

# Fintech Adoption and the Transformation of Traditional Banking Services in Kano State, Nigeria

By

Amina Muhammed

&

Umma Lawal Sulaiman

Department of Social Sciences and Administration

School of Continuing Education

Bayero University, Kano

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## Abstract

*This study examines the impact of fintech adoption and the transformation of traditional banking services in Kano State, Nigeria's most populous state and a major commercial hub in Northern Nigeria. Employing a quantitative cross-sectional survey design grounded in the Technology Acceptance Model (TAM), Innovation Diffusion Theory, and Service Quality Theory, data were collected from 475 banking customers using a multi-stage stratified random sampling technique. Results from multiple regression analyses confirmed all five hypotheses: demographic factors—particularly age, education, and urban location—significantly influence adoption rates; perceived service quality differences drive customer preferences; traditional banks' competitive responses positively affect market performance; and fintech adoption significantly improves financial inclusion. Mobile money and bill payment services recorded the highest adoption rates, while digital lending and investment products remain underutilized. The findings underscore the need for traditional banks in Kano State to accelerate digital transformation, develop Sharia-compliant fintech offerings, and pursue strategic Fintech partnerships to sustain competitive relevance and advance financial inclusion objectives.*

**Keywords:** Fintech adoption, traditional banking, financial inclusion, Technology Acceptance Model, digital disruption, Northern Nigeria.

## Introduction

The Financial Technology (Fintech) revolution has fundamentally transformed the global financial services landscape, creating unprecedented opportunities and challenges for traditional banking institutions (KPMG, 2022). Fintechs and traditional banks in Nigeria represent two intersecting ecosystems. While traditional banks bring institutional trust and deep liquidity, Fintechs like OPay, Moniepoint, and Kuda dominate retail transactions by prioritizing hyper-accessibility, zero-fee transfers, and digital-first solutions for the country's vast unbanked population. The emergence of Financial Technology (FinTech) has, in particular, transformed the landscape of financial service delivery globally and is now significantly reshaping financial practices in Nigeria (Okey & Ifeoluwa, 2025). In the Nigerian context, the growing adoption of digital financial tools, mobile payments, and blockchain solutions has reduced the dependence on physical bank branches and reshaped how people save, invest, and transact (Eze & Nwokah, 2021).

In Nigeria, Africa's largest economy, the fintech sector has experienced exponential growth, with mobile money services, digital payment platforms, and online lending services reshaping financial service delivery and consumption (McKinsey & Company, 2021).

This transformation is particularly pronounced in Northern Nigeria, where states such as Kano have witnessed significant fintech adoption despite historical challenges in financial inclusion. Platforms such as OPay, PalmPay, and Moniepoint have established agent networks across Kano metropolis and into semi-urban markets. Mobile money transactions processed through these platforms in Northern Nigeria rose significantly between 2019 and 2023, a period during which the Central Bank of Nigeria (CBN) simultaneously tightened regulations on cash transactions and pushed its cashless policy more aggressively into previously resistant northern markets (CBN, 2022). The COVID-19 pandemic accelerated matters: branch closures, movement restrictions, and a sudden need to pay bills and transfer money remotely forced many Kano residents into digital channels they had previously avoided or simply never encountered.

Kano State, Nigeria's most populous state and a major commercial hub in Northern Nigeria, presents a unique context for examining the intersection between traditional banking and emerging Fintech solutions (National Bureau of Statistics, 2018). Its diverse economic landscape—spanning agriculture, commerce, and manufacturing—combined with a large historically unbanked population, has created fertile ground for fintech innovation (CBN, 2020). Traditional banks in Kano, which have long dominated financial services, now face growing competition from agile Fintech companies offering more convenient and cost-effective alternatives.

The empirical literature on Nigerian fintech has concentrated overwhelmingly on Lagos and, to a lesser extent, Abuja and Port Harcourt. Akinwunmi and Okonkwo (2021) noted this regional gap directly, observing that state-level studies in Northern Nigeria remained sparse despite the distinctive socio-economic, cultural, and infrastructural conditions that ought to make fintech diffusion patterns there quite different from what is observed in the South. The few existing studies that address Northern Nigeria tend to focus narrowly on mobile money or Islamic banking compatibility rather than the broader question of how fintech adoption reshapes the relationship between customers and traditional banks (Oshodin et al., 2020; Ahmad and Mohammed, 2020).

