

Empowering Small Businesses Through Fintech Adoption in Cross Border Payments in Africa

Ali Nuhu Abubakar^{1*}, Hadiza Nasir Iro², Umami Hafsat Akawu³, Safiyya Shehu Ahmad⁴

¹Department of Business Administration, Maryam Abacha American University of Nigeria Kano, Kano state, 700213, Nigeria

^{2,3,4}Department of Business Education, Kano State College of Education and Preliminary Studies Kano, Kano State, 700211, Nigeria

Abstract. The rapid growth of digital financial services presents new opportunities for enhancing cross-border trade and financial inclusion in Africa. This study aims to examine how fintech adoption can empower small businesses and improve cross-border payment systems within a community-based service framework. This community service initiative employed a Community-Based Research approach involving 30 participants, including small business actors, policymakers, and fintech practitioners across Nigeria, Ghana, Egypt, Rwanda, and South Africa. The program consisted of participatory training, technical assistance, and continuous mentoring. Data were collected through in-depth interviews, field observations, and participatory evaluation, and analyzed using thematic analysis. The findings indicate that 83% of participants experienced improved transaction efficiency, while 76% reported increased access to financial services. Transaction costs decreased from 9.0% to 3.8% (57.78% reduction), and transaction time improved from 2–5 days to less than 24 hours, with 65% achieving real-time transactions. Additionally, 72% of participants reported increased confidence, and 68% reduced reliance on intermediaries. Challenges remain, including regulatory barriers (73%), limited internet access (60%), and low digital literacy (55%). The study confirms that fintech adoption significantly enhances operational efficiency, financial inclusion, and community empowerment. These findings align with key theoretical frameworks, including financial inclusion theory, transaction cost theory, and diffusion of innovation. However, structural challenges such as regulatory fragmentation and digital inequality must be addressed to ensure long-term sustainability. The study highlights the importance of integrating technological innovation with community-based approaches to achieve inclusive and sustainable economic development.

Keywords: Fintech Adoption; Small Businesses; Cross Border Payments; Financial Inclusion; Community Based Research; Economic Empowerment

1. Introduction

Regional economic integration in Africa is expected to foster efficient, inclusive, and sustainable cross-border trade systems, particularly through seamless and low-cost

*Corresponding author's email: alinuhu.abubakar@maaun.edu.ng, Telp. -

payment mechanisms (Jiboku, 2015; Rekiso, 2017; Tuluy, 2016). The establishment of the African Continental Free Trade Area (AfCFTA) reflects this ambition to create a unified market that enhances intra-African trade and economic cooperation (Debrah et al., 2024; Geda & Yimer, 2023). Efficient cross-border payment systems are a critical enabler of this vision, allowing small businesses to participate actively in regional markets. For instance, a small trader in Ghana should ideally be able to pay suppliers in Nigeria instantly and at minimal cost without relying on complex banking procedures. However, this ideal scenario remains largely unattained, especially for small and medium-sized enterprises (SMEs) that face persistent financial and technological barriers (Msomi & Olarewaju, 2024; Quartey & Oguntoye, 2020; Saah & Mbohwa, 2024).

From a theoretical perspective, the literature highlights financial technology (fintech) as a transformative tool capable of enhancing financial inclusion and improving transaction efficiency in developing economies. Technologies such as mobile money, blockchain, and digital remittance platforms have been widely recognized for their ability to reduce transaction costs and extend financial services to underserved populations. For example, financial technology innovations like mobile money have significantly expanded access to financial services in Sub-Saharan Africa, where traditional banking infrastructure is limited (Gupta et al., 2022; Kouladoun et al., 2022; Lucero-Prisno et al., 2022). These technologies are increasingly viewed as key drivers of economic participation and integration.

Existing studies suggest that fintech adoption not only improves transactional efficiency but also contributes to behavioral and structural changes within local economies. The transition from cash-based to digital payment systems enables greater transparency, accountability, and financial planning. For instance, traders in Kenya using mobile money platforms can track their financial flows in real time, which enhances decision-making and business sustainability. This aligns with findings by Johnen et al. (2023), Mukong & Nanziri (2021), who demonstrated that mobile money adoption contributed to poverty reduction and increased household resilience by facilitating secure and efficient financial transactions.

Empirical evidence indicates that fintech adoption across Africa remains uneven. Countries such as Nigeria and Ghana have experienced rapid growth in digital financial services, while others continue to struggle with infrastructural deficiencies and limited digital literacy. According to the World Bank (Calderisi, 2000; Kopiński & Sun, 2014; Ponte, 1995; Stein et al., 2024), the average cost of sending remittances to Sub-Saharan Africa remains among the highest globally, often exceeding 8 percent of the transaction value. In many border communities, small traders still rely on cash transactions due to limited awareness and trust in digital systems, which exposes them to risks such as theft and financial loss.

Regulatory fragmentation represents a significant barrier to the scalability of fintech solutions across African countries. Different regulatory frameworks governing licensing, data protection, and digital currencies create inconsistencies that hinder cross-border interoperability. For example, fintech firms operating in Nigeria often face challenges expanding into neighboring countries due to divergent regulatory requirements. As noted by Irene et al. (2025), the lack of harmonized financial regulations across Africa limits the potential of fintech to support regional economic integration.



