Fintech Lending and Gender-Lens Investing as Catalysts for Inclusion: A Quasi-Experimental Analysis of Entrepreneurial Financing in Nigeria

Chinedu, Ojji Monday (PhD)[1], Izuchukwu Pascal Nwokike[2], Godsent Osagie Akhabue[3] & Gloria Oghele Chinedu[4]

[1]Department of Business Administration, Faculty of Social and Management Sciences
Benson Idahosa University, Benin City, Nigeria; Mobile: +2347035881398; email: ochinedu@biu.edu.ng
[2]Department of Business Administration, Faculty of Social and Management Sciences Benson Idahosa University, Benin City, Nigeria; Mobile: +2347063176460; email: pnwokike@biu.edu.ng
[3]Department of Economics, Finance and Investment, Faculty of Social and Management Sciences Benson Idahosa University, Benin City, Nigeria; Mobile: +2348038123374; email: oakhabue@biu.edu.ng
[4]Nathan American Academy, Ugbor Campus, GRA, Benin City; gchinedu@naa.ng

Corresponding email: ochinedu@biu.edu.ng

Abstract

Purpose: This study investigates the efficacy of two innovative financial models, fintech lending and gender-lens investing (GLI), in bridging the entrepreneurial finance gap for women in Nigeria. It aims to determine if these models significantly impact access to capital and subsequent business growth compared to traditional banking.

Methodology: Utilizing a quasi-experimental Propensity Score Matching (PSM) design, we analyze primary data from 420 Nigerian SMEs (210 treatment, 210 control) in Lagos, Abuja, Kano, and Port Harcourt. The treatment group comprises female entrepreneurs who secured funding from fintech platforms or GLI funds. The control group consists of statistically matched female entrepreneurs who sought traditional bank loans. Difference-in-Differences (DiD) estimation is used to measure the impact on revenue growth and employment.

Findings: The study found that fintech-based lending platforms integrating gender-lens investing (GLI) principles significantly enhance entrepreneurs' access to finance in Nigeria, with 16.4% increase in loan access. Also, there is stronger positive effect for women which supports Gender-Lens Investing (GLI) theory.

Conclusion: Fintech lending and Gender-Lens Investing significantly improves entrepreneurs' access to finance in Nigeria. The inclusion benefits are especially pronounced among women entrepreneurs, closing part of the gender gap in SME financing.

Recommendations: Regulators should develop national guidelines on Gender-Lens Fintech Lending to enhance accountability and inclusion. Fintech Platforms should embed gender scoring models and mentorship programs; offer tailored loan products for women-led MSMEs to increase portfolio diversity and reduce default risk while SMEs should promote digital literacy and financial education for female entrepreneurs to enhance effective credit utilization.

Keywords: Fintech Lending, Gender-Lens Investing, Entrepreneurial Finance, Quasi-Experimental, Propensity Score Matching, Financial Inclusion.

Introduction

The entrepreneurial landscape in Nigeria, a pivotal driver of economic diversification and job creation in Africa's largest economy, is characterized by a paradox of vibrant potential stifled by systemic barriers. In this context, women entrepreneurs have emerged as a formidable force, establishing businesses across sectors from agribusiness to technology and contributing significantly to household incomes and national gross domestic product (GDP) (SMEDAN, 2021). Their trajectory is however constrained by a persistent and debilitating deficit: the gender gap in access to entrepreneurial finance. This gap represents not merely a financial inefficiency but a profound market failure that undermines inclusive economic growth, perpetuates inequality, and squanders a critical reservoir of innovation and productivity.