This study addresses that gap. We examine the current state of fintech adoption among banking customers in Kano State, how adoption is distributed across demographic groups, how it relates to traditional banking utilisation, what it implies for service quality perceptions and customer preferences, how traditional banks have responded competitively, and what the net effect has been on financial inclusion. The study is guided by five hypotheses derived from the Technology Acceptance Model (TAM), Innovation Diffusion Theory, and Financial Inclusion Theory.

## **Literature Review**

### **Fintech and Traditional Banking: Conceptual Overview**

Fintech, or financial technology, represents a paradigm shift in financial service delivery through the integration of technology and innovation (KPMG, 2022). FinTech, refers to the integration of advanced digital tools into financial service delivery to enhance efficiency, accessibility, and customer experience. FinTech can also be defined as “a new financial industry that applies technology to improve financial activities (Schueffel, 2016).” It encompasses a wide range of applications such as online banking, mobile money, peer-to-peer

lending, robo-advisory services, blockchain transactions, and crypto currency trading. Gomber, Kauffman, Parker, and Weber (2018) emphasized that FinTech innovations are not only disrupting conventional banking systems but also enhancing accessibility, transparency, and efficiency across the financial ecosystem. Key fintech segments include payments, lending, wealth management, insurtech, and blockchain-based services (Deloitte, 2023), each addressing specific pain points in conventional financial service delivery.

Traditional banking refers to the conventional model of financial intermediation where banks operate through physical branches and offer core services such as deposits, loans, and payments (Mishkin & Eakins, 2021). Traditional banking services—comprising deposit-taking, lending, payments, and advisory services—have historically provided stability and trust through branch networks and established regulatory frameworks (IMF, 2022). However, the traditional banking model faces increasing challenges in terms of operational efficiency, customer convenience, and accessibility in emerging markets. Fintech innovations threaten traditional advantages by offering superior user experience, lower costs, and greater reach (Accenture, 2022).

### **Digital Disruption and Financial Inclusion**

Digital disruption in financial services manifests through disintermediation, democratisation, and disaggregation of services (Deloitte, 2020). McKinsey & Company (2021) observe that new entrants initially serve overlooked customer segments before gradually moving upmarket, a pattern highly relevant in the Nigerian context where large unbanked populations exist. The COVID-19 pandemic accelerated digital adoption, triggering what BCG (2021) termed the "great acceleration" in financial digitisation. A central question in the literature is whether fintech displaces traditional banking or complements it. The honest answer is that it depends heavily on the market context and the specific services in question. Boot et al. (2021), in a careful study of European banking markets, argued that fintech and traditional banks tend toward complementarity rather than full substitution: banks provide trust, balance sheet capacity, and regulatory legitimacy that fintech platforms struggle to replicate, while fintech platforms provide reach, interface quality, and cost efficiency that banks struggle to match. The optimal outcome, Boot et al. (2021) suggested, is collaboration.

In African markets, however, the picture is more complicated. Where traditional banking penetration is low — as it is in much of Northern Nigeria — fintech platforms do not merely complement existing services; they substitute for services that were never provided in the first place. Jack and Suri's (2011) landmark study of M-Pesa in Kenya documented how mobile money created an entirely new financial layer for households that had never held a bank account, with measurable effects on household welfare and resilience to income shocks. Mbiti and Weil (2016) subsequently confirmed that M-Pesa adoption did reduce the use of informal financial mechanisms but did not significantly displace formal bank accounts where those accounts already existed. The substitution effect was concentrated at the boundary between formal and informal finance, not within the formal sector itself.

This distinction matters for Kano. Given EFINA's (2021) finding that digital finance significantly increased financial access among previously excluded populations, the question for this study is not simply whether fintech is replacing bank visits among existing customers — it likely is, to some degree — but whether the populations adopting fintech were ever meaningfully served by traditional banks to begin with.

Financial inclusion—defined as the availability and equality of opportunities to access financial services (World Bank, 2023)—represents a critical development objective in Kano State, where traditional banking penetration remains low. Ozili (2020) identifies four dimensions: access, usage, quality, and welfare impact. Fintech solutions, particularly mobile money and agent banking, have emerged as key enablers of Nigeria's financial inclusion objectives (CBN, 2019). Cultural and socioeconomic factors, including religious compatibility, significantly influence adoption in diverse markets such as Kano State (Adebayo & Okonkwo, 2021; Ahmad & Mohammed, 2020).

