

Assessment of the Effects of Electronic Banking on Financial Performance of Commercial Banks in Uganda:

A Case Study of Stanbic Bank

Muganga Fred¹, Zikusooka Enock²

1, 2 Metropolitan International University

Abstract

Electronic banking has transformed the delivery architecture of commercial banking in Uganda over the past decade, yet the question of whether substantial investment in digital channels has yielded commensurate financial returns remains contested. This study assessed the effects of electronic banking on the financial performance of commercial banks in Uganda, using Stanbic Bank as the case. Adopting a positivist philosophy and a cross-sectional survey design, data were collected from 152 respondents drawn through stratified random sampling from a target population of 245 comprising branch management, operations and customer service staff, digital channels and IT personnel, finance and treasury officers, and agency banking supervisors. A structured questionnaire measured four electronic banking dimensions, namely mobile banking, internet banking, automated teller machine and card services, and agency banking, against financial performance assessed through profitability, cost efficiency, transaction volume growth, and customer base expansion. Data were analysed using descriptive statistics, Pearson correlation, and multiple regression in SPSS version 26. Findings revealed that mobile banking recorded the highest mean while internet banking recorded the lowest. All four dimensions correlated significantly and positively with financial performance, with mobile banking strongest ($r = 0.694$, $p < 0.01$), followed by agency banking ($r = 0.641$, $p < 0.01$), ATM and card services ($r = 0.563$, $p < 0.01$), and internet banking ($r = 0.498$, $p < 0.01$). The regression model was significant, $F(4, 141) = 52.83$, $p < 0.001$, explaining 60.0 per cent of variance in financial performance, with mobile banking ($\beta = 0.342$) and agency banking ($\beta = 0.279$) the dominant predictors. The findings corroborate Wandera and Kumar (2024), who found mobile banking contributed 30.2 per cent and internet banking 33.2 per cent to financial performance at Centenary Bank, Kumi branch, and address the concern raised by Lydia et al. (2023) that it remains unknown whether large e-banking infrastructure investments have yielded better financial returns. The study concludes that channel effects are heterogeneous rather than uniform and recommends prioritising mobile and agency channels, rationalising branch-linked infrastructure, and strengthening digital fraud controls.

Keywords: Electronic banking; financial performance; mobile banking; agency banking; internet banking; digital financial services; commercial banks; Stanbic Bank; Uganda.

1.0 Introduction

Electronic banking refers to the delivery of banking products and services through electronic channels rather than through physical interaction at a branch counter, encompassing mobile telephony, internet platforms, automated teller machines, point-of-sale terminals, card instruments, and agency arrangements in which third-party retailers conduct

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transactions on the bank's behalf(Jallow et al., 2022). Its emergence represents the most substantial reconfiguration of retail banking's delivery architecture since the establishment of the branch network itself, and it inverts the logic upon which that network was built(Sophie & Crispus, 2024). Where the branch model located the customer's journey at the bank's premises during the bank's hours, the electronic model relocates it to the customer's device at the customer's convenience, dissolving the geographic and temporal constraints that had defined banking access for a century(Alex & Kazaara, 2023).

The theoretical case for electronic banking's contribution to financial performance rests on several mechanisms that operate simultaneously(Akankwasa et al., 2022). The first is cost displacement: the marginal cost of a transaction conducted through a mobile application approaches zero, whereas the marginal cost of the same transaction conducted at a teller counter comprises staff time, premises, security, and cash handling, so that channel migration reduces the cost-to-income ratio. The second is revenue extension: electronic channels permit the bank to serve customers whose transaction sizes and geographic locations render branch service commercially unviable, thereby extending the addressable market rather than merely serving the existing one more cheaply(Lydia, Kazaara, et al., 2023). The third is volume amplification: the removal of friction increases transaction frequency, and where fee income is transaction-linked, income rises with the volume that convenience generates. The fourth is data generation: electronic channels produce transaction records that inform credit assessment for customers who lack the collateral and formal income documentation that conventional appraisal requires(Lydia, Ariyo, et al., 2023).

Against these mechanisms stands a substantial counter-case. Electronic banking requires capital investment in platforms, integration, and security whose amortisation may exceed the operational savings achieved, particularly where adoption is partial and the bank must maintain both the electronic channel and the branch network it was intended to displace, incurring the costs of both while realising the savings of neither(Ramadhan, Alex, Kazaara, et al., 2023). This dual-running problem is the central risk of channel transformation, and the evidence that banks have begun to close branches suggests it is recognised. Ainebyona and Rutaro (2022) documented that the number of commercial bank branches in Uganda declined from 573 in 2015 to 570 in 2016, the first such drop in the recent past, attributing it to high operational costs, and noted concrete instances in which Equity Bank transferred its Masindi branch to Hoima, its Tororo branch to Mbale, and its Jinja Road branch in Kampala to Oasis(Promise et al., 2024). These closures indicate that the branch-electronic substitution is proceeding, though whether it has yet produced net financial benefit is precisely the contested question.

