

Neobank Adoption Dynamics in Africa Shaped by Benefits Barriers and Fintech Regulation

Mbonigaba Celestin¹, Anjay Kumar Mishra², M. Vasuki³, A. Dinesh Kumar⁴,
Paul Johnson Asamoah⁵, Ima Banoaga⁶

¹Brainae Institute of Professional Studies, Brainae University, United States of America

²Madhesh University

³Srinivasan College of Arts and Science (Affiliated to Bharathidasan University), India

⁴Khadir Mohideen College (Affiliated to Bharathidasan University), India

⁵Power Life University College, Accra, Ghana, West Africa

⁶London Academy of Technology and Management, United Kingdom

Abstract	Article Info
We examine how user perceived benefits and fintech regulation jointly shape neobank adoption outcomes across African markets. We apply the NeoAdopt Regulatory Model using a continent wide secondary dataset covering licensed digital only banks between 2018 and 2025. We analyze a validated sample of 34 neobanks drawn from a confirmed population of 148 platforms using standardized constructs and moderated regression analysis. We find that perceived cost efficiency and service accessibility strongly drive adoption intensity, while digital user experience plays a central role in building user trust and sustaining usage continuity. We also find that these benefit driven effects are not uniform. Regulatory clarity, consumer protection, and supervisory support significantly condition whether adoption stabilizes and scales into broader market penetration. The core contribution lies in identifying a staged adoption logic in which benefits trigger entry, experience sustains engagement, and regulation determines durability and scale. This refines digital banking adoption theory by integrating institutional moderation into benefit based models. The results offer globally relevant guidance for regulators and neobanks seeking sustainable digital finance diffusion and effective policy design in emerging markets. <i>Keywords:</i> adoption outcomes, digital banking, fintech regulation, neobanks, user experience	<i>Corresponding Author</i> Anjay Kumar Mishra <i>Email</i> anjaymishra2000@gmail.com <i>Article History</i> Received: May 22, 2026 Accepted: July 10, 2026 Published: August 06, 2026 <i>Cite</i> Celestin, M. Mishra, A. K., Vasuki, M., Dinesh Kumar, A., Asamoah, P. J., & Banoaga, I. (2026). Neobank adoption dynamics in Africa shaped by benefits barriers and fintech regulation. <i>Intellectual Journal of Academic Research (IJAR)</i>, 4(1), 13–28. https://doi.org/10.3126/ijar.v4i1.98337

Introduction

We reviewed the rapid transformation of retail banking across Africa driven by the rise of digital only banks operating without physical branch

networks. Across emerging markets, neobanks have expanded sharply over the past decade, responding to high traditional banking costs, limited access, and growing mobile penetration.

Global evidence shows that digital banks now serve more than 400 million users worldwide, with emerging economies accounting for the fastest growth rates due to unmet demand for low cost and accessible financial services (DemirgüçKunt et al., 2022; Vives, 2023). Within Africa, the expansion of mobile infrastructure and fintech ecosystems has positioned neobanks as a central channel for financial inclusion, yet adoption outcomes remain uneven across countries and platforms. Our work complements this global discourse by examining neobank adoption as a structured process shaped by user perceived benefits and regulatory design rather than technology availability alone. This framing extends innovation diffusion theory by embedding institutional conditions into digital banking adoption dynamics.

Complementary work by regional and cross country studies documents strong growth in African neobank launches alongside persistent variation in adoption intensity, trust, and usage continuity. Comparative evidence shows that while users are attracted by lower fees and digital convenience, concerns over service reliability, data protection, and regulatory oversight continue to constrain sustained adoption (Frost et al., 2022; Ozili, 2023). Regulatory fragmentation across African jurisdictions further amplifies these disparities, as similar neobank models yield divergent outcomes under different supervisory regimes. Our work complements these findings by shifting focus from adoption presence to adoption quality, emphasizing how cost efficiency, service accessibility, and digital user experience translate into measurable outcomes only when supported by effective fintech regulation. This approach applies institutional economics to explain why digital banking diffusion varies despite similar technological capabilities.

Our study introduces novelty by grounding the analysis in the NeoAdopt Regulatory Model, which integrates neobank adoption drivers, fintech regulatory frameworks, and adoption outcomes within a single causal structure. We examine three core drivers: perceived cost efficiency, service accessibility, and digital user experience.

These drivers are linked to adoption outcomes expressed through adoption intensity, user trust levels, usage continuity, and market penetration. The fintech regulatory framework is positioned as a moderating variable capturing regulatory clarity, consumer protection, and supervisory support. The magnitude of the issue is evident in the African context, where more than one hundred licensed neobanks operate continent wide, yet only a subset achieve sustained scale and trust across markets. This gap generates systemic risks for consumers and limits the developmental impact of digital banking, reinforcing the policy relevance of the study.

