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The Dark Side of Fintech

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ABSTRACT

Fintech is one of the most prominent manifestations of the contemporary digital revolution, reshaping the way financial services are delivered through innovative solutions including electronic payments, digital lending, smart insurance, and automated wealth management. It has also contributed to expanding financial inclusion and stimulating innovation in the business environment. Fintech has imposed a new reality on the global financial sector, transcending the boundaries of traditional institutions and relying on advanced tools and technologies such as artificial intelligence, blockchain technology, and big data analysis. The dark side of fintech cannot be ignored. Technology, as currently formulated, is not in the interest of the poor classes, as the technologies available today do not necessarily respond to the needs of low-income and vulnerable groups. They are often developed by companies seeking profit and, of course, responding to wealthier markets. Algorithms may harbor unintended biases that lead to discrimination in service delivery. The use of AI in security surveillance raises serious concerns about privacy and individual freedoms. These challenges are driving growing demands for global regulatory frameworks that ensure the ethical and responsible use of technology. Hence, bridging this gap requires a collective effort from financial technology service providers and social and legislative bodies to achieve the concept of financial technology empowerment to encompass all segments of society. Therefore, this study aims to contribute to the digital finance literature by presenting the risks associated with financial technology, especially those related to social equality.

Keywords: Dark Side, FinTech, Financial Inclusion, Emerging Economies, Perceived Risk.

INTRODUCTION

In recent years, the world has witnessed a radical transformation in the way financial services are delivered and managed due to financial technology (FinTech), which integrates modern technologies, such as blockchain and big data analytics, into the financial sector. This leads to improved efficiency and the delivery of innovative financial services, reshaping the future of financial services. Financial technology is one of the most innovative fields of the modern era, as this technology provides digital solutions that facilitate financial transactions and improve the user experience. Through the creation of central bank digital currencies, it has also contributed to creating new investment opportunities that facilitate the relationship between customers and digital banks. These have gained widespread popularity with the development of financial technology tools. It also provides new opportunities for economic growth.

Fintech has reshaped the global financial system, leading individuals and institutions to embrace new trends in fintech. Fintech provides new tools for investing, financing, and payments, enabling investors and individuals to access previously limited embedded financial services.

Global fintech market size is estimated at $340.10 billion in 2024 and is expected to reach approximately $1.12 trillion by 2032. The sustainable fintech market size reached $4.18 trillion in 2023, with expectations of rising to $28.71 trillion by 2033. The Islamic fintech market is expected to reach $138 billion in 2024, Fortune Business Insights (2025)

FinTech refers to the provision of financial services through technology-enabled solutions, typically supported by algorithmic processes, which streamline and automate the provision of services and create new opportunities, revenue streams, and new business models (Ogunfowoke, 2019; Ozili, 2022). FinTech evolved from analog-based systems to sophisticated digital technologies since its inception, with financial and banking institutions being the initial drivers. Today, the FinTech ecosystem comprises a wide range of innovations like (AI)-powered platforms, blockchain technology, virtual currencies, crowdfunding platforms, Insurtech products, and central bank digital currencies (Arslan et al., 2022; Bollaert et al., 2021).

World Bank report indicates that Fintech companies are now established in more than 189 countries globally, a reflection of its deep and broad reach into the world financial system (Adrian & Pazarbasioglu, 2019).

The financial institutions have had both challenge and opportunity, since Fintech opens access to financial services for unbanked individuals and challenges conventional procedures. Fintech companies have provided the financial sector with a significant impetus over the past few years. It can thus spur economic growth through technology and financial innovation that reduce the cost of financial services, moderate risk involved in financial transactions, lower customers' costs, and quicker service, all driving improved market value and financial performance and hence greater financial intermediation. The Internet and mobile money have given consumers convenient, safe, and quick services, and therefore a common payment mode (Mogaji et al., 2022). Machine learning and big data drive this revolution, which amplifies the enormous potential and upside of Fintech for services provision (Kshetri & Loukoianova, 2022).