### **Demographic Patterning of Adoption**

Senyo and Osabutey (2020) found that education level was the strongest individual predictor of fintech adoption across a sample of Ghanaian users, with urban location as a secondary predictor. Teng et al. (2021), working in Southeast Asian markets, documented a clear age gradient in mobile banking adoption even after controlling for smartphone ownership. Within Nigeria, Adeleye et al. (2020) observed that fintech adoption in payment services was heavily concentrated among urban residents under forty with at least secondary education, and that this demographic profile was markedly different from the profile of rural residents who were adopting agent banking services — a distinction that suggests different adoption mechanisms operating in parallel.

For Kano specifically, several factors complicate the standard diffusion picture. First, gender dynamics in mobile phone ownership have historically disadvantaged women's access to digital financial services across northern Nigeria (Burrell and Oreglia, 2015), though the picture has shifted as smartphone costs have fallen and digital literacy has improved among younger women. Second, religious compatibility matters: fintech products that offer interest-bearing savings or conventional credit are likely to face resistance among Kano's Muslim majority that would not appear in a Lagos sample. Ahmad and Mohammed (2020) documented this effect directly, finding that awareness of a fintech product's Sharia compliance status significantly affected adoption intentions among northern Nigerian respondents.

### **Service Quality and Customer Preferences**

Parasuraman et al. (1988) SERVQUAL framework — which structures service quality around five dimensions: tangibles, reliability, responsiveness, assurance, and empathy — has been widely applied in comparative studies of fintech and traditional banking. The consistent finding is that fintech platforms outperform traditional banks on responsiveness (speed of transactions, 24/7 availability) and are increasingly competitive on reliability, while traditional banks retain advantages in assurance — the dimension that captures trust, credibility, and customers' confidence that their money is safe. This trade-off has practical implications: customers who transact frequently and value convenience will lean toward fintech, while customers who hold significant balances or require credit will tend to retain their traditional bank relationships for the assurance dimension alone.

In the Nigerian context, Oshodin et al. (2020) found that security concerns were among the top barriers to fintech adoption, particularly among older and less educated respondents — a finding that maps directly onto the assurance dimension. The question of trust is not merely perceptual: Nigeria has had well-publicised cases of digital fraud and SIM-swap attacks, and the lack of deposit insurance for funds held in fintech wallets (as opposed to banks) is a real,

not imagined, difference in risk profile. Traditional banks in Kano carry NDIC deposit insurance; most fintech wallets do not. For customers who understand this distinction, the assurance gap is meaningful.

### **Competitive Responses of Traditional Banks**

Traditional banks have not been passive in the face of fintech competition. The strategic options available to incumbents are broadly three: compete by investing in digital capabilities to match fintech on convenience and cost; partner with fintech platforms to offer their balance sheets and regulatory infrastructure in exchange for access to fintech's distribution and interface capabilities; or cede certain customer segments and service categories to fintech while concentrating on those where incumbent advantages are durable. Adeleye et al. (2020) observed all three strategies operating simultaneously among Nigerian banks, with larger tier-one banks more likely to invest aggressively in in-house digital transformation and smaller banks more likely to pursue partnership arrangements.

### **Empirical Evidence**

Internationally, IMF (2021) found that Fintech adoption significantly reduces costs and improves efficiency, with the greatest impact in markets with limited traditional banking penetration. Boot et al. (2021) demonstrated that collaboration between fintech and traditional banks often produces superior outcomes to pure competition in European markets. In Africa, GSMA (2022) documented that M-Pesa adoption in Kenya improved financial inclusion, reduced poverty, and enhanced household welfare. The World Bank (2023) confirmed that supportive regulatory frameworks and telecommunications infrastructure drive African fintech adoption. The studies of Idigo and Ibenta,(2026) found that Fintech cause a significant disruption to traditional banking in Nigeria. Similarly, Ogbuji, Ologundudu, & Oluyomi, (2020) in their study Comparative Analysis of Financial Technology and Traditional Bank Performance in Nigeria: The Camels Approach, found that the digital FinTech operations, commonly called ALAT in WEMA bank resulted to a consistent positive impact on traditional bank performance

Within Nigeria, EFINA (2021) found that digital finance significantly increased financial service access, particularly among younger and urban populations. Adeleye et al. (2020) documented that competition between Fintech firms and traditional banks initially focused on payment services before expanding to lending and savings products, with traditional banks responding through digital transformation and strategic partnerships. Oshodin et al. (2020) established that cultural and religious factors—including Islamic banking compatibility—significantly influence Fintech adoption patterns in Northern Nigeria, a finding directly relevant to Kano State's predominantly Muslim population.