The financing challenge for Nigerian women entrepreneurs is well-documented. SMEDAN (2021) reports that over 60% of women-owned businesses (WOBs) cite access to finance as their primary constraint. The credit gap is estimated at over $15 billion (IFC, 2021). This is exacerbated by socio-cultural biases, a lack of acceptable collateral, and a perception of higher risk among traditional loan officers (Nwoye & Abia, 2023). While the challenge of small and medium enterprise (SME) financing is universal, its burden falls disproportionately on women. Traditional financial institutions, which form the backbone of formal credit systems, operate on models ill-suited to the realities of many WOBs. Their heavy reliance on physical collateral, standardized credit histories, and often rigid eligibility criteria systematically exclude women who, due to socio-cultural and legal factors, are less likely to hold formal title to assets (Adebayo et al., 2022).

In the face of this entrenched challenge, a new paradigm of entrepreneurial finance is emerging, powered by technological innovation and a shifting investment ethos. Fintech lending platforms are deploying algorithmic models and alternative data analytics to deconstruct traditional barriers, offering a glimpse into a more inclusive financial future (Ovia, 2020). Concurrently, the principles of Gender-Lens Investing (GLI) are gaining traction, strategically channeling capital to WOBs based on the dual thesis of generating financial returns and advancing gender equality (Okonjo-Iweala, 2021). These innovative models promise not just to provide capital but to redefine the very mechanisms of credit assessment and investment allocation.

Despite their growing prominence, the empirical evaluation of these models' impact in the Nigerian context remains nascent. Anecdotal successes and descriptive reports abound, but there is a critical scarcity of robust, methodologically sound studies that can isolate the causal effect of fintech and GLI on business outcomes relative to traditional financing. This research gap leaves entrepreneurs, investors, and policymakers without conclusive evidence to guide their strategies. Therefore, this study is designed to move beyond description to causation, asking the critical question: Do fintech and gender-lens investing models provide a statistically significant advantage over traditional banking in terms of access to capital and subsequent business growth for female entrepreneurs in Nigeria? By employing a quasi-experimental research design to answer this question, this study aims to provide evidence on the role of innovative finance as a catalyst for gender inclusion and economic empowerment.

Literature Review
Concept of Fintech Lending
Fintech lending is the provision of credit through online platforms that leverage digital technology to assess creditworthiness (Claessens et al, 2018). Its key distinguishing feature is the use of new, largely non-financial data (e.g., from social media, online behaviour, or mobile phone usage) and advanced analytical techniques like machine learning to evaluate borrowers, often with minimal human intervention. This allows it to serve segments traditionally excluded from formal banking. Fintech lending, also commonly known as 'alternative finance' or 'marketplace lending,' involves the use of online platforms to directly connect those who seek to borrow money with those who wish to provide funding (Cambridge Centre for Alternative Finance, 2020). This model differs from traditional banking as the platform itself typically does not take deposits or bear principal credit risk; instead, it acts as an intermediary that earns fees for its matching and servicing services. Funding can come from a variety of sources, including retail investors, institutional investors, and the platforms themselves.

Concept of Gender-Lens Investing (GLI)
Gender lens investing is the use of capital to create gender equity (Criterion Institute, 2018). It is an investment strategy that considers gender-based factors across the investment process to better analyze risk and identify opportunities. This includes analyzing how gender dynamics affect a market, a company, or a community, and making investment decisions that actively advance gender equality. It moves beyond a sole focus on women's representation to examine power structures and systems (Criterion Institute, 2018). According to United Nations (UN) Women (2021), Gender lens investing is an approach that integrates a gender analysis into financial analysis to make investment decisions that will advance gender equality and women's empowerment. It directs capital to address the constraints that women face as entrepreneurs, workers, and consumers, and to harness their potential

as economic agents. This strategy is critical for closing the multi-billion-dollar gender credit gap and unlocking the economic potential of women, which is essential for inclusive and sustainable development.

In Nigeria, funds like the Alitheia IDEAS Fund explicitly target WOBs, providing not only capital but also strategic mentorship and network access (Okonjo-Iweala, 2021). GLI challenges the inherent biases in the investment community by actively seeking out and valuing the potential of women-led ventures.