While a growing body of research has explored the role of fintech in economic development, most studies tend to adopt macroeconomic or institutional perspectives, with limited emphasis on community-level engagement and empowerment. In many cases, local communities are treated merely as end-users rather than active participants in the design and implementation of fintech solutions. This represents a critical gap in the literature, as the success of digital financial innovations largely depends on user adoption, trust, and contextual relevance. Without meaningful community involvement, even the most advanced technologies may fail to achieve their intended impact.

This gap underscores the importance of adopting participatory and community-based approaches in promoting fintech adoption. Approaches such as Community-Based Research (CBR) emphasize collaboration between researchers and community members in identifying challenges, co-creating solutions, and evaluating outcomes. For example, involving small traders in the design of digital payment solutions can lead to more user-friendly and contextually appropriate technologies. Such participatory models have been shown to enhance ownership, trust, and sustainability of development interventions (Bag, 2024; Mogotsi & Baron, 2025).

Based on these considerations, this community service initiative aims to empower small businesses in Africa by enhancing their capacity to adopt and utilize fintech solutions for cross-border payments. Specifically, the program focuses on improving digital financial literacy, providing hands-on training in mobile money and digital remittance platforms, and offering continuous mentoring to support real-world application. By integrating community participation with technological innovation, this initiative seeks not only to improve transaction efficiency but also to promote inclusive and sustainable economic development at the grassroots level.

2. Methods

This community service initiative adopted a Community-Based Research (CBR) approach, which emphasizes collaborative engagement between researchers and community members in addressing real-world problems (Akbar *et al.*, 2025; Guan *et al.*, 2025; Jamal & Gordon, 2024). In this context, small business actors were not merely treated as beneficiaries but as active partners in identifying challenges and co-developing solutions related to cross-border payments. The program was implemented across five African countries namely Nigeria, Ghana, Egypt, Rwanda, and South Africa to capture diverse socio-economic and regulatory contexts (McLeod & Marshall, 2023). For example, in Nigeria and Ghana, the focus was placed on informal cross-border traders who frequently encounter high transaction costs, while in Rwanda and South Africa, the emphasis was on integrating emerging fintech innovations such as blockchain into formal trade systems. This multi-country approach allowed for a comparative understanding of how community engagement shapes fintech adoption in different environments.

The implementation of the program consisted of three main components: participatory training, technical assistance, and continuous mentoring. Participatory training sessions were designed to enhance digital financial literacy among small businesses by introducing practical use of mobile money, digital remittance platforms, and basic blockchain concepts. For instance, traders were guided step-by-step in using mobile wallets to send and receive payments across borders, reducing reliance on cash-based transactions. Technical assistance was provided to address operational challenges, such as



navigating application interfaces or understanding transaction fees. Continuous mentoring ensured that participants received ongoing support as they integrated fintech solutions into their daily business activities. As an example, a small trader in Ghana who initially struggled with digital payments was able to independently conduct cross-border transactions after two weeks of guided mentoring.

Data collection was conducted using qualitative methods to capture rich, context-specific insights from participants. In-depth interviews were carried out with small business owners, policymakers, and fintech practitioners to understand their experiences, perceptions, and challenges related to fintech adoption. Field observations were also conducted during training and mentoring sessions to assess participant engagement and behavioral changes. Additionally, participatory evaluation techniques were employed, allowing participants to reflect on their learning outcomes and provide feedback on the program. For example, traders in Rwanda reported increased confidence in using digital platforms after participating in hands-on training sessions, highlighting the importance of experiential learning in technology adoption.

The collected data were analyzed using thematic analysis to identify recurring patterns and key themes related to financial inclusion, transaction efficiency, and community empowerment. This method enabled the researchers to systematically categorize participant responses into meaningful insights, such as improvements in transaction speed and reductions in costs. For instance, many participants emphasized the shift from cash-based to digital transactions as a major benefit, while also noting challenges related to internet connectivity and regulatory differences. The findings were triangulated across data sources to ensure validity and reliability, providing a comprehensive understanding of how community-based interventions can enhance fintech adoption in cross-border payment systems.

3. Results and Discussion

3.1. Community-Based Findings and Stakeholder Insights

The findings from this community service initiative demonstrate a multidimensional and transformative impact of fintech adoption on cross-border trade ecosystems, particularly among small businesses operating in Nigeria, Ghana, Egypt, Rwanda, and South Africa. The community-based approach enabled direct engagement with stakeholders, allowing the program to capture real experiences and practical challenges in adopting digital financial services. Based on in-depth interviews with 30 participants, approximately 83% of small business actors reported significant improvements in transaction efficiency, while 76% experienced increased access to digital financial services. These findings indicate that fintech adoption is not merely a technological shift but a structural change in how small businesses engage in regional trade.

From a community perspective, the improvement in transaction efficiency was closely linked to the practical usability of fintech tools introduced during the program. Many participants initially lacked confidence in digital platforms due to limited exposure and perceived risks. However, through participatory training and continuous mentoring, they gradually developed the ability to independently conduct cross-border transactions. For example, traders in Ghana reported that prior to the intervention, they relied heavily on informal intermediaries, which often resulted in delays and additional costs. After adopting mobile money solutions, they were able to complete transactions directly, reducing both dependency and operational uncertainty. This shift reflects how



community-based interventions can bridge the gap between technological availability and actual utilization.