### **Theoretical Framework and Hypotheses**

This study draws primarily on three complementary theories. The Technology Acceptance Model (TAM), developed by Davis (1989) and extended by Venkatesh et al. (2012), provides the individual-level adoption mechanism: people adopt fintech to the extent that they perceive it as useful and easy to use. These two constructs — perceived usefulness and perceived ease of use — are the proximate drivers of adoption intention and actual use behaviour. TAM has been validated extensively in mobile banking and digital payment contexts (Alalwan et al.,

2017) and provides the theoretical bridge between individual characteristics and observed adoption behaviour.

Innovation Diffusion Theory (Rogers, as discussed in OECD, 2022) situates individual TAM constructs within a population-level diffusion process, explaining why adoption rates vary systematically across demographic groups and geographic areas. It is this theory that generates the demographic hypotheses in this study: younger, more educated, urban residents are predicted to be earlier and heavier adopters because they have greater exposure to information about fintech, lower perceived risk of new technology, and social networks in which fintech use is normalised.

Financial Inclusion Theory (Ozili, 2020; World Bank, 2023) provides the developmental lens through which the broader societal consequences of fintech diffusion are assessed. Inclusion is defined here across four dimensions: access (the ability to open and use an account), usage (frequency and depth of financial service use), quality (appropriateness of products to users' needs), and welfare impact (the effect of financial access on household wellbeing). This framework moves the analysis beyond the commercial competition between fintech and banks to ask whether the diffusion of digital finance in Kano is actually advancing the financial welfare of previously excluded populations.

The three theories form a coherent analytical chain: TAM explains why individual consumers adopt or resist fintech; Innovation Diffusion Theory explains how adoption varies across the population; Financial Inclusion Theory assesses whether the aggregate pattern of adoption produces developmental benefits.

From these theoretical foundations, five hypotheses were proposed: (H1) Fintech adoption is significantly negatively related to traditional banking service utilization; (H2) Demographic characteristics significantly influence Fintech adoption rates; (H3) Perceived service quality differences significantly influence customer preferences; (H4) Traditional banks' competitive responses significantly affect their market performance; (H5) Fintech adoption significantly improves financial service accessibility and inclusion in Kano State.

## **Methodology**

### **Research Design**

This study adopts a quantitative cross-sectional survey design within a positivist paradigm, consistent with the deductive approach and the need to test specific hypotheses about variable relationships (Creswell & Creswell, 2018). The cross-sectional design was selected for its practical efficiency in capturing contemporaneous relationships between fintech adoption and traditional banking service utilization across Kano State.

### **Population, Sampling, and Sample Size**

The target population comprised adult banking customers aged 18 and above who were resident in Kano State at the time of data collection and who held accounts with at least one formal financial institution. According to CBN (2020) deposit data, approximately 3.2 million adults in Kano State held bank accounts at the time of the study. This population was the frame from which our sample was drawn. A multi-stage stratified random sampling approach was used to ensure geographic representativeness across three strata defined by the CBN's own urban/rural classification of local government areas: urban (Kano metropolis, comprising Kano Municipal,

Fagge, Dala, Gwale, and Nassarawa LGAs), semi-urban (a ring of commercially active LGAs within 30 kilometres of the metropolis, including Ungogo, Kumbotso, and Tarauni), and rural (remaining LGAs). The proportional allocation was 60 per cent urban, 25 per cent semi-urban, and 15 per cent rural, reflecting the distribution of banked adults across these strata as estimated from CBN (2020) data.

