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Innovative Financial Solutions: A Conceptual Framework for Expanding SME Portfolios in Nigeria's Banking Sector

Princess Eloho Odio^{1*}, Eseoghene Kokogho², Taiwo Akindele Olorunfemi³, Mark Osemedua Nwazomudoh⁴, Ilerioluwase Emmanuel Adeniji⁵, Adedamola Sobowale⁶

¹ Zircon Marine LTD, Lagos, Nigeria

² Independent Researcher, Lagos, Nigeria

³ Deloitte & Touche LLP, Dallas, TX, USA

⁴ First Bank of Nigeria Limited

⁵ Independent Researcher, Delta State, Nigeria

⁶ LafargeHolcim-Akwa Ibom

Corresponding Author: **Princess Eloho Odio**

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Abstract

Small and Medium-sized Enterprises (SMEs) are pivotal to Nigeria's economic development, contributing significantly to employment generation and Gross Domestic Product (GDP). However, their growth is constrained by limited access to financial resources, poor credit facilities, and inadequate support from financial institutions. This paper presents a conceptual framework for expanding SME portfolios in Nigeria's banking sector through innovative financial solutions. The framework integrates advanced technologies, strategic financial modeling, and collaborative partnerships to address the challenges SMEs face in accessing credit and financial services. Key elements of the framework include the implementation of data-driven credit scoring systems using machine learning algorithms to assess SME creditworthiness beyond traditional metrics, such as collateral and financial history. Additionally, digital banking platforms are proposed to streamline loan application processes, reduce operational costs, and enhance service delivery. The framework emphasizes the creation of SME-focused financial products, such as micro-loans, credit

guarantees, and revenue-based financing, tailored to the unique needs of various SME segments. Partnerships between banks, fintech firms, and government agencies are highlighted as essential for fostering an inclusive financial ecosystem. A critical component of the framework is financial literacy and advisory services, aimed at equipping SME owners with the knowledge and skills needed to manage finances effectively and optimize business performance. The model also incorporates monitoring and evaluation systems to track portfolio performance and mitigate risks, ensuring sustainability and profitability for both financial institutions and SMEs. This paper provides a roadmap for policymakers, financial institutions, and development organizations to support SME growth through innovative financial solutions. By leveraging advanced technologies, collaborative frameworks, and SME-specific financial products, the proposed conceptual framework aims to bridge the financing gap, stimulate SME growth, and contribute to Nigeria's economic diversification and development.

Keywords: SMEs, Financial Solutions, Banking Sector, Credit Scoring, Machine Learning, Digital Banking, Financial Literacy, Inclusive Financial Ecosystem, Nigeria, Economic Development

1. Introduction

Small and Medium Enterprises (SMEs) are widely recognized as the backbone of Nigeria's economy, significantly contributing to employment generation, poverty alleviation, and overall economic growth. According to Eniola *et al.*, SMEs provide over 90% of employment opportunities in the manufacturing sector and account for approximately 70% of aggregate employment created annually in Nigeria (Eniola *et al.*, 2015) [33, 34]. Furthermore, SMEs contribute between 40% to 60% of the nation's Gross Domestic Product (GDP). This substantial economic footprint underscores their critical role in fostering innovation and entrepreneurship within the Nigerian context ("undefined", 2018). Despite their importance, SMEs in Nigeria face numerous

challenges, particularly in accessing financial resources, which are essential for their growth and sustainability. Research indicates that limited access to credit, high-interest rates, insufficient collateral, and inadequate financial literacy are significant barriers preventing SMEs from realizing their full potential (Gololo, 2017) [40]. For instance, Gololo highlights that commercial banks are often reluctant to extend credit to SMEs due to their perceived high-risk nature and lack of adequate financial documentation (Gololo, 2017) [40]. Additionally, Eniola and Entebang emphasize that the challenges of accessing finance are compounded by the inefficiencies within the banking sector, which often fails to provide tailored financial products that meet the unique needs of SMEs (Eniola & Entebang, 2015) [33, 34].

The financial constraints faced by SMEs are rooted in various factors, including the perceived high-risk nature of small businesses and the inefficiencies within the banking sector (Aladejebi, 2019) [3]. Traditional financial institutions often hesitate to lend to SMEs due to their limited credit history and the absence of risk mitigation frameworks (Aladejebi, 2019; "The Impact of Financial Crisis on Small and Medium Scale Enterprises Access to Credit in Nigeria", 2019) [3, 65]. Moreover, the lack of innovative financial solutions tailored to the specific needs of SMEs exacerbates these challenges, leaving many small businesses excluded from formal financial systems (Okpara, 2011) [56]. This exclusion not only hampers their ability to expand operations and improve productivity but also limits their contribution to the national economy (Guzmán & González de Molina, 2015, Rishaug & Wika, 2018) [41, 76].

To address these barriers, a conceptual framework for innovative financial solutions has been proposed, aiming to expand SME portfolios within Nigeria's banking sector. This framework seeks to create a sustainable and inclusive financial ecosystem that bridges the gap between SMEs and financial institutions. By leveraging advanced technologies, data-driven insights, and tailored financial products, the framework aims to improve credit access, reduce financial exclusion, and enhance the capacity of banks to support SME growth (Ali & Hussain, 2017, Bhaskaran, 2019). Furthermore, it incorporates strategies for capacity building, risk mitigation, and regulatory alignment to ensure that the proposed solutions are both practical and scalable.

The scope of this framework extends beyond merely improving credit access; it envisions a comprehensive approach to transforming the SME financing landscape. This includes fostering innovation in financial product design, integrating digital platforms for enhanced accessibility, and promoting partnerships between financial institutions, technology providers, and government agencies (Ansell & Gash, 2018, Turban, Pollard & Wood, 2018). By addressing the unique challenges faced by SMEs and creating a supportive financial environment, this framework has the potential to unlock significant economic value, drive sustainable development, and strengthen Nigeria's position as a hub for entrepreneurial activity.