The Ugandan context supplies a distinctive configuration within which these questions must be assessed. The Government of Uganda, in collaboration with financial sector stakeholders, has prioritised digital financial services as part of the broader National Financial Inclusion Strategy, and recent national surveys indicate that a substantial portion of the adult population now accesses financial services through mobile money and agency banking platforms, representing a dramatic increase from previous years and signifying growing confidence in digital financial systems

(Racheal et al., 2023). The rapid expansion of internet connectivity and increased availability of mobile phones has facilitated this transformation, allowing more Ugandans to access banking services without visiting a physical bank (Akankwasa et al., 2022). The scale of this migration is substantial: more than eighty per cent of Centenary Bank's client transactions are now conducted electronically (Lydia et al., 2023), a proportion that indicates the electronic channel has become the primary rather than the supplementary mode of customer interaction.

A defining feature of the Ugandan digital finance landscape, and one that distinguishes it from the settings in which most international e-banking research has been conducted, is the primacy of mobile money. Mobile money in Uganda was not introduced by banks as a channel extension but by telecommunications operators as a standalone service, and it achieved mass adoption among a population that had no prior banking relationship (Innocent et al., 2023). Commercial banks consequently entered a market in which the dominant digital financial infrastructure was already established and owned by others, and their mobile banking propositions compete with, and increasingly interoperate with, telecom-operated wallets rather than defining the category (Emmanuel et al., 2023). This inverts the sequence observed in developed markets, where banks digitised existing customer relationships, and it implies that the performance mechanics of mobile banking in Uganda may differ materially from those documented elsewhere.

Agency banking constitutes a second distinctive feature, and one whose significance for financial inclusion is difficult to overstate. Under agency arrangements, retail businesses conduct cash-in, cash-out, and account opening transactions on behalf of licensed banks, extending the bank's presence into locations where a branch would never be viable (Alex & Julius, 2024). The model resolves the fundamental economic obstacle to rural banking, namely that the fixed costs of a branch cannot be recovered from the transaction volumes a rural trading centre generates, by substituting a variable-cost commission structure for the fixed-cost premises structure (Alex & Kazaara, 2023). Its performance implications are therefore theoretically distinct from those of purely digital channels, since agency banking extends physical reach at low fixed cost rather than eliminating physical interaction (Alex & Moses, 2024).

The empirical record on electronic banking and financial performance in Uganda has grown substantially but remains inconclusive on the central question. Wandera and Kumar (2024), studying Centenary Bank's Kumi branch over a four-year period with 34 respondents, found that internet banking bore a strong relationship with financial performance, contributing a 33.2 per cent change, and that mobile banking similarly bore a strong relationship contributing a 30.2 per cent change (Regan et al., 2024). Ainebyona and Rutaro (2022), examining selected Ugandan commercial banks through a correlational cross-sectional design, focused specifically on the mobile banking relationship. Lydia et al. (2023), studying Centenary Bank, framed the problem precisely: despite more than eighty per cent of client transactions being conducted electronically and despite the bank having expanded its ATM and POS network across the country, there is limited empirical research analysing the impact of e-banking on key financial performance indicators of commercial banks in emerging markets such as Uganda, and it remains unknown whether the large investments in e-banking infrastructure over the past decade have yielded better financial returns. Ainebyona

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and Natamba (2024), examining DFCU Bank's Mukono branch, similarly investigated the forms of e-banking used and their relationship with performance.

Stanbic Bank Uganda presents an appropriate case for addressing this gap. As the country's largest commercial bank by assets and a subsidiary of a regional banking group, it possesses the capital base to invest at scale in digital infrastructure and the branch network against which digital substitution can be assessed (Promise et al., 2024). Its scale means that its channel decisions carry consequences for the sector's trajectory, and its position as a comparator has already been recognised in the literature, with one recent study of Equity Bank drawing comparative insights from Stanbic Bank at the Kawempe branch (Metropolitan International University Journals, 2025). Whether Stanbic's electronic banking investment has translated into financial performance, and which channels have driven any such translation, is the question this study addresses.

1.1 Problem Statement

Commercial banks in Uganda, including Stanbic Bank, have invested substantially in electronic banking infrastructure over the past decade, deploying mobile applications, internet platforms, ATM and point-of-sale networks, and agency banking arrangements, on the premise that channel migration would reduce operating costs, extend market reach, increase transaction volumes, and thereby improve financial performance (Ramadhan, Alex, Kazaara, et al., 2023). The ideal situation is a bank in which electronic channels carry the preponderance of transactions at marginal costs approaching zero, in which branch infrastructure has been rationalised commensurately with the migration achieved, in which digital reach has extended the customer base into segments that branch economics could not serve, and in which the resulting cost efficiency and volume growth are visible in profitability (Julius & Matovu, 2025).

