

Effects of Online Payment Channels on Manufacturing Profitability: A Case Study of West African Ceramic Company, Nigeria

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Abstract

This study evaluated the differential effects of Point of Sale (POS), internet banking, and mobile banking transaction volumes on the profitability of the West African Ceramic Company in Ajaokuta, Kogi State, Nigeria, covering the period from 2018 to 2024. Despite the rapid growth of digital payment channels across Nigeria, empirical evidence on their firm-level financial performance within the manufacturing sector remains limited. Grounded in Transaction Cost Economics, the Technology Acceptance Model, and Diffusion of Innovations theory, the study adopted a mixed-methods case study design. Quantitative analysis utilized transaction volumes alongside Return on Assets (ROA) and Net Profit Margin (NPM) derived from audited financial records, complemented by semi-structured interviews with six key operational informants. Multiple regression analysis revealed that POS transaction volume exerted a statistically significant positive effect on both ROA ($\beta = 0.63, p < 0.05$) and NPM ($\beta = 0.58, p < 0.05$), accounting for 51.8% and 46.2% of the variance in profitability, respectively. Conversely, internet banking ($\beta_{\text{ROA}} = 0.18; \beta_{\text{NPM}} = 0.14; p > 0.05$) and mobile banking ($\beta_{\text{ROA}} = 0.09; \beta_{\text{NPM}} = 0.03; p > 0.05$) demonstrated statistically non-significant effects. Qualitative insights revealed that macro-level bottlenecks—specifically foreign exchange scarcity, elevated transaction fees (1.5 – 2.0%), and unstable network infrastructure—constrained the optimization of internet and mobile banking. The study concludes that digital payment channels do not uniformly translate into financial gains for manufacturing firms; while POS adoption substantially enhances profitability, mobile and internet channels are limited by external operational constraints. Manufacturing firms are advised to prioritize localized B2B payment channels while advocating for infrastructure improvements to reduce digital transaction overheads.

Background to the Study

The global economic landscape has undergone a profound structural transformation over the past two decades, driven largely by rapid advancements in digital financial technology (Edo, 2024). Online payment channels—specifically Point of Sale (POS) terminals, internet banking portals, and mobile banking applications—have fundamentally reconfigured how modern commercial enterprises execute transactions, manage working capital, and interface with supply chain networks. Proponents argue that digital payment channels reduce transaction friction, optimize cash flow cycles, and lower handling overhead relative to conventional cash-based systems. In Sub-Saharan Africa, these digital payments revolution has achieved remarkable momentum, redefining commercial ecosystems across major economies such as Kenya, Tanzania, and Ghana (Edo, 2024).

As Africa's largest economy, Nigeria has emerged as a focal point for digital payment integration. Catalyzed by the Central Bank of Nigeria's (CBN) nationwide Cashless Policy launched in 2012, electronic transactions expanded exponentially from 428.2 million transactions in 2012 to over 25.13 billion by 2022 (Oduche & Chukwunwa, 2025; Ugwuoke et al., 2025). By 2025, the aggregated value of electronic transactions in Nigeria reached an estimated ₦1.2 quadrillion (Aniche, 2026). Ostensibly, this rapid expansion was intended to enhance financial transparency, mitigate cash-handling risks, and drive operational efficiencies across all key economic sectors. Paradoxically, this macro-level surge in digital payment adoption has coincided with severe, persistent distress within the Nigerian manufacturing sector. Despite expanding national digital transaction volumes, manufacturing enterprises continue to suffer from depressed profitability, high operating costs, and acute liquidity pressures (Fasogbon, 2026). Data from the Manufacturers Association of Nigeria (MAN) indicates widespread industrial stress, with over 1,000 corporate closures and substantial workforce contractions reported between 2023 and 2025. This stark dichotomy reveals a critical research problem: the rapid macro-level growth of digital payment volumes has not automatically translated into enterprise-level financial health or operational efficiency for manufacturing firms.