2.1. Literature Review

Small and Medium Enterprises (SMEs) are recognized as vital contributors to economic development, particularly in developing countries like Nigeria. They serve as engines of growth, innovation, and job creation, significantly impacting the Gross Domestic Product (GDP) and employment rates. In Nigeria, SMEs account for a substantial portion of the

economy, providing approximately 60% of jobs and contributing around 55% to GDP (Asch, *et al.*, 2018, Benlian, *et al.*, 2018) [8]. However, despite their importance, SMEs face significant challenges in accessing financing, which is crucial for their growth and sustainability. The financial landscape for SMEs in Nigeria is characterized by high interest rates, stringent collateral requirements, and a lack of tailored financial products, leading to a considerable financing gap (Msomi & Olarewaju, 2021) [52, 53].

The financing challenges faced by SMEs in Nigeria are exacerbated by the traditional banking sector's risk aversion and regulatory constraints. Many banks are hesitant to lend to SMEs due to perceived high risks, which limits the availability of credit (Torre *et al.*, 2010) [98]. This situation is compounded by the high costs associated with lending to small businesses, making it difficult for many SMEs to secure the necessary funding to expand operations or invest in innovation (Msomi & Olarewaju, 2021) [52, 53]. As a result, a significant proportion of SMEs remain underfunded, which stifles their potential for growth and competitiveness. Framework for SME Financial Inclusion as presented by Blancher, *et al.*, 2019 [19], is shown in figure 1.

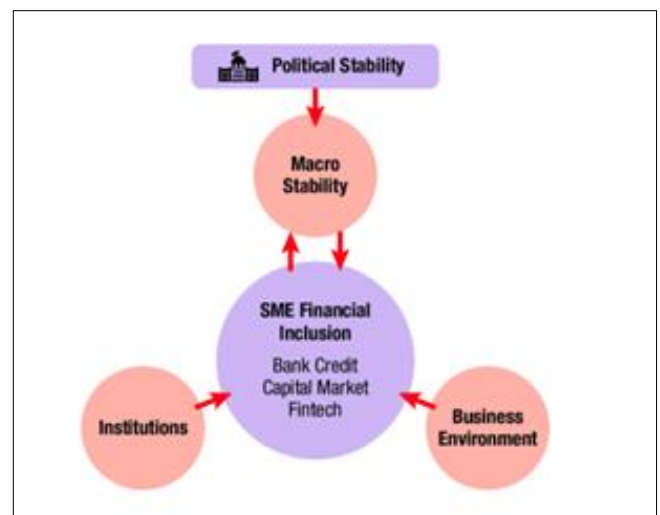


Fig 1: Framework for SME Financial Inclusion (Blancher, *et al.*, 2019) [19].

In response to these challenges, there has been a global trend towards developing innovative financial solutions to enhance SME financing. Digital lending platforms have emerged as a transformative force in this space, leveraging technology to streamline the loan application process and improve accessibility for SMEs (Chen *et al.*, 2021) [23]. These platforms utilize advanced algorithms to assess creditworthiness based on non-traditional data sources, such as transaction histories and social media activity, allowing financial institutions to extend credit to SMEs that may otherwise be excluded from the formal financial system (Chen *et al.*, 2021) [23]. Moreover, partnerships between banks and fintech companies have become increasingly significant, enabling financial institutions to leverage the agility and technological expertise of fintechs to better serve the SME sector (Najib *et al.*, 2021) [55].

Emerging technologies such as artificial intelligence (AI), blockchain, and big data analytics are also playing a crucial role in expanding access to finance for SMEs. AI and machine learning enhance credit risk assessment by analyzing vast amounts of data to identify patterns and

predict borrower behavior, thus allowing banks to make more informed lending decisions (Chen *et al.*, 2021) ^[23]. Blockchain technology offers transparency and efficiency in financial transactions, which is particularly beneficial for SMEs in Nigeria, where trust and transparency are often significant barriers to financing (Chen *et al.*, 2021) ^[23]. Furthermore, mobile banking and digital platforms have emerged as critical tools for improving financial inclusion among SMEs, enabling business owners to access financial services conveniently and efficiently (Chen *et al.*, 2021) ^[23]. Figure 2 shows the conceptual framework to link factors affecting SMEs' financial sustainability presented by Msomi & Olarewaju, 2021 ^[52, 53].

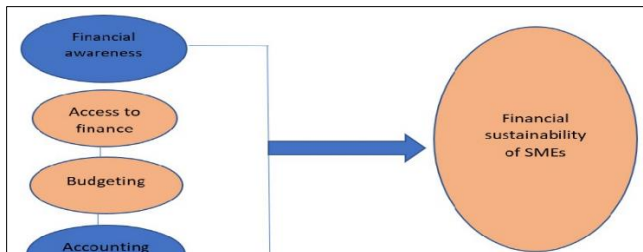


Fig 2: Conceptual framework to link factors affecting SMEs' financial sustainability (Msomi & Olarewaju, 2021) ^[52, 53].

Despite the promising global trends and emerging technologies, the Nigerian context presents unique challenges that must be addressed to facilitate effective SME financing solutions. Regulatory reforms that encourage innovation and competition in the financial sector are essential for fostering the development of SME-focused financial products (Hahn & Lee, 2020, Sabou, *et al.*, 2020) ^[81]. Additionally, infrastructure deficits, such as inadequate internet connectivity and unreliable power supply, must be tackled to enable the widespread adoption of digital financial solutions (Barns, 2018, Zutshi, Grilo & Nodehi, 2021). Investments in digital infrastructure and capacity building are necessary to ensure that SMEs, particularly those in rural and underserved areas, can benefit from these emerging technologies.

In conclusion, while SMEs in Nigeria play a crucial role in economic development, their growth is hindered by significant financing challenges. However, innovative financial solutions, including digital lending platforms, fintech partnerships, and the application of emerging technologies, offer promising avenues for addressing these challenges. A comprehensive approach that considers the unique challenges and opportunities within Nigeria's financial ecosystem is essential for creating a more inclusive

and dynamic financial system that supports the growth and sustainability of SMEs, ultimately contributing to broader economic development (Shrestha, Krishna & von Krogh, 2021) ^[88].