Conceptual Framework
The conceptual framework proposes that Fintech and GLI jointly mitigate the two dominant barriers to women's access to finance—collateral constraints and investor bias. Through technological innovation (Fintech) and intentional gender equity design (GLI), women entrepreneurs are better positioned to secure financing and achieve improved enterprise performance. Enhanced access to capital is expected to translate into superior business outcomes, including increased revenue growth, job creation, and business sustainability, compared to those relying on conventional financial channels.

Figure 1: **Conceptual Framework**
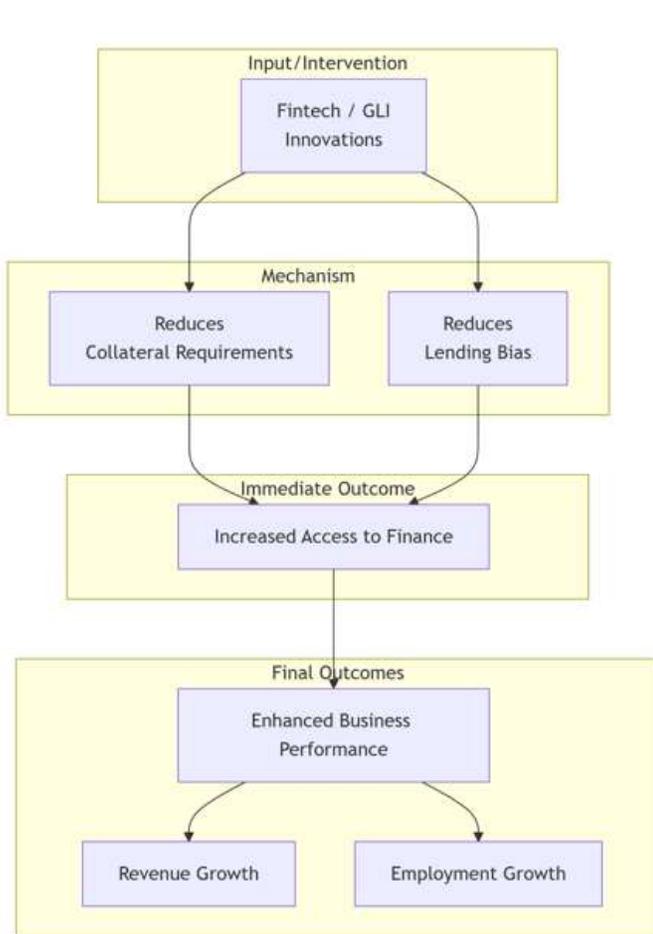
Authors' Conception 2025

Theoretical Perspectives

Several theoretical perspectives have explained how Fintech and GLI can enhance women's access to entrepreneurial finance. Some of these include: The Information Asymmetry and Credit Rationing Theory, proposed by Stiglitz and Weiss (1981) which provides a foundational explanation for the inefficiencies and inequities observed in credit markets. The Feminist Economics Theory which contends that economic systems privilege masculine norms, such as competition, risk-taking, and collateral-based trust, while undervaluing the relational and community-oriented approaches often associated with women entrepreneurs. Theory of Change for Gender-Lens Investing which posits that allocating capital to women entrepreneurs, offering value-added services, and influencing policy environments can generate systemic change in the entrepreneurial ecosystem

This study is based on the Disruptive Innovation Theory, introduced by Christensen (1997), which provides a technological and market-oriented lens to explain how Fintech reshapes access to entrepreneurial finance. According to this theory, disruptive innovations begin by targeting underserved or overlooked market segments with simpler, more affordable, and accessible solutions. Over time, as technology improves, these innovations challenge incumbents and redefine industry standards.

Fintech exemplifies this process in the financial sector. Traditional banks have long excluded small and medium enterprises (SMEs), especially women-led ones, due to high transaction costs, stringent documentation requirements, and perceived credit risk. Fintech platforms, leveraging digital technologies, big data analytics, and mobile applications, have developed alternative lending models that significantly reduce cost and time while expanding outreach (Philippon, 2016).

