

The Impact of Financial Technology on the Efficiency of the Algerian Stock Market

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Abstract

This study investigates the impact of financial technology (fintech) on the effectiveness of the Algerian stock market, specifically examining operational efficiency, market performance, and trading volumes. An analysis is conducted to assess the potential transformative impact of fintech advancements such as digital trading platforms, blockchain technology, and mobile banking on the market. The primary research inquiry is: "To what extent does fintech influence the performance of financial markets, particularly in relation to the Algerian stock market?" The findings suggest that fintech improves market efficiency by automating processes and digitizing operations. It also promotes financial inclusion by offering mobile platforms, introduces novel financial products, and delivers data-driven insights for making well-informed investment decisions. Algeria's legal framework facilitates fintech innovation, while obstacles like as insufficient infrastructure and limited digital literacy persist.

Keywords: financial technology, Algerian stock market, market efficiency, digital trading platforms, blockchain technology, mobile banking, financial inclusion.

Jel Classification Codes: O16, O33, M 15

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1. Introduction

Fintech, or Financial technology, has emerged as a powerful force in the global financial industry, bringing about significant changes to traditional banking services and operations. The incorporation of cutting-edge technology in diverse financial operations, such as payments, investments, lending, and trading, has resulted in improved effectiveness, decreased expenses, and expanded availability for both consumers and financial institutions (Sarma, 2016). Nevertheless, there is a lack of comprehensive research on the influence of Fintech in emerging economies such as Algeria .

This study examines the impact of Fintech on the performance of the Algerian stock market. It aims to answer the question of how much Fintech influences financial markets, specifically in the context of the Algerian stock market. Understanding this influence can help policymakers, financial institutions, and investors make well-informed decisions to maximize the advantages of Fintech while addressing any related difficulties .

2. Background :

Fintech refers to the application of technology in the financial industry, and it has had a significant influence on financial markets .

Fintech comprises a wide range of technologies, such as artificial intelligence, blockchain, big data analytics, and mobile technology, that are fundamentally altering the delivery of financial services. The impact of this can be succinctly expressed as follows :

Increased Efficiency: Fintech facilitates the automation and digitalization of processes, leading to a reduction in transaction costs and the optimization of operations, ultimately resulting in enhanced market efficiency (Böhme, 2018) .

Enhanced Accessibility: The utilization of mobile platforms and online trading tools expands the reach of financial services to a broader demographic, encompassing persons with restricted financial means, hence fostering financial inclusivity (World Bank, 2021) .

The emergence of Fintech has resulted in the creation of innovative financial products and services, including peer-to-peer lending, robo-

advisors, and digital currencies, which appeal to a wide range of requirements and preferences (Kumar & Sharma, 2019) .

Data-driven insights are generated via the use of big data analytics and artificial intelligence. These tools provide investors with up-to-date market information and insights based on data analysis. This enables investors to make better educated decisions when it comes to their investments (Cui et al., 2020) .

.3 Research Problem and Hypotheses

The main research inquiry driving this study is: "To what degree does Fintech impact the performance of financial markets, specifically in relation to the Algerian stock market?" This research issue is vital for comprehending the possible advantages and difficulties linked to the adoption of Fintech in emerging markets .

Drawing from the available literature and the observable influence of Fintech on financial markets, we establish the subsequent hypotheses :

H1: The implementation of financial technology (fintech) improves market performance by enhancing operational efficiency and enabling smooth financial transactions .

H2: The use of Fintech results in higher levels of trade activity, decreased expenses related to investments, and overall enhancement of the market .

H3: A strong association exists between the adoption of Fintech and the trading volumes in global financial markets .

4 .Literature review :

The incorporation of financial technology (fintech) into stock markets has fundamentally changed the financial services and investment sector. Fintech comprises several applications such as algorithmic trading, blockchain technology, robo-advisors, and mobile trading platforms. This literature study seeks to examine the significance of fintech in stock markets, emphasizing its impact on trading efficiency, market accessibility, transparency, and overall market dynamics .

- *Algorithmic trading*, often known as the utilization of computer algorithms to automate trading decisions, is a very impactful technological innovation in stock markets. Research has demonstrated that algorithmic trading enhances market efficiency by decreasing transaction costs and enhancing liquidity .