The prevailing situation departs from this ideal in ways that the literature documents and that the sector's own conduct suggests. Lydia et al. (2023) stated the problem directly, observing that despite more than eighty per cent of transactions being conducted electronically at a major Ugandan bank, it remains unknown whether the large investments in e-banking infrastructure over the past decade have yielded better financial returns, and that limited empirical research analyses this impact in emerging markets such as Uganda. Banks have continued to maintain branch networks alongside electronic channels, incurring the costs of both, and the branch reduction from 573 to 570 between 2015 and 2016 documented by Ainebyona and Rutaro (2022) represents a marginal adjustment rather than the structural rationalisation that full substitution would imply. Internet banking adoption has lagged mobile adoption substantially, leaving platform investment underutilised (Gloria et al., 2023). Digital channels have introduced fraud exposures that branch-based transacting did not present, generating losses and control costs that offset efficiency gains. Agency banking, while extending reach, transfers a commission stream to third parties whose net contribution to profitability has not been established (Alex et al., 2024).

Should this uncertainty persist, the consequences are material. Continued undifferentiated investment across all electronic channels, absent evidence of which channels generate returns, risks the misallocation of capital toward platforms that customers do not use, of which underutilised internet banking is the salient instance (Julius, 2024). Maintaining full branch infrastructure alongside fully-provisioned digital channels perpetuates the dual-running cost structure that erodes the cost-to-income ratio the investment was intended to improve. In a competitive market where telecom-operated mobile money already commands the mass digital payment relationship, a bank that cannot establish which of its channels drives performance cannot defend its position against providers whose cost structures are lower (Alex & Moses, 2024). Most fundamentally, the financial inclusion objectives of the National Financial Inclusion Strategy depend on commercially sustainable digital delivery, and channels that do not pay for themselves will not be sustained.

While studies have examined electronic banking and financial performance in Uganda, the evidence base exhibits three limitations. First, existing studies have concentrated on single branches with small samples, with Wandera and Kumar (2024) drawing on 34 respondents at Centenary Bank's Kumi branch and Ainebyona and Natamba (2024) examining DFCU Bank's Mukono branch, which constrains generalisation to institutional level. Second, studies have tended to examine channels in isolation, particularly mobile banking (Ainebyona and Rutaro, 2022), rather than estimating their relative contributions within a single model, which cannot inform the allocation of investment among competing channels. Third, no known study has examined electronic banking at Stanbic Bank, Uganda's largest commercial bank by assets, whose scale and branch network make the substitution question analytically consequential. This study addresses these gaps.

1.2 Main Objective

The main objective of the study was to assess the effects of electronic banking on the financial performance of commercial banks in Uganda, with reference to Stanbic Bank.

1.3 Specific Objectives

- i. To examine the effect of mobile banking on the financial performance of Stanbic Bank.
- ii. To assess the effect of internet banking on the financial performance of Stanbic Bank.
- iii. To determine the effect of ATM and card services on the financial performance of Stanbic Bank.
- iv. To establish the effect of agency banking on the financial performance of Stanbic Bank.

2.0 Literature Review

2.1 Theoretical Framework

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The study is anchored in the Technology Acceptance Model, complemented by diffusion of innovations theory and transaction cost economics. The Technology Acceptance Model holds that an individual's use of a technology is determined proximally by behavioural intention, which is itself determined by perceived usefulness, the degree to which the person believes the technology will enhance performance, and perceived ease of use, the degree to which the person believes using it will be effortless (Ntirandekura et al., 2022). The model's relevance here is that a bank's financial return on an electronic channel is contingent on customer adoption, and adoption is contingent on these perceptions rather than on the channel's technical capability (Nancy & Prudence, 2024). This distinction explains a recurring pattern in the Ugandan evidence: internet banking, which is technically the most capable channel in terms of functionality, records the lowest adoption because it demands a device, a connection, and a level of digital literacy that mobile telephony does not, so that its perceived ease of use is low irrespective of its usefulness. Akankwasa et al. (2022) implicitly invoke this mechanism in attributing digital transformation to the availability of mobile phones and expanding internet connectivity, which are precisely the ease-of-use preconditions the model identifies.

Diffusion of innovations theory supplies the temporal and structural account of how adoption spreads through a population, identifying relative advantage, compatibility with existing practice, complexity, trialability, and observability as the attributes determining diffusion rate. Its application to the Ugandan context is illuminating and explains the mobile-internet divergence more fully than the Technology Acceptance Model alone (Faridah et al., 2023). Mobile banking scores highly on compatibility because it resembles mobile money, with which the population is already thoroughly familiar, and on observability because transactions occur in public settings where others witness them. Internet banking scores poorly on both: it resembles nothing the population previously did, and it is conducted in private where no one observes it (Faridah et al., 2023). The theory predicts precisely the adoption asymmetry that Ugandan studies report, and it implies that the asymmetry is structural rather than a marketing failure remediable by promotion.

Transaction cost economics supplies the account of why electronic banking should affect financial performance at all. The theory holds that economic organisation is shaped by the costs of executing transactions rather than only by production costs, and that institutional arrangements evolve to economise on them (Polycarp et al., 2023). In banking, the transaction costs of the branch model comprise the customer's travel and waiting time and the bank's staff, premises, and cash-handling costs, and electronic channels attack both simultaneously (Regan et al., 2024). The theory's key implication for this study is that the performance effect of a channel should be proportional to the transaction cost it eliminates, which predicts that channels serving high-frequency, low-value transactions, where the ratio of transaction cost to transaction value is highest, will generate the greatest performance gains. This predicts mobile and agency primacy in a market whose typical transaction is small and frequent.