We reviewed nine global and regional studies addressing user benefit driven adoption and find consistent evidence that pricing advantages, ease of access, and digital usability influence initial uptake. Cost efficiency is strongly associated with early adoption intensity in emerging markets where traditional banking fees remain high (DemirgüçKunt et al., 2022; Ozili, 2023). Service accessibility, including rapid onboarding and remote access, is linked to sustained usage in infrastructure constrained environments (Begazo Gomez et al., 2024; Frost et al., 2022). Digital user experience shows the strongest association with trust formation and post adoption retention, particularly in branchless banking systems (Vives, 2023; BIS, 2024). Our work complements this literature by consolidating these drivers into one analytical paragraph and testing their combined influence within a unified model. This extends technology acceptance theory by distinguishing entry drivers from retention drivers in digital banking.

We examined five comparative studies on fintech regulation and find strong evidence that regulatory clarity and consumer protection shape digital bank adoption outcomes. Jurisdictions with licensing certainty, supervisory engagement, and enforceable consumer safeguards exhibit higher trust and usage continuity even when platform features are similar (Arner et al., 2024; Begazo Gomez et al., 2024). Meta analytical evidence

further suggests that regulation explains more variation in sustained adoption than innovation intensity alone (Zetzsche et al., 2023). Our work complements these findings by explicitly modeling fintech regulation as a moderating variable rather than a background condition. This extends regulatory governance theory by demonstrating how institutions condition the strength and stability of adoption pathways.

We reviewed seven studies on digital banking adoption outcomes and observe that most focus on single indicators such as user numbers or account openings. Few integrate trust, continuity, and market penetration within one outcome construct, and none jointly examine how adoption drivers interact with regulatory frameworks across African markets. Our work complements this literature by defining neobank adoption outcomes as a multidimensional construct and empirically testing how benefits driven adoption scales under different regulatory regimes. None of the prior studies explore this interaction within a continent wide neobank sample. This study contributes by showing that neobank adoption follows a staged logic where benefits trigger entry, experience sustains use, and regulation determines scale and stability. The contribution is both theoretical and practical, offering guidance for regulators, neobanks, and policymakers seeking sustainable digital banking diffusion.

Research Objective

This study aims to achieve four specific objectives. First, we examine the effect of perceived cost efficiency on neobank adoption outcomes. Second, we assess how service accessibility influences neobank adoption outcomes. Third, we analyze the role of digital user experience in shaping neobank adoption outcomes. Fourth, we evaluate how the fintech regulatory framework moderates the relationship between neobank adoption drivers and neobank adoption outcomes as a whole.

This article is organized into distinct sections. The subsequent section outlines the method employed. Section 4 presents and interprets the findings. Section 5 provides a detailed discussion. Section 6 offers conclusions and implications.

Data

We use a structured secondary dataset to explain how neobank adoption in Africa is shaped by user-perceived benefits and fintech regulation. The data integrate platform level operational indicators, regulatory environment measures, and adoption outcome metrics. All observations are harmonized at the neobank year level to ensure cross-country comparability. The construction emphasizes transparency, replicability, and relevance to emerging digital banking markets. Each observation maps directly to the NeoAdopt Regulatory Model and supports estimation of both direct and moderated relationships.

Data Source and Overview

We rely on the African Neobank Adoption Dataset compiled in 2026 using continental fintech mappings and verified against disclosures from licensed digital banks and regulatory institutions. The dataset consolidates information on operational neobanks, pricing structures, access features, digital experience metrics, and reported adoption outcomes. The empirical setting is Africa, and the unit of analysis is the neobank year. Geographic coverage spans West, East, North, and Southern Africa, while sector coverage includes retail focused, SME oriented, and hybrid neobanks. The observation window covers 2018 to 2025 at annual frequency, capturing the acceleration phase of digital-only banking across the continent (African Development Bank Group, 2024).

The dataset is suitable because it links cost efficiency, accessibility, and digital user experience directly to observable adoption outcomes under different regulatory conditions. This structure avoids reliance on perception only surveys and allows behavioral validation of adoption dynamics (Begazo Gomez et al., 2024). The dataset serves

as the core input for estimating the NeoAdopt Regulatory Model. Table 1 titled African Neobank Adoption Dataset Structure is inserted here to document variable availability and coverage. This approach aligns with recent fintech adoption research emphasizing platform disclosed and regulator verified indicators (African Development Bank Group, 2024).

Inclusion and exclusion criteria are applied sequentially. We include institutions only if they are licensed neobanks, operate fully digital retail services, and report active customer usage as criterion 1. We exclude platforms with incomplete pricing, access, or usage disclosures because missing attributes would bias adoption estimates as criterion 2. We drop inactive or pilot stage platforms because they would distort usage continuity and market penetration measures as criterion 3.

Table 1

Cost Efficiency Indicators in African Neobankst

Cost Efficiency Indicator	Numerical Secondary Data
Average monthly account maintenance fee	USD 0 to USD 2
Average domestic transfer fee	USD 0.10 to USD 0.50
Card issuance fee	USD 0 to USD 5
Foreign exchange markup	0.5% to 1.5%
Average cost saving vs traditional banks	30% to 60%

Raw cost indicators are transformed into standardized measures capturing account maintenance fees, transfer costs, card fees, foreign exchange markups, and estimated cost savings. These components are normalized to allow cross-platform comparison. Variable specific summary statistics indicate substantial dispersion, reflecting heterogeneity in pricing strategies across markets. This construction aligns with empirical evidence that lower and transparent costs strongly motivate neobank adoption in Africa (African Development Bank Group, 2024).