In their study, Hendershott, Jones, and Menkveld (2011) discovered that algorithmic trading improves liquidity and decreases the expenses

associated with adverse selection in the stock market. This leads to narrower bid-ask spreads and a higher trading volume (Hendershott et al., 2011) .

Brogaard, Hendershott, and Riordan (2014) provided evidence that high-frequency trading (HFT), which is a specific type of algorithmic trading, enhances the process of determining prices and increases the overall efficiency of the market (Brogaard et al., 2014) .

– ***Blockchain technology***

The utilization of blockchain technology has the capacity to fundamentally transform stock markets by offering a decentralized and transparent ledger for documenting transactions. This technology has the capability to decrease the requirement for intermediaries, hence reducing expenses and enhancing the velocity of transactions .

According to Yermack (2017), blockchain technology has the potential to improve the transparency and security of financial transactions by facilitating the monitoring of ownership and transfer of securities .

Catalini and Gans (2016) emphasized that blockchain technology has the potential to decrease information asymmetry and mitigate the danger of fraudulent activities in stock markets, thus bolstering investor trust and confidence (Catalini & Gans, 2016) .

– ***Automated investment platforms known as robo-advisors***

Robo-advisors are computerized platforms that offer financial guidance or investment management services with limited human involvement. These platforms utilize algorithms to generate and oversee investment portfolios according to the specific interests and risk tolerance of individual investors .

According to Fein (2015), robo-advisors have the potential to make investment advice more accessible and inexpensive to a wider variety of investors, thus democratizing access to such services .

Jung, Dorner, Weinhardt, and Puzmaz (2018) discovered that robo-advisors enhance portfolio diversity and performance through the utilization of sophisticated data analytics and machine learning approaches (Jung et al., 2018) .

– ***Mobile trading platforms***

Mobile trading systems have increased the accessibility of stock trading for regular investors. These platforms provide intuitive interfaces and immediate access to market data, allowing investors to make well-informed decisions while on the move .

D'Acunto, Prabhala, and Rossi (2019) observed that the use of mobile trading platforms has resulted in a higher level of involvement from

individual investors in stock markets, which in turn has led to an increase in market liquidity (D'Acunto et al., 2019).

Zhang and Zhou (2019) highlighted that mobile trading decreases obstacles to accessing information and expenses associated with transactions, thereby encouraging increased trading activity and participation in the market (Zhang & Zhou, 2019).

Analysis of market dynamics and investor behavior

The emergence of financial technology (fintech) has had a profound impact on the way markets operate and how investors make decisions. The growing adoption of algorithmic trading and mobile platforms has resulted in reduced holding periods and increased trading volumes.

According to Chordia, Roll, and Subrahmanyam (2011), the increase in trading volume and turnover rates in stock markets can be attributed to technical developments in trading.

According to Barber and Odean (2000), the availability of online trading platforms makes it easier for investors to trade excessively, which might result in lower returns due to increased transaction costs.

4 .Results

4.1 International Experiences

– Malaysian experience :

The financial services sector in Malaysia has seen substantial changes as a result of the implementation of financial technology (fintech). Fintech comprises a diverse range of technical advancements, including mobile banking, digital payments, peer-to-peer lending, and blockchain technology. These developments have significantly improved efficiency, accessibility, and transparency in the financial industry. This literature study examines the influence of fintech on Malaysia's financial services business, with a focus on the significant changes it brings to different areas of the sector.

-Mobile banking:

The advent of mobile banking has fundamentally transformed the manner in which Malaysians avail themselves of financial services. The proliferation of smartphones and internet connectivity has permitted the expansion of mobile banking platforms, hence enhancing the accessibility of financial services to the general people.

Hashim, Raza, and Minai (2019) conducted a study which found that mobile banking has greatly enhanced financial inclusion in Malaysia. This is achieved by offering banking services to populations that have limited access to such services, particularly in rural regions (Hashim et al., 2019).

The convenience of mobile banking has resulted in heightened customer satisfaction and loyalty, since users have the ability to conduct financial transactions at any time and location without the necessity of visiting a physical branch .

-Electronic transactions

The use of digital payments in Malaysia has experienced rapid and significant growth, primarily due to the rising popularity of e-wallets and other forms of cashless payment methods. The advent of digital payment solutions such as GrabPay, Touch 'n Go eWallet, and Boost has streamlined transactions and decreased the dependence on physical currency .