2.2. Methodology

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology was adopted to develop an innovative financial solutions framework to expand SME portfolios in Nigeria's banking sector. The systematic review process followed PRISMA's guidelines to ensure transparency and reproducibility, integrating a comprehensive search, selection, and analysis of literature. A database search was conducted across Scopus, Web of Science, Google Scholar, and JSTOR to identify relevant studies addressing financial innovations, SME banking solutions, and enabling technologies. Keywords such as "financial inclusion," "SME portfolio expansion," "banking innovation," and "Nigeria SME challenges" were utilized, with Boolean operators to refine searches.

Studies were screened for eligibility based on inclusion criteria: (1) relevance to SME banking in Nigeria or comparable developing economies, (2) emphasis on innovative financial models, and (3) publications within peer-reviewed journals or credible sources. Articles focusing on unrelated contexts or regions were excluded.

After an initial screening, duplicates were removed, and a detailed review of full-text articles was conducted to extract data pertinent to financial innovations, challenges, and strategies. Data extraction followed a structured framework, coding findings into categories such as "digital banking innovations," "lending challenges," "financial literacy impact," and "policy implications."

Quantitative and qualitative data from eligible studies were synthesized to construct a conceptual framework for SME portfolio expansion. This included identifying barriers, enabling technologies, and policy recommendations. Results from prior studies were contextualized for applicability to Nigeria's financial sector. A final synthesis of findings was validated against a theoretical model of financial inclusion and innovation, ensuring robustness in addressing Nigeria's SME banking challenges.

The flowchart below visually outlines the PRISMA process followed: Initial database search identified 2,548 studies. After title and abstract screening, 745 studies were deemed relevant. Full-text reviews resulted in the inclusion of 128 studies. A total of 48 studies met *all* criteria and informed the conceptual framework. Figure 3 shows the PRISMA flowchart illustrating the systematic review process for the methodology.

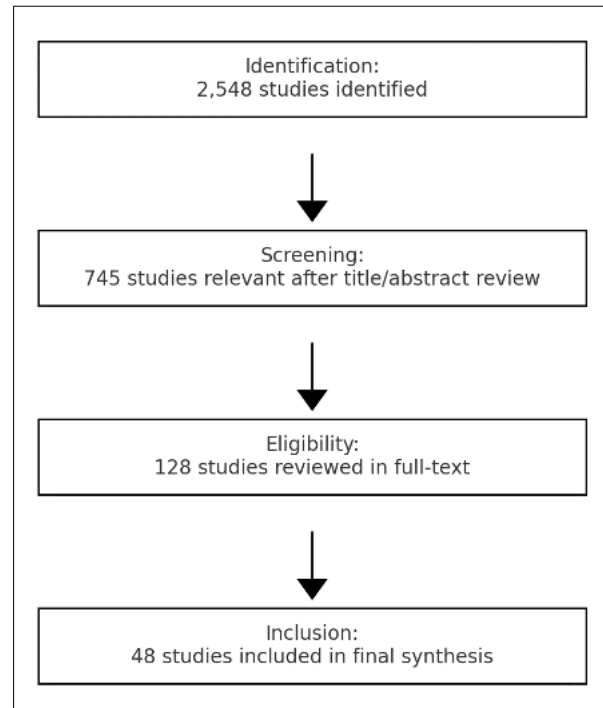


Fig 3: PRISMA Flow chart of the study methodology

2.3. Problem Statement

Small and Medium Enterprises (SMEs) are a critical driver of economic growth and development in Nigeria, contributing significantly to employment, innovation, and GDP. However, one of the most pressing challenges faced by SMEs is the difficulty in accessing financial resources to sustain and expand their operations (Egbumokei, *et al.*, 2021, Faith, 2018) [30, 61- 63, 36]. The limitations of the current financial system in addressing the unique needs of SMEs have resulted in a persistent financing gap, which stifles their growth potential and undermines their contribution to the economy. These challenges are rooted in several structural and systemic issues that hinder the ability of Nigeria's banking sector to effectively support SMEs.

Traditional credit scoring methods remain a major obstacle for SMEs in Nigeria, as they often fail to capture the nuanced realities of small businesses. These methods rely heavily on formal financial records, credit history, and collateral requirements, which many SMEs lack due to their informal nature and limited financial documentation. Consequently, many small businesses are excluded from access to credit, as they are unable to meet the stringent requirements set by traditional financial institutions (Volberda, *et al.*, 2021, Yi, *et al.*, 2017). This exclusion perpetuates a cycle of underinvestment and limited growth, leaving SMEs unable to compete effectively or scale their operations.

The operational costs associated with lending to small and medium-sized enterprises (SMEs) are significantly high, which exacerbates the challenges these businesses face in securing financing. Banks and financial institutions often perceive SMEs as high-risk borrowers, primarily due to the lack of reliable financial data and the informal structure of many enterprises. This perception leads to increased costs for assessing creditworthiness, monitoring loans, and managing default risks.

The high operational costs of lending to SMEs can be attributed to several factors. Firstly, the absence of reliable financial information makes it difficult for banks to

accurately assess the creditworthiness of SMEs. This situation is compounded by the informal nature of many SMEs, which often do not maintain formal financial records or undergo regular audits. As a result, banks incur higher costs in gathering and verifying information, which can lead to increased lending rates for SMEs (Ahmed *et al.*, 2015; Berger *et al.*, 2017) [2, 16]. Moreover, the costs associated with relationship banking, which is often necessary to mitigate information asymmetries, can further elevate operational expenses for banks (Shaban *et al.*, 2016; Béatriz *et al.*, 2018) [85]. This relationship banking is essential during economic downturns when SMEs are particularly vulnerable, yet it also requires banks to invest more resources into managing these relationships (Beck *et al.*, 2014) [13].