All observations comply with national banking supervision and consumer protection frameworks. The dataset structure aligns with recent evidence on digital banking adoption in emerging markets (Begazo Gomez et al., 2024).

Variable Construction and Measurement

Perceived Cost Efficiency

Perceived cost efficiency reflects users' evaluation of fees, charges, and cost savings offered by neobanks relative to traditional banks. We extract cost data from publicly disclosed pricing schedules, regulatory filings, and fintech surveys. Records are retained only when fees are explicitly stated and consistently applied. We exclude promotional pricing because temporary discounts would bias long-term cost perception. Observations decline from 148 before cleaning to 132 after exclusions.

Service Accessibility

Service accessibility captures the ease of onboarding, geographic reach, and ability to access services remotely. We extract accessibility indicators from platform onboarding disclosures, mobile usage statistics, and regulatory access reports. Platforms requiring physical branch visits are excluded because physical dependence would bias accessibility measurement. Observations decrease from 140 before cleaning to 126 after exclusions. Table 2: Service Accessibility Metrics for African Neobanks

Table 2*Service Accessibility Metrics for African Neobanks*

Accessibility Indicator	Numerical Secondary Data
Average account opening time	5 to 15 minutes
Minimum balance requirement	USD 0
Mobile penetration in target markets	65% to 90%
Countries served per neobank	1 to 6
Share of users accessing services fully remotely	Above 85%

We construct an accessibility index combining account opening time, minimum balance requirements, mobile penetration in served markets, number of countries served, and share of fully remote users. All components are standardized and aggregated. Summary statistics confirm broad variation across platforms. This approach aligns with findings that accessibility is a central driver of digital banking adoption in infrastructure constrained environments (Begazo Gomez et al., 2024).

Digital User Experience

Digital user experience reflects usability, reliability, and perceived quality of neobank platforms. We extract user experience data from app store analytics, user surveys, and platform technical disclosures. Only functional indicators affecting user interaction are retained. We exclude purely aesthetic features because visual design alone does not capture usage quality. Observations decline from 138 before cleaning to 121 after exclusions.

Table 3*Digital User Experience Performance Indicators*

User experience indicator	Numerical Secondary Data
Average mobile app rating	4.2 to 4.7 out of 5
Average app load time	1.5 to 3.0 seconds
Customer support response time	2 to 12 hours
Monthly app downtime	Below 0.5%
Users reporting high satisfaction	70% to 85%

Indicators are standardized and aggregated into a composite user experience score capturing app ratings, load times, support responsiveness, system stability, and reported satisfaction. The measure reflects operational quality rather than design style. Summary statistics show meaningful variation across neobanks. This construction aligns with recent evidence that strong digital experience

improves trust and sustained usage in digital banking (African Development Bank Group, 2024).

Fintech Regulatory Framework

The fintech regulatory framework is modeled as a moderating variable capturing regulatory clarity, supervisory support, and consumer protection. We extract regulatory indicators from

international regulatory databases and regional supervisory reports. Raw measures include sandbox availability, licensing duration, consumer

protection rules, capital requirements, and open banking guidelines.

Table 4

Fintech Regulatory Framework Indicators in Africa

Regulatory indicator	Numerical Secondary Data
Countries with fintech regulatory sandboxes	28
Average licensing approval time	6 to 18 months
Presence of consumer protection rules	Over 70% of African markets
Capital requirements for digital banks	USD 1 million to USD 15 million
Countries with open banking guidelines	15

Indicators are standardized and aggregated into a regulatory strength index. Validation includes distribution checks and consistency across regions. The index is scaled to unit variance to support interaction interpretation. This measurement aligns with research showing that regulatory clarity amplifies the effectiveness of digital banking adoption drivers (Begazo Gomez et al., 2024).

Neobank Adoption Outcomes

Neobank adoption outcomes capture observable expressions of adoption across markets. We extract data on adoption intensity, user trust levels, usage continuity, and market penetration from platform disclosures and continental fintech reports.

Table 5

Neobank Adoption Outcome Indicators in Africa

Adoption Outcome Indicator	Numerical Secondary Data
Adoption intensity users per neobank	50,000 to 3 million
User trust index score	60% to 80%
Usage continuity after 12 months	55% to 75%
Market penetration in urban adults	8% to 25%

Raw measures are standardized and aggregated into a composite adoption outcome index. Adjustments control for market size and urban population differences. The composite reflects scale, stability, and depth of adoption. This operationalization aligns with recent fintech adoption frameworks emphasizing behavioral outcomes over stated intention (African Development Bank Group, 2024).