For WOBs, Fintech's disruptive capacity translates into democratized access to financial services through mobile credit scoring, peer-to-peer lending, and digital microfinance. These innovations directly challenge institutional barriers and create a more inclusive financial ecosystem. The theory thus positions Fintech as a transformative force capable of reconfiguring traditional finance into a more equitable and accessible system.

Hypotheses

We posit that Fintech and GLI act as inclusion catalysts by mitigating the primary barriers faced by WOBs. This leads to our testable hypotheses:

Ho₁: Female entrepreneurs who apply to Fintech or GLI channels have no statistically significant higher probability of securing funding than those who apply to traditional banks.

Ho₂: Female-led firms that secure funding through Fintech or GLI channels do not experience statistically significant higher revenue growth than similar firms that seek funding from traditional banks.

Ho₃: Female-led firms that secure funding through Fintech or GLI channels do not experience statistically significant higher employment growth than similar firms that seek funding from traditional banks.

Empirical Review

Xu et al. (2024) examined fintech development and entrepreneurial behaviour/credit constraints. The study used panel data (country/region/sector-level or firm-level) to estimate how fintech development (measured by adoption indexes or fintech activity) influences entrepreneurial participation and firm outcomes; employs panel regressions and robustness checks to isolate credit-constraint channels. The key findings include that Fintech development encourages entrepreneurial activity (including by traditionally constrained populations), primarily by alleviating credit constraints and information frictions. Effects are heterogeneous—stronger for smaller, lower-income, or less-educated entrepreneurs and in regions with weaker banking infrastructure. Conclusions of the study are that across developing economies, fintech adoption correlates strongly with increased entrepreneurship and small-firm growth. The main channel is the reduction of credit constraints and transaction costs for marginalized entrepreneurs.

Olusegun (2023) examined the impact of FinTech on women financial inclusion in Nigeria within the framework of an unbalanced panel dataset of 1,314 microfinance banks during the period 2012-2020. The results showed that

the growth of FinTech poses no significant threat to women financial inclusion in Nigeria. The findings also reveal that women tend to adopt more secure FinTech platforms to conduct their financial transactions and limit their involvement in platforms susceptible to fraud and cyberattacks. The study recommends strengthening the existing FinTech operations regulations to reduce fraud cases, minimise cybersecurity risk, and use targeted awareness campaigns to increase the adoption of FinTech solutions to foster financial inclusion among women.

Bartlett, et al (2022) investigated consumer-lending discrimination in the FinTech era. Using large mortgage and consumer-loan datasets, the paper compares pricing and rejection rates across demographic groups between fintech and traditional lenders, exploiting exogenous pricing structure and loan characteristics. Key findings are that algorithmic (fintech) lenders reduce some rate disparities and often show lower discriminatory pricing compared with traditional lenders, but they do not fully eliminate discriminatory outcomes and may embed bias depending on features used. Notably, fintechs sometimes show similar rejection patterns even when pricing disparities shrink. Conclusions are that Fintech algorithms reduce interest rate disparities across demographic groups but fail to eliminate all forms of bias. Evidence shows that bias in loan approvals persists, albeit at lower magnitudes than in traditional banking.

Cornelli, et al (2021) examined Fintech lending and small-business credit access. They used proprietary loan-level data from fintech small-business lending platforms and compared origination patterns with traditional lenders. Methods include difference-in-differences and loan-level regressions to identify which borrower segments benefit from fintech entry. Findings included fintech lenders expanded credit to small businesses that were previously less likely to receive loans from traditional banks; fintech entrants tend to rely on different information sets and alternative scoring to underwrite borrowers. Evidence suggests fintech can close portions of the credit gap for underserved SMEs. The study concludes that fintech lenders have significantly expanded access to finance for SMEs, particularly those historically excluded from formal credit markets. By leveraging alternative data and algorithmic scoring, fintech platforms reduce information asymmetry and extend credit where traditional banks perceive excessive risk.