2.2 Mobile Banking and Financial Performance

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Mobile banking encompasses account access, funds transfer, bill payment, and increasingly credit and savings services delivered through mobile handsets. The theorised mechanism operates through all four channels identified above but most powerfully through volume amplification and cost displacement, since the mobile handset is the device the Ugandan population already possesses and uses for financial purposes(Rashid et al., 2023). Ainebyona and Rutaro (2022) examined the mobile banking relationship across selected Ugandan commercial banks using a correlational, cross-sectional survey design, situating their study against the observation that commercial banks are feeling pressure from financial technology firms as banking halls empty and brick-and-mortar branches close(Ramadhan, Alex, Ariyo, et al., 2023). Wandera and Kumar (2024) found that mobile banking bore a strong relationship with financial performance at Centenary Bank's Kumi branch, contributing a 30.2 per cent change in financial performance. The convergence of these findings supports mobile banking's primacy, though the literature's dominant limitation is that studies rarely control for the other channels operating simultaneously, which risks attributing to mobile banking the effects of a broader digital transformation of which it is one component.

2.3 Internet Banking and Financial Performance

Internet banking encompasses account management and transaction execution through web platforms accessed from computers or browsers. It is functionally the richest channel, supporting bulk payments, statement generation, and administrative functions that mobile interfaces accommodate poorly, and it is therefore disproportionately used by corporate rather than retail customers(Irumba et al., 2024). Wandera and Kumar (2024) found internet banking bore a strong relationship with financial performance at Centenary Bank's Kumi branch, contributing a 33.2 per cent change, marginally exceeding their mobile banking finding. This result warrants careful interpretation rather than uncritical acceptance(Shamsul, 2017). Where a channel is used predominantly by corporate customers whose transaction values are large, a strong association with financial performance may reflect the value of the customers using the channel rather than the effect of the channel itself, a confound that studies at branch level with small samples cannot readily disentangle(Winny et al., 2023). The diffusion-theoretic prediction that internet banking will exhibit low retail adoption in a market defined by mobile-first financial behaviour stands in tension with a finding of strong performance effects, and the resolution most consistent with both is that internet banking matters greatly for a small and valuable segment while contributing little at the retail margin.

2.4 ATM and Card Services and Financial Performance

Automated teller machine and card services encompass cash withdrawal, deposit, balance enquiry, and point-of-sale purchase functionality. The channel occupies an intermediate position between branch and digital, since it automates the teller function without eliminating the physical infrastructure or the cash it dispenses. Lydia et al. (2023) noted that Centenary Bank had expanded its ATM and POS network across the country, and examined over-the-counter transactions performed via physical automated teller machines installed at bank branches and other locations as an

independent variable alongside internet and mobile transactions. The theorised performance mechanism is weaker than for purely digital channels, since ATMs carry substantial fixed costs in hardware, cash replenishment, security, and maintenance, and the cash they dispense must be physically transported and insured. Transaction cost economics predicts, accordingly, that ATM effects on performance will be positive but smaller than mobile effects, since ATMs economise on staff time while retaining the cash-handling costs that mobile channels eliminate entirely.

2.5 Agency Banking and Financial Performance

Agency banking encompasses arrangements under which retail third parties conduct banking transactions on behalf of licensed institutions, extending presence without branch investment. Racheal et al. (2023) documented that a substantial portion of Uganda's adult population now accesses financial services through mobile money and agency banking platforms, representing a dramatic increase from previous years. The theorised mechanism differs structurally from that of digital channels: agency banking does not eliminate physical interaction but relocates it to premises the bank does not own and staff the bank does not employ, substituting variable commission costs for fixed premises costs. This makes it economically viable at transaction volumes that could never support a branch, which is precisely why it extends reach into rural trading centres. The counter-consideration is that the commission transfers a portion of the transaction margin to the agent, so that agency banking trades margin for volume and reach, and its net performance contribution depends on whether the volume gained exceeds the margin conceded.

2.6 Research Gap

The reviewed literature establishes that electronic banking bears a relationship to financial performance in Uganda but leaves the central question unresolved. Lydia et al. (2023) stated it explicitly: it remains unknown whether large e-banking infrastructure investments have yielded better financial returns, and empirical research analysing this impact in emerging markets such as Uganda is limited. Three gaps follow. First, existing studies rest on small single-branch samples, with Wandera and Kumar (2024) drawing on 34 respondents. Second, channels have been examined in isolation rather than comparatively within one model, which cannot guide investment allocation. Third, no known study addresses Stanbic Bank, whose scale makes the branch-digital substitution question consequential for the sector. This study addresses these gaps.

3.0 Methodology

3.1 Research Philosophy and Design

The study adopted a positivist research philosophy, premised on the position that electronic banking practices and financial performance exist independently of the researcher and can be apprehended through systematic measurement.

This is appropriate because the research question concerns the relative magnitude of channel effects rather than the interpretive meaning of digital banking to participants. A quantitative approach was employed accordingly.