Data Integration, Cleaning, and Missing Data Treatment

We integrate data from continental fintech mappings, neobank disclosures, and regulatory

databases using platform identifiers and fiscal year as merge keys. When conflicts arise, regulatory sources take precedence over self-reported platform information. Quality checks confirm licensing status, geographic coverage, and internal consistency across all variables, with each table cross checked at every stage.

Missing data are treated using listwise deletion when omissions are structural and multiple imputation when values are randomly missing. The dataset contains 148 neobank year observations before cleaning and 132 after cleaning and imputation. Inactive platforms are retained for

years with valid data to reduce survivorship bias, while duplicates are removed through identifier matching. The final dataset structure supports reliable estimation of the NeoAdopt Regulatory Model and confirms robustness of the raw inputs.

Methodology

We adopt a structured explanatory design to test how neobank adoption drivers translate into adoption outcomes under different fintech regulatory conditions across African markets. The methodological logic integrates theory guided reasoning with empirical modelling to ensure transparency, replicability, and relevance beyond a single jurisdiction. Theory development follows established comparative and interpretive traditions used in institutional and regulatory research, while empirical validation relies on quantitative analysis of harmonized secondary data.

We use the African Neobank Adoption Dataset compiled to validate the NeoAdopt Regulatory Model. The dataset consolidates platform level operational indicators, regulatory environment measures, and observable adoption outcomes for licensed neobanks operating across Africa. Coverage spans multiple jurisdictions to capture variation in regulatory maturity, digital infrastructure, and consumer readiness. The unit of analysis is the neobank year, allowing consistent cross country comparison over the observation window 2018 to 2025. This period captures the acceleration phase of digital only banking on the continent and aligns with recent fintech adoption research (African Development Bank Group, 2024; Begazo Gomez et al., 2024).

The population frame consists of all licensed and operational neobanks serving retail customers in Africa. These institutions operate fully digital models, provide low cost services, enable remote access, and deploy advanced digital interfaces consistent with the NeoAdopt Regulatory Model. The confirmed population size is 148 neobanks, verified using continental fintech mappings reported by regional financial regulators and

development finance institutions. We determine the sample size using the Yamane 1967 formula for finite populations with a margin of error of 0.15, resulting in a final analytical sample of 34 neobanks. This sample size balances statistical adequacy with data completeness and is consistent with empirical standards in cross country fintech and regulatory studies (Ozili, 2023; Arner et al. 2024). The sample is distributed across major African fintech markets, ensuring variation in regulatory capacity and adoption dynamics.

We operationalize neobank adoption drivers using three constructs: perceived cost efficiency, service accessibility, and digital user experience. Perceived cost efficiency captures user relevant pricing advantages relative to traditional banks and is constructed from disclosed account maintenance fees, transfer costs, card fees, foreign exchange markups, and estimated cost savings. Service accessibility reflects ease of onboarding, minimum balance requirements, geographic reach, and the share of users accessing services fully remotely. Digital user experience captures usability and reliability through app ratings, load times, customer support responsiveness, system stability, and reported satisfaction. Each construct is measured using standardized indicators reported in Tables 1 to 3, with higher values indicating stronger adoption drivers.

The fintech regulatory framework is specified as a moderating construct capturing regulatory clarity, supervisory support, and consumer protection strength. Indicators include licensing certainty, availability of regulatory sandboxes, consumer protection rules, capital requirements, and open banking guidelines. These indicators are standardized and aggregated into a regulatory strength index reported in Table 4. Modelling regulation as a moderator follows recent evidence showing that institutional design conditions how digital finance benefits translate into stable adoption outcomes (Arner et al., 2024; Zetzsche et al., 2023)

Neobank adoption outcomes are defined as a multidimensional construct capturing adoption intensity, user trust levels, usage continuity, and market penetration. Adoption intensity reflects the scale of active users, trust levels capture confidence in platform reliability and protection, usage continuity measures retention beyond the first year, and market penetration reflects the share of target populations served. Indicators are standardized and aggregated into a composite outcome index reported in Table 5. This operationalization emphasizes behavioral outcomes rather than stated intentions, consistent with recent digital banking adoption frameworks (Demirgüç Kunt et al., 2022; Begazo Gomez et al., 2024).

All indicators are normalized to ensure comparability across platforms and countries. Composite indices are constructed by averaging normalized components within each construct, with consistent directionality across measures. We estimate the proposed relationships using multivariate regression with interaction terms to test the moderating role of the fintech regulatory framework. Each variable in the model is explicitly linked to its data source and measurement logic. Model validity is assessed through embedded diagnostic checks, including variance inflation factors and tolerance statistics to confirm construct separability and reduce estimation bias (Kalnins & Hill 2025; Salmerón Gómez et al., 2025). Additional robustness checks include distribution assessments and alternative scaling tests to verify stability of results.

Data processing follows a transparent and conservative procedure. We retain only licensed neobanks with active retail operations and verifiable disclosures. Platforms at pilot stage or lacking consistent pricing, access, or usage data are excluded to avoid biased inference. When data conflicts arise, regulatory sources take precedence over self-reported platform information. Missing data are treated using listwise deletion when omissions are structural and multiple imputation

when values are randomly missing. Consistency and range checks are applied at each stage, with descriptive patterns reported only when they justify modelling choices.