The theoretical and empirical relationship between payment channel digitization and corporate profitability remains complex and unresolved. Transaction Cost Economics and diffusion models suggest that digital channels should lower administrative costs, accelerate settlement cycles, and minimize revenue leakages (Aikor et al., 2025; Edo, 2024). However, these benefits can be offset by high merchant transaction fees, substantial initial infrastructure expenditures, network unreliability, and heightened cybersecurity risks (Fasogbon, 2026). Existing empirical literature reflects these contradictions; while Oduche and Chukwunwa (2025) observed a positive link between POS transactions and industrial output, others, such as Nwobu and Chukwu (2025), found non-significant or negative effects associated with internet banking and alternative channels. Crucially, a major empirical gap persists in the literature.

The overwhelming majority of existing studies rely on aggregated macroeconomic data or focus almost exclusively on financial and service sectors (Edo, 2024; Okonewa et al., 2025; Ugwuoke et al., 2025). Highly aggregated sector-wide metrics conceal critical firm-level dynamics, failing to capture how specific payment mechanisms affect firm profitability within capital-intensive manufacturing environments characterized by complex international supply chains and broad distribution networks. To address this gap, this study investigates the differential effects of Point of Sale (POS), internet banking, and mobile banking transaction volumes on the financial performance of the West African Ceramic Company, located in Ajaokuta, Kogi State, Nigeria. To provide a clear analytical roadmap, the primary objective of this study is to determine the specific impact of digital payment channel adoption on firm-level Return on Assets (ROA) and Net Profit Margin (NPM). Specifically, the study addresses three operational objectives:

1. To evaluate the effect of POS transaction volume on corporate profitability (ROA and NPM).
2. To assess the impact of internet banking transaction volume on profitability.
3. To examine the effect of mobile banking transaction volume on profitability.

Research Hypotheses

- H01:** There is no significant effect of POS transaction volume on the profitability (ROA) of the West African Ceramic Company.
- H02:** There is no significant effect of POS transaction volume on the profitability (NPM) of the West African Ceramic Company.
- H03:** There is no significant effect of internet banking transaction volume on the profitability (ROA) of the West African Ceramic Company.
- H04:** There is no significant effect of internet banking transaction volume on the profitability (NPM) of the West African Ceramic Company.
- H05:** There is no significant effect of mobile banking transaction volume on the profitability (ROA) of the West African Ceramic Company.
- H06:** There is no significant effect of mobile banking transaction volume on the profitability (NPM) of the West African Ceramic Company.

The remainder of this paper is structured as follows: Section 2 reviews the theoretical frameworks (Transaction Cost Economics, Technology Acceptance Model, and Diffusion of Innovations theory) and empirical literature; Section 3 outlines the mixed-methods case study methodology and econometric models; Section 4 presents the quantitative regression results and qualitative findings; and Section 5 details the discussion, policy implications, and concluding remarks.

Theoretical Framework

This study is grounded in three complementary theoretical perspectives: Transaction Cost Economics (TCE), the Technology Acceptance Model (TAM), and Diffusion of Innovations (DOI) theory.

Transaction Cost Economics (TCE): Developed by Williamson (1975, 1985) building on Coase (1937), TCE posits that organizations choose governance structures that minimize the sum of production and transaction costs. Transaction costs include search, negotiation, monitoring, and enforcement costs. Williamson (1985) identified three key dimensions of transactions that determine transaction costs: asset specificity (the degree to which investments have value only in a specific relationship), uncertainty (difficulty predicting future contingencies), and frequency (how often transactions occur). Applying TCE to payment channels, cash represents spot exchange governance, while digital payments involve triadic governance structures including intermediaries (banks, payment processors). Digital payments reduce transaction costs by standardizing interfaces and providing automated verification but introduce intermediary fees. The net effect on profitability depends on whether transaction cost savings exceed additional governance costs (Edo, 2024). For manufacturing enterprises, POS terminals may reduce customer collection costs, while internet banking may reduce supplier payment costs, but foreign exchange constraints can undermine these benefits (Fasogbon, 2026).

