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Digital Capabilities and SME Performance in Northern Nigeria: The Moderating Role of Access to Finance

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Abstract
The research looks at the impact of the digital capabilities, specifically the use of digital platforms and the literacy of ICT, on the performance of SMEs in Northern Nigeria, as well as whether finance access serves as a moderator. Based on Resource-Based View and Contingency Theory, the study examines the case of digital transformation benefits being conditional for the resource-poor enterprises. A cross-sectional survey of 512 SME owners and managers from three states, Kano, Katsina, and Kaduna, was then analysed using the PLS-SEM approach. The measurement model was found to have excellent reliability (Cronbach's α: 0.926–0.958) and validity (AVE: 0.819–0.857) through the different models. The findings indicate that the usage of digital platforms and ICT literacy facilitate the improvement of SME performance. Moreover, access to finance acts as a significant moderate factor in both relationships. Simple slope analysis indicates that the performance differentials are very large: for high digital capacity, well-capitalized SMEs get performance scores of 0.70–0.79 whereas, on the contrary, financially constrained companies have scores ranging from -0.32 to -0.21 which is a difference of more than 1.0 standard deviation. The results reveal that digital transformation should go hand in hand with synchronized digital-financial interventions. Digital-only or finance-only policies will not suffice since the best performance gains will only be realized when the digital skills are complemented by financial access simultaneity. Policymakers are advised to merge the SMEDAN training programs with the CBN financial inclusivity schemes.

Keywords: Digital Capabilities, ICT Literacy, Access to Finance, SME Performance, Moderation, Northern Nigeria

1. INTRODUCTION

The advent of digital technology marks a strategic transformation for small and medium

enterprises (SMEs), shaping both contemporary and future business operations (Berman et al., 2024; Hafeez et al., 2025). Platforms such as Jumia, Konga, Facebook, WhatsApp Business, and payment solutions like Paystack and Flutterwave enable Nigerian SMEs to transcend traditional barriers of geography and resources (Filosa et al., 2025; WEF, 2024). Particularly in northern Nigeria, SMEs are active in food production, manufacturing, trading, and services, primarily concentrated in Kano, Katsina, and Kaduna. Despite federal initiatives from SMEDAN and NITDA to promote digital financial inclusion (NITDA, 2020), sustainability remains a key challenge for digital adoption among Northern SMEs.

A significant impediment to digital transformation in the region is the lack of adequate finance to support digital investments. While mobile phone penetration is high—nationally around 80% since 2025—many Northern SMEs lack the capital needed for further digitalisation (Central Bank of Nigeria, 2024; Nigerian Patriot, 2025). This financial constraint limits working capital for inventory, digital marketing, ICT equipment upgrades, and the costs of digital payment systems (World Bank, 2019; McKinsey & Company, 2020). As a result, the transformative potential of digital tools is curtailed by financial barriers, impeding sustainable growth and performance improvements.

Much of the literature links digital adoption with enhanced firm productivity and market outcomes (Maycotte et al., 2025; World Economic Forum, 2024), yet significant gaps persist for developing economies. Firstly, more robust empirical insights are needed on how digital platform use and ICT literacy influence SME performance under resource constraints (Prihandono et al., 2024; Yuwono et al., 2024). Secondly, the conditionality of digital returns remains underexplored, particularly, under what conditions digital investments translate into performance gains. This report posits that access to finance acts as a moderator, critically shaping the degree to which digital capabilities enhance SME outcomes.

Drawing on resource-based and contingency theories, the study argues that financial capital must complement technological capabilities to yield competitive advantage (Barney, 1991; Hafeez et al., 2025). From a contingency perspective, access to finance enables SMEs to convert digital potential into tangible performance improvements (Donaldson, 2001; Najib et al., 2021; Kurniasari et al., 2023). By testing a conditional model using PLS-SEM on data from Kano, Katsina, and Kaduna, the research demonstrates that financial inclusion amplifies the performance benefits of digitalisation. The findings advocate for synergistic policy approaches, combining digital capability strengthening with financial inclusion, rather than favouring digital- or finance-only strategies for SME growth.

Objectives of the Study

This study is guided by the following specific objectives.

1. To examine the effect of digital platform utilization on the performance of SMEs in Northern Nigeria.
2. To examine the effect of ICT literacy on the performance of SMEs in Northern Nigeria.
3. To determine whether access to finance moderates the relationship between digital platform utilization and SME performance.
4. To determine whether access to finance moderates the relationship between ICT literacy and SME performance.

Research Hypotheses

In line with the objectives of the study, the following hypotheses are formulated.