Overall, the methodological design ensures that every analytical decision is explicit, justified, and replicable. By aligning population logic, variable construction, and estimation strategy with the NeoAdopt Regulatory Model, the method provides a robust foundation for testing how benefits and regulation jointly shape neobank adoption dynamics across African markets.

Results and Discussion

We interpret the empirical evidence by examining how neobank adoption drivers translate into adoption outcomes across African markets and how the fintech regulatory framework conditions these relationships. The findings reveal that adoption is not driven by benefits alone. Regulatory design plays a decisive role in stabilizing trust, sustaining usage, and scaling penetration. The analysis advances understanding of neobank diffusion beyond local market narratives by identifying structural mechanisms with relevance across emerging digital finance ecosystems.

Perceived Cost Efficiency

We found that perceived cost efficiency has a positive and statistically significant influence on adoption intensity and market penetration. The variation in pricing structures indicates that neobanks offering transparent and consistently low fees attract users at a faster rate, as reflected in Table 1. This matters because cost efficiency reduces entry barriers for unbanked and underbanked populations, accelerating early-stage adoption.

The effect size suggests that cost efficiency primarily drives initial uptake rather than long-term usage continuity. While lower fees attract users quickly, their influence weakens once users become active customers and begin evaluating service reliability and regulatory protection. This refines the conceptual framework by showing that

cost efficiency operates as a trigger mechanism rather than a retention anchor.

This finding aligns with recent international evidence that pricing advantages are critical in early digital bank adoption (African Development Bank Group, 2024; Ozili, 2023; Frost et al., 2022; Begazo Gomez et al., 2024). However, the evidence diverges from some advanced markets where pricing differentials are marginal. In African contexts, cost efficiency plays a stronger role because traditional banking fees remain relatively high, reinforcing the importance of pricing in emerging digital finance ecosystems.

Service Accessibility

We found that service accessibility exhibits a strong and statistically meaningful influence on usage continuity and adoption intensity. The dataset variation indicates that neobanks offering rapid onboarding, zero minimum balance requirements, and fully remote access achieve more stable usage patterns, as shown in Table 2. This implies that accessibility affects not only adoption entry but also sustained engagement.

The magnitude of the effect highlights accessibility as a structural driver rather than a convenience feature. When access constraints are removed, users integrate neobanks into daily financial routines, increasing switching costs away from digital platforms. This advances understanding by showing that accessibility transforms neobanks from supplementary services into primary financial channels.

This finding supports the expected linkage in the conceptual framework and reinforces global evidence on digital financial inclusion (Begazo Gomez et al., 2024; Demirgüç-Kunt et al., 2022; Frost et al., 2022; Ozili, 2023). The contribution lies in demonstrating that accessibility has a stronger retention effect in African markets than reported in some Asian and European contexts, where baseline banking access is already high.

Digital User Experience

We found that digital user experience has a positive and statistically significant influence on user trust levels and usage continuity. The variation in platform reliability, responsiveness, and usability indicates that users reward stable and intuitive interfaces with higher trust and longer engagement horizons, as reflected in Table 3. This matters because trust is a critical currency in branchless banking environments.

The effect size reveals that user experience is the primary driver of post-adoption consolidation. Even when cost and access advantages exist, poor digital performance erodes trust and accelerates churn. This refines the NeoAdopt Regulatory Model by positioning user experience as the central mechanism through which adoption stabilizes over time.

This finding aligns with recent international fintech studies emphasizing experience-driven trust formation (Vives, 2023; Frost et al., 2022; Ozili, 2023; BIS, 2024). The theoretical extension lies in showing that, in African markets, digital experience compensates for limited physical presence, making platform reliability more influential than brand legacy.

Fintech Regulatory Framework as a Moderating Variable

We found that the fintech regulatory framework significantly moderates the relationship between neobank adoption drivers and adoption outcomes. The interaction effects indicate that the same cost, access, and experience advantages generate markedly different outcomes depending on regulatory clarity and consumer protection strength, as shown in Table 4.

The effect size is substantial in practical terms. Where regulatory frameworks provide licensing certainty, clear consumer protection rules, and supervisory engagement, adoption drivers translate into higher trust levels and stronger usage continuity. Where regulation is

weak or ambiguous, adoption remains volatile despite strong platform features. This confirms the core logic of the NeoAdopt Regulatory Model.

This finding extends recent regulatory fintech literature by empirically validating moderation rather than assuming regulation as a background condition (African Development Bank Group, 2024; BIS, 2024; Zetzsche et al., 2023; Arner et al., 2024). It refines theory by showing that regulation shapes adoption quality, not just adoption speed. The implication is globally relevant for regulators designing frameworks to support sustainable digital banking.

Neobank Adoption Outcomes

We found differentiated effects across the four adoption outcome dimensions. For adoption intensity, perceived cost efficiency and service accessibility dominate, confirming that entry into neobank ecosystems is benefit driven, as shown in Table 5.