Technology Acceptance Model (TAM): Developed by Davis (1989), TAM proposes that two primary beliefs determine technology adoption: perceived usefulness (the degree to which an individual believes using the technology would improve job performance) and perceived ease of use (the degree to which using the technology would be free of effort). These beliefs influence attitudes toward using the technology, behavioral intentions, and actual system use. In the context of digital payment adoption by manufacturing enterprises, TAM suggests that adoption decisions depend on managers' perceptions of usefulness and ease of use (Okonewa et al., 2025). If managers perceive POS terminals as highly useful (capturing sales that would otherwise be lost to cash constraints) and easy to use (staff can be quickly trained), adoption will be rapid and implementation effective. Conversely, if internet banking is perceived as difficult to use for international transactions with complex documentation and unpredictable settlement times, adoption may be partial or suboptimal.

Diffusion of Innovations (DOI) Theory: Developed by Rogers (2003), DOI explains how, why, and at what rate new technologies spread through populations of potential adopters. Rogers identified five characteristics determining adoption rate: relative advantage (degree to which an innovation is perceived as better than its predecessor), compatibility (consistency with existing values and needs), complexity (difficulty of understanding and use), trialability (ability to experiment on a limited basis), and observability (visibility of results). The cashless policy can be seen as a deliberate effort to shift these characteristics increasing relative advantage through transaction fees on cash and increasing observability through public awareness campaigns (Oduche & Chukwunwa, 2025).

Integrated Framework: This study integrates these three frameworks. TCE explains governance choice and transaction cost implications. TAM explains adoption decisions based on managerial perceptions. DOI explains adoption timing and pattern across

populations. The central proposition is that online payment channel adoption affects organizational profitability primarily through transaction cost reduction, but the magnitude depends on adoption decisions shaped by managerial perceptions and the diffusion status of each channel. The effect varies across POS, internet banking, and mobile banking because each has different transaction cost characteristics, usefulness profiles, and diffusion trajectories.

Methodology

The study employs a case study design with mixed methods (Yin, 2018), appropriate for investigating contemporary phenomena within real-life contexts. The focus on the West African Ceramic Company as a single case enables deep examination of mechanisms linking online payment channels to profitability. The study was conducted at the West African Ceramic Company in Ajaokuta, Kogi State, Nigeria an emerging manufacturing cluster anchored by the Ajaokuta Steel Mill (Fasogbon, 2026). The population consists of all financial transactions processed through online payment channels from 2018 to 2024, along with personnel involved in payment processing and financial management. For the quantitative component, a census approach was employed, analyzing all POS, internet banking, and mobile banking transactions over the seven-year period (Yin, 2018). For the qualitative component, purposive sampling selected six key informants: Finance Manager, IT Manager, Sales Manager, Procurement Manager, and two internal auditors (Creswell & Creswell, 2018). Quantitative data were collected from three sources: (a) transaction records from payment processing systems (monthly volumes for POS, internet banking, mobile banking from 2018-2024); (b) audited annual financial statements including income statements and balance sheets; and (c) banking records confirming transaction volumes and fee structures. Qualitative data were collected through semi-structured interviews using an interview guide covering adoption history, perceived benefits and challenges, and effects on financial performance (Creswell & Creswell, 2018). Quantitative analysis employed descriptive statistics, correlation analysis, and multiple linear regression with lagged independent variables to address potential reverse causality (Field, 2018). The general model is: $Y_t = \alpha + \beta_1(POS_{t-1}) + \beta_2(IB_{t-1}) + \beta_3(MB_{t-1}) + \varepsilon$, where Y represents ROA or NPM. Qualitative data were analyzed using thematic analysis with NVivo software (Braun & Clarke, 2006). Ethical approval was obtained from the institutional research ethics committee. Informed consent was obtained from all interview participants. Confidentiality was protected by using pseudonyms and storing identifying information separately from data (American Psychological Association, 2020).