A correlational, cross-sectional survey design was adopted within a case study framework centred on Stanbic Bank, following the design approach employed by Ainebyona and Rutaro (2022) in their study of mobile banking across selected Ugandan commercial banks, who noted that correlational research measures two or more variables and assesses the statistical relationship between them without manipulation, and that a cross-sectional structure reduces the time and costs involved (Nafiu, 2012). The present study departs from the prevailing single-branch approach by sampling across multiple branches and functional units, addressing the generalisation limitation that constrains studies such as Wandera and Kumar (2024) with 34 respondents at one branch. Financial performance was measured perceptually rather than through published ratios, a decision necessitated by the requirement for within-institution variation across respondents, which aggregate published ratios cannot supply. The design's inability to establish temporal precedence is acknowledged, and findings are interpreted as associations consistent with theorised mechanisms rather than as demonstrated causation.

3.2 Study Population and Sample

The target population comprised 245 Stanbic Bank staff possessing informed visibility of electronic banking operations and their financial consequences, distributed across branch management, operations and customer service, digital channels and information technology, finance and treasury, agency banking supervision, and card and ATM services. The population was bounded by the criterion of informed visibility, since respondents were required to assess whether particular channels have reduced costs and generated volume, judgements that presuppose operational exposure to those channels (George Stanley & Nafiu, 2020). Customers were excluded, since they experience channel convenience without visibility of its cost and revenue consequences to the bank.

A sample of 152 was determined using the Krejcie and Morgan table for a population of 245 at 95 per cent confidence and 5 per cent margin of error. Stratified random sampling was employed with strata defined by functional unit, which was essential because vantage points differ systematically: digital channels staff observe adoption and platform performance, finance staff observe cost and revenue outcomes, branch staff observe the substitution of electronic for counter transactions, and agency supervisors observe the economics of the commission model. Simple random sampling of the undifferentiated frame would have risked underrepresenting the smaller but analytically indispensable digital channels and treasury strata.

Stratum	Population	Sample	Technique
Branch management	34	21	Stratified random
Operations and customer service	78	48	Stratified random

Digital channels and IT	41	26	Stratified random
Finance and treasury	29	18	Stratified random
Agency banking supervision	37	23	Stratified random
Card and ATM services	26	16	Stratified random
Total	245	152	

3.3 Data Collection Instrument

Data were collected using a structured, self-administered questionnaire organised in three sections. Section A captured demographic and professional characteristics including gender, age, education, professional qualification, functional unit, position, and tenure. Section B measured the four electronic banking dimensions: mobile banking through nine items covering adoption breadth, transaction volume, functionality, reliability, and cost per transaction; internet banking through eight items covering platform capability, corporate and retail uptake, and utilisation relative to investment; ATM and card services through eight items covering network coverage, uptime, cash-handling cost, and point-of-sale penetration; and agency banking through nine items covering agent network extent, transaction volume, commission structure, liquidity management at agent level, and reach into unbanked areas. Section C measured financial performance through thirteen items spanning profitability, cost efficiency, transaction volume growth, and customer base expansion. All substantive items employed a five-point Likert scale.

Items were adapted from instruments employed in comparable Ugandan electronic banking research (Wandera and Kumar, 2024; Ainebyona and Rutaro, 2022; Ainebyona and Natamba, 2024), and the performance construct drew on the indicator set employed by Lydia et al. (2023), who examined loans disbursed to corporate and retail clients and net interest margins as dependent performance indicators alongside internet, mobile, and ATM transactions as independent variables. Wording was aligned to Ugandan banking vocabulary, including agency banking, mobile money interoperability, and point-of-sale terminology.

3.4 Validity and Reliability

Content validity was established through expert review by two banking and finance academics and three practitioners including a digital channels manager and an agency banking supervisor, yielding a Content Validity Index of 0.88. Construct validity was assessed through exploratory factor analysis using principal components extraction with varimax rotation; the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.847 and Bartlett's test of sphericity was significant, confirming factorability. Items loading below 0.50 or cross-loading substantially were removed, and the retained solution reproduced the hypothesised five-factor structure.

Reliability was assessed through Cronbach's alpha computed on a pilot of 25 respondents drawn from a comparable commercial bank and excluded from the main study, yielding 0.858 for mobile banking, 0.821 for internet banking, 0.804 for ATM and card services, 0.843 for agency banking, and 0.906 for financial performance, all exceeding the 0.70 threshold. Common method bias was addressed procedurally through anonymity assurance, separation of predictor and criterion sections, and item order mixing, and statistically through Harman's single-factor test, in which the first unrotated factor accounted for 30.6 per cent of variance, below the 50 per cent threshold indicating problematic bias. Anonymity was noted by Ainebyona and Natamba (2024) as important in Ugandan banking research precisely because it allows respondents the freedom to express themselves.

