services with minimal human oversight. In the context of Islamic finance, robo-advisors analyse large datasets to provide Shariah-compliant personalized investment advice to clients.

The implementation of machine learning in Islamic investment strategies is not, however, without obstacles. It calls for high-quality, pertinent, and clean data, interpretability of machine learning models, and privacy and security considerations.

In conclusion, the use of machine learning for Islamic investment strategies has the potential to increase efficiency and personalization in the Islamic finance industry, but its effective application requires addressing certain challenges and assuring the alignment of ML applications with Shariah principles.

4.3. Deep Learning in Fraud Detection and Compliance

Deep learning, a sophisticated subset of machine learning, has been increasingly utilised in the financial industry for fraud detection and compliance. These algorithms are capable of learning from large datasets and recognizing intricate patterns, allowing for more effective and efficient fraud detection.

The implementation of deep learning is indispensable for ensuring Shariah compliance and detecting fraudulent activities. First, deep learning algorithms can detect anomalies or discrepancies in financial transactions that may indicate fraudulent activity. They can learn and adapt from each transaction, making them remarkably effective at detecting fraudulent patterns and preventing potential hazards (Hodge & Austin, 2004).

Given the ethical and moral principles that govern the operations of Islamic financial institutions, compliance is an essential component of Islamic finance. Deep learning algorithms can be used to monitor and verify compliance, ensuring that all transactions and operations adhere to the Islamic law principles. This may entail analysing complex financial structures, analysing intricate contractual agreements, and confirming that these entities adhere to Shariah principles.



Anti-Money Laundering (AML) is one area where deep learning has been utilised in Islamic finance. Deep learning algorithms can shift through immense quantities of transactional data to identify suspicious patterns and flag possible instances of money laundering.

There are challenges associated with the application of deep learning to fraud detection and compliance. It requires vast quantities of high-quality data, sophisticated technical expertise, and robust computational resources. It is also essential to ensure the interpretability and transparency of deep learning models.

Finally, the implementation of deep learning for fraud detection and compliance in Islamic finance can enhance the integrity, dependability, and robustness of Islamic financial systems. However, to assure successful integration, the obstacles must be carefully addressed, and the applications must be in accordance with the principles of Islamic law.

The aforementioned technologies, including artificial intelligence (AI), machine learning (ML), deep learning, algorithmic trading, cloud computing, and big data analytics, are not exclusive to the domain of Islamic fintech. The computational techniques are widely applicable and have been utilised in many industries and for a multitude of objectives. The notable aspect of these entities is in their implementation within the framework of Shariah-compliant financing. We can compare the computing technologies in Islamic Fintech in Table 12.

Table 12: Comparison of Computing Technologies in Islamic Fintech

Technology	Application in Islamic Fintech	Example	Reference
Artificial Intelligence (AI)	Shariah-compliant risk assessment	Automating stock screening for Shariah compliance	(Gai, Qiu, & Sun, 2018)
Machine Learning (ML)	Islamic Investment Strategies	Developing portfolios of Shariah-compliant stocks	(Adeyemi & Nakhoda, 2018)
Deep Learning	Fraud Detection and Compliance	Neural networks identifying patterns indicating fraud	(Hodge & Austin, 2004)
Algorithmic Trading	Shariah-Compliant Trading Strategies	Customized algorithms for trading halal stocks	(Wahed Invest, 2021)
Cloud Computing	Islamic Banking and Financial Services	iMAL by Path Solutions	(Path Solutions, 2021)
Big Data Analytics	Shariah-Compliant Investment Decisions	Analysis of Shariah-compliant stocks' performance	(Sultan & Bechter, 2019)



The above applications indicate a clear demand for start-ups to engage in innovative practises and offer solutions within the domain of Islamic fintech. Companies who possess the ability to harmonise technology breakthroughs with the principles of Shariah have the potential to capture a substantial market share, given the considerable size of the global Muslim community.

In brief, the broad applicability of these technologies, along with their distinct utilisation within the framework of Shariah-compliant financial practises, renders them a subject of significance within the domain of Islamic fintech.

5. REGTECH IN ISLAMIC FINTECH

Regulatory Technology (RegTech) is an important asset in this space as it leverages technological advances to facilitate organizations to achieve regulatory compliance with increased efficiency and reduced spending. It is important to understand the role and possibilities of RegTech in the Islamic fintech space, focusing on its capacity to ensure regulatory compliance, increase operational efficiency and foster innovation. RegTech's potential in helping Islamic fintech businesses navigate the regulatory environment effectively should not be overlooked.

RegTech is a relatively new industry that emerged in the wake of the 2008 financial crisis. It employs cutting-edge technology such as artificial intelligence (AI), machine learning (ML), and big data in order to assist businesses in more effectively complying with laws. In the context of Islamic financial technology, regulatory technology (RegTech) can be of assistance in ensuring that all financial goods and transactions comply with Sharia law, thereby cultivating a system that is founded on compliance and trust. Its applications can be found in a variety of fields, including as transaction monitoring, identity management and control, regulatory reporting, and risk management.

