African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Digital orientation, digital capability, and organisational performance in an emerging African digital ecosystem: the mediating role of digital innovation, the moderating role of digital organisational culture, and the absorptive capacity of context.

Auteur 1 : BELINGA BESSALA Jacob Patrick

BELINGA BESSALA Jacob Patrick, (ORCID: 0000-0001-7236-0564)
1LEMA: Laboratory of Applied Economics and Management, Faculty of Economics and Applied Management, University of Douala, Cameroon

Déclaration de divulgation : L'auteur n'a pas connaissance de quelconque financement qui pourrait affecter l'objectivité de cette étude.

Conflit d'intérêts : L'auteur ne signale aucun conflit d'intérêts.

Pour citer cet article : BELINGA BESSALA .J P « Digital orientation, digital capability, and organisational performance in an emerging African digital ecosystem », African Scientific Journal « Volume 03, Num 35 » pp: 1392 – 1411.

DOI : 10.5281/zenodo.19677937

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Abstract

Purpose – This study examines the relationship between digital orientation, digital capability, digital innovation, and organisational performance among 146 IT SMEs in Cameroon. It extends Khin and Ho's (2018) model by introducing digital organisational culture as a moderator and develops the institutional absorption thesis to explain why resource–innovation conversion mechanisms operate differently in African digital ecosystems characterised by institutional voids, infrastructural scarcity, and founder-centric governance.

Design/methodology/approach – Cross-sectional survey data were analysed using PLS-SEM with bootstrapping. CMV was assessed through Harman's test and the full collinearity VIF approach (Kock, 2015). CFA was conducted for the culture scale. Post-hoc model comparison tested culture as direct antecedent, mediator, and moderator.

Findings – Digital orientation ($\beta = 0.309$) and digital capability ($\beta = 0.389$) are positively associated with digital innovation. Digital innovation mediates both antecedents' association with performance. Culture does not moderate but operates as a direct antecedent, theorised through founder-embedded culture in micro-enterprises.

Originality/value – Three contributions: the institutional absorption thesis explaining context-specific mechanisms (capability primacy, infrastructure attenuation, founder-culture fusion); formal demonstration that culture functions as antecedent rather than moderator; first methodologically rigorous empirical test of the orientation–capability–innovation–performance chain in Sub-Saharan Africa.

Keywords *Digital innovation, Digital orientation, Digital capability, Digital organisational culture, SMEs, Cameroon, PLS-SEM, Institutional voids*

Practitioner Notes

- Digital capability (skills, talent, expertise) is the strongest predictor of digital innovation among Cameroonian IT SMEs. Firms should prioritise developer training, cloud certifications, and applied AI skills over technology acquisition.
- Digital orientation also drives innovation, but its association is attenuated by Cameroon's infrastructural constraints (unreliable connectivity, high bandwidth costs, limited cloud access). Strategic intent alone cannot overcome material bottlenecks.
- Digital organisational culture does not amplify the effects of orientation or capability. In micro-firms where the founder embodies strategy and culture simultaneously, culture is not a

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

separate lever. Founders should focus on hiring for digital skills, allocating time for experimentation, and tolerating failure in early-stage projects.

Policy makers at the Ministry of Posts and Telecommunications and the ART should target: (i) subsidised digital skills programmes through the GICAM for cloud computing, data analytics, and AI; (ii) public–private partnerships to reduce bandwidth costs outside Douala; (iii) tax incentives for R&D investment, following the Rwandan ICT Hub model. Industry associations should facilitate peer learning focused on practical challenges (mobile payment APIs, low-bandwidth solutions, open-source tools) rather than strategy workshops.

Introduction

In Cameroon, the ICT sector has emerged as one of the most dynamic segments of the economy. The government's Stratégie Nationale de Développement 2020–2030 positions digital transformation as a priority, and locally owned IT firms have grown rapidly in Douala, Yaoundé, and Bafoussam. Yet most Cameroonian IT SMEs remain small (over 55 per cent employ fewer than ten people) and face persistent obstacles: limited financing, unreliable infrastructure, and a shortage of advanced digital skills. How these young firms produce innovative digital solutions under such constraints, and whether doing so improves performance, has received almost no empirical attention.