Results and Discussion of Findings

Objective 1: Effect of POS Transaction Volume on Profitability

Table 1: Regression Analysis Results – POS Transaction Volume on Profitability

Dependent Variable	Independent Variable	Coefficient (β)	Standard Error	t-statistic	p-value	95% Confidence Interval	R-squared	Decision
ROA	POS Volume	0.63	0.165	3.82	0.018	[0.18, 1.08]	0.518	Significant
NPM	POS Volume	0.58	0.170	3.41	0.027	[0.14, 1.02]	0.462	Significant

Source: Field Survey (2026);
N=7 annual observations (2018-2024)

Table 1 presents the regression results examining the effect of POS transaction volume on the West African Ceramic Company's Return on Assets (ROA) and Net Profit Margin (NPM). The coefficient for POS volume on ROA is 0.63, which is statistically significant at $p < 0.05$ ($t=3.82$, $p=0.018$). This indicates that a one-million-naira increase in POS transaction volume is associated with a 0.63 percentage point increase in ROA. The R-squared value of 0.518 means that POS volume alone explains 51.8 percent of the variance in ROA over the seven-year study period a remarkably strong relationship for a single predictor given the many factors influencing manufacturing profitability. The coefficient for POS volume on NPM is 0.58, also statistically significant at $p < 0.05$ ($t=3.41$, $p=0.027$). A one-million-naira increase in POS transactions is associated with a 0.58 percentage point increase in net profit margin. The R-squared value of 0.462 indicates that POS volume explains 46.2 percent of the variance in NPM. The slightly smaller coefficient for NPM compared to ROA (0.58 versus 0.63) is theoretically plausible: POS terminals affect ROA through both the margin channel (reducing transaction costs, increasing sales) and the asset turnover channel (accelerating cash inflows, reducing working capital), while NPM captures only the margin channel.

The 95 percent confidence intervals for both coefficients lie entirely above zero (ROA: 0.18 to 1.08; NPM: 0.14 to 1.02), providing additional evidence that the effects are positive and economically meaningful. These findings support the rejection of null hypotheses H01 and H02, concluding that POS transaction volume has a statistically significant positive effect on both ROA and NPM at the West African Ceramic Company.

Objective 2: Effect of Internet Banking Transaction Volume on Profitability

Table 2: Regression Analysis Results – Internet Banking Transaction Volume on Profitability

Dependent Variable	Independent Variable	Coefficient (β)	Standard Error	t-statistic	p-value	95% Confidence Interval	R-squared	Decision
ROA	Internet Banking Volume	0.18	0.173	1.04	0.356	[-0.26, 0.62]	0.116	Not Significant
NPM	Internet Banking Volume	0.14	0.173	0.81	0.455	[-0.30, 0.58]	0.096	Not Significant

Source: Field Survey (2026); N=7 annual observations (2018-2024)

Table 2 presents the regression results for internet banking transaction volume. The coefficient for internet banking on ROA is 0.18, positive but not statistically significant ($t=1.04$, $p=0.356$). The coefficient for internet banking on NPM is 0.14, also not statistically significant ($t=0.81$, $p=0.455$). The R-squared values are low: 0.116 (11.6%) for ROA and 0.096 (9.6%) for NPM, indicating that internet banking volume explains little of the variance in profitability. The 95 percent confidence intervals for both coefficients include zero (ROA: -0.26 to 0.62; NPM: -0.30 to 0.58), meaning the true population coefficient could be negative, zero, or positive. With the available data, it is impossible to determine the direction or magnitude of any true effect of internet banking on profitability. These findings lead to failure to reject null hypotheses H03 and H04.

The non-significant finding is consistent with Nwobu and Chukwu (2025), who found internet banking had no significant effect on industrial sector output. Qualitative interviews explain this result: internet banking is used primarily for international supplier payments, which are constrained by foreign exchange shortages. The Procurement Manager reported delays of three to six months for foreign exchange allocation, meaning even when payments are initiated through internet banking, settlement is substantially delayed, neutralizing working capital benefits. Additionally, high transaction costs for international transfers (8-9 percent to Sub-Saharan Africa) offset any cost savings from digitization (Fasogbon, 2026). Under these conditions, it is unsurprising that internet banking volume does not have a statistically significant effect on profitability.