Social workers might believe that Fintech is a helpful ingredient in facilitating clients' ability to access their needs, but its effects are polarized. Most (64%) of the global population used over one type of Fintech in 2019, as opposed to only 15% in 2015 (Hatch, 2019). Fintech promotes financial inclusion – access to financial services – as a means to support the United Nations' Sustainable Development Goals for improving quality of life. It can help lower-income and economically marginalized people to recover from financial shocks and reduce food insecurity, smooth cash flow. Moreover, it can help them to access remittances and government transfers, secure credit to expand income-generating activities (IGAs) and small business revenues and save.

Despite the numerous advantages offered by financial technology, it is important to acknowledge that, like any technological advancement, FinTech also possesses a distinct "dark side" that poses potential threats to institutions, individuals, and society at large (Anshari et al., 2021; Bollaert et al., 2021).

At the organizational level, the adoption of FinTech can lead to adverse effects such as the spread of high-frequency trading activities and the intensification of workers' grievances because of labor displacement (Cheng et al., 2022). At the individual level, FinTech innovations have been linked to issues related to over-personalization of services (Gutierrez et al., 2019), the generation of techno-stress (Yeh et al., 2020), heightened exposure to financial fraud (Akomea-Frimpong et al., 2019).

At a social level, global discussions have centered on ethical issues concerning the application of financial technologies. They span from inadequate regulation, less human interaction in service delivery, concentration of wealth as a result of hyper-personalization, labor displacement, and systemic biases in machine learning systems (Ashta & Herrmann, 2021).

Study Objective

The features which make fintech unique are the convenience of financial services availability through online services, enabling individuals and businesses to enjoy financial services anywhere at any time at their fingertips.

Even though financial progress, safeguarding customers, and inclusion are pertinent goals of fintech, there are some new challenges which could be a result of digitization, such as cybersecurity threats due to the increasing rate of technological revolution and adoption of virtual systems for financial activities, cybersecurity threats, and data protection. Therefore, there may be challenges for the financial processes which are being digitized as much for businesspersons as for customers.

Therefore, this paper attempts for the first time filling a literature gap in the mainstream fintech literature presenting original results towards the dark side of FinTech, i.e., its undesirable impacts.

METHODOLOGY

This research paper utilizes qualitative research methods to achieve its intended objective. The methodology includes a comprehensive review of the dark side of fintech and regulatory frameworks, through a literature review. Previous work was examined to extrapolate theories and develop a conceptual framework on the risks associated with adopting financial technology. The qualitative analysis helped to discover and discuss the various types of risks and their relationship to the adoption of financial technology and the resulting disruptions in the financial services system.

Studies that Highlight the Dark Side of FinTech

Rapid spread of Fintech can significantly improve financial inclusion, particularly in emerging economies. Fintech has the potential to reduce inequalities, and promote sustainable economic development, low transaction costs, account management fees, and trading commissions. However, there are potential side effects primarily due to the lack of adequate regulation in the Fintech companies' activity, because technology develops and changes very fast and the regulatory bodies cannot catch up, thus, huge numbers of Fintech companies are not legalized and can do anything they want.

An example is the blockchain & cryptocurrencies field, which is so intricate and strongly advanced that it cannot be understood by more than a handful of experts in its actual meaning and applications for which it can be used. Research conducted by (Athey et al. 2016) ***found*** that the Bitcoin has been used to purchase weapons and drugs on dark-web platforms with a value of $11 billion absolutely.

Swan (2017) has identified some major hindrances to the adoption of blockchain technology in emerging economies. They include: (a) technical intricacy in introducing the technology; (b) unresolved matters of its openness and transparency; (c) uncertainties about its scalability; and (d) needs for effective and agile governmental regulations.

Similarly, Hua and Huang (2021) indicated that cryptocurrencies have the potential to render some of the anti-money laundering legislation and cross-border management of capital flows outdated. Insufficient knowledge, regulation and oversight of cryptocurrency use can significantly increase the potential for illegal activities.

Specifically, in robo-advisory services, Ji (2017) raised inherent limitations, noting that robo-advisors lack human intuition and rely primarily on standardized questionnaires in gathering information regarding clients—an approach that may fail in getting comprehensive information regarding the client's circumstances. More significantly, robo-advisors cannot act as fiduciaries as they lack the capacity to react to or resolve market failures.