The academic literature on digital innovation has grown considerably, from early conceptual work (Yoo et al., 2010; Nambisan et al., 2017) through the digital transformation literature (Vial, 2019; Verhoef et al., 2021) to empirical studies of innovation drivers (Khin and Ho, 2018). Two firm-level resources consistently matter: digital orientation (strategic commitment to digital technologies; Gatignon and Xuereb, 1997) and digital capability (skills and expertise for digital product development; Teece et al., 1997). Khin and Ho (2018) found both had significant positive effects on digital innovation among 105 Malaysian IT SMEs, with innovation mediating the link to performance.

Their study left three gaps. First, nearly all evidence comes from Asia, Europe, and North America. Sub-Saharan Africa remains absent, yet its institutional environment differs fundamentally. Institutional theory (North, 1990) and the institutional voids literature (Khanna and Palepu, 2010) demonstrate that in emerging economies with weak institutions, unreliable infrastructure, and limited regulatory frameworks, firms cannot rely on the same supports that facilitate resource–innovation conversion in mature economies. Cameroon combines an active IT ecosystem with these constraints, meaning relationships observed in Malaysia cannot be assumed to hold here.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Second, Khin and Ho treated digital orientation and capability as sufficient for innovation, without considering whether organisational culture moderates this conversion. Martínez-Caro et al. (2020) demonstrated that digital organisational culture plays a significant role in firm performance, yet no study has tested it as a moderator of the technology antecedents–innovation link.

Third, absorptive capacity theory (Cohen and Levinthal, 1990; Zahra and George, 2002) provides a mechanism for understanding why identical digital resources may produce different innovation outcomes across contexts. In African ecosystems where firms simultaneously build their knowledge base, infrastructure, and market presence, absorptive capacity constraints may fundamentally alter how digital resources translate into innovation.

This study addresses all three gaps by building on and extending Khin and Ho's (2018) framework in theoretically substantive ways. We replicate their core model in Cameroon, introduce digital organisational culture as a moderator, and develop a theoretical framework we term the institutional absorption thesis that explains why the mechanisms linking digital resources to innovation in emerging African economies operate differently from those in institutionally mature settings. When the moderation hypothesis is not supported, we exploit this finding as a substantive theoretical contribution rather than treating it as a limitation, developing an argument about founder-embedded culture in micro-enterprises operating within institutional voids.

We draw on four theoretical perspectives that interact in the specific context of the African digital ecosystem. The resource-based view (Barney, 1991) provides the rationale for digital orientation and capability as valuable, rare, and difficult-to-imitate resources. The dynamic capabilities theory (Teece et al., 1997) explains how firms reconfigure these resources to create innovation. The organisational culture theory (Schein, 2010) grounds our argument that culture constitutes the contextual condition under which resource deployment succeeds or fails. The absorptive capacity perspective (Cohen and Levinthal, 1990; Zahra and George, 2002) provides the missing mechanism: it explains why conversion of digital resources into innovation is contingent on the firm's knowledge base and the institutional environment that shapes knowledge flows. In the African context, these four perspectives interact distinctively: institutional voids constrain absorptive capacity, founder centrality collapses the distinction between orientation and culture, and capability becomes the binding constraint because it is the resource most directly affected by the shortage of advanced digital skills.

The study makes three contributions. First, it develops the institutional absorption thesis as a context-specific mechanism generating predictions about how institutional context shapes the conversion of digital resources into innovation. Second, it demonstrates through formal post-hoc model comparison that digital organisational culture operates as a direct antecedent of digital

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

innovation rather than as a moderator, with a theoretically grounded explanation (founder-embedded culture) that generates testable hypotheses. Third, it provides the first empirical test of the orientation–capability–innovation–performance chain in Sub-Saharan Africa with a methodological toolkit meeting current PLS-SEM standards (Hair et al., 2022; Sarstedt et al., 2022), including CFA for the culture scale, multiple CMV assessments, non-response bias analysis, and model comparison.

The remainder of this article is organised as follows. Section 1 develops the conceptual background, presenting the institutional absorption thesis and deriving the research hypotheses. Section 2 describes the methodology, including the epistemological positioning, sampling strategy, measurement instruments, and analytical procedures. Section 3 reports the results of the measurement model, structural model, and post-hoc model comparison. Section 4 discusses the theoretical contributions, practical implications, and managerial recommendations. Section 5 addresses the limitations and outlines a future research agenda. The article concludes with a synthesis of the key contributions.