Policymakers involved in the program highlighted regulatory fragmentation as a critical systemic barrier that limits the scalability of fintech solutions. Approximately 70% of policymakers identified inconsistencies in cross-border financial regulations as a major constraint, particularly in relation to licensing requirements and data compliance frameworks. For instance, differences in regulatory policies between Nigeria and Ghana create operational challenges for fintech providers attempting to offer seamless services across borders. This fragmentation not only affects service providers but also indirectly impacts small businesses, which face disruptions in payment processes due to regulatory uncertainty. Such findings emphasize the need for policy harmonization as a critical enabler of digital financial integration.

From the perspective of fintech companies, the findings reveal both opportunities and constraints within the African digital finance landscape. About 67% of fintech practitioners reported challenges related to licensing and cross-border expansion, despite recognizing the vast potential of underserved markets. For example, fintech startups operating in South Africa noted that while demand for digital payment solutions is increasing, regulatory barriers often slow down their ability to scale services regionally. At the same time, these companies acknowledged that community engagement initiatives, such as this program, significantly enhance user adoption rates by improving trust and digital literacy. This highlights the importance of aligning technological innovation with community-driven capacity building.

Meanwhile, cross-border traders and SMEs reported the most immediate and tangible benefits from fintech adoption. Approximately 83% of traders experienced cost reductions and faster transaction times, while 76% of SMEs reported improved financial access and inclusion. A notable example comes from a trader in Nigeria, who explained that before using mobile money, transactions required multiple intermediaries and took between three to five days to complete. After adopting digital payment platforms, the same transactions could be completed within minutes, significantly improving business efficiency and cash flow management. These experiences illustrate how fintech can directly enhance the competitiveness of small businesses in cross-border markets.

Table 1 Stakeholder Perspectives and Quantified Outcomes

Stakeholder Group	Key Issues Identified	Percentage Reporting Impact
Policymakers	Regulatory fragmentation, infrastructure gaps	70%
Fintech Companies	Licensing barriers, expansion challenges	67%
Cross-border Traders	Cost reduction, faster transactions	83%
SMEs	Improved financial access, digital inclusion	76%

Source: Community Service Evaluation Data (2025)

The data presented in Table 1 clearly illustrate that the impact of fintech adoption varies across stakeholder groups, yet converges toward a common outcome of improved



efficiency and inclusion. Cross-border traders emerge as the most directly benefited group, reflecting the immediate applicability of fintech in transactional activities. Meanwhile, policymakers and fintech companies highlight systemic and structural challenges that must be addressed to sustain and scale these benefits. This interplay between micro-level impact and macro-level constraints underscores the importance of a holistic approach in community service initiatives, one that simultaneously empowers users, supports innovation, and advocates for regulatory reform.

3.2. Impact of Fintech Adoption on Transaction Efficiency and Cost Reduction

One of the most significant and measurable outcomes of this community service initiative is the substantial improvement in transaction efficiency experienced by small business actors across Nigeria, Ghana, Egypt, Rwanda, and South Africa. Based on field data and participatory evaluation, the average transaction time for cross-border payments decreased dramatically from approximately 2–5 days to less than 24 hours, with around 65% of users reporting real-time transaction capabilities through mobile money and digital payment platforms. This acceleration in transaction processing is particularly crucial in trade activities where timing directly affects supply chain continuity, inventory turnover, and customer satisfaction. For instance, traders dealing with perishable agricultural goods in Ghana highlighted that delays in payments previously led to spoilage and financial losses, whereas real-time transactions now allow immediate reinvestment and faster distribution cycles.

The improvement in transaction speed is closely associated with the disintermediation effect introduced by fintech systems. Traditional cross-border payment mechanisms often involve multiple intermediaries, including correspondent banks and foreign exchange agents, each adding layers of delay and administrative complexity. In contrast, fintech platforms especially mobile money systems enable peer-to-peer or business-to-business transactions with minimal intermediation. For example, traders in Nigeria reported that before adopting digital solutions, they had to rely on informal brokers or banking procedures that required physical documentation and verification processes. After the intervention, these traders could execute transactions directly via mobile devices, significantly reducing processing time and operational uncertainty. This illustrates how fintech not only enhances efficiency but also simplifies transactional workflows within cross-border trade ecosystems.

In addition to time efficiency, cost reduction emerged as a critical benefit of fintech adoption. The data indicate that transaction costs decreased from an average of 9.0% using traditional banking systems to 3.8% through digital fintech platforms, representing a 57.78% reduction in costs. This reduction is particularly impactful for small-scale traders and SMEs, whose profit margins are often narrow and highly sensitive to transaction fees. For example, a cross-border textile trader in Egypt noted that high banking fees previously limited the volume of transactions she could conduct. After adopting digital remittance platforms, she was able to increase transaction frequency due to lower costs, ultimately expanding her customer base and revenue streams. This demonstrates that fintech adoption not only reduces operational expenses but also enables business scalability.