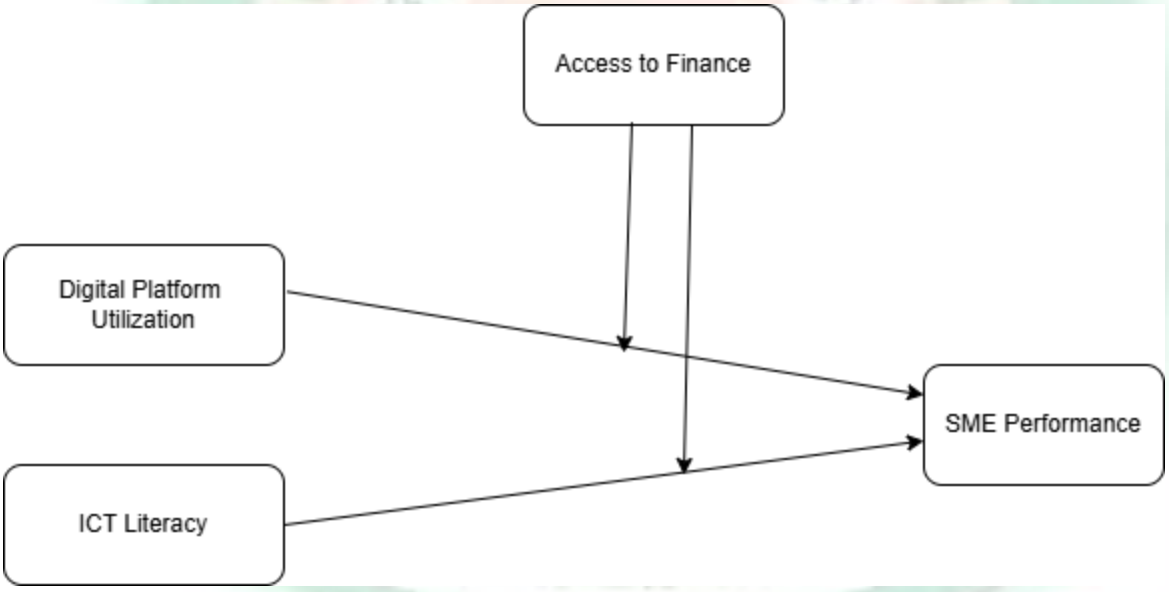
H_1: Digital platform utilization has a positive and significant effect on SME performance in Northern Nigeria.

H_2: ICT literacy has a positive and significant effect on SME performance in Northern Nigeria.

H_3: Access to finance positively moderates the relationship between digital platform utilization and SME performance, such that the positive effect of digital platform utilization on performance is stronger at higher levels of access to finance.

H_4: Access to finance positively moderates the relationship between ICT literacy and SME performance, such that the positive effect of ICT literacy on performance is stronger at higher levels of access to finance.

Figure 1. Conceptual Model



2.0 LITERATURE REVIEW

2.1 Digital Platform Utilization and SME Performance

It is suggested that digital platforms have played a major role in enhancing the competitiveness of SMEs by enabling them to do so through the extension of their market revenues, reduction of transaction costs, and Data-driven decision making (OECD, 2021; Telukdarie, 2022). E-commerce marketplaces, social media platforms, and digital payment gateways provide small and medium-sized enterprises (SMEs) with access to customers beyond their local markets, enhance visibility, and facilitate the flow of products and the performance of administrative tasks (Rajala, 2023; Qalati et al., 2022). Survey results from developing countries show that SMEs which adopted

platform-based business models have reported more significant increases in sales, higher customer acquisition, and superior operational efficiency than their counterparts (Kim, 2024; Nazaruddin, 2024). In Nigeria, the digital technology adoption among small and medium enterprises has been associated with revenue growth, improved marketing effectiveness, and increased capability to withstand economic downturns, even though the benefits are not evenly distributed due to the existing infrastructural and skill gaps (Anusi, 2025).

However, the situation is that platform adoption is not automatically accompanied by success, nor is it successful in all cases. A systematic review indicates that SMEs in emerging markets often are at the lowest level of digital maturity, using basic communication tools while having difficulty integrating the platforms into core processes due to the high cost, lack of skills, and organizational barriers (Maulidia, 2024; OECD, 2021). The mixed outcomes from the studies suggest that plant usage may not necessarily translate to performance unless accompanied by improved internal capabilities and external support.

2.2 ICT Literacy and SME Performance

ICT literacy, which is defined as the ability to access, understand, evaluate, and effectively use digital technologies, is getting more recognition as a strategic resource for SMEs (Hermansyah, 2025). The studies done in developing countries have shown that the higher the digital literacy among the owners and managers, the better is the adoption of e-commerce, stronger online marketing, and improved financial and operational performance (Yuwono et al., 2024; Kim, 2024). Systematic reviews have concluded that low levels of digital literacy are one of the main barriers that prevent micro and small businesses from fully exploiting digital technologies, even where the infrastructure is available (Hermansyah, 2025; Nazaruddin, 2024).

In Nigeria, the research that has been done points to the fact that SMEs with digitally skilled owners are more likely to make use of online channels for sales, adopt cashless payment systems, and engage with digital financial services, which in turn enhances their growth prospects (Ojeaburu & Ogbonna, 2025). Nevertheless, digital skill disparities are still present, particularly in the Northern states where the rate of formal education and the number of structured ICT training opportunities fall below the national average (NBS, 2024; SMEDAN, 2023). These results indicate that ICT literacy acts as an essential human-capital input, which determines how effective the utilization of digital platforms is and the extent of the broader digital transformation.

2.3 Access to Finance and SME Performance

Access to finance is a constraint that has been consistently identified as one of the major challenges for SMEs in developing countries (Abraham & Schmukler, 2017; ADB–OECD, 2014). Structural factors such as high collateral requirements, high-interest rates, and perceived credit risk limit access to formal bank credit for SMEs in Nigeria, as a result, many are forced to rely on personal savings and informal sources (World Bank, 2019; NBS, 2024). It has been consistently demonstrated by empirical studies that SMEs constrained by credit invest less in technology, have lower inventories and slower growth rates than financially unconstrained firms (Najib et al., 2021; Kurniasari et al., 2023).