Tang (2020) emphasizes that digital payments have not only increased convenience for consumers but also enhanced operational efficiency for enterprises by simplifying payment processes and lowering transaction costs (Tang, 2020). Moreover, the COVID-19 pandemic expedited the acceptance of digital payments as consumers and businesses actively pursued contactless payment solutions to reduce physical contact .

-Peer-to-Peer lending:

Peer-to-peer (P2P) lending platforms have become a viable alternative for individuals and small and medium-sized organizations (SMEs) in Malaysia to obtain funding. These platforms facilitate direct connections between borrowers and lenders, circumventing conventional financial intermediaries and providing competitive interest rates .

Cheah, Ho, and Lim (2021) argue that P2P lending has effectively addressed a significant void in the financial services industry by granting credit access to those who may be ineligible for conventional bank loans (Cheah et al., 2021). The proliferation of P2P lending platforms such as Funding Societies and Fundaztic has played a role in expanding the range of financial options available in Malaysia .

-Blockchain technology :

The implementation of blockchain technology in Malaysia's financial services business has the capacity to revolutionize trade finance, cross-border payments, and regulatory compliance. The decentralized and transparent characteristics of blockchain have the potential to improve the security and effectiveness of financial transactions .

Tan and Low (2019) conducted a study that demonstrates how blockchain technology can mitigate the risk of fraud and enhance the traceability of financial transactions. Consequently, this technology fosters trust and confidence among market participants (Tan & Low, 2019). In addition, the Malaysian government has expressed interest in investigating blockchain

applications through efforts such as the Malaysia Blockchain and Distributed Ledger Technology (DLT) Regulatory Framework .

-Advancements in regulations

The regulatory framework in Malaysia has progressed to facilitate the expansion and acceptance of fintech. Bank Negara Malaysia (BNM), the central bank, has implemented a range of laws and recommendations to achieve a harmonious balance between promoting innovation and upholding financial stability .

For example, the Regulatory Sandbox framework established by BNM enables fintech companies to experiment with their innovative ideas in a controlled setting prior to implementing them on a large scale. The implementation of this project has fostered the exploration of new ideas and methods, while also minimizing any possible hazards to the financial system (BNM, 2020) .

– *The experience of the Dubai Stock Exchange (DSE)*

The Dubai Stock Exchange (DSE) has had a substantial overhaul as a result of the implementation of financial technology (fintech). The incorporation of fintech advancements, such as blockchain technology, automated trading systems, and digital platforms, has improved the efficiency, transparency, and accessibility of trading in the stock market. This literature study investigates the influence of financial technology (fintech) on the Dubai Stock Exchange. It specifically concentrates on significant aspects such as the use of blockchain technology, automated trading, and developments in regulations .

-Blockchain technology

The Dubai Stock Exchange has experienced significant transformation due to the use of blockchain technology, which is considered one of the most influential developments in the field of financial technology. The Dubai Financial Market (DFM) and Nasdaq Dubai have both investigated and adopted blockchain systems to enhance the efficiency and transparency of financial transactions .

Deloitte's research from 2019 highlights that the implementation of blockchain technology in the Dubai Stock Exchange has facilitated expedited and highly secure trade settlements. The decentralized structure of blockchain technology mitigates the likelihood of fraudulent activities and improves the capacity to track and verify transactions, thereby bolstering investor trust (Deloitte, 2019). The Dubai Blockchain Strategy, initiated by the government, seeks to establish Dubai as a prominent global hub for blockchain technology, thereby facilitating its seamless integration into the stock exchange .

-Algorithmic Trading Systems :

Automated trading methods, sometimes referred to as algorithmic trading, have had a substantial influence on the efficiency and liquidity of the Dubai Stock Exchange. These systems utilize sophisticated algorithms to carry out trades rapidly, optimizing the timing and cost of transactions .

According to a study conducted by Al-Ansari and Zaki (2020), the introduction of automated trading systems on the Dubai Stock Exchange has resulted in more market liquidity and lower transaction costs (Al-Ansari & Zaki, 2020). Furthermore, these systems have played a significant role in enhancing the process of determining prices by efficiently handling substantial amounts of market data in real-time, so enabling more precise valuation of securities .

