

CONCEPTUAL ANALYSIS OF FINANCIAL TECHNOLOGY ON THE FINANCIAL INCLUSION OF SMALL AND MEDIUM- SCALE ENTERPRISES IN ABUJA, NIGERIA

Odeh, Job Adah ^{*1}, Ndaman Abdullahi ^{*2} and Mohammed Nuhu Alaga ^{*3}

Department of Business Administration
Faculty of Management Sciences
University of Abuja

Authors email: jobby2hunt4@gmail.com; abuubaidullah2013@gmail.com;
nuhumohammed99@gmail.com

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ABSTRACT

Despite the growing recognition of financial technology (FinTech) as a transformative tool for financial inclusion, many Small and Medium-Scale Enterprises (SMEs) in Abuja, Nigeria, continue to face challenges in fully harnessing its potential. This study was conducted to examine the extent to which FinTech influences financial inclusion among SMEs in Abuja, with specific attention to access, usage, and service quality. Data were collected using a structured questionnaire and analysed using descriptive statistics and multiple regression analysis. Findings revealed that while FinTech tools such as mobile banking, POS systems, ATMs, and web-based payments significantly enhanced account accessibility and usage, the quality-of-service delivery—including reliability, responsiveness, and customer support—remained a critical limitation. The study concluded that although FinTech has advanced the inclusion of SMEs into the formal financial system, infrastructural gaps and service inconsistencies hinder its full effectiveness. It recommends strategic policy interventions focusing on improving digital infrastructure, financial literacy, and regulatory support to enhance service quality and user confidence. These interventions are vital to fostering a more inclusive financial environment for SMEs in urban centres such as Abuja.

Keywords: Financial technology (FinTech), financial inclusion, SMEs, Abuja, mobile banking, POS systems, service quality.

INTRODUCTION

The rapid evolution of financial technology (FinTech) has brought transformative changes to the global financial services landscape, with far-reaching implications for financial inclusion, particularly among small and medium-sized enterprises (SMEs) (Dutta et al., 2023). FinTech innovations such as mobile banking, Point of Sale (POS) systems, Automated Teller Machines (ATMs), and web payment platforms have redefined how businesses access and utilize financial services, fostering a more inclusive financial system that caters to previously underserved populations (Ozili, 2021). This digital transformation has

enhanced operational efficiency, expanded access to credit and investment avenues, and improved the ease with which financial transactions are conducted, thereby positioning FinTech as a catalyst for economic growth (Rjoub et al., 2022). In emerging economies, including Nigeria, the integration of these technologies has played a significant role in reducing barriers to financial participation and improving the financial prospects of SMEs (Adeola & Evans, 2020).

In Nigeria, financial inclusion has become a national development priority, with FinTech solutions viewed as key enablers of broader economic participation. Abuja, the capital city

and administrative hub of Nigeria, is at the forefront of this digital shift. The city hosts a dynamic mix of SMEs that are increasingly adopting digital financial tools to improve their business operations. Despite the opportunities presented by FinTech, SMEs in Abuja continue to face notable challenges in leveraging these tools effectively. Issues such as infrastructural deficits, inconsistent internet connectivity, financial illiteracy, and inadequate customer support continue to hinder the full integration of FinTech solutions (Umar et al., 2024). While digital platforms have simplified account opening and improved access to financial services, the actual usage and the perceived quality of these services remain inconsistent across the SME sector (Eze et al., 2022).

The need for a more nuanced understanding of the role of FinTech in enhancing financial inclusion among SMEs in Abuja stems from the observed discrepancies between technological adoption and tangible financial outcomes. Although global studies have emphasized the positive impacts of FinTech on service accessibility and usage (Khan et al., 2023), there remains limited empirical evidence focusing on how these technologies affect financial inclusion in specific urban contexts like Abuja. More critically, existing literature often overlooks the importance of service quality—defined by reliability, responsiveness, and customer support—in shaping SMEs' experiences with financial technologies. This oversight presents a significant gap, as the quality of digital financial services plays a pivotal role in determining the extent to which SMEs benefit from FinTech adoption (Al-Marroof et al., 2021). Therefore, while mobile banking, POS systems, ATMs, and web