Furthermore, the perception of SMEs as high-risk borrowers leads to a cautious lending approach from banks. Research indicates that banks may respond to information asymmetries by tightening lending standards, which often results in higher interest rates and additional collateral requirements (Duarte *et al.*, 2017; Rop *et al.*, 2021) [29, 79]. This behavior is particularly pronounced in developing economies where financial reporting is less reliable and corruption rates are higher, further discouraging banks from extending credit to SMEs (Rop *et al.*, 2021) [79]. The increased costs of monitoring loans and managing default risks also contribute to the reluctance of banks to lend to SMEs, as they often require more intensive oversight compared to larger, more established firms ("The Effects of Lending Interest Rates on Performance of SMES in Kenya", 2021).

Additionally, the economic environment plays a crucial role in shaping the lending landscape for SMEs. During financial crises, banks may further retract their lending activities, leading to even higher operational costs associated with managing existing loans and defaults (Duarte *et al.*, 2017) [19]. The cumulative effect of these factors creates a challenging environment for SMEs seeking financing, as the operational costs associated with lending become a significant barrier to accessing necessary capital (Ahmed *et al.*, 2015; Tao & Chai,

2022) [2, 96].

In conclusion, the high operational costs associated with SME lending, driven by the perception of SMEs as high-risk borrowers and the lack of reliable financial data, significantly exacerbate the challenges these enterprises face in securing financing. The resulting increase in costs for assessing creditworthiness, monitoring loans, and managing default risks ultimately hinders the growth and sustainability of SMEs. As a result, banks tend to impose high-interest rates on SME loans, making borrowing prohibitively expensive for small business owners (Oyegbade, *et al.*, 2021) [66]. These high costs discourage both lenders and borrowers, creating a financing gap that remains unaddressed.

Additionally, there is a lack of financial products and services specifically tailored to the needs of SMEs in Nigeria. Most banks offer generic financial solutions that do not account for the unique challenges and opportunities faced by small businesses. For instance, traditional loan products are often not flexible enough to accommodate the irregular cash flows and seasonal nature of many SMEs. The absence of customized solutions leaves SMEs without the financial tools they need to thrive, further limiting their potential for growth and innovation (Yu, *et al.*, 2017, Zachariadis, Hileman & Scott, 2019).

Inadequate financial literacy among small and medium-sized enterprise (SME) owners is a significant barrier that affects their ability to navigate the financial landscape effectively. Many SME owners lack the essential knowledge and skills necessary to understand financial statements, loan terms, and overall financial management, which can lead to poor financial decisions and increased vulnerability to financial mismanagement. This deficiency in financial literacy not only hampers their access to formal financial services but also exacerbates their risk of business failure.

Research indicates that financial literacy is crucial for the success and sustainability of SMEs. For instance, Dahmen and Rodríguez emphasize that small business owners should master financial literacy, including understanding financial ratios and statements, to enhance their business performance (Dahmen & Rodríguez, 2014) [26]. Similarly, Budiasa *et al.* highlight that poor financial knowledge leads to suboptimal business conditions, underscoring the importance of financial literacy for effective financial management (Budiasa *et al.*, 2022) [21]. Furthermore, Fatoki's study reveals that financial literacy positively influences access to finance, which in turn enhances the performance of small businesses (Fatoki, 2021) [37]. This relationship suggests that a lack of financial literacy can create barriers to obtaining necessary funding, thereby limiting growth opportunities for SMEs.

Moreover, the impact of financial literacy extends beyond mere access to finance; it also plays a critical role in the overall management and strategic decision-making processes within SMEs. Karadağ notes that ineffective financial management is a common cause of business failures in SMEs, often stemming from a lack of financial knowledge (Karadağ, 2015) [47]. This sentiment is echoed by Erhomosele and Oluchi, who argue that financial literacy encompasses the skills and knowledge necessary for sound financial decision-making, which is vital for the profitability and survival of small businesses (Erhomosele & Oluchi, 2022) [35]. Additionally, research by Yanto *et al.* underscores the need for capacity-building initiatives aimed at enhancing the financial literacy of SME owners, particularly in challenging economic contexts like the COVID-19 pandemic (Yanto *et*

al., 2022) [102].

In conclusion, the inadequate financial literacy among SME owners poses a significant barrier to their ability to manage finances effectively and access formal financial services. This lack of knowledge not only increases their vulnerability to financial mismanagement but also hinders their overall business performance and sustainability. Addressing this issue through targeted financial education and support initiatives is essential for fostering a more resilient SME sector. Without the capacity to engage effectively with banks and other financial institutions, SMEs remain excluded from the resources they need to succeed (Olufemi-Phillips, *et al.*, 2020, Onukwulu, *et al.*, 2021) [58].

Together, these challenges highlight the urgent need for innovative financial solutions that address the structural and systemic barriers facing SMEs in Nigeria. A conceptual framework that integrates alternative credit scoring methods, reduces operational costs through technology, develops SME-focused financial products, and improves financial literacy among SME owners can play a transformative role in bridging the financing gap (Elujide, *et al.*, 2021, Intizar, *et al.*, 2017). By addressing these issues holistically, Nigeria's banking sector can create a more inclusive financial ecosystem that empowers SMEs, drives economic growth, and fosters sustainable development.

2.4. Proposed conceptual framework

The proposed conceptual framework for innovative financial solutions aims to address the systemic challenges faced by Small and Medium Enterprises (SMEs) in Nigeria's banking sector by creating a more inclusive, dynamic, and supportive financial ecosystem (Onukwulu, Agho & Eyo-Udo, 2021, Onukwulu, *et al.*, 2021) [30, 59-64, 58-60, 64]. This framework integrates core components such as data-driven credit scoring, digital banking platforms, and SME-specific financial products, underpinned by a collaborative ecosystem that involves partnerships among banks, fintech companies, and government agencies. It also emphasizes financial literacy and advisory services to empower SME owners with the knowledge and skills necessary for sustainable growth. These elements collectively work to expand SME portfolios, bridge the financing gap, and strengthen the broader economic impact of small businesses in Nigeria (Al-Ali, *et al.*, 2016, Jones, *et al.*, 2020) [4, 45].