The recent studies draw attention to digital financial services, mobile money, digital banking, and fintech lending, as the major sources that ease SMEs' financing constraints. Research in Nigeria and other African countries indicates that expanding digital financial inclusion can lead to increased access to credit, better cash-flow management and hence support for business (Tajudeen et al., 2024; Kambi, 2024). However, the extent to which improved financial access will result in

higher performance is contingent on the firms' ability to productively deploy funds, which may include investment in digital capabilities. This suggests that the interaction effects between financial access and digital readiness should not be underestimated.

2.4 Access to Finance as Moderator between Digital Platform Utilization and Performance

Most researchers consider the access to finance factor to be directly linked to the performance of SMEs, while only a limited number of studies and research are recognizing the use of finance as a contingent resource that determines the effectiveness of other strategic initiatives (Najib et al., 2021; Kim, 2024). From the Resource-Based View angle, digital platforms are only efficient if there are supportive infrastructures like working capital, marketing budgets, logistics, etc., even though they are regarded as valuable technological resources (Barney, 1991; OECD, 2021).

Conceptual and empirical research indicate that financially constrained SMEs are, in fact, not able to fully take advantage of the digital platforms, as they would not be able to expand their inventory and thus, not able to afford payments for platform-based advertising or upgrade fulfilment capabilities (Abakpa, 2024; Telukdarie, 2022). On the other hand, with better finance access, the SMEs will be able to invest in stock, promotion, and customer service; hence, their digital outreach will be converted into actual sales and repeat visitors. This implies that finance acts as a moderator in the relationship between digital platform use and performance: the positive impact of platform use will be greater for SMEs with easier access to finance than for those that are struggling to get credit.

2.5 Access to Finance as Moderator between ICT Literacy and Performance

The same reasoning applies to ICT literacy. Digital skills make it possible for business owners to spot the lucrative technologies, come up with innovative online strategies and analyse digital data, however, capital investment is often required to put these insights into practice (Hermansyah, 2025; Kim, 2024). Financial literacy and SME performance studies reveal that financially literate owners, who also have credit access, are more likely to invest in productivity-boosting areas, like technology and training (Rini, 2025; Abdallah et al., 2024). Without financial means, even the most ICT-skilled entrepreneurs will find it hard to buy new gadgets, pay for good internet services, obtain software, or train staff. This situation results in what some researchers call a "capability–resource gap," where the organization has digital knowledge but cannot apply it (Nazaruddin, 2024). On the other hand, when digital finance and credit are available, the ICT-literate SMEs are then able to apply their skills to develop and execute more advanced digital strategies, thus obtaining better results. Such reasoning leads to the expectation that access to finance is a moderating factor in the relationship between ICT literacy and performance, over the situation of accessibility of finances, the impact of digital skills on firm outcomes is higher.

3.0 METHODOLOGY

3.1 Research Design, Population and Sampling

This research adopted a quantitative, cross-sectional survey design to examine relationships among digital platform usage, ICT literacy, financial access, and SME performance in Northern Nigeria. A cross-sectional design is well-suited for assessing variance-based structural relationships at a single time point and is widely recognised in studies of SMEs and digital transformation (Hair et al., 2021; Kock & Hadaya, 2018). The primary analytical technique was Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4, which is particularly suitable for theory-building research, complex models with interaction terms, and data that may not conform to normal distributions (Hair et al., 2021).

The targeted population comprised registered SMEs in Kano, Katsina, and Kaduna States—regions collectively hosting over 60,000 SMEs across diverse sectors (SMEDAN, 2021). A stratified purposive sampling strategy was used, with each state as a stratum and sample quotas aligned to their SME populations. Within each state, purposive sampling ensured diversity in trade, manufacturing, services, and agro-processing sectors and included businesses with differing levels of digital adoption. The sample size, determined by the "10-times rule," required a minimum of 40 but ultimately included 512 valid responses from 798 distributed questionnaires (≈64% response rate). Data were collected between February and June 2025, using both self-administered and online questionnaires, and pre-tested with 30 SME owners/managers to refine instrument validity. The final sample consisted of 56% owners and 44% managers, ensuring a comprehensive strategic and operational perspective.

3.2 Measurement of Constructs

All constructs were treated as reflective latent variables measured via five-point Likert scale (1 = completely disagree, 5 = completely agree). The items were derived from validated scales and contextualized specifically for the SMEs in Northern Nigeria.

Digital Platform Utilization (DP): 4 items obtained from Berman et al. (2024) and Prihandono et al. (2024) determined the utilization of e-commerce platforms (like Jumia and Konga), social media (Facebook, Instagram, WhatsApp Business), online marketing, and digital payment systems (POS, mobile money, Paystack, Flutterwave) for sales, promotion, and customer interaction.

ICT Literacy (ICTL): 5 items drawn from Aminullah et al. (2024) and Yuwono et al. (2024) surveys assessed the owner/manager's competence in using computers, smartphones, and social media for business, as well as solving basic ICT problems.

Access to Finance (ACF): Items from Hafeez et al. (2025), Najib et al. (2021), and Kurniasari et al. (2023) were employed to measure the ease of getting loans, existence of digital/fintech lending, and the cost and reliability of financing terms.

SME Performance (FP): Changes in sales growth, profitability, customer satisfaction, operational efficiency, and competitive position over the past three years were assessed with 5 items taken from Prihandono et al. (2024).