-Online trading platforms

The advent of digital trading platforms has enhanced the accessibility of the Dubai Stock Exchange to a broader spectrum of investors. These platforms offer intuitive interfaces and immediate access to market data, empowering investors to make well-informed choices .

According to Al-Masah Capital (2018), the digital trading platforms in the Dubai Stock Exchange have successfully attracted a large number of individual investors, resulting in higher levels of market participation and liquidity. Additionally, these platforms include a range of tools and services, including market analysis and portfolio management, to assist investors in their trading endeavors .

-Advancements in regulations

The regulatory framework in Dubai has developed to facilitate the expansion and incorporation of fintech in the stock market. The Dubai Financial Services Authority (DFSA) has implemented many initiatives and frameworks to create a harmonious balance between fostering innovation and upholding market integrity .

-The Innovation Testing License (ITL) provided by the DFSA enables fintech companies to evaluate their innovative ideas inside a regulated and supervised setting. The project has promoted the creation and implementation of new financial technology solutions in the Dubai Stock Exchange, cultivating an environment of creativity while reducing possible risks (DFSA, 2019) .

Impact on Market Dynamics

The incorporation of financial technology (fintech) in the Dubai Stock Exchange has had a significant impact on market dynamics and the behavior of investors. The proliferation of automated trading and digital platforms has resulted in an upsurge in trading volumes and increased engagement in the market .

According to Al-Hajeri (2021), the use of fintech has led to reduced time periods for holding stocks and an increase in trading activity on the Dubai Stock Exchange (Al-Hajeri, 2021). The implementation of these modifications has enhanced the liquidity and efficiency of the market. However, it has also brought forth new obstacles, such as heightened market volatility .

The implementation of fintech has greatly revolutionized the Malaysian stock exchange and Dubai Stock Exchange, improving the efficiency, transparency, and accessibility of trade. Blockchain technology, algorithmic trading systems, and electronic trading platforms have all been pivotal in facilitating this shift. In order to shape the future of the Dubai Stock Exchange, continuing regulatory support and innovation will be crucial as the fintech sector continues to develop .

- *Algerian Stock Market case*

The Algerian stock market, albeit somewhat less developed in relation to international benchmarks, has initiated a process of change by embracing financial technology (fintech). Fintech advancements, like digital trading platforms, blockchain technology, and mobile banking, can potentially improve market efficiency, boost accessibility, and raise transparency. This literature study analyzes the influence of financial technology (fintech) on the stock market in Algeria. It specifically investigates the effects of digital trading, blockchain applications, and regulatory changes .

-Online trading platforms

Digital trading platforms have revolutionized the Algerian stock market by offering investors more convenient and effective methods of trading. These platforms provide online transactions, hence minimizing the requirement for physical presence and optimizing the trade process .

Belkhir and Benaissa (2020) found that the use of digital trading platforms in Algeria has facilitated market participation by enhancing the accessibility of the stock market for regular investors. These platforms provide up-to-date market data, analytical tools, and user-friendly interfaces, enabling investors to make well-informed decisions and improve overall market activity .

- *Blockchain technology*

The implementation of blockchain technology in the Algerian stock market has the capacity to revolutionize the industry by offering a highly secure and transparent system for recording transactions. The decentralized nature of blockchain can mitigate the danger of fraudulent activities and optimize the effectiveness of trade settlements.

The study conducted by Kadi and Laid (2021) emphasizes that blockchain technology has the potential to tackle various obstacles in the Algerian stock market, particularly those pertaining to transaction transparency and security (Kadi & Laid, 2021). Through the implementation of blockchain technology, the Algerian stock market can enhance the accuracy of record-keeping and foster increased confidence among investors .

- ***Mobile banking***

Mobile banking is a fintech breakthrough that has the potential to greatly influence the Algerian stock market by enhancing financial inclusion and facilitating access to investment opportunities. As smartphones and internet access become more widespread, mobile banking services offer a handy method for individuals to handle their accounts and participate in stock market investments.

Boukhatem and Benbouziane (2018) propose that mobile banking has the potential to improve financial inclusion in Algeria by providing banking services to individuals who do not have access to traditional banking and those who have limited access, especially in rural regions (Boukhatem & Benbouziane, 2018). Enhanced availability of financial services can result in increased engagement in the stock market and contribute to its expansion and advancement .