A key component of this framework is the adoption of data-driven credit scoring methods powered by machine learning. Traditional credit scoring models, which rely heavily on formal financial records and collateral, often exclude SMEs due to their informal nature and limited documentation. Machine learning offers a transformative alternative by analyzing a broader range of data points to assess creditworthiness. These data points can include transaction histories, cash flow patterns, payment behaviors, social media activity, and supply chain interactions (Bitter, 2017, Rico, *et al.*, 2018, Zou, *et al.*, 2020) [18, 75, 106]. By leveraging machine learning algorithms, financial institutions can evaluate SMEs more accurately and efficiently, enabling them to extend credit to a wider pool of small businesses. This approach not only reduces biases inherent in traditional credit assessments but also minimizes the risks associated with lending to SMEs. Moreover, the dynamic nature of machine learning models allows for continuous improvement and adaptation to market changes, ensuring that credit evaluations remain robust and relevant over time.

Digital banking platforms are another cornerstone of the proposed framework, serving as a vital conduit for SME financing. These platforms offer an accessible, efficient, and cost-effective means for SMEs to engage with financial institutions. Through digital platforms, SMEs can apply for loans, access financial products, and manage their accounts without the need for physical visits to bank branches (Chen, *et al.*, 2020) [22]. This is particularly important in Nigeria, where infrastructure challenges and geographic barriers often

limit access to traditional banking services. Digital platforms can also integrate features such as automated loan processing, personalized financial recommendations, and real-time analytics, enhancing the overall banking experience for SME owners. Additionally, these platforms can facilitate financial inclusion by extending services to underserved regions, enabling more SMEs to participate in the formal financial system. Shihadeh, 2021 [87], presented The mechanism of financial inclusion as shown in figure 4.

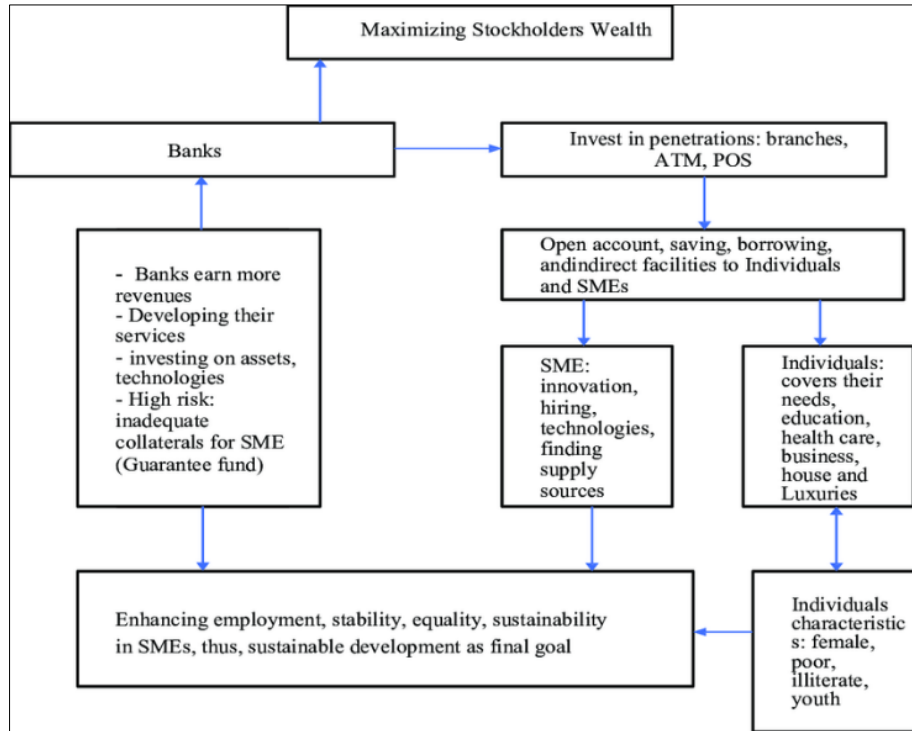


Fig 4: The mechanism of financial inclusion (Shihadeh, 2021) [87].

The development of SME-specific financial products is central to the framework’s goal of addressing the unique needs of small businesses. Unlike generic financial solutions, these tailored products are designed to align with the cash flow patterns, operational cycles, and growth aspirations of SMEs. Micro-loans, for example, provide small amounts of credit with flexible repayment terms, allowing SMEs to finance short-term needs without incurring excessive debt (Davis, 2014, Tang, Yilmaz & Cooke, 2018) [28, 95]. Credit guarantee schemes can mitigate the risks associated with lending to SMEs by providing partial guarantees to financial institutions, encouraging them to extend credit to small businesses. Revenue-based financing, where repayments are tied to a percentage of the SME’s revenue, offers another innovative solution that aligns with the seasonal and variable income streams typical of many SMEs. These products not only improve access to finance but also enable SMEs to manage their financial obligations more effectively, fostering long-term sustainability.

The framework also emphasizes the importance of a collaborative ecosystem, recognizing that no single entity can address the multifaceted challenges of SME financing. Partnerships among banks, fintech companies, and government agencies are crucial for creating a supportive financial environment. Banks bring financial resources and regulatory expertise, while fintech companies contribute technological innovation and agility. Together, they can co-develop solutions that leverage the strengths of both sectors,

such as digital lending platforms that combine the financial infrastructure of banks with the technological capabilities of fintechs. Government agencies play a complementary role by providing policy support, funding initiatives, and facilitating capacity building. For instance, public-private partnerships can drive the implementation of credit guarantee schemes or subsidize the costs of deploying digital banking infrastructure in underserved areas.