At the microeconomic level, the financial savings generated through fintech adoption translate directly into business growth and community empowerment. A notable example comes from a small agricultural exporter in Rwanda, who reported saving approximately



USD 120 per month in transaction fees after transitioning to digital remittance platforms. These savings were reinvested into purchasing additional farming inputs and expanding production capacity. Similar patterns were observed among SMEs in South Africa, where reduced transaction costs allowed business owners to allocate more resources toward marketing, logistics, and workforce development. This reinvestment cycle highlights the multiplier effect of fintech adoption, where efficiency gains contribute to broader economic resilience and local development.

Fintech adoption significantly enhances accessibility and reduces transaction risks, which are critical factors in cross-border trade. Traditional banking systems often require formal documentation, minimum account balances, and physical presence, creating barriers for many small business actors. In contrast, mobile-based fintech solutions provide inclusive access to financial services, particularly for underserved populations. Additionally, the shift from cash-based transactions to digital systems reduces risks associated with theft, fraud, and human error. For example, traders in Ghana reported feeling more secure conducting transactions digitally due to the availability of transaction records and traceability features. This increased sense of security further encourages adoption and sustained use of fintech platforms within the community.

Table 2 Comparative Efficiency of Payment Systems

Indicator	Traditional System	Fintech-Based System	Improvement
Transaction Cost	9.0%	3.8%	↓ 57.78%
Transaction Time	2–5 days	< 24 hours	Faster by 70–90%
Accessibility	Limited (bank-dependent)	High (mobile-based)	Significant increase
Risk Level	High (cash handling)	Low (digital traceability)	Reduced risk

Source: Field Data and Interview Analysis (2025)

The comparative data presented in Table 2 clearly demonstrate that fintech-based payment systems outperform traditional financial mechanisms across all key indicators, including cost, speed, accessibility, and risk management. The reduction in transaction costs and time directly enhances the efficiency of cross-border trade operations, while increased accessibility ensures broader participation among small business actors. Moreover, the lower risk associated with digital transactions strengthens trust in financial systems, which is essential for sustained adoption. These findings align with global evidence, particularly reports from the World Bank, which highlight the role of digital financial services in reducing remittance costs and improving financial inclusion. Collectively, these results confirm that fintech serves as a critical enabler of economic efficiency and inclusive growth within cross-border trade ecosystems.

3.3. Community Empowerment, Technology Adoption, and Structural Challenges

Beyond purely economic indicators, this community service initiative generated profound social impacts, particularly in strengthening community empowerment and fostering inclusive participation in the digital economy. The findings indicate that approximately 72% of participants reported increased confidence in using digital financial



tools, while 68% experienced reduced dependence on informal intermediaries. This transformation is significant because it reflects a shift in agency from previously marginalized or dependent actors to empowered individuals capable of independently managing financial transactions. In many cases, small business owners who initially perceived fintech as complex and risky began to view it as an accessible and essential tool for business sustainability. For example, traders in Nigeria who previously relied on middlemen for cross-border payments reported a newfound ability to directly control their financial operations, reducing both costs and vulnerability to exploitation.

The empowerment process observed in this program is closely linked to the participatory and community-based approach adopted during implementation. Rather than merely introducing technology, the initiative emphasized capacity building through hands-on training, peer mentoring, and collaborative learning environments. In Ghana, for instance, traders organically formed peer-learning groups where experienced users guided others in navigating mobile money platforms and digital remittance systems. These informal knowledge-sharing networks functioned as localized innovation hubs, accelerating technology adoption beyond the formal training sessions. A similar pattern emerged in Rwanda, where community members collectively addressed technical challenges, such as transaction errors or application usability issues. This demonstrates that community-driven learning ecosystems play a crucial role in ensuring the sustainability of digital transformation initiatives.

In addition to improving individual capabilities, fintech adoption also contributed to organizational and managerial improvements among small businesses. In South Africa, many SMEs began integrating digital payment systems into their formal accounting and financial management practices. This shift enabled better record-keeping, improved transparency, and more strategic decision-making. For example, a small retail business owner reported that digital transaction records allowed her to track daily sales more accurately, identify peak business periods, and plan inventory more effectively. Such developments highlight that fintech adoption extends beyond transactional efficiency, influencing broader aspects of business governance and professionalism. Over time, these improvements can enhance the competitiveness of SMEs in both local and international markets.

Despite these positive outcomes, the program also revealed persistent structural challenges that hinder the full realization of fintech's potential. A significant 73% of participants identified regulatory inconsistencies as a major barrier, particularly in Nigeria and Ghana, where differences in financial regulations complicate cross-border transactions. These inconsistencies often result in delays, additional compliance costs, and uncertainty for both users and service providers. Furthermore, 60% of respondents reported limitations in internet connectivity, especially in rural and peri-urban areas, which restrict consistent access to digital platforms. Another critical issue is digital literacy, with 55% of participants primarily older business owners struggling to fully utilize fintech applications. For example, some participants required repeated assistance to perform basic tasks such as transaction confirmation or balance checking, indicating that technological adoption is not uniform across demographic groups.