The interaction terms ACF × DP and ACF × ICTL relied on the product-indicator method, which multiplied the standardized indicators of the main effect constructs to produce interaction indicators in SmartPLS (Hair et al., 2021).

3.3 Data Screening and Assumptions

Before the analyses took place, the data were scrutinized for missing values, outliers, and normality. Cases with a significant proportion of missing responses were eliminated; the rest of the missing values were little and were taken care of by mean substitution at the item level. The standardized z-scores were employed to check for univariate outliers, while the Mahalanobis distance was used for multivariate outliers; extreme cases that were characterized by unbelievable response patterns were eliminated from the analysis. The use of PLS-SEM does not imply the need for multivariate normality; however, the skewness and kurtosis values were analyzed to detect possible problems. The items were all within the allowed ranges, which is an indicator of the correctness of the following estimation (Hair et al., 2021). Multicollinearity was identified using the variance inflation factors (VIF). All VIF values for the inner model were below 3.0, which means that there were no serious co-linearity problems (Kock & Hadaya, 2018).

3.4 PLS-SEM Estimation Procedure

The estimation of PLS-SEM was carried out using a two-step strategy. The first step included the reliability and validity checks of the measurement model. Internal consistency was determined through two methods: Cronbach's alpha and composite reliability (ρc), and a value of more than 0.70 was accepted as a standard. On the other hand, convergent validity was evaluated with the help of Average Variance Extracted (AVE), where the minimum of 0.50 was set as a requirement, and the discriminant validity was determined through the Heterotrait–Monotrait ratio (HTMT), to ensure that the values were less than 0.90 (Henseler et al., 2015). The second step involved the evaluation of the structural model, where the focus was on path coefficients (β), R^2, effect sizes (f^2), and predictive relevance (Q^2).

The path coefficients and t-values were computed by adopting the bootstrapping method with 5,000 resamples and two-tailed significance tests ($\alpha = 0.05$). The R^2 values indicated the extent of the model's explanatory power regarding SME performance, the respective benchmarks being 0.25 (weak), 0.50 (moderate), and 0.75 (substantial) (Hair et al., 2021). The effect sizes (f^2) were employed to gauge the influence of the exogenous variables, while Q^2 was determined using the blindfolding technique with an omission distance of 7, where positive Q^2 values signified predictive relevance (Stone, 1974; Geisser, 1974). In the end, the moderation analysis was performed to test the interaction terms ACF × DP and ACF × ICTL along with the generation of simple slope analyses and interaction plots to depict the impacts of access to finance on the digital capability–performance relationships.

4. RESULTS

4.1 Measurement Model Assessment

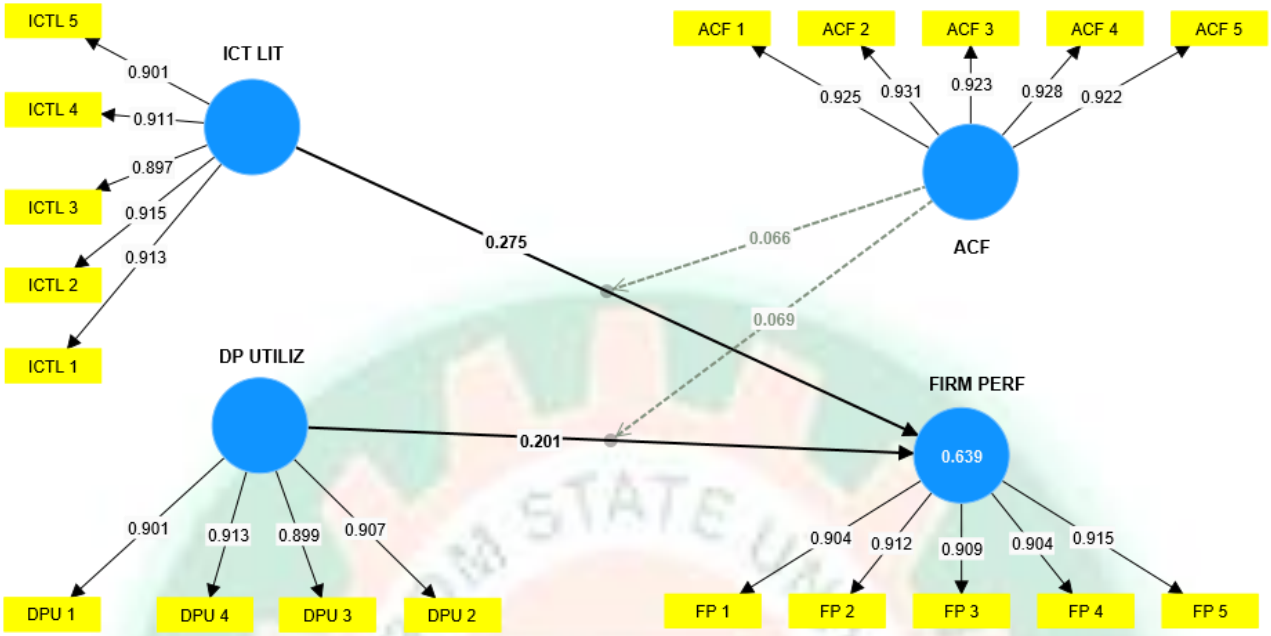
The measurement model was assessed, and all the constructs were found to hold excellent reliability and validity. The Cronbach's alpha values were between 0.926 and 0.958, and the composite reliability was calculated between 0.927 and 0.968, all of which were higher than the minimum threshold of 0.70, thus confirming strong internal consistency for the four constructs which are Access to Finance (ACF), Digital Platform Utilization (DP), ICT Literacy (ICTL) and Firm Performance (FP) (Hair et al., 2021; Rönkkö & Evermann, 2013). The Average Variance Extracted (AVE) values were also very high, ACF showed 0.857, DP 0.819, ICTL 0.823 and FP 0.826, implying that each construct can explain more than 50% of the variance in its indicators and thus meeting the convergent validity criteria (Hair et al., 2021).