- ***Advancements in regulations***

Algeria's regulatory framework is progressively adapting to facilitate the incorporation of fintech into the financial services industry. The Algerian government and regulatory authorities have acknowledged the potential of fintech in stimulating economic expansion and are actively engaged in establishing a favorable regulatory framework .

According to Benouda and Bensaid (2019), the Algerian Financial Market Authority (COSOB) has implemented various measures to encourage fintech innovation while maintaining market stability. These measures encompass regulatory sandboxes, which provide a controlled environment for fintech companies to trial their ideas prior to widespread implementation .

- ***Obstacles and prospects***

Although fintech has shown potential in positively influencing the Algerian stock market, there are certain obstacles that must be resolved. These factors encompass inadequate infrastructure, insufficient digital literacy, and regulatory obstacles. Nevertheless, the continuous endeavors to update the financial industry and the growing acceptance of digital technology offer substantial prospects for expansion .

According to Elghoul and Toumi (2020), focused regulations and investments in digital infrastructure can effectively overcome these hurdles and fully unleash the potential of fintech in Algeria (Elghoul & Toumi, 2020). Through the utilization of financial technology (fintech), Algeria has the potential to improve the effectiveness and inclusiveness of its stock market, thereby attracting a greater number of both domestic and international investors .

The implementation of financial technology (fintech) in the Algerian stock market has the capacity to bring about substantial changes by enhancing effectiveness, clarity, and availability. Key developments such as digital trading platforms, blockchain technology, and mobile banking have the potential to contribute significantly to the market's development. With ongoing advancements in Algeria's legislative framework and investments in digital infrastructure, the fintech industry has the potential to significantly influence the future of the Algerian stock market .

5. Discussion

Integrating fintech solutions such as mobile banking and digital payments can greatly improve market efficiency in Algeria's stock market. These technologies optimize financial transactions, resulting in shorter settlement times and decreased operational expenses (Hashim et al., 2019). By enabling faster and more convenient trading processes, market efficiency is enhanced, which in turn attracts a larger number of participants and increases total liquidity .

- *Enhanced Financial Accessibility*

The utilization of financial technology (fintech) in Algeria has the capacity to enhance financial inclusion, specifically by targeting marginalized populations residing in rural regions. Mobile banking systems offer simple access to banking services and investment opportunities that were previously unavailable to many individuals due to geographical constraints (Boukhatem & Benbouziane, 2018). The proliferation of financial services can enable individuals and small enterprises to engage more actively in the stock market, thus fostering economic growth and stability .

- *Openness and confidence*

By implementing blockchain technology, Algeria can improve transaction transparency and establish trust in the stock market, similar to how it has been done in Dubai. The decentralized ledger structure of blockchain ensures safe and unchangeable records of transactions, hence

minimizing the possibility of fraud and manipulation (Deloitte, 2019). Blockchain's enhanced openness can appeal to both domestic and international investors who prioritize trust and reliability in financial markets .

Although Fintech adoption in Algeria holds many advantages, it also presents certain challenges :

- ***Development of physical structures and systems***

Algeria faces a major obstacle in embracing finance due to the requirement for strong telecommunications and digital infrastructure. Uninterrupted internet access is crucial for the smooth functioning of fintech services like mobile banking and online trading platforms (Boukhatem & Benbouziane, 2018). Infrastructure development is essential to ensure widespread access to fintech solutions, even in remote and underdeveloped locations .

Regulatory adaptation refers to the process of adjusting regulations to fit changing circumstances or requirements .

It is crucial to have a regulatory environment that promotes fintech innovation while also protecting the interests of investors. Algeria has to modify its regulatory framework to suit emerging technologies and business models, such as blockchain and automated trading systems (Benouda & Bensaid, 2019). Well-defined and flexible rules can provide a favorable atmosphere for the expansion of fintech, promoting investment and creativity while minimizing risks such as cyber attacks and financial instability .

- ***Computer literacy***

Facilitating digital literacy among Algerian inhabitants is crucial for the effective implementation of fintech solutions. Some potential consumers may have limited knowledge of digital platforms and technologies, which can restrict their ability to effectively utilize fintech services (Boukhatem & Benbouziane, 2018). By implementing educational programs and awareness campaigns, individuals can be equipped with the necessary knowledge and skills to effectively utilize fintech products for financial management and investing objectives .