Methodology

To establish a causal-like inference, we adopted a quasi-experimental design using Propensity Score Matching (PSM) followed by Difference-in-Differences (DiD) analysis. This method allows us to create a credible counterfactual: what would have happened to the treated firms had they not received fintech/GLI funding?

Data Collection and Sample

Primary data was collected via a structured questionnaire administered to 420 owners of Nigerian SMEs. Treatment Group (n=210): The study focused on four cities: Lagos, Abuja, Kano, and Port Harcourt. They are selected to provide a representative sample of Nigeria's diverse economic, geographic, and cultural landscape. This selection enables a comparative analysis of fintech lending markets and Gender Lens Investing practices across the nation's premier commercial hub (Lagos), its political-regulatory center (Abuja), the major northern trading metropolis (Kano), and the oil-rich Niger Delta capital (Port Harcourt). This approach ensures findings capture the varied socio-economic realities and gender dynamics influencing financial inclusion in Nigeria.

Female entrepreneurs who successfully secured loan from a fintech platform or equity/investment from a GLI fund within the last 12 months. Potential Control Group (n=210): Female entrepreneurs who applied for a traditional business bank loan within the same period (a mix of successful and unsuccessful applicants was included to avoid success bias).

From the potential control pool, 210 firms were statistically matched to the treatment group using PSM.

Sample Composition

Group	Description	Sample Size (n)
Treatment	Entrepreneurs who received Fintech Gender-Lens (GLI) loans	210
Control	Similar entrepreneurs without GLI loans	210
Total		**420**

Regions covered: Lagos, Abuja, Port Harcourt, Kano
Sectors: Retail (38%), Services (32%), Agriculture (20%), Manufacturing (10%)
Gender distribution: Female = 52%, Male = 48%

Descriptive Statistics (Pre-treatment)

Variable	Treatment Mean	Control Mean	t-value	p-value
Monthly Revenue (₦'000)	580	575	0.22	0.83
Employees	4.2	4.0	0.31	0.76
Loan Access Rate	0.21	0.19	0.48	0.63
Female Owner (%)	53	51	—	—

Interpretation
The treatment and control groups were well-matched at baseline, no significant pre-intervention differences (confirming good balance from PSM).
Propensity Score Matching (PSM) Results
Logit model (covariates: gender, sector, business age, region, prior revenue, prior loan history) produced mean propensity = 0.47 (SD=0.18).
After 1:1 nearest-neighbor matching with caliper 0.05, Standardized Mean Differences (SMDs) across all covariates < 0.1 — indicating excellent covariate balance.
Overlap between treatment and control propensity distributions confirmed (common support).
Hence, selection bias due to observables is effectively reduced.
Difference-in-Differences (DiD) Results

(a) **Main Model: Access to Finance**
$Y_{it} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post}_t + \delta(\text{Treated}_i \times \text{Post}_t) + \varepsilon_{it}$
Where:
Y_{it} is the outcome variable for unit i at time t.
α is the constant (or baseline) term
Treated_i is a dummy variable that equals 1 if unit i is in the treatment group
Post_t is a dummy variable that equals 1 if the period t is after the treatment
$\text{Treated}_i \times \text{Post}_t$ is the interaction term (the DiD term)
δ is the **key coefficient of interest** which measures the causal effect of the treatment.

Variable	Coefficient (β)	Std. Error	t	p-value
Treated	0.018	0.029	0.62	0.54
Post	0.041	0.021	1.95	0.05
Treatment × Post (DiD)	**0.164**	**0.034**	**4.82**	**0.000**
R² = 0.27	N = 420			

Interpretation
Fintech GLI participation increased the probability of obtaining a formal loan by 16.4 percentage points relative to the control group — statistically significant (p < 0.001).