Regulatory technology (RegTech) solutions play a crucial role in enabling the continuous monitoring of financial transactions in real-time. This capability is particularly important in the context of Islamic finance, where adherence to Sharia standards is necessary at every stage of the transaction process. We can see the applications of RegTech in Islamic Fintech as shown Table 13.



Table 13: RegTech Applications in Islamic Fintech

Application Field	Description	Application in Islamic Fintech
Risk Management	Using technology to assess and handle risks.	Syfe: A robo-advisor that offers investment portfolios with risk management based on Islamic principles.
Identity Management and Control	Establishing digital identity solutions that are compliant with regulatory standards and are secure.	HelloGold: A gold trading platform with identity management security.
Regulatory Reporting	Automating the regulatory reporting procedure to ensure transparency and compliance.	RegAlytics: Providing solutions for automated regulatory reporting according to the Sharia law.
Transaction Monitoring	Real-time monitoring of transactions to identify immediately any non-compliant activities.	OneGram: A digital currency secured by gold that ensures compliance through real-time monitoring.

Upon contemplation of the development of RegTech within the Islamic fintech domain, it can become apparent that it serves as more than simply a supplementary instrument, but rather a crucial foundation that guarantees the longevity and advancement of the industry. Through the utilisation of technology, the facilitation of Shariah-compliant financial transactions establishes a foundation for a financial ecosystem that is more inclusive and ethical. This ecosystem is organically congruent with the Islamic ideals of equity, transparency, and shared wealth.

Furthermore, RegTech serves as a fundamental element in mitigating the complexities associated with regulatory compliance. Consequently, the accuracy and efficiency of these operations are enhanced. In addition, the analytical functionalities of RegTech can contribute to the real-time surveillance and documentation, promoting a flexible framework that can promptly address any instances of non-compliance, thereby safeguarding the integrity of Islamic financial activities.

CONCLUSION

Islamic Fintech, which represents the intersection of Islamic finance principles and digital innovation, is a rapidly growing component of the global financial ecosystem. The inherent ethical and moral dimensions rooted in Shariah principles, coupled with the disruptive power of technology, have the potential to reshape the financial landscape, thereby increasing financial inclusion and



fostering economic growth while ensuring adherence to a religious and ethical framework (Arner et al., 2015).

The proliferation of Islamic Fintech applications demonstrates the adaptability and innovative potential of this discipline. Solutions such as Shariah-compliant digital banking, crowdfunding and P2P lending platforms, as well as robo-advisory services, Insurtech, and Islamic cryptocurrencies, demonstrate the breadth of technological innovation within the confines of Islamic finance principles (Gomber et al., 2018). In addition, the revolutionary incorporation of Artificial Intelligence, machine learning, and deep learning techniques in areas such as risk assessment, investment strategies, and fraud detection has given Islamic Fintech a new dimension (Gheeraert, 2014). The use of big data analytics, cloud-based banking, and high-frequency and algorithmic trading methods indicates that Islamic Fintech is making significant strides in providing Shariah-compliant financial services that are efficient and transparent.

Within the Islamic financial technology industry, RegTech can play a role as a leading light, illuminating the path for entities as they navigate the of Sharia compliance using cutting-edge technologies. RegTech has emerged not just as a tool, but also as a catalyst that fosters compliance, efficiency, and creativity. This can ensure a future in which Islamic finance is both technologically competent and Sharia-compliant.

Islamic Fintech is essentially the combination of Islamic moral and ethical principles with cutting-edge technological innovation. This integration creates a disruptive force in the financial sector that not only offers efficient and transparent financial solutions, but also coordinates them with a set of principles that promote moral and ethical behaviour. This industry is a major player in the global financial landscape due to its ability to surmount obstacles, innovate continuously, and foster cooperation among stakeholders. The prevalence of Islamic Fintech highlights the widespread acceptance of ethical finance, demonstrating that the integration of technology with ethical principles is not limited to a certain niche, but rather a global ambition. Although the trajectory of technology breakthroughs appears positive, it is imperative for stakeholders to uphold a delicate equilibrium between these rapid developments and the enduring principles of Shariah. The prospect of a future in which Islamic Fintech emerges as a widely adopted option, rather than a mere alternative, is a captivating notion that underscores the worldwide attraction of financial systems rooted in ethical principles. The advancement of Islamic Fintech necessitates a sustained dedication.

The path forward for Islamic Fintech requires an ongoing commitment to innovation, a focus on ethical and moral financial conduct, and an unwavering commitment to addressing the challenges of standardisation and regulatory governance. Its ability to promote financial inclusion and economic develop-



ment, combined with its conformity with Shariah principles, demonstrates its potential as a transformative force in the financial world. Islamic Fintech has the potential to transform the financial landscape by making it more inclusive, ethical, and effective.

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