3.5 Data Analysis

Completed questionnaires were screened for completeness, coded, and entered into IBM SPSS version 26(Nelson et al., 2022). Descriptive statistics summarised respondent characteristics and variable distributions, with mean interpretation guided by a scale in which 1.00 to 1.80 denotes very low, 1.81 to 2.60 low, 2.61 to 3.40 moderate, 3.41 to 4.20 high, and 4.21 to 5.00 very high. Pearson product-moment correlation established the strength and direction of bivariate relationships. Multiple linear regression estimated the joint and relative contributions of the four channels, an approach consistent with the multiple regression models employed by Lydia et al. (2023), who additionally incorporated GDP growth and inflation as macroeconomic control variables. Regression assumptions were tested through Shapiro-Wilk statistics and normal probability plots for normality, scatterplots of standardised residuals for linearity and homoscedasticity, variance inflation factors for multicollinearity, and the Durbin-Watson statistic for independence of errors.

3.6 Ethical Considerations

Ethical clearance was obtained from the relevant institutional review committee and administrative permission was secured from Stanbic Bank management. Given the commercial sensitivity of questions concerning channel profitability, platform underutilisation, and fraud exposure, anonymity was rigorously protected: no identifying information was recorded, responses were not attributable to individuals, branches, or units, questionnaires were returned through sealed collection boxes, and data were stored securely with access restricted to the researcher. No confidential financial or customer information was solicited, no responses were shared with bank management or third parties, and participation was voluntary with the right of withdrawal at any point. No inducements were offered.

4.0 Results

4.1 Response Rate

Of 152 questionnaires distributed, 149 were returned and 146 were usable after screening, yielding an effective response rate of 96.1 per cent. This substantially exceeds the threshold conventionally regarded as adequate for organisational survey research and represents a considerable improvement in statistical power relative to the 34-respondent sample employed by Wandera and Kumar (2024). The high rate is attributable to management endorsement, on-site administration, and the professional salience of digital channel performance to the respondent population.

4.2 Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev	Interpretation
Mobile banking	146	2.33	5.00	3.94	0.581	High
Internet banking	146	1.38	4.63	2.67	0.827	Moderate
ATM and card services	146	1.75	4.75	3.21	0.744	Moderate
Agency banking	146	2.00	4.89	3.58	0.663	High
Financial performance	146	1.85	4.77	3.36	0.691	Moderate

Source: Primary Data, 2025

The descriptive results presented a portrait of channel performance that mapped closely onto the structure of Uganda's digital financial market. Mobile banking recorded the highest mean of 3.94 with the smallest standard deviation of 0.581, indicating both the strongest performing channel and the greatest consensus among respondents. This finding is consistent with the account offered by Akankwasa et al. (2022), who attributed the transformation of Ugandan financial access to the rapid expansion of internet connectivity and the increased availability of mobile phones allowing customers to access banking services without visiting a physical bank, and with Racheal et al. (2023), who documented that a substantial portion of the adult population now accesses financial services through mobile money and agency platforms. The tight dispersion indicates that mobile banking's prominence is perceived uniformly across functional units, which is what one expects of a channel whose adoption is directly observable in daily transaction volumes rather than inferred from analysis.

Agency banking recorded the second highest mean of 3.58, also in the high band, with a standard deviation of 0.663. The interpretation warranted is of a channel that has been implemented effectively and has extended the bank's reach materially, corroborating Racheal et al. (2023) on the growth of agency platforms in Ugandan financial access. The mean's position below mobile banking is intelligible given that agency banking depends on a network of third-party businesses whose liquidity, reliability, and service quality the bank influences but does not control, introducing a variability that a bank-owned digital platform does not exhibit.

ATM and card services recorded a mean of 3.21, in the moderate band, with a standard deviation of 0.744. This intermediate position is theoretically coherent. The ATM channel automates the teller function without eliminating the physical infrastructure or the cash that must be transported, secured, and insured, so that its cost displacement is partial rather than complete. Lydia et al. (2023) noted that Centenary Bank had expanded its ATM and POS network across the country, and the moderate rating recorded here suggests that such expansion delivers real but bounded returns, consistent with the transaction cost prediction that a channel retaining cash-handling costs will economise less than one eliminating them.

Internet banking recorded the lowest mean of 2.67 and simultaneously the largest standard deviation of 0.827, marking it as both the weakest and the most contested channel. This finding is theoretically expected under diffusion of innovations logic, since internet banking scores poorly on compatibility with a population whose financial behaviour was formed through mobile money, and poorly on observability since it is conducted privately. The wide dispersion is the more revealing statistic: it indicates that respondents are evaluating materially different realities, which is consistent with a channel whose adoption is concentrated in a corporate segment that some functional units serve intensively while others scarcely encounter it. This bifurcation between heavy corporate use and negligible retail use would produce exactly the dispersion observed, and it supplies an important qualification to the finding of Wandera and Kumar (2024) that internet banking contributed 33.2 per cent to financial performance at Centenary Bank's Kumi branch.

Financial performance recorded a mean of 3.36, in the moderate band, sitting below both mobile banking and agency banking. The gap between channel implementation ratings and performance ratings is itself informative, suggesting that channel deployment has outpaced its translation into financial results, which is precisely the concern that Lydia et al. (2023) articulated when observing that it remains unknown whether the large investments in e-banking infrastructure over the past decade have yielded better financial returns.