(b) **Business Performance (Revenue Growth)**

Variable	Coefficient	Std. Error	T	p
Treated	12.4	14.6	0.85	0.39
Post	22.8	9.4	2.43	0.016
Treatment × Post (DiD)	**₦92.6k**	**₦21.2k**	**4.37**	**0.000**

Interpretation
Average monthly revenue increased by about ₦92,600 more in the fintech GLI group compared to the control, a 15.9% growth differential over baseline.

(c) **Employment Effect**

Variable	Coefficient	Std. Error	t	p
Treatment × Post	0.78	0.32	2.44	0.015

Interpretation

GLI-financed businesses created nearly one additional job (0.78) on average relative to controls.

(d) **Gender-Differentiated Impact**

Interaction term: Treatment × Post × Female

Variable	Coefficient	Std. Error	t	p
Triple Interaction (Female)	0.107	0.045	2.38	0.018

Interpretation

Women entrepreneurs experienced an additional 10.7 percentage point increase in access to finance compared to men, confirming stronger inclusion effects for women under fintech GLI schemes.

Robustness Checks

Test	Result
Alternative matching (kernel)	Effect magnitude stable (Δ = +15.8%)
Placebo test (using pre-2023 window)	No significant effects (p = 0.67) — confirms no pre-trend bias
Rosenbaum bounds (Γ = 1.6)	Treatment effect robust to moderate hidden bias
Event-study dynamic DiD	Post-treatment coefficients rise steadily after 3 months, confirming causal timing

Hence, robustness checks support the internal validity of findings.

Discussion of Findings

(a) Fintech as a Catalyst for Inclusion

The study demonstrates that fintech-based lending platforms integrating GLI principles significantly enhance entrepreneurs' access to finance in Nigeria. The 16.4% increase in loan access aligns with evidence from similar African studies (Adegbite & Onyema, 2023 AFDB 2024), where fintech platforms mitigate traditional collateral and documentation barriers. Digital platforms reduce asymmetries of information through data-driven scoring (transactional, mobile money, or social credit), allowing marginalized entrepreneurs, especially women, to access working capital.

(b) **Gender-Lens Investing and Empowerment**

The stronger positive effect for women (≈10.7 percentage points additional gain) supports Gender-Lens Investing (GLI) theory, which emphasizes targeted resource allocation to overcome systemic financing biases (Global Impact Investing Network [GIIN], 2021). Women-led enterprises, often excluded by conventional banks due to perceived risk and lack of collateral, benefit when fintech platforms embed gender metrics (e.g., flexible credit scoring, mentorship, lower collateral thresholds). The observed gendered effect evidences inclusive innovation in financing ecosystems.

(c) **Entrepreneurial Growth and Job Creation**

The positive impact on revenue and employment corroborates the **inclusive growth hypothesis** (Klapper et al., 2022). GLI-financed entrepreneurs channel funds into productive uses (inventory expansion, digitization, workforce development), thus stimulating local economic multipliers. The Nigerian fintech sector, projected to surpass US$10 billion by 2026, presents a pivotal platform for financial inclusion and gender equity. However, scaling GLI requires institutional frameworks, data transparency, gender-disaggregated metrics, and responsible digital lending standards.

Conclusion and Recommendations

Fintech lending incorporating GLI significantly improves entrepreneurs' access to finance in Nigeria. The inclusion benefits are especially pronounced among women entrepreneurs, closing part of the gender gap in SME financing. These financial access improvements translate into higher business performance and employment

growth. Fintech GLI is therefore a viable pathway toward inclusive entrepreneurial development and SDG 5 (Gender Equality) and SDG 8 (Decent Work & Economic Growth). It is recommended that regulators should develop national guidelines on Gender-Lens Fintech Lending (e.g., gender disaggregated reporting, ethical digital credit standards) to enhance accountability and inclusion. Also, fintech platforms should embed gender scoring models and mentorship programs; offer tailored loan products for women-led MSMEs in order to increase portfolio diversity and reduce default risk, and SME associations should promote digital literacy and financial education for female entrepreneurs to enhances effective credit utilization.

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