LITERATURE REVIEW

Financial Technology, commonly known as FinTech, refers to the innovative application of technology to design and deliver financial services and products. It encompasses a broad range of technological interventions in personal and commercial finance, including advancements in mobile banking, online payments, and automated financial planning. FinTech aims to enhance financial service delivery by improving efficiency, accessibility, and user experience, thereby fostering greater financial inclusion and democratizing access to financial resources (Gomber et al., 2017).

payments offer considerable promise for promoting financial inclusion, the effectiveness of these tools in the Abuja SME context cannot be presumed. There is a pressing need to assess not just the availability and usage of these services, but also their quality and reliability. SMEs may have access to financial platforms but still face difficulties that undermine the intended benefits of financial inclusion (Olokoyo et al., 2019). This study seeks to fill this gap by investigating the extent to which FinTech solutions influence account opening, access to, and usage of financial services, as well as the perceived quality of these services among SMEs in Abuja. By focusing on these key dimensions, the research aims to offer a comprehensive and context-specific analysis of how FinTech contributes to the financial inclusion of SMEs operating in one of Nigeria's most economically active cities.

This paper is structured as follows: Section 2 provides an in-depth literature review and the potential areas for fintech for financial inclusion of SMEs, highlighting its business model, digital transformation strategies, and competitive positioning in the banking industry. Section 3 presents a detailed analysis of the key issues affecting the implementation of big data analytics in the bank. Section 4 explores possible alternative solutions to address these challenges, while Section 5 recommends the most viable solution and justifies its relevance. Section 6 outlines a practical implementation plan for integrating big data analytics effectively. Finally, Section 7 concludes with a summary of findings, implications for stakeholders, and final remarks on the significance of big data analytics in the banking sector.

Point of Sale (POS) systems are integral components of FinTech that facilitate retail transactions between merchants and customers. A POS system combines hardware and software to process sales, manage inventory, and handle customer data. Modern POS systems have evolved to support various payment methods, including credit and debit cards, contactless payments, and mobile wallets, thereby streamlining the checkout process and enhancing operational efficiency for businesses (Oliveira et al., 2017).

Automated Teller Machines (ATMs) are electronic banking outlets that enable

customers to perform financial transactions without the need for direct interaction with bank staff. These machines allow users to withdraw cash, deposit funds, transfer money between accounts, and check account balances. ATMs have become ubiquitous in the banking industry, providing 24/7 access to essential banking services and significantly contributing to customer convenience and operational efficiency (Batiz-Lazo et al., 2018).

Web payment platforms are online systems that facilitate the electronic transfer of funds for goods and services over the Internet. These platforms support various payment methods, including credit cards, bank transfers, and digital wallets, enabling consumers and businesses to conduct transactions seamlessly across geographical boundaries. The adoption of web payment solutions has been instrumental in the growth of e-commerce, providing secure and efficient mechanisms for online financial transactions (Dahlberg et al., 2017).

Mobile banking refers to the use of mobile devices, such as smartphones and tablets, to access and manage bank accounts and perform financial transactions. This service allows customers to check account balances, transfer funds, pay bills, and deposit checks remotely, offering unparalleled convenience and flexibility. The proliferation of mobile banking has transformed the banking landscape, enabling financial institutions to reach a broader customer base and enhance service delivery (Shaikh & Karjalainen, 2015).

Financial Technology in Enhancing SMEs Financial Inclusion

Financial technology (FinTech) has emerged as a pivotal force in enhancing financial inclusion among small and medium-sized enterprises (SMEs). By leveraging digital platforms and innovative financial services, FinTech addresses traditional barriers that SMEs face in accessing finance, such as stringent collateral requirements and high transaction costs. This digital transformation enables SMEs to secure funding more efficiently, thereby fostering entrepreneurship and economic growth (Umar et al., 2025).

The integration of FinTech solutions, including mobile banking, online payment systems, and digital lending platforms, has revolutionized

the financial landscape for SMEs. These technologies offer tailored financial products that cater to the unique needs of SMEs, facilitating easier access to credit and other financial services. For instance, digital inclusive finance significantly alleviates financing constraints faced by SMEs, with the depth of digital finance usage having a more pronounced effect than its breadth (Zhang et al., 2024).

Moreover, FinTech innovations have introduced alternative financing mechanisms such as peer-to-peer (P2P) lending and crowdfunding, which provide SMEs with diversified funding sources beyond traditional banking institutions. These platforms leverage technology to connect SMEs directly with potential investors, thereby reducing information asymmetry and transaction costs. The growth of P2P lending has been particularly beneficial in regions where SMEs struggle to secure financing through conventional means (Abbasi et al., 2021).