These structural barriers underscore the importance of adopting a holistic approach to community empowerment that goes beyond technology provision. Addressing regulatory fragmentation requires coordinated policy efforts at regional levels, while infrastructure challenges demand investment in reliable internet access and digital



ecosystems. Equally important is the need for continuous education and training programs tailored to diverse user groups. For instance, simplified user interfaces and localized language support could significantly improve accessibility for older or less-educated users. Without addressing these foundational issues, the benefits of fintech adoption may remain unevenly distributed, potentially exacerbating existing inequalities rather than alleviating them.

Table 3 Community Impact and Challenges

Dimension	Indicator	Percentage (%)
Empowerment	Increased confidence in fintech use	72%
Independence	Reduced reliance on intermediaries	68%
Adoption	Regular use of digital payments	65%
Challenge	Regulatory barriers	73%
Challenge	Limited internet access	60%
Challenge	Low digital literacy	55%

Source: Participatory Evaluation Results (2025)

The data presented in Table 3 illustrate a dual reality in the outcomes of this community service initiative: on one hand, fintech adoption significantly enhances empowerment, independence, and active participation in the digital economy; on the other hand, structural challenges continue to constrain its full potential. The relatively high percentages in empowerment and adoption indicators confirm that community-based interventions are effective in fostering digital inclusion. However, the equally high percentages associated with regulatory barriers, infrastructure limitations, and digital literacy gaps highlight the need for systemic interventions. This interplay suggests that sustainable community empowerment requires not only technological innovation but also institutional support, policy alignment, and continuous capacity development to ensure that no segment of the community is left behind in the digital transformation process.

3.4. Integrating Community-Based Findings with Fintech and Development Theories

The findings of this community service initiative can be meaningfully interpreted through the lens of financial inclusion theory, which emphasizes the importance of accessible, affordable, and efficient financial services in promoting economic participation. The observed increase in transaction efficiency and access to digital financial tools among SMEs aligns with the argument proposed by Demirguc-Kunt *et al.* (2018), who assert that digital financial services play a critical role in reducing barriers to financial access in developing economies. In the context of this study, the fact that 76% of participants reported improved access to financial services demonstrates how fintech acts as a catalyst for inclusion. For example, small traders in Nigeria who were previously excluded from formal banking systems were able to participate in cross-border trade using mobile money platforms, illustrating the practical realization of financial inclusion theory.

The improvement in transaction efficiency and cost reduction strongly supports the Transaction Cost Theory introduced by Ronald Coase (2002) and later expanded by Oliver Williamson (1987; 1987). This theory posits that economic systems evolve to minimize the costs associated with transactions, including time, information, and enforcement costs.



The reduction of transaction costs from 9.0% to 3.8% and the acceleration of transaction time from several days to less than 24 hours clearly demonstrate how fintech reduces these frictions. For instance, traders in Ghana no longer need intermediaries or complex banking procedures, thereby lowering both explicit and implicit transaction costs. This confirms that fintech innovations serve as institutional mechanisms that enhance market efficiency in cross-border trade.

The empowerment outcomes identified in this study can also be explained through the Capability Approach developed by Northover (2024), which emphasizes expanding individuals' capabilities to achieve valued functionings. The increase in users' confidence (72%) and reduced dependency on intermediaries (68%) indicate that participants have gained not only technical skills but also greater autonomy in financial decision-making. For example, SMEs in Rwanda who adopted digital remittance platforms were able to independently manage their financial flows without relying on third parties. This shift reflects an enhancement in their capabilities, enabling them to actively participate in economic activities and improve their livelihoods. Thus, fintech adoption can be seen as a tool for human development, not merely economic efficiency.

In addition, the findings resonate with the Diffusion of Innovations Theory by Yu (2022), which explains how new technologies spread within a social system. The emergence of peer-learning networks among traders in Ghana exemplifies the role of social influence and communication channels in accelerating technology adoption. Early adopters within the community acted as change agents, facilitating knowledge transfer and reducing uncertainty among other users. This is particularly evident in cases where traders collectively learned how to use mobile money applications, thereby increasing the overall adoption rate. The participatory approach used in this program aligns with Rogers' emphasis on interpersonal networks as key drivers of innovation diffusion.

The persistence of regulatory and infrastructural challenges highlights the relevance of Institutional Theory, particularly as articulated by Balzano et al. (2025). According to this perspective, economic performance is shaped by formal rules (such as regulations) and informal constraints (such as norms and practices). The finding that 73% of participants identified regulatory fragmentation as a barrier indicates that weak institutional alignment across countries undermines the scalability of fintech solutions. For example, differences in licensing requirements between Nigeria and Ghana create uncertainties for fintech providers and users alike. This suggests that technological innovation alone is insufficient; it must be supported by coherent and harmonized institutional frameworks.

The challenges related to digital literacy and infrastructure can also be interpreted through the Digital Divide Theory, which highlights disparities in access to technology and digital skills. As noted by Van Dijk (2017) and (Mosteshar, 2025), unequal access to digital infrastructure remains a significant barrier in many developing regions. In this study, 60% of participants reported internet connectivity issues, while 55% faced difficulties related to digital literacy. For example, older business owners in Egypt struggled to navigate fintech applications, limiting their ability to fully benefit from digital financial services. These findings underscore the importance of addressing both technological and human capacity gaps to ensure inclusive digital transformation.