Within each stratum, banks were identified from the CBN-registered list of deposit money banks with branches in Kano State. A random sample of branch locations was drawn from each stratum — twelve urban branches, five semi-urban branches, and three rural branches — and questionnaires were administered to customers exiting branch premises over a four-week period in the first quarter of 2024. Exit survey methodology was chosen over a customer list approach for two reasons: customer lists are not publicly available and banks were unwilling to share them; and exit surveys in branch settings reliably reach the population of people who are actively using banking services, which is precisely the population of interest for this study.

Sample size was determined using Cochran's (1977) formula for proportional estimation from a finite population:

$$n_0 = (Z^2 \times p \times q) / e^2$$

where  $Z = 1.96$  (95% confidence level),  $p = 0.50$  (maximum variance assumption),  $q = 1 - p = 0.50$ , and  $e = 0.05$  (5% margin of error). This gives  $n_0 = 384$ . Applying the finite population correction for  $N = 3,200,000$  yields a corrected  $n$  of 384 (the correction factor is negligible at this population size). Adjusting upward by 30 per cent for anticipated non-response and unusable forms yielded a target sample of 500. Of 500 questionnaires distributed, 487 were returned (97.4% response rate, reflecting the supervised exit-survey administration), and after screening for incompleteness and inconsistent responses, 475 were retained for analysis.

### **Instrument and Measurement**

A structured questionnaire with validated measurement scales was used. Traditional banking usage was measured with Laukkanen's (2007) scale; Fintech adoption with Alalwan et al.'s (2017) and Senyo & Osabutey's (2020) scales; technology acceptance factors with Venkatesh et al.'s (2012) extended TAM scales; service quality with the adapted SERVQUAL model (Parasuraman et al., 1988); and financial inclusion impact with a six-item scale. All items used 5-point Likert scales. Pre-testing with 30 respondents and expert review ensured content and face validity.

### **Data Analysis**

Data were analysed using SPSS version 28.0. The analytical sequence comprised: descriptive statistics; reliability assessment (Cronbach's alpha); confirmatory factor analysis (CFA) for construct validity; Pearson correlation analysis; and multiple regression analysis for hypothesis testing. Logistic regression was employed for Hypothesis 3. All statistical assumptions—normality, linearity, homoscedasticity, independence, and multicollinearity ( $VIF < 10$ )—were verified prior to hypothesis testing.

### **Results and Discussion**

- **Sample Profile And Data Quality**
- **Sample Profile**

Table 1 summarises the demographic characteristics of the 475 valid respondents. The majority (62.9%) were aged 18 to 35, consistent with Nigeria’s youthful population structure. Urban respondents constituted 60% of the sample, as designed. Smartphone ownership was high at 90.7%, and daily internet access was reported by 77.3% of respondents — figures that suggest a reasonably favourable technological environment even while acknowledging that the exit-survey design may oversample more digitally active bank customers. Bank account ownership was near-universal in the sample (88.6%), which is expected given the sampling frame.

Variable	Category	n (%)
Age	18–25	198 (41.7%)
	26–35	101 (21.3%)
	36–45	109 (22.9%)
	46 and above	67 (14.1%)
Gender	Male	271 (57.1%)
	Female	204 (42.9%)
Education	Secondary and below	87 (18.3%)
	Tertiary (OND/NCE)	154 (32.4%)
	University degree	176 (37.1%)
	Postgraduate	58 (12.2%)
Location	Urban	285 (60.0%)
	Semi-urban	119 (25.1%)
	Rural	71 (14.9%)
Smartphone ownership	Yes	431 (90.7%)
Daily internet access	Yes	367 (77.3%)

Table 1. Sample Demographic Profile (N = 475)

### Reliability and Validity

All measurement scales achieved Cronbach's alpha values above 0.70, confirming acceptable to excellent internal consistency (Nunnally, 1978). The Fintech adoption scale recorded the highest reliability ( $\alpha = 0.892$ ). CFA demonstrated acceptable model fit ( $\chi^2/df = 2.87$ ; GFI = 0.902; CFI = 0.931; RMSEA = 0.063), with all factor loadings exceeding 0.70. AVE values (0.523–0.687) confirmed convergent validity, and the Fornell-Larcker criterion established discriminant validity.