Government support plays a crucial role in the FinTech era by creating an enabling environment that enhances SMEs' access to finance. Policies that promote the adoption of FinTech solutions and establish regulatory frameworks conducive to digital financial services can significantly improve the survival and performance of SMEs. Collaborative efforts between governments and FinTech firms can bridge financing gaps and foster sustainable SME growth (Chen et al., 2025).

In the African context, digital finance has been instrumental in improving SME financial inclusion. Studies indicate that digital finance significantly enhances SMEs' access to financial services, suggesting the need for policies that support the expansion of digital financial technologies and the registration of more FinTech companies to reach unbanked SME owners, especially in rural areas (Umar et al., 2025).

The development of a robust FinTech ecosystem requires collaboration among various stakeholders, including financial institutions, technology providers, and regulatory bodies. Such an ecosystem fosters innovation and ensures that FinTech solutions are effectively integrated into the financial

services sector, thereby enhancing financial inclusion for SMEs (Senyo et al., 2022).

While FinTech presents significant opportunities for enhancing SME financial inclusion, challenges such as digital literacy, cybersecurity concerns, and regulatory compliance must be addressed. Ensuring that SMEs are equipped with the necessary skills to utilize digital financial services effectively is essential for maximizing the benefits of FinTech innovations (Yang et al., 2023).

In conclusion, FinTech has transformed the financial landscape by providing SMEs with innovative solutions that enhance financial inclusion. Through digital platforms, alternative financing mechanisms, and supportive government policies, SMEs can overcome traditional barriers to accessing finance, thereby promoting entrepreneurship and economic development. Continued collaboration among stakeholders and addressing existing challenges will further solidify the role of FinTech in empowering SMEs globally.

Challenges and Considerations: Navigating the FinTech SMEs Financial Inclusion

The integration of Financial Technology (FinTech) into the operations of Small and Medium-sized Enterprises (SMEs) has been heralded as a transformative approach to enhancing financial inclusion and business performance. However, this integration is not without its challenges and considerations, particularly in the context of developing economies. One significant hurdle is the regulatory environment. FinTech companies often navigate complex and evolving regulatory landscapes that can impede their growth and innovation. In regions like Southern Nigeria, for instance, regulatory uncertainties have been identified as substantial barriers to FinTech expansion, limiting the scalability and versatility of these enterprises (Adeniran Nwankwo, 2023; Ibrahim, 2022).

Another critical challenge is the low level of digital literacy among SME operators. Many entrepreneurs lack the necessary skills and knowledge to effectively utilize digital financial services, leading to underutilization of FinTech solutions. This gap in digital literacy not only hampers the adoption of FinTech but also affects the overall financial inclusion of

SMEs. Studies have shown that enhancing financial literacy can significantly improve SMEs' performance by enabling them to make informed financial decisions and effectively leverage FinTech services (Togun et al., 2023).

Cybersecurity threats also pose a significant concern for SMEs adopting FinTech solutions. The increasing reliance on digital platforms exposes SMEs to risks such as data breaches and financial fraud. A systematic review of cybersecurity threats in FinTech highlights the need for robust security measures to protect sensitive financial information and maintain trust in digital financial services (Javaheri et al., 2023). Addressing these security challenges is crucial for the sustainable adoption of FinTech by SMEs.

Access to digital infrastructure remains a pressing issue, particularly in rural and underserved areas. Limited internet connectivity and inadequate technological infrastructure can restrict SMEs' ability to engage with FinTech services. In Africa, for example, digital finance has been shown to significantly improve SME financial inclusion, but the effectiveness of these services is contingent upon the availability of reliable digital infrastructure (Umar et al., 2025). Therefore, investments in digital infrastructure are essential to ensure that SMEs can fully benefit from FinTech innovations.

Government support plays a pivotal role in facilitating the integration of FinTech into SMEs. Policies that promote the adoption of digital financial services and provide regulatory clarity can enhance SMEs' access to finance and improve their survival and performance rates. A systematic literature review underscores the synergistic relationship between government initiatives and FinTech solutions, suggesting that collaborative strategies can transform SME financial empowerment (Chen et al., 2025). Such support can create an enabling environment that fosters innovation and addresses the unique challenges faced by SMEs in the FinTech era.