Table 1: Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
ACF	0.958	0.959	0.968	0.857
DP	0.926	0.927	0.948	0.819
UTILIZ				
FIRM	0.947	0.947	0.96	0.826
PERF				
ICT LIT	0.946	0.947	0.959	0.823

Source: *Smart PLS 4 Output, 2025*

Figure 2: Measurement Model



Discriminant validity was checked with the Heterotrait–Monotrait (HTMT) ratio. All HTMT values were under 0.90, with the majority being significantly lower (for instance, 0.724 between DP and FP; 0.751 between ICTL and FP; 0.748 between ACF and DP), thus confirming that the constructs are distinct from one another in the empirical sense (Henseler et al., 2015). The interaction terms (ACF × DP and ACF × ICTL) also proved to have the same level of discriminant validity, the highest HTMT value (0.775) being below the conservative thresholds.

Table 2: HTMT

	ACF	DP UTILIZ	FIRM PERF	ICT LIT	ACF x DP UTILIZ	ACF x ICT LIT
ACF						
DP UTILIZ	0.748					
FIRM PERF	0.756	0.724				
ICT LIT	0.749	0.69	0.751			
ACF x DP UTILIZ	0.385	0.039	0.066	0.085		
ACF x ICT LIT	0.382	0.085	0.052	0.014	0.775	

Source: *Smart PLS 4 Output, 2025*

4.2 Structural Model Assessment

4.2. 1 Explanatory and Predictive Power

The structural model provided good explanatory power even for SME performance. The Firm Performance's coefficient of determination (R^2) was 0.639 (adjusted $R^2 = 0.636$), which means that the variance in SME performance due to the combined effects of digital platform utilization, ICT

literacy, and the two interaction terms is at the level of 63.9%. This R^2 value is beyond the "moderate" threshold (0.50), and it is only a small step away from the "substantial" explanatory power for social science research (Hair et al., 2021).

The model's predictive relevance was assessed according to Stone–Geisser's Q^2 which was determined through the blindfolding method. For Firm Performance, the Q^2 score was 0.517 which is a good indication that the model has strong predictive relevance, as it is well above zero (Stone, 1974; Geisser, 1974). Moreover, the Q^2predict statistics confirmed the PLS model's superior out-of-sample predictive accuracy when compared with the linear model in the case of all performance indicators.