Martin (2019) concluded that individuals are exposed to security and privacy threats by mobile payment technology.

Suryono et al. (2019) reported that peer-to-peer lending is confronted with information asymmetry, wrong creditworthiness evaluation, herding, policy, and regulation.

Cyber threats and tech threats to financial stability and national security of emerging economies are primary threats against fintech adoption (Buckley et al., 2019). Infrastructure inadequacy such as cloud and data management, risk of data manipulation, risk of data privacy.

Fintech in Emerging Economies

Financial exclusion is one of the major bottlenecks to economic inclusion in most emerging economies, as large segments of the population lack access to formal financial institutions. According to Hall (2022), it has been estimated that 1.4 billion people worldwide remain unbanked, with the majority of them residing in Sub-Saharan Africa, South Asia, and Latin America. This exclusion holds back individuals and small businesses from participating fully in the economy, perpetuating cycles of poverty and economic stagnation.

As noted by the World Bank (2021), financial inclusion not only facilitates access to such essential services but also assists in risk management, wealth creation, entrepreneurship, and general economic development. Besides, it is a central promoter of women's empowerment, poverty alleviation, resilience, and the development of an inclusive and sustainable economy. Lastly, inclusive financial systems reinforce economic stability, ease wealth creation, and enhance the overall well-being of society.

Perceived Risk Dimensions

Featherman and Pavlou (2003) define perceived risk as the potential for loss in the pursuit of an attractive outcome. This definition encompasses both the magnitude of potential loss—that is, what is threatened if the outcome is poor—and the personal sensation of the individual that the results will not be good or appropriate. In FinTech, perceived risk can be conceptualized as the sensation of weakness, vulnerability, and likelihood of negative consequences of the customer in utilizing financial technologies. (Lin, & Lin 2008)

Building on Ryu's (2018) FinTech perceived risk model, seven dimensions have been identified that may influence stakeholders' expectation and adoption of FinTech innovations:

Performance Risk

Performance risk is the likelihood that a project will fail to achieve its objectives due to inefficient team performance. This may occur in the form of delays, budget overruns, or failure to deliver to expected quality standards. These encompass insufficient experience, poor communication, and limited resources (Abdul-Rahim et al., 2022). In FinTech, operational and financial risks can discourage potential users. Structural weaknesses in response systems, delayed or ineffective response mechanisms, and poorly designed internal processes can lead to

cynicism and frustration on the part of the users, losing faith in the system to meet their needs effectively (Gupta et al., 2023).

Social Risk

Social risk involves the loss of esteem or social standing as a result of the use of certain products or services that are deemed inappropriate by one's social group (Xiao et al., 2021). In Fintech, this may be dissatisfaction or disapproval by family members, friends, or peers regarding the use of financial technologies such as internet banking (Submitter et al., 2021). Attitudinal differences towards FinTech across different social groups influence how its consumers are viewed within their social groups.

Financial Risk

Financial risk is the possibility of monetary loss in financial transactions, such as those conducted through FinTech platforms (Abdul-Rahim et al., 2022). This may result from account hacking, exchange failure, or transaction failure. Researchers identify network-based and mobile systems as more vulnerable to such risks (Ryu, 2018). Other financial risks include market volatility, currency manipulation, unethical practices, fraud attempts, and other unexpected transaction fees that differ from the intended price (Gupta et al., 2023).

Security and Privacy Risk

Security risk concerns threats that invoke the probability of adverse events such as loss, falsification, denial of service, misrepresentation, tampering, unauthorized disclosure, or destruction of information (Tang et al., 2020). Privacy concerns remain among the formidable issues challenging customer trust in e-businesses, including FinTech services (Degerli, 2019). For example, "spoofing" attacks—where the attacker uses stolen credentials to make false transactions or wire transfers—can heavily undermine user trust (Reavley, 2005).

Time Risk

Time risk, particularly in mobile payment systems, means issues relating to the time that a consumer will utilize the service; it is also a major influencer of consumer behavior (Kamboj et al., 2024). It consists of (1) learning time to employ the technology; (2) technological glitches or mistakes in a transaction causing delays; and (3) time gaps between initiation and finalization of a transaction (Wang et al., 2024). Scholars posit that consumer behavior is essentially time-bound and place-bound (Sheth, 2020).