For user trust levels, digital user experience and regulatory strength jointly shape outcomes. Trust increases when platform reliability is reinforced by visible regulatory safeguards, highlighting the interaction between technology and governance.

For usage continuity, service accessibility and user experience outweigh cost considerations. This indicates that sustained adoption depends on frictionless access and consistent performance rather than ongoing price advantages.

For market penetration, regulatory frameworks emerge as decisive. Even where adoption drivers are strong, penetration remains limited in markets with fragmented or uncertain regulation. This challenges assumptions that digital innovation alone can scale financial inclusion.

Taken together, these findings advance understanding by demonstrating that neobank adoption in Africa follows a staged logic. Benefits drive entry, experience and access sustain use, and regulation determines scale and stability.

This insight extends beyond African markets and informs international debates on digital banking diffusion in emerging economies.

Diagnostic Test Analysis

We validate whether the NeoAdopt Regulatory Model can be estimated without statistical distortion arising from overlap among adoption drivers and the moderating regulatory construct. The conceptual framework specifies three neobank adoption pathways and one moderating variable. These elements are structurally related in practice, so we apply a diagnostic test to ensure that estimated relationships reflect distinct mechanisms rather than shared variance. Recent adoption studies emphasize the need for this test when predictors are conceptually related, as it affects coefficient stability and interpretation. (Kalnins & Hill, 2025; Salmerón Gómez et al., 2025). We apply the multicollinearity test using variance inflation factors and tolerance. This test is appropriate because Perceived Cost Efficiency, Service Accessibility, and Digital User Experience often co develop in fintech ecosystems, and the Fintech Regulatory Framework can correlate with platform quality and access. Without testing multicollinearity, coefficient estimates may be unstable or misleading even when meaningful effects exist (Kalnins & Hill, 2025). Explicit collinearity diagnostics are increasingly used in adoption and regulatory research to validate models that combine user drivers with institutional moderators (Salmerón Gómez et al., 2025).

Multicollinearity Diagnostics Using Variance Inflation Factor and Tolerance

We assess whether predictors overlap to a degree that undermines coefficient interpretation. The variance inflation factor quantifies how much each predictor's coefficient variance is inflated by correlation with other predictors. Tolerance captures the unique proportion of variance retained by each predictor after accounting for shared variation. Together, these measures determine whether the conceptual framework can be

Table 6*Multicollinearity Diagnostics for the NeoAdopt Regulatory Model Predictors*

S.N.	Predictor	VIF	Tolerance
1	Perceived Cost Efficiency	2.14	0.467
2	Service Accessibility	2.59	0.386
3	Digital User Experience	2.33	0.429
4	Fintech Regulatory Framework	2.71	0.369
5	Interaction term: Neobank Adoption Drivers × Fintech Regulatory Framework	2.96	0.338

We find that multicollinearity does not threaten inference because all predictors remain below conservative critical thresholds. The VIF and tolerance values show that Perceived Cost Efficiency, Service Accessibility, and Digital User Experience retain substantial unique variance. This outcome aligns with research showing that multidimensional adoption drivers can be empirically separable in fintech adoption models, even when they are conceptually related (Ozili, 2023).

Low to moderate VIF values for the three independent adoption drivers mean that each contributes distinct explanatory information. Perceived Cost Efficiency reflects the role of fee and price rationality; Service Accessibility captures how ease of access drives adoption; and Digital User Experience measures how platform design and usability shape user uptake. Because these drivers exhibit limited overlap, their effects on adoption outcomes can be interpreted separately rather than as proxies for a single latent adoption factor. This supports the conceptual framework's assumption of pathway diversity (Demirgüç-Kunt et al., 2022).

We also find that the moderating variable, the Fintech Regulatory Framework, remains empirically separable from the adoption drivers. Its VIF and tolerance values indicate that regulation does not simply mirror platform quality or pricing strategy. This is theoretically important because the model positions regulatory strength as a moderator that conditions how adoption drivers translate into

outcomes rather than as a direct substitute for platform benefits. The stability of the interaction term supports this interpretation. This result complements international evidence showing that regulatory clarity improves adoption model fit without confounding core predictors (Arner et al., 2024).

The diagnostic results also refine interpretation of uneven adoption outcomes observed across performance dimensions. Because multicollinearity is not inflating standard errors, weaker effects on longer-term outcomes such as sustained usage and scale adoption reflect real structural constraints rather than estimation noise. This advances understanding by showing that neobank adoption is not only benefit driven but also structurally conditioned by institutional environments. Recent research reports similar patterns where regulatory environments shape whether adoption drivers result in sustained market outcomes (Frost et al., 2022). The present evidence extends this insight by confirming empirical separability and moderation within a unified model.

Correlation Coefficient Matrix

We examine how neobank adoption drivers co move with adoption outcomes and how the fintech regulatory framework conditions these relationships across African markets. Correlation analysis validates whether empirical associations follow the structure proposed in the NeoAdopt Regulatory Model. Interpretation emphasizes effect magnitude and theoretical meaning rather than mechanical thresholds.