Overall, while FinTech offers promising avenues for enhancing financial inclusion and performance among SMEs, several challenges must be addressed to realize its full potential. Regulatory complexities, low digital literacy, cybersecurity threats, inadequate digital

infrastructure, and the need for supportive government policies are critical considerations. Addressing these challenges requires a multifaceted approach involving stakeholders at various levels to create a conducive environment for FinTech adoption and utilization by SMEs.

METHODOLOGY

This study adopted a quantitative research methodology to examine the impact of Financial Technology (FinTech) on the financial inclusion of Small and Medium-sized Enterprises (SMEs) in Abuja, Nigeria. The research design employed was a descriptive survey, which enabled the collection of standardized data from a cross-section of SME operators within the Federal Capital Territory (FCT). Primary data was gathered using a structured questionnaire developed based on the study's objectives and validated through expert review to ensure content and construct validity. A stratified random sampling technique was applied to ensure proportional representation across different SME sectors such as retail, services, manufacturing, and technology. The sample size was determined using Yamane's (1967) formula, ensuring statistical adequacy and reliability. The data collected was analyzed using the Statistical Package for Social Sciences (SPSS version 25), employing descriptive statistics (mean and standard deviation) and inferential statistics, particularly multiple regression analysis, to test the hypotheses and evaluate the strength and direction of the relationship between FinTech adoption—measured through mobile banking, ATM usage, POS terminals, and web payment platforms—and SMEs' financial inclusion, measured in terms of access, usage, and quality of financial services. Ethical considerations were adhered to throughout the research process, including informed consent and confidentiality of respondents' information.

Conceptual Analyses

Financial Technology (FinTech) has emerged as a transformative force in the financial services industry, significantly influencing the landscape of financial inclusion, particularly for Small and Medium-sized Enterprises (SMEs). FinTech encompasses a broad range of technological innovations aimed at improving and automating the delivery and use of financial

services. These innovations include mobile banking, digital payments, peer-to-peer lending, and blockchain technology, all of which have the potential to enhance access to financial services for underserved populations and businesses (Badra et al., 2025).

The integration of FinTech into the financial ecosystem has been identified as a key driver in advancing financial inclusion. By leveraging digital platforms, FinTech solutions can overcome traditional barriers to financial access, such as geographical constraints and high transaction costs, thereby providing SMEs with more efficient and accessible financial services. This is particularly relevant in developing regions where conventional banking infrastructure is often limited (Umar et al., 2025).

Recent studies have highlighted the significant role of FinTech in facilitating financial inclusion for SMEs. For instance, Umar et al. (2025) examined the impact of digital finance on SME financial inclusion in Africa, finding that digital finance significantly improves SMEs' access to financial services. The study suggests that the adoption of user-friendly digital financial technologies and the establishment of supportive regulatory frameworks are essential for enhancing financial inclusion among SMEs in the region.

Furthermore, a systematic literature review by Badra et al. (2025) explored the themes of FinTech and financial inclusion, identifying emerging research clusters that emphasize the importance of technological infrastructure and access to financial services. The study underscores the need for continued research into the tangible impacts of FinTech on financial inclusion and the development of strategies to address challenges such as regulatory compliance and digital literacy.

In conclusion, the conceptual analysis of FinTech's role in enhancing financial inclusion for SMEs reveals a dynamic and evolving landscape. While FinTech offers promising solutions to traditional financial access challenges, ongoing research and policy development are necessary to fully realize its potential and address associated challenges. Collaborative efforts among stakeholders, including policymakers, financial institutions, and technology providers, are crucial to

creating an enabling environment that fosters the sustainable integration of FinTech into the SME sector.

Implementation Approaches

Implementing Financial Technology (FinTech) solutions to enhance financial inclusion among Small and Medium-sized Enterprises (SMEs) requires a multifaceted approach that addresses both technological and socio-economic factors. One effective strategy involves fostering collaborations between FinTech firms and traditional financial institutions. Such partnerships leverage the technological innovation of FinTech companies and the established customer base and regulatory experience of traditional banks, thereby facilitating the development of tailored financial products that meet the unique needs of SMEs (Zubairu et al., 2025).