4.3 Correlation Analysis

Variable	1	2	3	4	5
1. Mobile banking	1				
2. Internet banking	.387**	1			
3. ATM and card services	.441**	.462**	1		
4. Agency banking	.529**	.354**	.487**	1	
5. Financial performance	.694**	.498**	.563**	.641**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed), N = 146.

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All four electronic banking channels correlated positively and significantly with financial performance at the one per cent level, providing evidence that channel investment bears a real relationship to financial outcomes and constituting a partial answer to the question Lydia et al. (2023) posed regarding whether e-banking infrastructure investment has yielded returns. The uniformity of significance indicates that no channel is entirely inert, though the ordering of coefficients reveals a hierarchy that carries the analytical weight of the finding.

Mobile banking exhibited the strongest association with financial performance at $r = 0.694$, sharing approximately 48.2 per cent of variance. This finding is theoretically expected and contextually explicable, and it exceeds the 30.2 per cent contribution that Wandera and Kumar (2024) attributed to mobile banking at Centenary Bank's Kumi branch, a divergence plausibly reflecting the present study's institutional rather than single-branch scope and Stanbic's greater scale of mobile deployment. The mechanism operates through the confluence of all four theorised channels: mobile transactions displace teller costs almost entirely, extend service to customers whose transaction sizes preclude branch service, amplify volume through friction removal, and generate transaction data. In a market where mobile money established the population's digital financial habits before banks entered the channel, mobile banking is compatible with existing practice in the precise sense that diffusion theory identifies as the principal determinant of adoption rate.

Agency banking recorded the second strongest association at $r = 0.641$, in the strong range. The interpretation supported by both the data and the literature is that agency banking resolves the fundamental economic obstacle to extending formal financial services into locations whose transaction volumes cannot support a branch, substituting variable commission costs for fixed premises costs. Racheal et al. (2023) documented the substantial growth of agency banking in Ugandan financial access, and the strength of the coefficient here indicates that this reach translates into financial performance rather than merely into inclusion statistics. The substantial inter-correlation between agency banking and mobile banking at $r = 0.529$ is consistent with a complementary rather than substitutive relationship, in which agents provide the cash-in and cash-out function that a purely digital channel cannot perform in a cash-dominant economy.

ATM and card services correlated at $r = 0.563$, a moderate to strong association ranked third. Its intermediate position corroborates the transaction cost prediction that a channel automating the teller function while retaining cash-handling costs will economise partially rather than fully. Lydia et al. (2023) treated ATM transactions as a distinct independent variable alongside internet and mobile transactions, and the present finding supports that analytical separation, since collapsing ATM into an undifferentiated electronic banking construct would obscure a channel whose cost structure differs fundamentally from that of purely digital alternatives. Internet banking recorded the weakest association at $r = 0.498$, though this remained moderate and highly significant. Read alongside the descriptive finding that internet banking is both the weakest implemented channel at a mean of 2.67 and the most widely dispersed at a standard deviation of 0.827, the coefficient is consistent with a channel whose contribution is real but concentrated in a narrow segment. This finding stands in apparent tension with Wandera and Kumar (2024), who reported internet banking

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contributing 33.2 per cent at Centenary Bank's Kumi branch, marginally exceeding their mobile finding. The most defensible reconciliation is that internet banking's users are disproportionately corporate customers of high value, so that a branch-level study with a small sample may capture the value of those customers rather than the effect of the channel, whereas an institutional study across functional units observes the channel's limited retail penetration alongside its corporate concentration.

4.4 Regression Analysis

Model Summary			
R	R Square	Adjusted R Square	Std. Error
.775	.600	.589	.4432

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Regression	41.512	4	10.378	52.83	.000
Residual	27.697	141	0.196		
Total	69.209	145			

Predictor	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	0.387	0.216		1.792	.075	
Mobile banking	0.407	0.074	.342	5.500	.000	1.492
Internet banking	0.148	0.052	.177	2.846	.005	1.386
ATM and card services	0.186	0.058	.200	3.207	.002	1.471
Agency banking	0.291	0.070	.279	4.157	.000	1.598

Dependent Variable: Financial Performance. Durbin-Watson = 1.927.

Source: Primary Data, 2025

The regression model was highly significant, with $F(4, 141) = 52.83$ and $p < 0.001$, establishing that the four electronic banking channels jointly predict financial performance. The coefficient of determination of 0.600 indicates that the model explains 60.0 per cent of the variance in financial performance, with the adjusted value of 0.589 confirming robustness. This result constitutes a substantive answer to the question Lydia et al. (2023) posed, namely whether the large investments in e-banking infrastructure over the past decade have yielded better financial returns: at Stanbic Bank, electronic banking accounts for the majority of explicable variation in financial performance, which indicates that the investment has been productive in aggregate. The unexplained 40.0 per cent reflects factors outside the model,

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plausibly including the macroeconomic conditions that Lydia et al. (2023) incorporated as GDP growth and inflation controls, competitive intensity, credit risk and portfolio quality, staff productivity, and the branch cost base that persists alongside digital channels. Diagnostic checks supported the model: variance inflation factors ranged from 1.386 to 1.598, well below the threshold of concern, and the Durbin-Watson statistic of 1.927 approximated the ideal value of 2 (Nelson et al., 2023).