Psychological Risk

Psychological risk refers to users' feelings of distrust, insecurity, and emotional discomfort when making use of payment technologies. This is natural consequence of lack of familiarity, perceived failure, or apprehension to implement new systems (Ghosh, 2024). The emotions are generally associated with technological unreadiness or reluctance to adopt such new money instruments. These need to be overcome through investment in education of the consumer and user-friendly design to build up familiarity and confidence.

Legal Risk

Legal risk is brought about by uncertainty in the legal environment governing FinTech activities. As FinTech is a relatively new sector in most markets globally, a lack of comprehensive regulations, guidelines, and consumer protection policies—particularly regarding security and cash matters—have filled the hearts of users with fear, uncertainty, and doubt (Tang et al., 2020).

Negative Social Factors Associated with Fintech

Financial technology, despite being much vaunted for its potential to increase financial inclusion and render financial services more efficient, is also endowed with a set of negative social determinants, in particular relevance to vulnerable populations. These include:

Fintech is typically powered by AI-driven technologies, which can be applied to assess the financial risk of lending to small business owners or retail consumers. However, when artificial intelligence programs are trained on past or untested information, then this is likely to produce discrimination on grounds of sex, race, religion, colour and sexual orientation. Discrimination identifies a circumstance when a person is unfairly biased, at least partially, on a ground or grounds that are covered. (European Union Agency for Fundamental Rights, & Council of Europe, 2018).

The rapid digitalization of financial services has introduced an extensive array of cyber threats to Fintech platforms. The high interconnectedness and data intensity of Fintech operations make Consumers highly vulnerable to cyber threats. Cyber attackers exploit technological, process, and human vulnerabilities to launch attacks with disastrous financial, reputational, and operational impacts (Oladinni & Odumuwagun, 2025).

Evidence repeatedly shows that women have lower ownership rates of bank accounts compared to men (Demirgüç-Kunt & Singer, 2017) and are underrepresented as stock market traders. While Sahay et al. (2020) concluded that FinTech has reduced gender gaps in financial inclusion in the majority of nations. It is feared that such gaps will widen in the post-COVID-19 era.

Several studies have highlighted that such systems have the potential to produce biases against women, minorities, and the poor (Heaven, 2021). These biases generally occur due to noisy or incomplete data sets that render predictions inaccurate, and applying a "fair" algorithm alone may not solve the issue. For example, Blattner and Nelson (2021), in their analysis of mortgage data, found that disparities in the approval of mortgages between majority and minority groups could not be wholly attributed to bias. They were, in part, fueled by the fact that there is less financial information available for minority and low-income applicants, which translates to reduced predictive performance and, consequently, inferior results.

Ethical concerns, particularly the use of algorithms in Fintech, may represent a dark side of financial technology, where issues of bias and fairness are raised. Hence, financial technology companies must make their AI models accountable in order not to discriminate against a group without their knowledge or perpetuate existing biases in financial services, (Adeyelu et al.,2024).

CONCLUSION

Despite the many opportunities that financial technology offers to various players in the markets, it also entails many potential risks that pose a threat to financial stability in terms of economic risks. Therefore, it is essential to recognize and address the dark side of financial technology. The study provides important theoretical insights related to financial technology, including regulatory issues, security concerns, and the need for optimal risk management practices.

In light of the increasing reliance on financial technology, which represents opportunities and gains that enhance financial stability or risks that threaten it, this calls for serious procedures at the international level to coordinate cooperation efforts to establish unified regulatory and supervisory frameworks that enhance the benefits and gains of financial technology and mitigate its risks. This requires:

- Creating and enhancing a culture of fintech risk management
- Implementing strategies to mitigate market and operational risks, such as system failures, scalability challenges, and regulatory changes
- Ensuring compliance aligns with values and social responsibilities
- Suggesting further supervisory coordination where appropriate for cross-border fintech
- Enhancing data privacy
- Understanding of consumer behavior by including the moderating role of demographic parameters such as gender and age.

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