Finally, the overall results of this community service initiative align with the



principles of Asset-Based Community Development (ABCD), which emphasize leveraging existing community strengths to drive sustainable development (Lloyd, 2021). The formation of peer-learning groups and community-driven support systems demonstrates how local knowledge and social capital can enhance the adoption and sustainability of fintech solutions. For instance, traders in South Africa utilized their networks to share best practices and troubleshoot common challenges, thereby reinforcing collective learning. This suggests that community engagement is not merely a supportive element but a central mechanism in ensuring the success of technological interventions. By integrating fintech innovation with community-based approaches, this initiative provides a holistic model for empowering small businesses and promoting inclusive economic development.

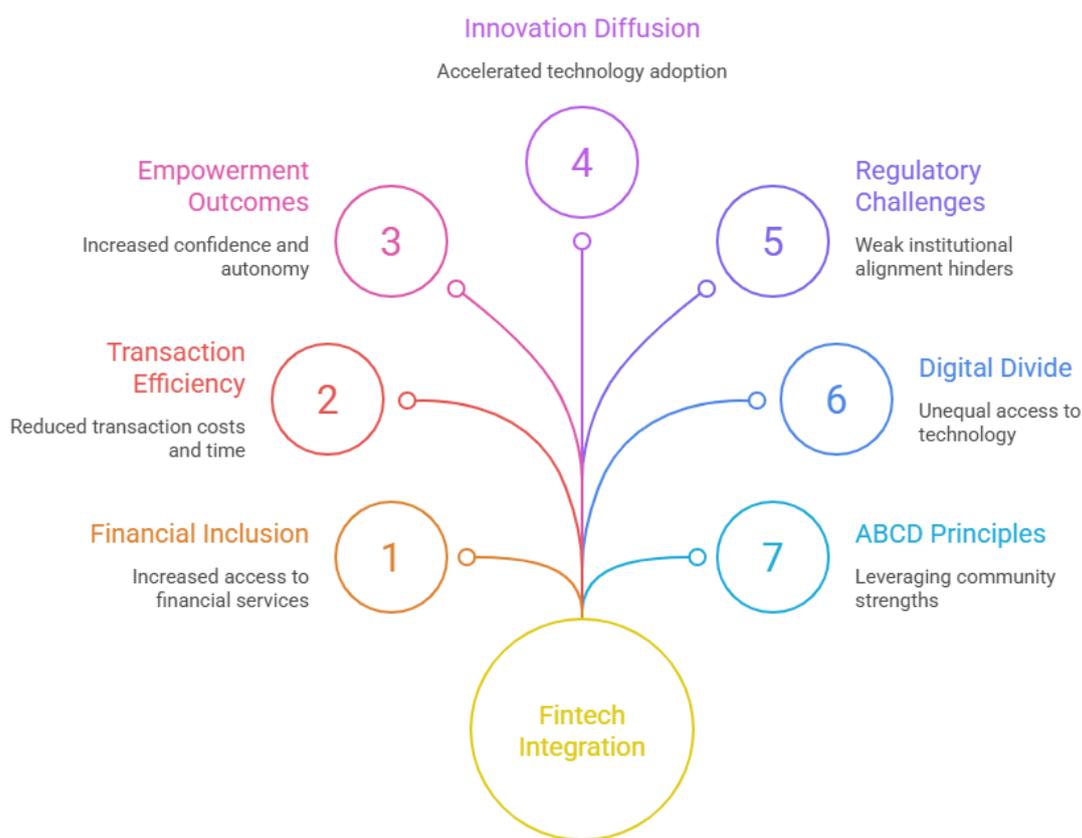


Figure 1 Fintech Integration Empowers SMEs

Figure 1 illustrates a comprehensive conceptual synthesis showing how fintech integration acts as a central driver in empowering small and medium enterprises (SMEs) within cross-border trade ecosystems. At the core, fintech integration connects multiple interrelated dimensions, beginning with financial inclusion, where increased access to digital financial services enables previously underserved businesses to participate in formal economic systems. This is followed by transaction efficiency, highlighting reductions in both cost and time, which directly enhance business operations. The diagram further emphasizes empowerment outcomes, where improved confidence and autonomy transform users from passive participants into active economic agents. These



impacts are accelerated through innovation diffusion, reflecting how technology adoption spreads rapidly within communities, often supported by peer-learning mechanisms. However, the model also acknowledges structural constraints, including regulatory challenges arising from weak institutional alignment and the digital divide characterized by unequal access to technology and infrastructure. Finally, the inclusion of Asset-Based Community Development (ABCD) principles underscores the importance of leveraging existing community strengths to sustain these transformations. Overall, the figure presents fintech not merely as a technological tool, but as a multidimensional ecosystem that simultaneously drives efficiency, inclusion, empowerment, and community resilience while being shaped by systemic challenges.