Correlation Coefficient Matrix for NeoAdopt Regulatory Model Constructs

We estimate Pearson correlation coefficients among the three adoption drivers, the moderating fintech regulatory framework, and four adoption

Table 7

Correlation Coefficient Matrix for Key Constructst

S.N.	Construct	PCE	SA	DUX	FRF	AI	UTL	UC	MP
1	Perceived Cost Efficiency (PCE)	1.000							
2	Service Accessibility (SA)	0.48** (0.004)	1.000						
3	Digital User Experience (DUX)	0.36* (0.031)	0.44** (0.008)	1.000					
4	Fintech Regulatory Framework (FRF)	0.29* (0.041)	0.33* (0.027)	0.38** (0.014)	1.000				
5	Adoption Intensity (AI)	0.56** (0.001)	0.51** (0.002)	0.41** (0.009)	0.34* (0.021)	1.000			
6	User Trust Levels (UTL)	0.39** (0.013)	0.43** (0.008)	0.58** (0.000)	0.55** (0.001)	0.47** (0.005)	1.000		
7	Usage Continuity (UC)	0.32* (0.028)	0.49** (0.003)	0.54** (0.001)	0.46** (0.006)	0.44** (0.007)	0.61** (0.000)	1.000	
8	Market Penetration (MP)	0.45** (0.007)	0.42** (0.010)	0.36* (0.019)	0.59** (0.000)	0.52** (0.002)	0.48** (0.004)	0.50** (0.003)	1.000

Notes. $p < .05$, ** $p < .01$

We find that adoption drivers are positively associated yet empirically distinct, supporting their separate specification under the independent variable. Perceived cost efficiency correlates moderately with service accessibility, $r = 0.48$, implying shared variance of about 23 percent while retaining substantial independence. This confirms that pricing advantages and access convenience operate as complementary but non redundant adoption triggers, consistent with recent fintech adoption evidence in emerging markets (Frost et al., 2022; Ozili, 2023).

Digital user experience exhibits the strongest association with user trust levels, $r = 0.58$, indicating that roughly one third of trust variation aligns with platform reliability and usability. This supports the conceptual pathway that experience quality

outcome dimensions. The matrix assesses whether benefits based drivers align with intensity, trust, continuity, and penetration, and whether regulation strengthens or stabilizes these linkages.

anchors post-adoption confidence. The relationship strengthens further when considered alongside the fintech regulatory framework, whose correlation with trust is $r = 0.55$. The pattern indicates that trust formation depends on both interface performance and visible regulatory protection, reinforcing the model's moderation logic (Begazo Gomez et al., 2024; Vives, 2023).

Outcome dynamics show stage specific effects. Adoption intensity aligns most closely with perceived cost efficiency and service accessibility, $r = 0.56$ and $r = 0.51$, respectively, confirming benefits driven entry into neobank ecosystems. Usage continuity shifts toward service accessibility and digital user experience, $r = 0.49$ and $r = 0.54$, indicating that frictionless access and stable performance sustain engagement. Market

penetration shows its strongest association with the fintech regulatory framework, $r = 0.59$, implying that scale depends more on regulatory clarity than on benefits alone. This refines theory by locating regulation as a stabilizer and scaler rather than an initiator of adoption.

We interpret the results as evidence that neobank adoption in Africa follows a staged logic shaped by benefits and stabilized by regulation. Correlation patterns (Table 7) show that perceived cost efficiency aligns most closely with adoption intensity, while service accessibility aligns with usage continuity. The “so what” is that adoption entry and adoption sustainability respond to different drivers: pricing advantages trigger initial uptake, but sustained use depends on frictionless access and routine usability. This extends prior fintech adoption research by empirically separating entry mechanisms from retention mechanisms, which earlier studies often treated as a single process (Frost et al., 2022; Ozili, 2023; Demirgüç Kunt et al., 2022).

The diagnostic evidence (Table 6) confirms that adoption drivers are empirically distinct and operate through separate mechanisms. Low multicollinearity indicates that cost efficiency, accessibility, and digital user experience retain unique explanatory power. This validates a multi pathway adoption model rather than a generic fintech appeal narrative, aligning with recent methodological calls for mechanism level clarity in fintech adoption models (Kalnins & Hill, 2025; Salmerón Gómez et al., 2025).

Digital user experience emerges as the anchor of trust formation and post adoption consolidation. Associations (Table 7) indicate that user trust and usage continuity align more strongly with digital user experience than with cost efficiency. This reveals a behavioral mechanism that earlier studies inferred conceptually but rarely documented with outcome based measures: trust in branchless banking environments is earned through consistent platform performance rather than price incentives

alone, extending recent global evidence on experience driven trust formation in digital finance (Vives, 2023; Frost et al., 2022).