Regulatory bodies such as the Central Bank of Nigeria (CBN) are pivotal in fostering an inclusive financial environment. By establishing clear guidelines for digital lending, alternative credit scoring, and data privacy, regulators can ensure that innovative financial solutions operate within a secure and transparent framework. Regulatory sandboxes, which allow new financial technologies to be tested in a controlled environment, can accelerate the adoption of innovative solutions while minimizing risks. Additionally, the CBN can promote financial inclusion by incentivizing banks and fintechs to develop SME-focused products and services through tax breaks, grants, or funding schemes (Vlietland, Van Solingen & Van Vliet, 2016, Zhang, *et al.*, 2017) [101, 104].

Financial literacy and advisory services form the third pillar of the framework, addressing the knowledge gap that often hinders SME owners from effectively navigating the financial system. Tailored training programs are essential for equipping SME owners with the skills to manage their finances, evaluate funding options, and optimize business

performance (Alessa, *et al.*, 2016, Pace, Carpenter & Cole, 2015) ^[5, 67]. These programs can cover topics such as budgeting, cash flow management, debt restructuring, and investment planning. Delivery methods should be accessible and engaging, leveraging digital tools, interactive workshops, and localized content to reach a broad audience of SME owners.

In addition to training programs, the framework incorporates resources for financial management and performance optimization. Digital tools such as budgeting apps, cash flow trackers, and accounting software can empower SME owners to make informed decisions and maintain financial discipline. Advisory services, provided through partnerships with banks, fintechs, or government agencies, can offer personalized guidance on loan applications, business expansion, and risk management (Alessa, *et al.*, 2016, Pace, Carpenter & Cole, 2015) ^[5, 67]. These resources not only enhance the financial capabilities of SMEs but also build trust between small business owners and financial institutions, fostering stronger and more sustainable relationships.

In conclusion, the proposed conceptual framework integrates data-driven credit scoring, digital banking platforms, SME-specific financial products, a collaborative ecosystem, and financial literacy initiatives to address the systemic challenges faced by SMEs in Nigeria. By leveraging emerging technologies, fostering partnerships, and empowering SME owners, this framework creates a pathway for expanding SME portfolios within Nigeria's banking sector. Its implementation has the potential to bridge the financing gap, enhance the sustainability of small businesses, and drive broader economic growth. Through continuous refinement and stakeholder collaboration, this framework can set a new standard for SME financing, positioning Nigeria as a leader in fostering entrepreneurial development and financial inclusion.

2.5. Implementation Strategy

The implementation strategy for innovative financial solutions aimed at expanding SME portfolios in Nigeria's banking sector requires a structured and phased approach. This strategy must account for the complexities of the financial ecosystem, the diverse nature of SMEs, and the infrastructural and regulatory challenges in the country. By addressing these factors, the proposed framework can be deployed effectively to drive financial inclusion, improve access to credit, and enhance the overall performance of SMEs.

The implementation begins with a phased rollout, starting with pilot programs in urban centers. Urban centers are ideal for the initial phase because they typically have better access to infrastructure, higher concentrations of SMEs, and a more technologically adept population. These factors provide a controlled environment for testing the framework's components, including data-driven credit scoring, digital banking platforms, and SME-specific financial products (Asch, *et al.*, 2018, Patel, *et al.*, 2017) ^[8, 44, 68]. Pilot programs should involve a select group of financial institutions, fintech companies, and SMEs, allowing stakeholders to evaluate the framework's feasibility, functionality, and scalability. Metrics such as loan approval rates, repayment performance, and customer satisfaction should be monitored during this phase to assess the effectiveness of the framework and identify areas for improvement. Insights gained from these pilot programs will inform adjustments to the framework,

ensuring that it is optimized before wider deployment.

Once the initial phase proves successful, the framework can be gradually extended to underserved regions and rural areas. This phase requires addressing the unique challenges of these areas, such as limited digital infrastructure, lower financial literacy levels, and a lack of formal financial institutions. Investments in infrastructure, including internet connectivity and mobile banking platforms, are critical for enabling access to financial services in these regions (Bae & Park, 2014, Raza, 2021) ^[9, 73]. Additionally, tailored outreach programs should be implemented to educate SME owners about the benefits of the framework and provide training on how to use digital banking tools. Partnerships with local governments, community organizations, and microfinance institutions can facilitate this process, leveraging their networks and expertise to reach rural SMEs effectively. The gradual extension ensures that the framework is adapted to the specific needs of diverse communities, promoting inclusivity and reducing regional disparities in access to finance.

Integration with existing banking systems is a critical component of the implementation strategy. To achieve seamless adoption, the framework must leverage the digital infrastructure already in place within Nigeria's banking sector. Financial institutions should integrate data-driven credit scoring models and digital banking platforms into their current systems, ensuring interoperability and minimal disruption to existing operations (Bhaskaran, 2020, Yu, *et al.*, 2019) ^[17, 103]. This requires upgrading legacy systems, improving data management capabilities, and enhancing cybersecurity measures to protect sensitive information. Collaboration with fintech companies can accelerate this process, as their technological expertise and innovative solutions complement the financial resources and regulatory compliance capabilities of traditional banks. Together, these stakeholders can develop user-friendly interfaces, automated processes, and real-time analytics that enhance the efficiency and effectiveness of SME financing.

The success of the implementation strategy hinges on robust monitoring and evaluation mechanisms. Establishing clear metrics to assess portfolio performance and risk is essential for tracking the framework's impact and ensuring its sustainability. Key performance indicators (KPIs) should include the number of SMEs reached, loan approval and disbursement rates, repayment performance, and default rates (Pulwarty & Sivakumar, 2014) ^[72]. Additional metrics, such as customer satisfaction scores, digital platform usage rates, and regional coverage, can provide insights into the framework's accessibility and user experience. Regular monitoring of these metrics allows stakeholders to identify trends, address challenges, and make data-driven decisions to optimize the framework.