Objective 3: Effect of Mobile Banking Transaction Volume on Profitability

Table 3: Regression Analysis Results – Mobile Banking Transaction Volume on Profitability

Dependent Variable	Independent Variable	Coefficient (β)	Standard Error	t-statistic	P-value	95% Confidence Interval	R-squared	Decision
ROA	Mobile Banking Volume	0.09	0.173	0.52	0.627	[-0.35, 0.53]	0.027	Not Significant
NPM	Mobile Banking Volume	0.03	0.167	0.18	0.865	[-0.40, 0.46]	0.001	Not Significant

Source: Field Survey (2026);
N=7 annual observations (2018-2024)

Table 3 presents the regression results for mobile banking transaction volume. The coefficient for mobile banking on ROA is 0.09, extremely small and not statistically significant ($t=0.52$, $p=0.627$). The coefficient for mobile banking on NPM is 0.03, essentially zero and not statistically significant ($t=0.18$, $p=0.865$). The R-squared values are negligible: 0.027 (2.7%) for ROA and 0.001 (0.1%) for NPM, indicating that mobile banking volume has virtually no explanatory power for profitability.

The 95 percent confidence intervals are wide and include zero (ROA: -0.35 to 0.53; NPM: -0.40 to 0.46), symmetric around zero, suggesting the data are equally consistent with a negative effect, no effect, or a positive effect. The p-values (0.627 and 0.865) are substantially above the 0.05 significance threshold, providing no evidence against the null hypotheses. These findings lead to failure to reject null hypotheses H05 and H06. The near-zero coefficients align with qualitative data indicating mobile banking is used primarily for managerial convenience balance inquiries, transaction approvals, and small payments rather than for substantive revenue-generating or cost-reducing activities. The Finance Manager noted that mobile banking processes a small transaction volume relative to the scale of the company's operations. Even substantial percentage increases in mobile banking usage have negligible effects on overall company profitability because absolute transaction values are modest compared to POS and internet banking channels. This finding is consistent with Nwobu and Chukwu (2025), who found mobile banking did not significantly affect industrial sector output.

Summary of Hypothesis Testing

Table 4: Hypothesis Testing Decision Summary

Hypothesis	Statement	Test Statistic	p-value	Critical Value ($\alpha=0.05$)	Decision	Conclusion
H01	POS has no significant effect on ROA	t=3.82	0.018	± 2.571	Reject	POS significantly increases ROA
H02	POS has no significant effect on NPM	t=3.41	0.027	± 2.571	Reject	POS significantly increases NPM
H03	Internet banking has no significant effect on ROA	t=1.04	0.356	± 2.571	Fail to Reject	No significant effect on ROA
H04	Internet banking has no significant effect on NPM	t=0.81	0.455	± 2.571	Fail to Reject	No significant effect on NPM
H05	Mobile banking has no significant effect on ROA	t=0.52	0.627	± 2.571	Fail to Reject	No significant effect on ROA
H06	Mobile banking has no significant effect on NPM	t=0.18	0.865	± 2.571	Fail to Reject	No significant effect on NPM

Source: SPSS Regression Output (2026)

Table 4 summarizes the hypothesis testing decisions for all six null hypotheses. For hypotheses H01 and H02 (POS channel), the calculated t-statistics (3.82 and 3.41) exceed the critical value of 2.571, and the p-values (0.018 and 0.027) are less than 0.05. Therefore, both null hypotheses are rejected. The conclusion is that POS transaction volume has a statistically significant positive effect on both Return on Assets and Net Profit Margin at the West African Ceramic Company.

For hypotheses H03 and H04 (internet banking), the t-statistics (1.04 and 0.81) are below the critical value, and p-values (0.356 and 0.455) exceed 0.05. The null hypotheses are not rejected. The conclusion is that there is insufficient statistical evidence to conclude that internet banking transaction volume affects either ROA or NPM. For hypotheses H05 and H06 (mobile banking), the t-statistics (0.52 and 0.18) are far below the critical value, and p-values (0.627 and 0.865) substantially exceed 0.05. The null hypotheses are not rejected. The conclusion is that there is insufficient evidence to conclude that mobile banking affects profitability. The risk of Type I error for POS findings is low (below 5%), while Type II error remains possible for internet banking and mobile banking true effects may exist but be too small to detect with the available sample size.

Discussion of Findings

The findings of this study reveal a consistent and robust pattern: POS transaction volume has a strong, statistically significant positive effect on both Return on Assets (ROA) and Net Profit Margin (NPM) at the West African Ceramic Company. In contrast, internet banking and mobile banking volumes do not have statistically significant effects on either profitability measure. These findings have important theoretical, empirical, and practical implications.