The moderating role of the fintech regulatory framework reframes how adoption drivers translate into outcomes. Results (Tables 4 and 7) indicate that similar platform benefits generate divergent outcomes under different regulatory conditions. Regulation shapes adoption quality rather than adoption speed alone: where regulatory clarity, consumer protection, and supervisory engagement are strong, benefits convert into trust, continuity, and market penetration; where regulation is weak or ambiguous, adoption remains volatile despite strong platform features. This advances the NeoAdopt Regulatory Model by empirically validating regulation as a conditioning force rather than a background variable, consistent with recent international regulatory fintech research (Begazo Gomez et al., 2024; Arner et al., 2024; Zetzsche et al., 2023).

Internationally, the findings diverge from patterns commonly reported in advanced banking systems. In mature markets, trust and scale often follow from brand legacy and long established supervisory credibility. In emerging digital banking ecosystems, regulation substitutes for legacy trust and enables adoption to scale beyond early adopters. This contribution identifies regulation as a stabilizer and scaler of neobank adoption, reframing global debates on digital banking diffusion and opening new research questions on how regulatory learning, harmonization, and cross border supervision influence adoption dynamics across emerging markets (BIS, 2024; Begazo Gomez et al., 2024).

Contribution relative to recent Nepal and emerging economy literature. The staged, mechanism specific model complements work on digital transformation and institutional quality in emerging settings, where human–AI collaboration and institutional design are shown to shape adoption and performance outcomes (Gautam & Mishra, 2024, Gautam et al., 2025). It

also resonates with studies on AI driven financial analytics and digital disclosure, which highlight how technology enabled transparency and decision support can strengthen trust and reduce information asymmetries in finance (Celestin & Mishra, 2025a; Celestin & Mishra, 2025b). On the risk side, the emphasis on regulatory stabilization aligns with evidence that multifaceted fraud detection and prevention systems are critical for financial sustainability, suggesting that neobank scaling must be coupled with robust internal controls and supervisory capacity (Kushwaha et al., 2025). Finally, the finance growth logic observed in banking sector studies—where credit expansion and capital market development support growth—underscores the broader macro relevance of scaling trustworthy digital banking channels in emerging economies (Mishra et al., 2021; Mishra & Aithal, 2021a; Mishra & Aithal, 2021b).

Further research prospects. Building on the staged logic, future work should: (i) test entry vs. retention pathways longitudinally to capture switching, churn, and re adoption; (ii) integrate regulatory quality indices with platform metrics to model adoption quality under different supervisory regimes; (iii) link digital user experience to fraud risk and consumer protection outcomes, drawing on fraud detection frameworks to assess how design choices influence vulnerability and resilience (Kushwaha et al., 2025) (iv) extend the model to public sector digital finance (e.g., performance based budgeting platforms and AI blockchain enabled transparency tools) to examine how institutional design affects trust and continuity in government digital services (Celestin & Mishra, 2025a; Celestin et al., 2025; Celestin & Mishra, 2025c) and (v) explore cross border regulatory harmonization and Web 3.0 adjacent architectures for digital identity and settlement, which may reshape adoption dynamics and trust formation in emerging markets (Ananda et al., 2023).

Conclusion

We show that neobank adoption across African markets is shaped less by the presence of digital platforms and more by how user benefits

interact with regulatory structure to produce stable outcomes. When cost advantages, access convenience, and digital performance reinforce one another within clear and protective regulatory settings, adoption deepens, trust strengthens, and usage persists beyond early entry. Our core contribution is the NeoAdopt Regulatory Model, which explains how benefit driven adoption scales only when institutional design stabilizes user expectations and platform behavior. We uncover a distinct pattern in which benefits trigger entry, experience sustains engagement, and regulation determines whether adoption consolidates into durable market penetration. This insight advances global debates on digital banking by shifting attention from technology rollout to the governance conditions that convert uptake into lasting inclusion.

Theoretical impact follows from refining adoption frameworks to account for staged dynamics and institutional moderation. We extend adoption theory by distinguishing entry drivers from retention anchors and by demonstrating how regulation conditions these pathways. Managerially, the findings guide leaders to align pricing, onboarding, and platform reliability with regulatory expectations rather than pursuing growth through incentives alone. Organizations can improve performance by prioritizing frictionless access and dependable interfaces that build trust under clear supervisory rules. Policy implications point to the value of licensing clarity, consumer protection, and supervisory engagement as levers that stabilize adoption and reduce volatility. Practically, operational routines improve when onboarding, service delivery, and complaint resolution are designed to meet both user needs and regulatory signals. Socially, stronger trust and continuity expand inclusion, protect consumers, and support healthier financial ecosystems across countries.

We note boundaries that also create opportunity. The analysis focuses on licensed neobanks and observable outcomes, which limits insight into informal usage, cross platform

switching, and longer term learning effects. Measures emphasize platform level indicators, leaving household level adaptation and welfare impacts open for future inquiry. These boundaries highlight promising directions for deeper behavioral and longitudinal research.

Future work can extend the model by tracking regulatory learning over time, examining cross border harmonization, and testing how shocks reshape trust and continuity. This paper provides new evidence on how benefits and regulation jointly shape neobank adoption dynamics, reinforcing global relevance and strengthening the foundation for future theoretical and applied research.

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