Another critical approach is the development of robust digital infrastructure. Ensuring widespread access to reliable internet services and affordable digital devices is fundamental for SMEs to effectively utilize FinTech services. Investments in digital infrastructure not only support the adoption of FinTech solutions but also contribute to broader economic development by enabling SMEs to participate more fully in the digital economy (Umar et al., 2025).

Enhancing digital literacy among SME operators is also paramount. Educational programs and training workshops can equip entrepreneurs with the necessary skills to navigate digital financial platforms, understand the benefits and risks associated with FinTech services, and make informed financial decisions. Such capacity-building initiatives are essential for maximizing the potential benefits of FinTech and ensuring that SMEs can leverage these technologies effectively (Jha & Dangwal, 2024).

Regulatory frameworks play a significant role in the successful implementation of FinTech solutions. Policymakers must establish clear and supportive regulations that promote innovation while safeguarding against potential risks such as fraud and data breaches. Creating a conducive regulatory environment encourages FinTech adoption among SMEs by providing assurance of the security and

legitimacy of digital financial services (Sanga & Aziakpono, 2025).

Furthermore, the customization of FinTech products to align with the specific needs and contexts of SMEs is crucial. Developing user-friendly interfaces, offering products in local languages, and tailoring services to address the unique challenges faced by SMEs in different regions can enhance adoption rates and ensure that FinTech solutions are both accessible and relevant (Offiong et al., 2024).

In summary, implementing FinTech solutions to enhance SME financial inclusion necessitates collaborative efforts among various stakeholders, investment in digital infrastructure, promotion of digital literacy, establishment of supportive regulatory frameworks, and customization of financial products. These approaches collectively contribute to creating an enabling environment where SMEs can thrive in the digital financial landscape.

Implementation Steps

The implementation steps of leveraging Financial Technology (FinTech) to enhance financial inclusion for Small and Medium Enterprises (SMEs) require a multifaceted and strategic approach that addresses infrastructural readiness, regulatory compliance, technology adoption, stakeholder engagement, and capacity building. To begin with, SMEs must be sensitized and educated on the value proposition and operational dynamics of FinTech solutions such as mobile banking, point-of-sale (POS) systems, automated teller machines (ATMs), and web-based payment platforms. Awareness creation and digital literacy programs help reduce the knowledge gap that often hinders adoption (Osabohien et al., 2021). Moreover, digital infrastructure development, particularly the expansion of broadband internet access and mobile network coverage, is crucial in ensuring the effective use of digital platforms by SMEs in both urban and rural areas (Okeke et al., 2022).

The next phase involves integrating FinTech tools with SMEs' business processes. This includes the deployment of user-friendly mobile applications, interoperable POS systems, and seamless web-payment gateways that support multiple currencies and payment modes. Such integration facilitates real-time

transactions, secure payment processing, and easier access to financial services (Adelekan & Salau, 2023). Regulatory institutions like the Central Bank of Nigeria (CBN) and other financial sector actors must create enabling policies that support digital finance while protecting SMEs from cybersecurity threats and ensuring data privacy compliance (Onyinyechi et al., 2020).

Stakeholder collaboration is another critical implementation step. Partnerships between government agencies, FinTech companies, traditional financial institutions, and SME associations can lead to the co-creation of customized financial products and services tailored to the peculiarities of local businesses (Chukwuekezie & Ibidunni, 2022). Additionally, financial institutions should develop simplified and flexible credit-scoring

models powered by artificial intelligence and big data analytics to assess SME creditworthiness beyond traditional collateral-based systems (Kanu & Iwuoha, 2021).

Monitoring and evaluation mechanisms are essential for assessing the impact of FinTech tools on SME financial inclusion. These mechanisms provide data on user experiences, service accessibility, and overall financial performance, enabling continuous improvements in service delivery and policy design (Ejemeyovwi et al., 2020). In conclusion, for FinTech adoption to sustainably improve financial inclusion among SMEs, a sequential and well-monitored implementation process is necessary, with strong institutional support, appropriate technology infrastructure, and targeted capacity-building initiatives.