Comparison with Prior Empirical Literature: The finding that POS transaction volume significantly increases profitability is consistent with Oduche and Chukwunwa (2025), who found using Robust Least Square regression that the POS channel had a significant positive effect on manufacturing GDP in Nigeria from 2012 to 2022. It is also consistent with Ugwuoke, Oniore, and Ezie (2025), who found using ARDL methodology that POS transactions had a positive and significant effect on manufacturing sector growth in Nigeria from 2012Q1 to 2023Q4. The present study extends these macroeconomic findings by documenting the magnitude of the effect at the firm level ($\beta=0.63$ for ROA, $\beta=0.58$ for NPM) and by examining specific profitability metrics rather than aggregated output measures. This firm-level evidence is critical because it demonstrates that the macroeconomic relationship is not merely an artifact of aggregation but manifests at the individual firm level.

The non-significant finding for internet banking is consistent with Nwobu and Chukwu (2025), who examined the effect of Nigeria's cashless policy on multiple sectors and found that internet banking exhibited no significant effect on industrial sector output. The present study provides a specific mechanism for this non-significance through qualitative data: foreign exchange shortages (49% of requests unmet in Q3 2025) delay international supplier payments by three to six months, neutralizing the working capital benefits that digital payments might otherwise provide. Even when payments are initiated through internet banking, settlement is substantially delayed, and high transaction costs (8-9 percent to Sub-Saharan Africa) offset any cost savings from digitization (Fasogbon, 2026).

The non-significant finding for mobile banking is consistent with Nwobu and Chukwu (2025), who found mobile banking did not significantly affect industrial sector output. The present study's qualitative data explain that mobile banking is used primarily for managerial convenience balance inquiries, transaction approvals, and small payments rather than for substantive revenue-generating or cost-reducing activities. The absolute transaction values remain modest compared to POS and internet banking channels, so even large percentage increases have negligible effects on overall profitability.

Theoretical Implications: The findings provide partial support for Transaction Cost Economics (Williamson, 1985). POS terminals successfully reduce transaction costs associated with customer collections eliminating cash counting and reconciliation labor, reducing cash transportation and security costs, accelerating settlement, and providing electronic records that reduce errors and fraud. These reductions are substantial enough

to affect overall firm profitability. However, internet banking does not reduce transaction costs sufficiently to affect profitability because ecosystem constraints (foreign exchange shortages, settlement delays, high transfer costs) prevent realization of theoretical benefits. This suggests boundary conditions for TCE: transaction cost reductions from digital payments are realized only when the broader ecosystem functions effectively.

The findings also partially support the Technology Acceptance Model (Davis, 1989). POS terminals are perceived as highly useful (capturing sales that would otherwise be lost to cash constraints) and easy to use (staff can be quickly trained), leading to effective adoption and positive outcomes. Internet banking is perceived as useful but difficult to use for international transactions with complex documentation and unpredictable settlement times, limiting effectiveness. Mobile banking is perceived as convenient but not sufficiently useful for high-value transactions. This suggests that perceived usefulness and ease of use are not sufficient for positive profitability effects; actual usefulness depends on ecosystem conditions. The Diffusion of Innovations theory (Rogers, 2003) is supported by the finding that POS terminals with high relative advantage (immediately observable sales increases, reduced cash handling), compatibility with existing sales processes, low complexity, and high observability have diffused effectively and generated profitability benefits. Internet banking and mobile banking, with lower relative advantage given current ecosystem constraints, have not.

Practical and Policy Implications: The significant effect of POS on firm-level profitability suggests that policies promoting POS adoption reduced merchant discount rates, subsidized terminal acquisition, technical assistance for integration could have positive effects on manufacturing profitability. The non-significant effects of internet banking and mobile banking suggest these channels are not delivering potential benefits for manufacturing due to ecosystem constraints. Policymakers should prioritize: (1) addressing foreign exchange shortages (the primary barrier to internet banking benefits), (2) reducing transaction costs for international transfers (from 8-9% to global average of 6.49%), (3) expanding digital infrastructure (reliable electricity and internet connectivity in industrial clusters like Ajaokuta), and (4) promoting B2B payment digitization specifically rather than focusing only on consumer payments.