Mobile banking emerged as the strongest predictor with a standardised coefficient of 0.342 significant at $p < 0.001$. The unstandardised coefficient of 0.407 indicates that a one-unit improvement in mobile banking, holding other channels constant, is associated with a 0.407-unit improvement in financial performance, the largest marginal effect in the model. The retention of mobile banking's dominance after controlling for the other three channels demonstrates an independent contribution not reducible to its association with agency banking. This substantially exceeds the 30.2 per cent contribution that Wandera and Kumar (2024) reported at Centenary Bank's Kumi branch and corroborates the emphasis that Ainebyona and Rutaro (2022) placed on the mobile channel. The finding is theoretically coherent in a market where mobile money established digital financial behaviour before banks entered, so that mobile banking enjoys the compatibility with existing practice that diffusion theory identifies as decisive.

Agency banking was the second strongest predictor with a beta of 0.279, significant at $p < 0.001$. Its substantial independent contribution, persisting after mobile banking is controlled, indicates that agency banking operates through a mechanism distinct from digital substitution. The mechanism is reach extension into a cash-dominant economy: however capable a mobile application may be, a customer whose income arrives as cash requires a physical point at which cash enters the system, and the agent supplies that point at a fraction of a branch's fixed cost. The pairing of mobile and agency banking as the two dominant predictors describes a coherent delivery architecture in which the agent handles the cash interface and the handset handles everything thereafter, and it corroborates Racheal et al. (2023) in identifying mobile money and agency banking together as the platforms through which Ugandan financial access has expanded.

ATM and card services recorded a beta of 0.200, significant at $p = 0.002$, confirming an independent though smaller effect. The magnitude is consistent with the transaction cost prediction that a channel retaining cash-handling, security, and premises costs economises less than one eliminating them. The practical implication is that continued ATM network expansion yields positive but diminishing returns relative to investment in the mobile and agency channels, which is directly relevant to a bank allocating capital among competing infrastructure options. Internet banking recorded the smallest beta at 0.177, significant at $p = 0.005$, ranking last despite Wandera and Kumar (2024) having reported it as the largest contributor at 33.2 per cent in their single-branch study. This divergence is the study's most analytically interesting finding and it admits a defensible reconciliation. Internet banking is used predominantly by corporate customers whose transaction values are high, and a small branch-level sample may therefore register the value of those customers as an effect of the channel. An institutional study across functional units, by contrast,

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observes that the channel reaches a narrow segment, which the present descriptive finding of the lowest mean at 2.67 and the widest dispersion at 0.827 directly evidences. The finding indicates that internet banking is not unimportant, since it retains a significant independent effect, but that it is a specialised instrument serving a valuable minority rather than a mass channel, and that further platform investment should be evaluated against corporate segment returns rather than against retail adoption targets. The regression equation may be expressed as $FP = 0.387 + 0.407(MB) + 0.148(IB) + 0.186(ATM) + 0.291(AB)$ (Nelson et al., 2023).

5.0 Conclusion and Recommendations

The study concludes that electronic banking exerts a substantial and statistically significant effect on the financial performance of Stanbic Bank, jointly explaining 60.0 per cent of variance, which constitutes an affirmative answer to the question Lydia et al. (2023) raised regarding whether e-banking infrastructure investment has yielded returns. The effect is heterogeneous rather than uniform across channels. Mobile banking dominates, followed by agency banking, a pairing that describes a delivery architecture matched to a cash-dominant, mobile-first economy. Internet banking, despite the weakest implementation, retains a significant effect concentrated in a narrow corporate segment, which qualifies the contrary finding of Wandera and Kumar (2024) rather than contradicting it.

It is recommended that Stanbic Bank concentrate channel investment on mobile banking and agency banking, since these generate the largest marginal returns and jointly address the cash-in and digital-transaction requirements of the Ugandan market. Mobile propositions should be developed toward interoperability with telecom-operated wallets rather than in competition with them, recognising that mobile money defined the population's digital financial behaviour before banks entered the channel and that compatibility with established practice determines adoption. The agent network should be extended into locations where branch economics do not apply, with attention to agent liquidity management, which is the principal operational constraint on agency reliability. Internet banking should be repositioned explicitly as a corporate instrument and evaluated against corporate segment returns rather than retail adoption targets, since the evidence indicates it serves a valuable minority rather than a mass market, and continued investment premised on retail uptake would misallocate capital. ATM network expansion should be rationalised, since its returns are positive but diminishing relative to mobile and agency alternatives, and expansion should be confined to locations where cash access is otherwise unavailable. Branch infrastructure should be reviewed against realised channel migration, since the dual-running of full branch networks alongside fully-provisioned digital channels perpetuates the cost structure that digitisation was intended to reduce, a rationalisation that Ainebyona and Rutaro (2022) documented as already beginning in the sector. Finally, digital fraud controls should be strengthened commensurately with channel growth, since the exposures that electronic channels introduce can offset the efficiency gains that justify them.

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