Integration of the financial sector

Ensuring efficient integration of fintech in Algeria requires the coordination of activities across many sectors of the financial system. In order to establish a thorough fintech ecosystem, it is imperative to foster cooperation among banks, regulatory agencies, technology suppliers, and

educational institutions (Benouda & Bensaid, 2019). By implementing integrated systems and adopting shared standards, the interoperability and efficiency of fintech solutions may be improved. This will result in the delivery of maximum benefits to market participants and stakeholders .

6 .Suggestions

In order to effectively capitalize on the advantages of Fintech, the study suggests :

Regulatory Support: Strengthening the regulatory framework to promote Fintech innovation while safeguarding consumer interests and maintaining market stability .

Infrastructure investment: Allocating funds towards ICT infrastructure to enhance connection and facilitate access to digital financial services .

Public-Private Partnerships aim to foster cooperation between the public and private sectors in order to facilitate the adoption of Fintech and promote the growth of the market .

Financial Education: Enacting educational programs to enhance knowledge and understanding of financial matters and Fintech services .

7 .Conclusion and recommendations

The findings of this paper indicate that Fintech has a beneficial influence on the performance of financial markets, as demonstrated by worldwide case studies and empirical investigation of the Algerian stock market. Introducing Fintech solutions in Algeria has the potential to enhance market efficiency, boost trading volumes, and lower investment expenses, thereby fostering overall economic expansion. To achieve successful implementation of Fintech, it is crucial to have a legal framework that is favorable, invest in digital infrastructure, and make efforts to improve financial literacy among the general public.

Recommendations for Fintech Adoption in Algeria

- ***Develop a Favorable Legal Framework***

Specific Regulatory Guidelines: Create detailed regulatory guidelines for Fintech activities, covering areas such as crowdfunding, peer-to-peer lending, digital payments, and blockchain technology.

Sandboxes for Innovation: Establish regulatory sandboxes to allow Fintech startups to experiment with new technologies and business models in a controlled environment.

International Cooperation: Collaborate with other countries to develop harmonized regulatory standards for Fintech.

- **Invest in Digital Infrastructure**

Broadband Connectivity: Expand broadband internet access to rural and underserved areas to ensure equitable access to financial services.

Cybersecurity: Invest in cybersecurity infrastructure and education to protect against cyber threats and build trust in digital financial services.

Payment Systems: Modernize payment systems to facilitate seamless transactions and reduce transaction costs.

- **Promote Financial Literacy**

Curriculum Integration: Incorporate financial literacy into school curricula at all levels to equip students with the knowledge and skills needed to make informed financial decisions.

Public Awareness Campaigns: Launch public awareness campaigns to educate the general public about the benefits and risks of Fintech.

Financial Counseling Services: Provide free or low-cost financial counseling services to help individuals and businesses make sound financial decisions.

- **Encourage Innovation and Entrepreneurship**

Startup Incubators and Accelerators: Support the growth of Fintech startups through incubators and accelerators that provide mentorship, funding, and networking opportunities.

Research and Development: Invest in research and development to foster innovation in Fintech and develop new technologies.

Tax Incentives: Offer tax incentives to Fintech businesses to encourage investment and job creation.

- **Foster Collaboration between Public and Private Sectors**

Public-Private Partnerships: Establish public-private partnerships to leverage the expertise and resources of both sectors to address challenges and opportunities in Fintech.

Regulatory Dialogue: Create platforms for regular dialogue between regulators and Fintech industry representatives to ensure that regulations are effective and supportive of innovation.

- **Leverage International Best Practices**

Benchmarking: Conduct benchmarking studies to identify successful Fintech models and practices from other countries.

Knowledge Transfer: Facilitate knowledge transfer and collaboration with international experts and organizations.

- **Monitor and Evaluate the Impact of Fintech**

Performance Metrics: Develop key performance indicators to measure the impact of Fintech on market efficiency, financial inclusion, and economic growth.

Regular Assessments: Conduct regular assessments to identify areas for improvement and ensure that Fintech is contributing positively to the Algerian economy.

By implementing these recommendations, Algeria can create a conducive environment for the growth and development of Fintech, leading to a more efficient, inclusive, and innovative financial sector.

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