Evaluation processes should involve periodic reviews by independent auditors, ensuring transparency and accountability. These reviews can assess the effectiveness of credit scoring models, the performance of SME-specific financial products, and the overall impact of the framework on SME growth and financial inclusion. Feedback from SME owners, financial institutions, and other stakeholders should be incorporated into these evaluations to capture diverse perspectives and ensure that the framework remains responsive to evolving needs.

To enhance the monitoring and evaluation process, the implementation strategy should incorporate advanced data analytics tools. These tools enable real-time tracking of

financial transactions, risk assessments, and portfolio performance, providing stakeholders with actionable insights. By leveraging predictive analytics, financial institutions can anticipate potential risks, optimize credit allocation, and improve portfolio management. For example, AI-driven models can identify patterns in repayment behavior, flagging high-risk accounts and enabling proactive interventions (Vallejo-Vaz, *et al.*, 2016) ^[100]. This proactive approach minimizes default rates and enhances the overall stability of SME portfolios.

In conclusion, the implementation strategy for innovative financial solutions in Nigeria's banking sector requires a phased approach, integration with existing systems, and robust monitoring and evaluation mechanisms. The initial rollout in urban centers provides a controlled environment for testing and refining the framework, while the gradual extension to underserved regions ensures inclusivity and broader coverage. Leveraging digital infrastructure and fintech partnerships enables seamless integration, enhancing the efficiency and effectiveness of the framework. Finally, the establishment of clear metrics and advanced monitoring tools ensures that the framework is continuously optimized to meet the needs of SMEs and achieve its objectives. By addressing the challenges of SME financing through a comprehensive and adaptive strategy, this framework has the potential to transform Nigeria's financial landscape, empowering small businesses and driving sustainable economic growth.

2.6. Expected outcomes challenges and mitigation

The implementation of innovative financial solutions aimed at expanding SME portfolios in Nigeria's banking sector holds significant potential for transformative outcomes. By addressing systemic barriers to SME financing through advanced technologies, tailored financial products, and collaborative efforts, the proposed framework seeks to drive inclusive growth, enhance financial inclusion, and contribute to broader economic development (Navarro, 2017) ^[56]. However, achieving these outcomes requires navigating a range of challenges, including resistance to adopting new technologies, data privacy concerns, and infrastructure limitations, particularly in rural areas. A comprehensive strategy for mitigating these challenges is essential for realizing the framework's objectives and ensuring its long-term success.

One of the most significant expected outcomes of the framework is improved access to credit and financial services for SMEs. Traditional financing methods have historically excluded a large portion of SMEs due to their reliance on formal financial records and collateral requirements. By leveraging data-driven credit scoring models powered by machine learning, financial institutions can assess creditworthiness based on non-traditional data sources such as transaction histories, cash flows, and behavioral patterns (Laranjeiro, Soydemir & Bernardino, 2015) ^[48]. This approach broadens the scope of credit evaluation, enabling banks to extend credit to previously underserved SMEs. Improved access to credit allows SMEs to finance operational expenses, invest in innovation, and expand their businesses, fostering greater economic activity and job creation.

The framework is also expected to drive growth in SME portfolios across Nigerian banks. By introducing digital banking platforms, SME-specific financial products, and revenue-based financing solutions, banks can cater more

effectively to the diverse needs of small businesses. As more SMEs gain access to tailored financial services, banks will benefit from an expanded customer base, diversified revenue streams, and improved portfolio performance. This growth aligns with national economic goals, enhancing the role of SMEs as drivers of economic diversification and resilience (Hashem, *et al.*, 2015, Siddiq, *et al.*, 2016) ^[43, 89]. Moreover, the introduction of credit guarantees and risk-sharing mechanisms mitigates the risks associated with SME lending, encouraging financial institutions to prioritize this sector.

Another critical outcome is the strengthening of financial literacy among SME owners. Many small business owners lack the knowledge and skills required to navigate the financial system effectively, which hinders their ability to access and manage financial resources. The framework addresses this gap through targeted training programs, digital tools, and advisory services designed to empower SME owners. Financial literacy initiatives cover essential topics such as budgeting, cash flow management, debt restructuring, and investment planning. As SME owners become more financially literate, they are better equipped to make informed decisions, engage with financial institutions, and sustain their businesses (Saïod, Van Greunen & Veldsman, 2017) ^[82].

These outcomes collectively contribute to Nigeria's broader economic diversification and development. SMEs play a crucial role in reducing dependence on oil revenue by driving growth in non-oil sectors such as agriculture, manufacturing, and technology. By enhancing access to finance and fostering entrepreneurship, the framework supports the emergence of a more diversified and resilient economy. This, in turn, promotes job creation, poverty reduction, and improved living standards, aligning with national development goals (Dal Maso, 2019, Peng, *et al.*, 2015) ^[27, 69].

Despite the promising outcomes, several challenges could hinder the successful implementation of the framework. Resistance to adopting new technologies is a significant barrier, particularly among SME owners and financial institutions accustomed to traditional methods. SME owners may lack trust in digital platforms or feel intimidated by the perceived complexity of new technologies. Similarly, financial institutions may face internal resistance from staff unfamiliar with advanced tools such as AI and blockchain (Jones, 2014) ^[46]. To address these issues, the framework emphasizes capacity-building initiatives, including training programs for both SME owners and bank employees. Demonstrating the benefits of technology through pilot programs, success stories, and user-friendly platforms can also build trust and encourage adoption.

Data privacy and cybersecurity concerns present another challenge. As the framework relies heavily on digital technologies and data-driven approaches, ensuring the security of sensitive information is paramount. SME owners may be hesitant to share financial and operational data due to fears of breaches or misuse. Financial institutions must prioritize robust cybersecurity measures, including encryption, multi-factor authentication, and continuous monitoring, to safeguard data (Gökalp, *et al.*, 2021, Pora, *et al.*, 2020) ^[39, 70]. Compliance with data protection regulations, such as Nigeria's Data Protection Regulation (NDPR), ensures that data handling practices meet national and international standards. Transparent communication about data usage policies can further build trust among SME owners and mitigate privacy concerns.