### Descriptive Findings

Fintech adoption was moderate overall (Mean = 2.63, SD = 0.98). Mobile money services recorded the highest adoption rate (42.1% using often or very often), followed by bill payment services (37.7%). Digital lending (only 8.6% regular use) and fintech savings/investment products (11.6%) remained largely underutilised. Among traditional banking services, ATM usage was highest (52.8% often or very often), while investment products and financial advisory services showed low utilisation rates. Paired t-tests confirmed that fintech services

were rated significantly superior in responsiveness ( $M = 4.12$  vs  $2.67$ ,  $p < 0.001$ ), tangibles ( $3.89$  vs  $3.12$ ,  $p < 0.001$ ), and reliability ( $3.67$  vs  $3.24$ ,  $p < 0.001$ ), while traditional banking retained a significant advantage in assurance ( $3.58$  vs  $3.31$ ,  $p < 0.001$ ).

### Hypothesis Testing Results

H	Hypothesis Statement	Key Statistic	Decision
H1	Significant negative relationship between fintech adoption and traditional banking utilization	$\beta = -0.394$ , $p < .001$	Supported
H2	Demographic characteristics significantly influence fintech adoption	$R^2 = .286$ , $p < .001$	Supported
H3	Perceived service quality differences influence customer preferences	$\chi^2 = 123.45$ , $p < .001$	Supported
H4	Competitive responses significantly affect traditional bank market performance	$R^2 = .345$ , $p < .001$	Supported
H5	Fintech adoption significantly improves financial inclusion	$\beta = .456$ , $p < .001$	Supported

Table 1: Summary of Hypothesis Testing Results

H1 was supported. Fintech adoption was a significant negative predictor of traditional banking utilisation ( $\beta = -0.394$ ,  $p < 0.001$ ;  $R^2 = 0.201$  with fintech adoption accounting for approximately 20 per cent of the variance in traditional banking use. This is a substantively meaningful but partial effect. The moderate  $R^2$  tells us that fintech adoption is one important driver of reduced bank usage, but not the only one: declining branch hours, ATM reliability issues, and simple generational shifts in preference all likely play roles that this study's design cannot disentangle. The substitution effect is real, but characterizing it as displacement overstates the case. Many respondents who use fintech for daily transactions still rely on their bank account for salary receipt, NDIC-insured savings, and credit access. This is closer to the complementarity pattern Boot et al. (2021) described in European markets than the displacement pattern one might have feared.

H2 was supported. The demographic model explained 28.6 per cent of variance in fintech adoption ( $F = 31.26$ ,  $p < 0.001$ ). Urban location ( $\beta = 0.298$ ) was the strongest positive predictor, followed by education ( $\beta = 0.234$ ). Age was the strongest negative predictor ( $\beta = -0.267$ ): for each additional year of age, the predicted fintech adoption score fell by approximately 0.31 scale points. Income was a modest but significant predictor ( $\beta = 0.145$ ). Gender did not reach significance ( $\beta = 0.037$ ,  $p = 0.42$ ), a finding that departs from older literature but is consistent with Senyo and Osabutey's (2020) observation that the gender gap in mobile phone ownership is narrowing in urban West African markets. The remaining 71 per cent of variance in adoption not explained by demographics presumably reflects individual-level TAM constructs — perceived usefulness and ease of use — which were not the focus of H2 but which the broader theoretical model addresses.

H3 was supported through logistic regression. Responsiveness was the strongest predictor of preference for fintech over traditional banking ( $OR = 2.277$ , 95% CI [1.84, 2.81]), followed by reliability ( $OR = 1.763$ ) and tangibles ( $OR = 1.264$ ).

The assurance dimension, where traditional banking holds its advantage, was associated with preference for traditional banking (OR = 0.742). Put more plainly: customers who prioritise speed and transactional efficiency gravitate toward fintech; customers who prioritise trust and credibility remain anchored in traditional banking. This trade-off is not going away. As long as fintech wallets lack deposit insurance and Nigeria's digital fraud problem persists, the assurance gap will constrain the rate at which even high-intent fintech adopters fully exit the traditional banking system.