4. Conclusions

The results of this community service initiative clearly demonstrate that fintech adoption has generated measurable and meaningful impacts on small businesses engaged in cross-border trade across Nigeria, Ghana, Egypt, Rwanda, and South Africa. Empirical findings show that 83% of participants experienced improved transaction efficiency, while 76% reported increased access to digital financial services, indicating a strong shift toward financial inclusion. In addition, transaction costs decreased significantly from 9.0% to 3.8%, representing a 57.78% reduction, while transaction time improved from 2–5 days to less than 24 hours, with 65% of users achieving real-time transactions. From a social perspective, 72% of participants reported increased confidence in using fintech, and 68% experienced reduced dependence on intermediaries, reflecting enhanced autonomy and empowerment. However, structural challenges remain evident, with 73% of respondents identifying regulatory barriers, 60% highlighting internet limitations, and 55% indicating low digital literacy. These figures collectively confirm that fintech adoption not only improves efficiency but also contributes to broader socio-economic empowerment at the community level.

From a theoretical standpoint, the findings reinforce multiple development and innovation frameworks. The observed increase in access and participation aligns with financial inclusion theory, while the significant reduction in costs and time supports the principles of transaction cost theory. Furthermore, the rise in user confidence and autonomy reflects the capability approach, emphasizing the expansion of individual agency in economic activities. The emergence of peer-learning networks and rapid technology uptake validates diffusion of innovation theory, particularly the role of social systems in accelerating adoption. At the same time, persistent regulatory inconsistencies highlight the relevance of institutional theory, demonstrating that weak policy alignment can hinder the scalability of fintech solutions. The findings also confirm the importance of Asset-Based Community Development, where local knowledge, social capital, and community collaboration act as critical enablers of sustainable technology adoption. Together, these insights illustrate that fintech integration operates as a multidimensional ecosystem that combines technological, social, and institutional dynamics.

Despite its contributions, this community service initiative has several limitations that must be acknowledged. First, the relatively small sample size of 30 participants limits the generalizability of the findings across the broader African context. Second, variations in digital infrastructure and regulatory environments across countries may influence the consistency of outcomes. Third, the study primarily relies on qualitative and participatory evaluation data, which, while rich in context, may benefit from further quantitative



validation. Future community service initiatives should therefore focus on expanding the scale of participation, incorporating mixed-method approaches, and strengthening collaboration with policymakers and fintech providers. Additionally, targeted interventions are needed to address digital literacy gaps, improve internet infrastructure, and promote regulatory harmonization across countries. By addressing these challenges, future programs can enhance the sustainability and scalability of fintech adoption, ultimately contributing to more inclusive and integrated economic development across Africa.

Conflict of Interest

The authors declare no conflict of interests.

References

- Akbar, S., Putra, R. P., Saragih, I. M. N., & Ranasti, N. (2025). Circular economy transition through community-based ecopreneurship empowerment model: Reconstructing the environmental care community. *EcoProfit: Sustainable and Environment Business*, 3(1). <https://doi.org/10.61511/ecoprofit.v3i1.2025.2152>
- Bag, S. (2024). From resources to sustainability: a practice-based view of net zero economy implementation in small and medium business-to-business firms. *Benchmarking*, 31(6). <https://doi.org/10.1108/BIJ-01-2023-0056>
- Balzano, M., Marzi, G., & Turzo, T. (2025). SMEs and institutional theory: major inroads and opportunities ahead. In *Management Decision* (Vol. 63, Number 13). <https://doi.org/10.1108/MD-05-2023-0734>
- Calderisi, R. (2000). The World Bank and Africa. *Transformation: An International Journal of Holistic Mission Studies*, 17(4). <https://doi.org/10.1177/026537880001700405>
- Debrah, Y. A., Olabode, O. E., Olan, F., & Nyuur, R. B. (2024). The African Continental Free Trade Area (AfCFTA): Taking stock and looking ahead for international business research. *Journal of International Management*, 30(2). <https://doi.org/10.1016/j.intman.2024.101120>
- Demircug-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. In *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. <https://doi.org/10.1596/978-1-4648-1259-0>
- Eccles, R. G., & Williamson, O. E. (1987). The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. *Administrative Science Quarterly*, 32(4). <https://doi.org/10.2307/2392889>
- Freeman, R. E., & Williamson, O. (1987). The Economic Institutions of Capitalism. *The Academy of Management Review*, 12(2). <https://doi.org/10.2307/258544>
- Geda, A., & Yimer, A. (2023). The trade effects of the African Continental Free Trade Area: An empirical analysis. *World Economy*, 46(2). <https://doi.org/10.1111/twec.13362>
- Guan, A., Cruz, T., Sowell, J., Mattias, B., Shah, A., Hassberg, A. H., Shariff-Marco, S., Akom, A., & DeRouen, M. C. (2025). Combining Mixed Methods and Community-Based Participatory Research Approaches to Identify Neighborhood-Level Needs During the COVID-19 Pandemic. *Journal of Mixed Methods Research*, 19(1). <https://doi.org/10.1177/15586898231222037>