Table 3: Coefficient of Determination

	R-square	R-square adjusted
FIRM PERF	0.639	0.636

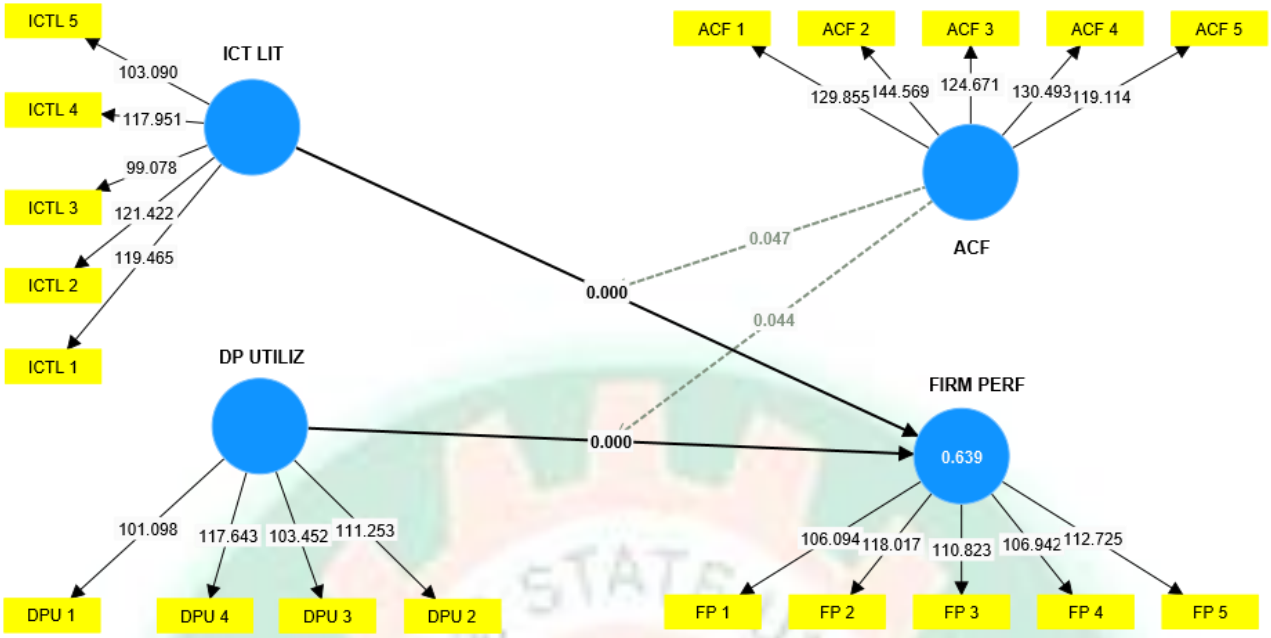
Table 4: *Stone–Geisser's Q^2*

	SSO	SSE	Q^2 (=1-SSE/SSO)
ACF	2600	2600	0
DP UTILIZ	2080	2080	0
FIRM PERF	2600	1256.027	0.517
ICT LIT	2600	2600	0

Table 5: $PLS_{predict}$

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
FP 1	0.504	0.451	0.364	0.459	0.37
FP 2	0.519	0.434	0.353	0.439	0.356
FP 3	0.505	0.442	0.349	0.447	0.356
FP 4	0.503	0.446	0.356	0.451	0.361
FP 5	0.537	0.414	0.329	0.419	0.332

Figure 3: **Structural Model**



4.2. 2 Hypothesis Testing

The structural paths were tested with bootstrapping using 5,000 subsamples. The results are summed up in Table 4.

Table 4: Path Coefficients and Hypothesis Tests

Hypothesis	Path	β (Original Sample)	t-value	p-value	Result
H1	DP → FP	0.201	4.926	< 0.001	Supported
H2	ICTL → FP	0.275	6.880	< 0.001	Supported
H3	ACF × DP → FP	0.069	1.707	0.044	Supported
H4	ACF × ICTL → FP	0.066	1.677	0.047	Supported

Source: *Smart PLS 4 Output, 2025*

The two digital capabilities have a positive direct effect on the performance of SMEs to a big extent. The usage of digital platforms has an indirect effect ($\beta = 0.201$, $p < 0.001$) that is positive and indicates that the usage of e-commerce, social media, and digital payments in greater amounts is linked to the above-mentioned factors that include sales growth, profitability, and so forth to a considerable extent. The effect of ICT literacy is even stronger ($\beta = 0.275$, $p < 0.001$), which means that the skills and confidence of the owners and managers in using the digital tools are the most important drivers of performance. Most importantly, the two interaction terms are positive and significant at a statistically level. The access to finance significantly moderates the relation of performance with the use of the digital platform ($\beta = 0.069$, $p = 0.044$), and with ICT literacy ($\beta = 0.066$, $p = 0.047$). The size of these coefficients is small, which is a common characteristic of interaction effects in field studies, but they are still meaningful and supported by the simple slope plots.

4.2. 3 Simple Slope Analysis

Interaction plots were created as a helpful tool for interpretation. The moderator equation for each case included three lines: ACF at low level of −1 standard deviation, at mean and at high level of +1 standard deviation.

Figure 4: Access to Finance by Digital Platforms Utilization.