H4 was supported. Among the competitive response variables, digital service improvement was the strongest predictor of perceived bank performance ( $\beta = 0.267$ ), ahead of customer service enhancement ( $\beta = 0.223$ ), process simplification ( $\beta = 0.201$ ), and fintech partnerships ( $\beta = 0.134$ ). The relatively modest contribution of fintech partnerships is worth noting. In the discourse around banking strategy, partnerships between incumbents and fintech platforms are frequently presented as the optimal response to disruption. In Kano, at least, the data do not support that conclusion: banks that have invested in improving their own digital interfaces and streamlining internal processes appear to have gained more perceived performance ground than those that have pursued external fintech alliances. This may reflect the early stage of such partnerships in the northern market, or it may reflect customer scepticism about co-branded products from institutions they do not fully trust. Either way, it complicates a received wisdom.

H5 was supported, and this is arguably the most important finding in the paper. Fintech adoption was a strong positive predictor of financial inclusion ( $\beta = 0.456$ ,  $p < 0.001$ ,  $R^2 = 0.398$ ). The sub-group analysis showed that the inclusion effect was largest among previously unbanked respondents ( $\beta = 0.201$  within that sub-group), among respondents aged under 30 ( $\beta = 0.189$ ), and among urban residents ( $\beta = 0.176$ ), with the rural sub-group showing a smaller but still significant effect ( $\beta = 0.112$ ). The direction of this finding is consistent with Jack and Suri (2011) and the broader African mobile money literature, but the specific Kano context adds something: the inclusion gains documented here are occurring not in the absence of formal banking — most sample members have bank accounts — but alongside it. Fintech is expanding the depth and frequency of financial service use among people who were nominally banked but practically underserved. That is a different and arguably more nuanced inclusion story than the M-Pesa narrative, and it has different implications for policy.

## **Discussion, Implications, and Recommendations**

### **Discussion of Findings**

This study provides robust empirical evidence of fintech adoption's transformative effects on traditional banking services in Kano State. The substitution effect documented for H1 is nuanced: while fintech reduces reliance on branch-based banking, the co-existence of moderate traditional banking usage suggests complementarity rather than full replacement—a dynamic consistent with Boot et al.'s (2021) conclusions in European markets. The demographic drivers identified for H2 reflect broader patterns in fintech diffusion across Africa, but the finding that younger, educated, urban residents are primary adopters has particular significance in Kano, given its large youth population and ongoing urbanisation.

The service quality trade-offs documented in H3 highlight a critical strategic tension: fintech excels in responsiveness and tangibles (digital interfaces), while traditional banking retains superiority in assurance—trust and credibility — which remains essential in a market where

financial fraud concerns persist. The effectiveness of competitive responses (H4) confirms that traditional banks are not passive victims of disruption; digital investment and process simplification directly translate into improved performance perceptions. However, the modest effect of fintech partnerships ( $\beta = 0.134$ ) suggests that these collaborations remain nascent in Kano's banking sector. Finally, the financial inclusion findings (H5) are the most policy-significant: fintech is expanding the financial services frontier beyond what traditional banks have historically reached, directly serving Kano State's large previously unbanked population.

### **Research Implications**

Theoretically, this study validates TAM, Innovation Diffusion Theory, and SERVQUAL in a Northern Nigerian fintech context, extending their applicability to diverse cultural settings with Islamic banking considerations. Practically, the findings provide traditional banks with actionable insights: prioritise digital service investments, develop Sharia-compliant fintech products, and strengthen assurance and trust mechanisms to retain customers who are not yet ready to fully transition to digital channels. For policymakers, the evidence confirms that fintech is a viable tool for advancing financial inclusion targets in underserved Northern Nigerian states, warranting continued regulatory support through CBN's sandbox initiative and related frameworks.

### **Limitations and Recommendations for Future Studies**

This study has several limitations. The cross-sectional design precludes causal inference over time; longitudinal studies are recommended to track adoption trajectories and displacement effects. The study focused on individual customers; future researchers should incorporate firm-level and household-level analyses to capture broader economic effects. The use of a 500-respondent sample, while statistically adequate, may not fully capture rural dynamics; future studies should oversample rural areas. Additionally, qualitative approaches—interviews with bank managers and fintech operators—would enrich understanding of strategic responses and partnership dynamics.

Future studies should also specifically examine Islamic Fintech (e.g., Sharia-compliant digital lending and savings products) in Northern Nigeria, given the clear influence of religious compatibility on adoption documented here. Comparative studies between Kano and other Northern Nigerian states, as well as cross-country comparisons with other Muslim-majority African markets, would further advance theoretical development and policy-relevant knowledge.

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