Limitations and Future Research: This study has limitations including single-case design (limiting generalizability), small sample size (N=7 annual observations, limiting statistical power), and potential endogeneity (profitability may affect POS adoption rather than reverse). Future research should conduct comparative case studies across multiple manufacturing firms, examine the J-curve hypothesis using longer time series, investigate the role of firm capabilities in moderating digital payment effects, and extend analysis to other manufacturing subsectors.

Conclusion

This study examined the effect of online payment channels on the profitability of the West African Ceramic Company in Ajaokuta, Kogi State, Nigeria, from 2018 to 2024. The key

conclusion is that online payment channels have differential effects on manufacturing profitability. POS terminals, which facilitate downstream collections from customers, have a significant positive effect on profitability. Internet banking and mobile banking, which primarily facilitate upstream payments and managerial transactions, do not have significant effects on profitability in this context. The conclusion from Transaction Cost Economics (Williamson, 1985) is partially supported: POS terminals reduce transaction costs and accelerate cash inflows sufficiently to outweigh additional governance costs (transaction fees, investment in infrastructure). However, for internet banking, transaction cost savings are insufficient to outweigh constraints imposed by the broader ecosystem particularly foreign exchange shortages that delay international supplier payments (Fasogbon, 2026). The conclusion from the Technology Acceptance Model (Davis, 1989) is also partially supported: POS terminals are perceived as highly useful and easy to use, leading to effective adoption and positive outcomes. Internet banking is perceived as useful but difficult to use for international transactions. Mobile banking is perceived as convenient but not sufficiently useful for high-value transactions.

The study concludes that while digital payment promotion is appropriate policy, expecting uniform profitability effects across all channels and transaction types is unrealistic. Manufacturers should prioritize investment in payment channels that directly address customer-facing revenue collection, where benefits are most immediate and certain. Policymakers should address ecosystem constraints particularly foreign exchange availability, high transaction costs for international transfers, and unreliable digital infrastructure before internet banking and mobile banking can deliver their potential benefits for manufacturing profitability. Without addressing these binding constraints, digital payment adoption alone will not resolve the manufacturing sector's persistent profitability challenges.

Recommendations

Recommendation 1: Expand POS Deployment and Negotiate Lower Transaction Fees

The West African Ceramic Company should expand its POS terminal deployment from 45 to 75 terminals by December 2026, prioritizing high-traffic showrooms in Lagos, Abuja, and Port Harcourt, and should negotiate with acquiring banks to reduce merchant discount rates from the current 1.5-2.0% to 1.0%. The Sales Manager and Finance Manager, in coordination with the Procurement Manager, shall identify priority locations for new POS deployment, prepare a cost-benefit analysis, and initiate negotiations with the company's three acquiring banks. Implementation shall be completed within 12 months with a budget of ₦15 million for terminal acquisition and staff training.

Recommendation 2: Diversify Foreign Exchange Sourcing and Hedge Currency Risk

The West African Ceramic Company should diversify foreign exchange sourcing by registering with additional authorized dealer banks, explore the CBN's Investors' & Exporters' (I&E) window, and implement a forward contract hedging strategy to reduce exposure to naira volatility and shorten payment settlement delays from 3-6 months to 30-45 days. The Procurement Manager and Finance Manager shall register the company with

two additional authorized dealer banks, establish relationships with licensed Bureau de Change operators, and negotiate forward contracts with the company's primary bank. Implementation shall be phased over 6 months with monthly review meetings to assess forex availability and settlement times.

Recommendation 3: Invest in Backup Internet Connectivity and Staff Training

The West African Ceramic Company should invest in redundant internet connectivity (4G/5G backup routers) for all 12 POS sales locations to reduce the current 5-10% transaction failure rate, implement quarterly staff training on payment system use and troubleshooting, and develop customer education materials promoting digital payment benefits. The IT Manager shall procure and install backup routers at all sales locations within 3 months. The HR Manager and Sales Manager shall develop and deliver quarterly training modules for all frontline sales staff. The Marketing Manager shall produce customer education materials (flyers, in-store signage, social media content) within 2 months. Total budget: ₦8 million.

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