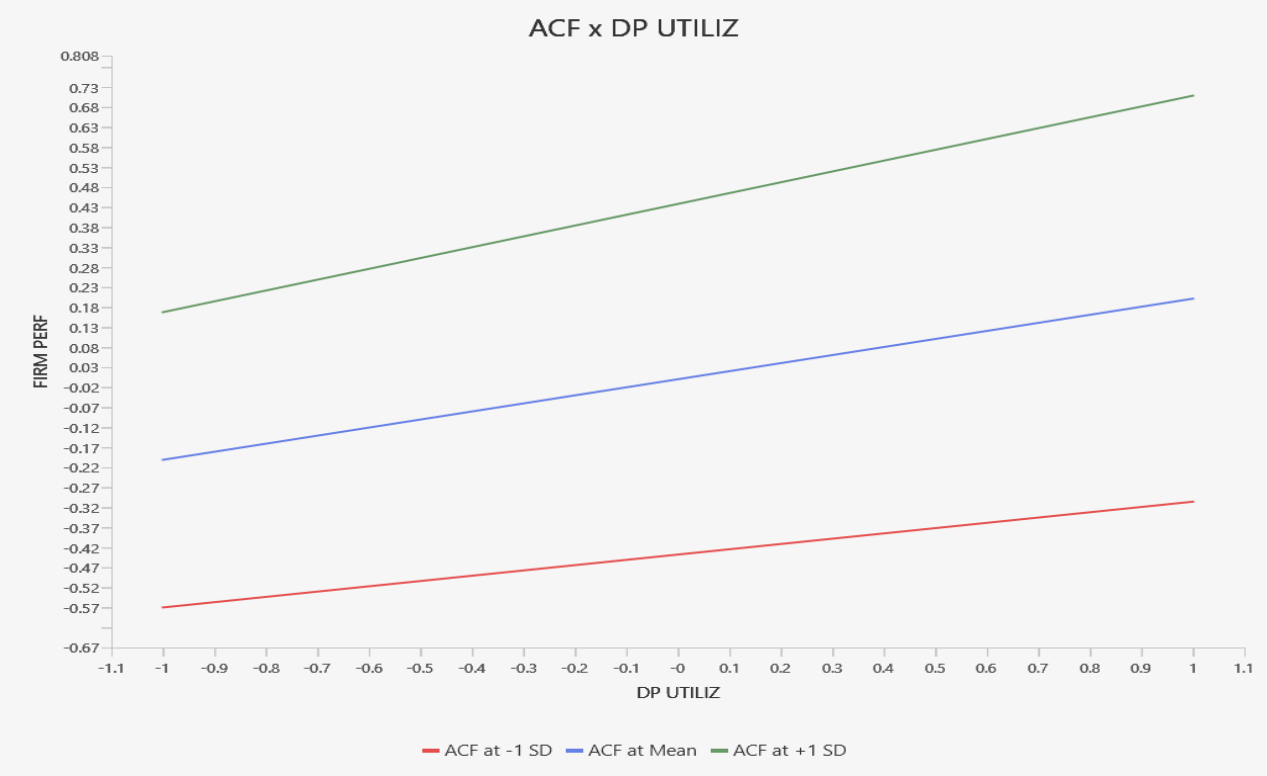
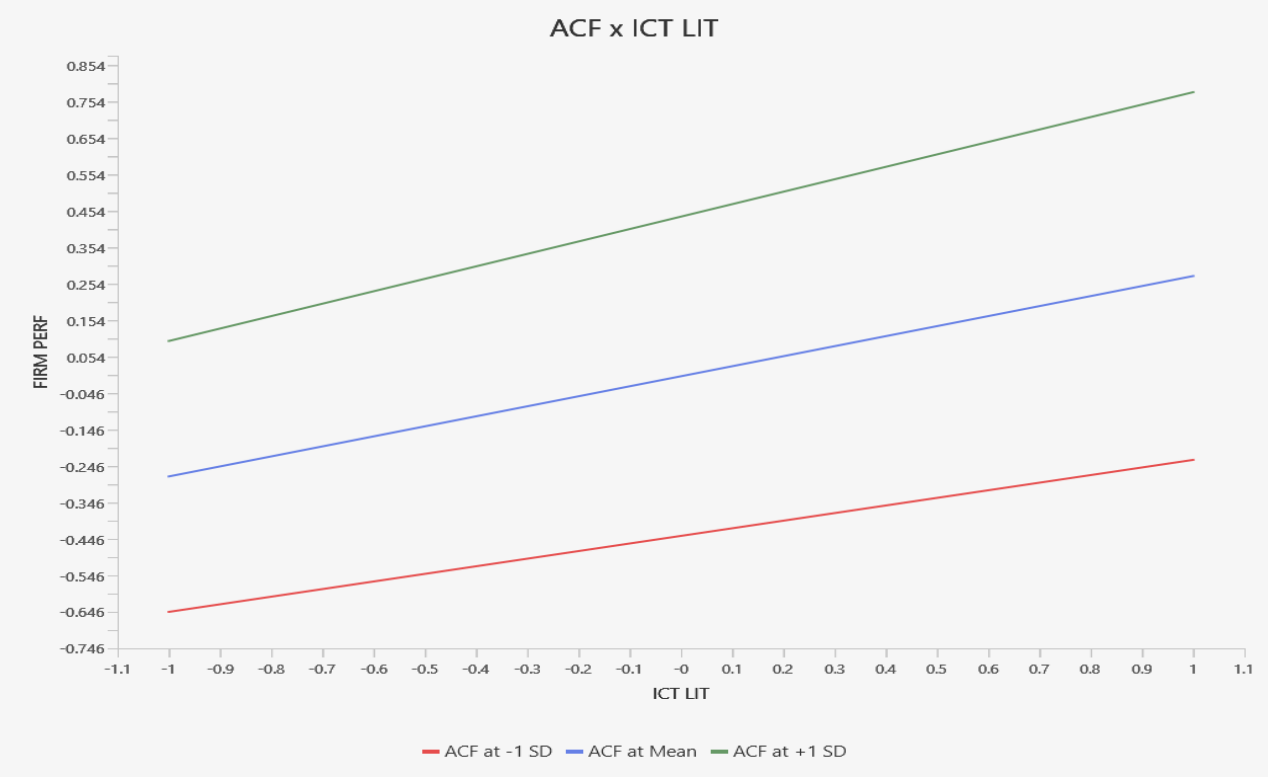


Figure 5: Access to Finance by ICT Literacy



For ACF × DPU, all the three slopes are positive with the line for high access to finance being steepest and the line for low access being flattest. At low levels of DV platform utilization, the performance differences across finance levels are not significant. However, at high platform utilization, the SMEs with strong financial access score around 0.70 (in standardized units), whereas the financially constrained ones score around −0.32, thus creating a performance gap that is more than one standard deviation. A similar situation can be seen in ACF × ICTL: at high ICT literacy, the financially enabled SMEs get their performance to the level of about 0.79 while the low-finance ones stay at about −0.21. The plots provide a visual confirmation of the fact that access to finance greatly elevates the positive effect that digital capabilities have on performance.

5. DISCUSSION OF FINDINGS

5.1 Digital Capabilities as Performance Drivers

The first finding of significant magnitude is that the use of digital platforms and the acquisition of ICT skills together form a major basis for the Northern Nigerian SMEs' performance enhancement. This can be supported by a vast quantity of research that confirms that the adoption of digital technology gives SMEs the ability to reach more customers, make their marketing more efficient and improve their operating processes (OECD, 2021; Prihandono et al., 2024). The stronger effect of ICT literacy ($\beta = 0.275$) compared to platform utilization ($\beta = 0.201$) implies that the development of human capital in the form of digital skills is even more essential than simply having the technology available. This agrees with the Human Capital Theory and Dynamic Capabilities Theory which state that whether or not a firm is able to recognize, grab and use available resources depends on its knowledge and skills (Becker, 1964; Teece et al., 1997).