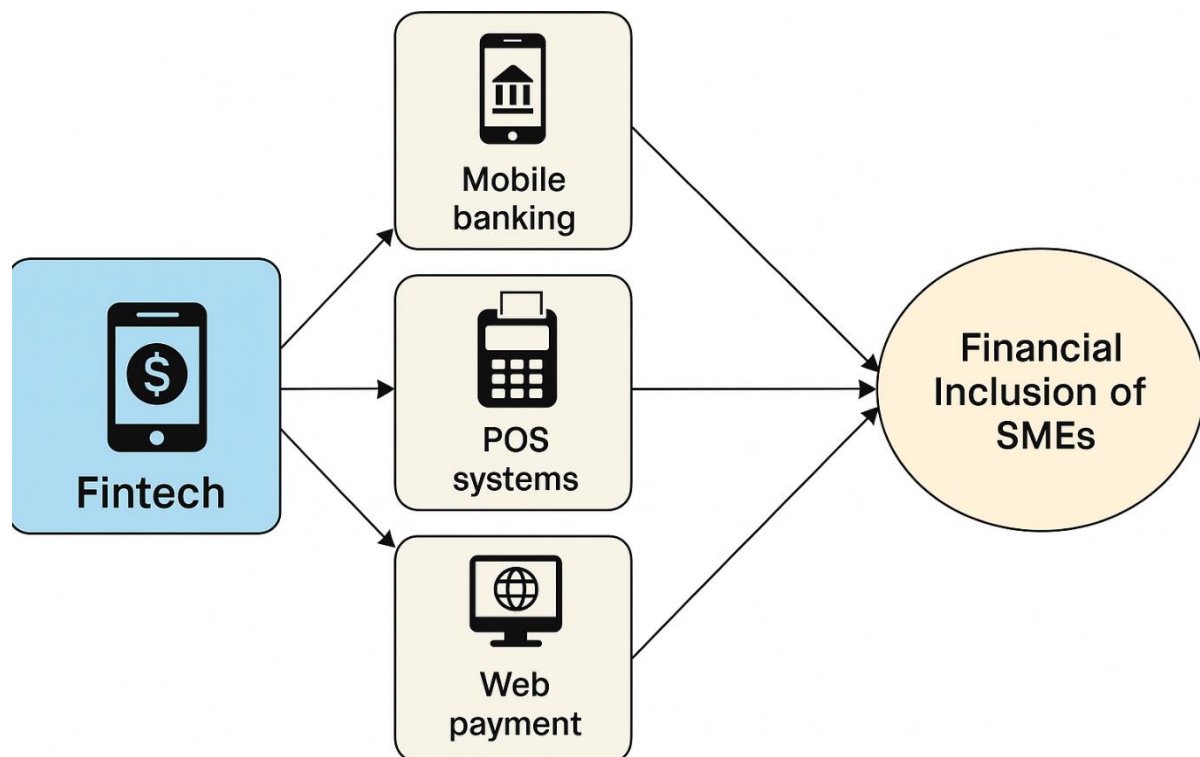


Figure 1: Big Data Implementation Model

Source: Authors Contribution, 2025

Conclusion

The integration of Financial Technology (FinTech) into the operational frameworks of Small and Medium Enterprises (SMEs) has emerged as a transformative force, particularly

in enhancing financial inclusion. As this study has demonstrated, the adoption of FinTech tools such as mobile banking, Point of Sale (POS) systems, Automated Teller Machines (ATMs), and web-based payment solutions has significantly improved SMEs' access to formal

financial services, thereby facilitating growth, reducing transaction costs, and fostering economic resilience. These technologies address the long-standing barriers of accessibility, affordability, and speed that have historically hindered SMEs from achieving full financial inclusion.

Despite these advantages, the FinTech ecosystem presents implementation challenges such as cybersecurity risks, lack of digital literacy among SME operators, regulatory inconsistencies, and infrastructural gaps, particularly in developing economies. Therefore, deliberate policy interventions, capacity-building programs, and a robust regulatory environment are critical to fully harnessing FinTech's potential for SME development. The conceptual and implementation models presented in this study provide a useful roadmap for stakeholders aiming to deploy FinTech solutions that are inclusive, secure, and scalable.

Generally, FinTech holds great promise for bridging the financial inclusion gap among SMEs in Nigeria and similar contexts. Future studies and policy frameworks should focus on mitigating the identified challenges while promoting innovative, inclusive, and sustainable digital financial ecosystems. Through strategic alignment of FinTech capabilities with SMEs' operational needs, financial inclusion can evolve from a policy goal into a practical and measurable economic outcome.

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