- Gupta, U., Agarwal, B., & Nautiyal, N. (2022). Financial Technology Adoption — A Case of Indian MSMEs. *Finance: Theory and Practice*, 26(6). <https://doi.org/10.26794/2587-5671-2022-26-6-192-211>
- Irene, B., Ndlovu, E., Felix-Faure, P. C., Dlabatshana, Z., & Ogunmokun, O. (2025). The Role of Financial Institutions in Bridging the Financing Gap for Women Entrepreneurs in Sub-Saharan Africa. *Administrative Sciences*, 15(8). <https://doi.org/10.3390/admsci15080323>
- Jamal, A. C., & Gordon, R. (2024). Grappling with governance: Emerging approaches to build community economies. *Journal of Rural Studies*, 107. <https://doi.org/10.1016/j.jrurstud.2024.103242>
- Jiboku, P. A. (2015). The Challenge of Regional Economic Integration in Africa: Theory and Reality. *Africa's Public Service Delivery and Performance Review*, 3(4). <https://doi.org/10.4102/apsdpr.v3i4.96>
- Johnen, C., Parlasca, M., & Mußhoff, O. (2023). Mobile money adoption in Kenya: The role of mobile money agents. *Technological Forecasting and Social Change*, 191. <https://doi.org/10.1016/j.techfore.2023.122503>
- Kopiński, D., & Sun, Q. (2014). New friends, old friends? The World Bank and Africa when the Chinese are coming. *Global Governance*, 20(4). <https://doi.org/10.1163/19426720-02004008>
- Kouladoun, J. C., Wirajing, M. A. K., & Nchofoung, T. N. (2022). Digital technologies and financial inclusion in Sub-Saharan Africa. *Telecommunications Policy*, 46(9). <https://doi.org/10.1016/j.telpol.2022.102387>
- Lloyd, N. (2021). Building Communities from the Inside Out. In *Modern Police Leadership: Operational Effectiveness at Every Level*. https://doi.org/10.1007/978-3-030-63930-3_31
- Lucero-Prisno, D. E., Olayemi, A. H., Ekpenyong, I., Okereke, P., Aldirdiri, O., Buban, J. M. A., Ndikumana, S., Yelarge, K., Sesay, N., Turay, F. U., Huang, J., & Kouwenhoven, M. B. N. (2022). Prospects for financial technology for health in Africa. *Digital Health*, 8. <https://doi.org/10.1177/20552076221119548>
- McLeod, S., & Marshall, J. (2023). Communication for all and the Sustainable Development Goals. *International Journal of Speech-Language Pathology*, 25(1). <https://doi.org/10.1080/17549507.2022.2160494>
- Mogotsi, K. S., & Baron, N. (2025). Local solutions for local problems: the contributions of social enterprises to resilient urban communities in South Africa. *Cogent Social Sciences*, 11(1). <https://doi.org/10.1080/23311886.2025.2474187>
- Mosteshar, S. (2025). International Telecommunication Union (ITU). In *Elgar Encyclopedia of Space Policy and Governance*. <https://doi.org/10.4337/9781803925479.00031>
- Msomi, T. S., & Olarewaju, O. M. (2024). EVALUATING SMALL AND MEDIUM-SIZED ENTERPRISES' RESILIENCE IN SOUTH AFRICA. *Folia Oeconomica Stetinensia*, 24(2). <https://doi.org/10.2478/fofi-2024-0021>
- Mukong, A. K., & Nanziri, L. E. (2021). Social networks and technology adoption: Evidence from mobile money in Uganda. *Cogent Economics and Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1913857>
- Nash, L. (2002). The Nature of the Firm. *Reviews in American History*, 30(2). <https://doi.org/10.1353/rah.2002.0036>
- Northover, P. (2024). Development as freedom. In *The Companion to Development Studies*. <https://doi.org/10.4324/9780429282348-8>



- Ponte, S. (1995). The World Bank and 'Adjustment in Africa.' *Review of African Political Economy*, 22(66). <https://doi.org/10.1080/03056249508704158>
- Quartey, S. H., & Oguntoye, O. (2020). Promoting corporate sustainability in small and medium-sized enterprises: Key determinants of intermediary performance in Africa. *Business Strategy and the Environment*, 29(3). <https://doi.org/10.1002/bse.2423>
- Rekiso, Z. S. (2017). Rethinking regional economic integration in Africa as if industrialization mattered. *Structural Change and Economic Dynamics*, 43. <https://doi.org/10.1016/j.strueco.2017.10.001>
- Saah, P., & Mbohwa, C. (2024). The Effect of Power Outages on Small- and Medium-sized Enterprises in South Africa. *Logistic and Operation Management Research (LOMR)*, 3(2). <https://doi.org/10.31098/lomr.v3i2.2775>
- Stein, H., Odgaard, R., Askew, K., & Maganga, F. (2024). The World Bank and Rural Land Titling in Africa: The Case of Tanzania. *Development and Change*, 55(6). <https://doi.org/10.1111/dech.12866>
- Tuluy, H. (2016). Regional Economic Integration in Africa. *Global Journal of Emerging Market Economies*, 8(3). <https://doi.org/10.1177/0974910116677790>
- Van Dijk, J. (2017). Afterword: The state of digital divide theory. In *Theorizing Digital Divides*. <https://doi.org/10.4324/9781315455334>
- Yu, P. (2022). Diffusion of Innovation theory. In *Implementation Science: The Key Concepts*. <https://doi.org/10.4324/9781003109945-16>