In Northern Nigeria where the distribution of formal education and structured ICT training is not even, the digitally skilled owners and managers have a very clear advantage. They can pick out

the right platforms, create the best online strategies, and assist in solving problems like they arise and this will bring them the best business results even if they are using very low-end technology.

5.2 Access to Finance as a Critical Boundary Condition

This study's most innovative contribution lies in the evidence that access to finance is a primary boundary condition for digital success. The significant moderation effects indicate that digital capabilities do not produce the same performance gains across the board; rather, the impact of digital capabilities is contingent upon the extent of financial access that the firm enjoys.

For digital platform utilization, the interaction patterns reveal that SMEs with limited access to finance may find it hard to convert their online presence into actual performance gains. Without sufficient working capital, they can neither make necessary stock available nor pay for advertising on the digital platform or set up good logistics and customer service. Consequently, heavy usage of the platform in times of financial constraints can lead to unfulfilled orders, dissatisfied customers and loss of reputation, the "digital platform trap." On the other hand, SMEs with good financial backing can take advantage of the platform to the fullest by providing funds for the stock, discounts and better fulfilment and hence converting their digital reach into sales and repeat customers.

For ICT literacy, the moderation effect uncovers a "capability-resource gap" for financially constrained but digitally skilled entrepreneurs. These individuals know how to use state-of-the-art tools, and which technologies would enhance their operations, but they do not have capital for purchasing devices, software or high-quality connectivity, or for staff training. Hence, their knowledge remains underutilized. However, when access to finance is easy, ICT-literate SMEs can purchase more advanced digital solutions and effectively utilize their skills thus achieving much higher performance.

The findings highlight the Resource-Based View which requires digital and financial resources to be combined to create a competitive advantage. They also provide evidence for Contingency Theory that the effectiveness of a strategy depends on the compatibility of the contextual conditions: in this case, digital strategies are made for high-finance situations much better than low-finance ones.

5.3 Theoretical Implications

The present research adds to the ongoing debate regarding digital transformation of SMEs and helps to understand its impact on the firms from three main theoretical perspectives. Firstly, the research changes the view of digital transformation from a universally good phenomenon to a case situation dependent phenomenon. Most of the existing literature takes the perspective that the adoption of digital technologies automatically improves the performance of the firm by making it more efficient, connected, and innovative. Nevertheless, the results of the present study are contrary to that view in that they show that the benefits of digitalization are not the same across the board but are rather specific to the enabling context—financial conditions especially. This perspective, which seems to be conditional, speaks to the issue of digitalization being part of a larger configuration of organizational resources, capabilities and environmental constraints that should be explored through future research. It points out that investing in digital technology is necessary but not enough if done alone because it must be accompanied by complementary assets for the performance outcomes to be realized.

Secondly, the integration of the Resource-Based View (RBV), Dynamic Capabilities Theory, and Contingency Theory is the main theoretical contribution of the study. Digital capabilities as

valuable, rare, inimitable, and non-substitutable (VRIN) resources essentially would not be productive unless there are supportive financial conditions. This interaction between capability and financial condition strengthens the dynamic capability viewpoint which talks about the firm's resource deployment in reaction to the market and environmental changes. The study has also made it clear that even the most dynamic capabilities need the right conditions to be effectively applied in the context of a contingent lens. Simply put, capabilities are weighing, but they are not delivering co-dependently; their enhancement effect is mediated by the presence of external or internal contextual factors such as financial resource availability. This blend of theories broadens our comprehension of the intersection of strategic management theories in the explanation of digital transformation results.

Thirdly, the study makes the most of the financial struggles in the context of Northern Nigeria by offering previously hidden empirical evidence. The previous moderation research works have mostly been done in developed or financially healthy areas, where the firms can easily access credit and proper infrastructures. This study, however, brings such evidence from places where financial exclusion and institutional weaknesses are prominent. It points out that not only less the finance affecting the firms' operational cost but also the digital capabilities at their disposal will result in reduced returns coming from digital investments. This not only expands the geographical boundary of the digital transformation studies but also brings along a nuanced contextual aspect that may be quite helpful for illuminating comparative studies in other low-income or lower-middle-income situations. The contextual contribution thus strengthens the external validity of digital transformation theories by showing how macro-financial structures determine micro-level digital outcomes.

5.4 Conclusion and Policy Implications

The findings have important implications for policymakers, financial institutions, and SME support organizations. For policymakers, the results argue against siloed “digital-first” or “finance-first” programs. Training SMEs in digital skills or subsidizing platform registration without addressing credit constraints risks pushing firms into the digital capability trap. Conversely, expanding SME credit without building digital capabilities may yield inefficient capital allocation. Integrated policies are needed, such as programs that combine ICT training with tailored credit lines for digital investment, implemented through collaboration between SMEDAN, NITDA, the Central Bank of Nigeria, microfinance institutions, and fintech lenders. For financial institutions, digital capability should be recognized as an indicator of creditworthiness and growth potential. Banks and fintech companies could design products that specifically target digitally capable but financially constrained SMEs, offering working capital for inventory, digital marketing, and technology upgrades. Pairing lending with advisory services on digital strategy would further increase the likelihood that borrowed funds will translate into performance improvements.

For SME owners and managers, the results underscore the importance of sequencing and complementarity. Investing in digital skills and platforms without a plan for securing and managing working capital can be risky. Entrepreneurs should carefully align digital expansion efforts with their financial capacity and actively seek appropriate financing mechanisms (including digital lending platforms) as they scale their online presence.

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