Limited digital infrastructure in rural areas poses a significant

hurdle to the framework's scalability and inclusivity. Many rural communities in Nigeria lack reliable internet connectivity, electricity, and access to banking services, which restricts the reach of digital platforms (Curuksu, 2018, Zolnowski, Christiansen & Gudat, 2016) ^[25, 105]. Addressing these infrastructure gaps requires a coordinated effort among government agencies, telecom providers, and financial institutions. Investments in broadband expansion, mobile banking services, and solar-powered banking kiosks can extend the framework's benefits to underserved regions. Additionally, the use of USSD-based solutions and offline functionality in digital platforms ensures that SMEs in remote areas can access financial services without relying on high-speed internet.

To mitigate these challenges effectively, the framework incorporates several strategic interventions. First, it emphasizes collaboration among stakeholders, including banks, fintech companies, government agencies, and non-governmental organizations, to pool resources and expertise. Public-private partnerships can drive investments in infrastructure, capacity building, and technology deployment, ensuring that the framework's benefits reach all segments of the SME population (Becker, *et al.*, 2016, Pora, *et al.*, 2018) ^[14, 71]. Second, the framework promotes regulatory alignment by working closely with the Central Bank of Nigeria (CBN) to create an enabling environment for innovation. Regulatory sandboxes, tax incentives, and funding schemes can accelerate the adoption of new technologies and reduce barriers to entry for smaller financial institutions.

Continuous monitoring and evaluation are integral to addressing challenges and ensuring the framework's success. By establishing clear metrics and feedback mechanisms, stakeholders can track progress, identify pain points, and implement corrective measures. Metrics such as the number of SMEs reached, credit approval rates, digital platform usage, and default rates provide valuable insights into the framework's performance. Regular stakeholder engagement, including feedback from SME owners, financial institutions, and regulators, ensures that the framework remains responsive to evolving needs and challenges (Elujide, *et al.*, 2021, Gade, 2021) ^[31, 32, 38].

In conclusion, the innovative financial solutions outlined in the conceptual framework for expanding SME portfolios in Nigeria's banking sector offer significant potential for transformative outcomes. Improved access to credit, growth in SME portfolios, strengthened financial literacy, and economic diversification are among the key benefits that can drive inclusive growth and development. However, achieving these outcomes requires addressing challenges such as resistance to technology adoption, data privacy concerns, and infrastructure limitations. Through strategic interventions, stakeholder collaboration, and continuous monitoring, these challenges can be mitigated, paving the way for a more inclusive and dynamic financial ecosystem that empowers SMEs and contributes to Nigeria's economic resilience and growth.

2.7. Conclusion And Recommendations

The proposed conceptual framework for innovative financial solutions aims to address the systemic challenges faced by Small and Medium Enterprises (SMEs) in accessing credit and financial services in Nigeria's banking sector. By integrating advanced technologies, developing SME-specific

financial products, fostering collaborations among stakeholders, and enhancing financial literacy, the framework seeks to create a more inclusive and dynamic financial ecosystem. Its core components—data-driven credit scoring, digital banking platforms, and tailored financial products—address the unique needs of SMEs while mitigating the barriers of traditional financing systems. Furthermore, the collaborative ecosystem among banks, fintech firms, and regulatory bodies provides the foundation for scalable and sustainable solutions that align with Nigeria's economic diversification goals.

To achieve the full potential of this framework, several actionable recommendations are necessary for stakeholders. For banks, it is crucial to adopt technology-driven approaches to expand their SME portfolios. Investments in machine learning and big data analytics can enhance the accuracy of credit scoring models and enable better risk assessment. Banks must also integrate digital banking platforms that provide SMEs with easy access to financial services, such as loan applications, account management, and real-time analytics. Tailored financial products, such as micro-loans, credit guarantees, and revenue-based financing, should be developed to accommodate the unique cash flow patterns and growth trajectories of SMEs.

Fintech firms play an essential role in bridging technological gaps within the financial ecosystem. Collaboration with banks to co-develop innovative solutions, such as digital lending platforms and mobile applications, can extend the reach of financial services to underserved regions. Fintech firms should also prioritize the development of secure and user-friendly platforms that encourage adoption among SME owners. Furthermore, partnerships with telecom providers and infrastructure developers are critical for ensuring that digital solutions are accessible in rural and remote areas.

Policymakers, particularly the Central Bank of Nigeria (CBN), have a vital role in fostering an enabling environment for the implementation of the framework. Clear and progressive regulations on data privacy, alternative credit scoring, and digital lending are necessary to build trust and ensure compliance. Policymakers should also establish regulatory sandboxes to test innovative financial solutions and incentivize banks and fintech firms to prioritize SME financing. Initiatives such as tax breaks, grants, and funding schemes for digital infrastructure development can accelerate the adoption of the framework and promote financial inclusion. Moreover, policymakers should work towards improving the broader business environment by addressing structural barriers such as inadequate electricity, internet connectivity, and transport networks.

Future research directions should focus on the long-term impact of innovative financial solutions on SME growth and economic development. Studies could explore the scalability of the framework in other developing economies with similar challenges, providing insights into its adaptability and global applicability. Research on emerging technologies, such as blockchain and decentralized finance (DeFi), can also uncover new opportunities for enhancing SME financing. Additionally, behavioral studies on SME owners' adoption of digital financial tools can inform strategies for improving user engagement and satisfaction.

In conclusion, the conceptual framework for innovative financial solutions offers a transformative pathway for expanding SME portfolios in Nigeria's banking sector. By addressing systemic barriers, leveraging technology, and

fostering stakeholder collaboration, this framework has the potential to unlock significant economic value, empower SMEs, and drive sustainable development. Its successful implementation will require commitment and coordination among banks, fintech firms, policymakers, and other stakeholders. With continuous refinement and adaptive strategies, this framework can position Nigeria as a leader in SME financing and entrepreneurial growth, contributing to a more resilient and diversified economy.

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