1. Conceptual background and hypotheses

1.1. Digital innovation in emerging digital ecosystems

Digital innovation refers to the creation of new products, services, or solutions through digital technologies (Nambisan et al., 2017). Yoo et al. (2010) identified reprogrammability, data homogenization, and self-referential capability as distinguishing digital technology, enabling combinatorial innovation (Henfridsson et al., 2014). Vial (2019) defined digital transformation as a process triggering structural changes in organisations, affecting value creation and competitive dynamics. Verhoef et al. (2021) identified three phases requiring different capabilities. Warner and Wäger (2019) showed that building dynamic capabilities for digital transformation requires an organisational ecosystem supporting sensing, seizing, and reconfiguring activities.

These frameworks, however, were developed primarily in the context of large Western firms with established institutional supports. The emerging literature on African innovation systems (Kraemer-Mbula and Wamae, 2010; Lundvall et al., 2009) reveals a fundamentally different landscape. African firms innovate under conditions of institutional voids: the absence of specialised intermediaries, reliable regulatory frameworks, and efficient factor markets that firms in mature economies take for granted (Khanna and Palepu, 2010). In Cameroon specifically, the digital innovation landscape is shaped by several institutional constraints: an electricity grid that delivers reliable power only intermittently, internet bandwidth costs that are among the highest in Central Africa, a venture capital ecosystem that remains nascent, and an intellectual property regime offering limited effective protection for software innovations.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

These conditions do not prevent digital innovation; Cameroonian firms are building mobile payment solutions, agricultural platforms, and health-tech applications. Yet these conditions shape the mechanisms through which innovation occurs. The digital transformation frameworks of Vial (2019) and Verhoef et al. (2021) assume an institutional infrastructure supporting the sensing, seizing, and reconfiguring activities that Warner and Wäger (2019) identified. In institutional void contexts, firms must simultaneously build the infrastructure that supports innovation and the innovations themselves. This double burden changes the relative importance of different innovation drivers, as we theorise below.

1.2. The institutional absorption thesis

We develop the institutional absorption thesis to explain why digital resource–innovation mechanisms differ across institutional contexts. The thesis synthesises four theoretical perspectives that, taken individually, provide partial explanations but whose interaction in the African context produces distinctive predictions.

The resource-based view (Barney, 1991) establishes digital orientation and capability as valuable, rare, and inimitable resources. However, the RBV has been criticised for context-insensitivity: it theorises resource value in the abstract without specifying how the institutional environment shapes whether resources can actually be converted into innovation (Peng et al., 2008). In institutionally mature economies, this gap is manageable because the infrastructure enabling conversion (reliable internet, talent pools, regulatory clarity, capital markets) can be taken as given. In institutional void contexts, it cannot.

Dynamic capabilities theory (Teece et al., 1997; Teece, 2007) provides a partial solution by theorising how firms reconfigure resources to adapt to changing environments. But the theory was developed for competitive markets with functioning institutional infrastructure, not for markets where the basic infrastructure is itself in formation. When a Cameroonian IT SME attempts to reconfigure its digital resources to seize a market opportunity, the reconfiguration process is constrained not only by internal capabilities but by external institutional factors: unreliable connectivity that disrupts development cycles, a shallow labour market that limits hiring, and regulatory uncertainty that complicates scaling.

Absorptive capacity theory (Cohen and Levinthal, 1990; Zahra and George, 2002) provides the critical missing mechanism. A firm's absorptive capacity, its ability to recognise, assimilate, transform, and exploit new knowledge, depends on its prior knowledge base and the richness of external knowledge flows. Zahra and George (2002) distinguished between potential absorptive capacity (the ability to acquire and assimilate knowledge) and realised absorptive capacity (the ability to transform and exploit it). In the African digital ecosystem, both forms are constrained:

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

potential absorptive capacity is limited by the shortage of advanced digital skills and limited exposure to global knowledge networks, while realised absorptive capacity is limited by the institutional infrastructure needed to convert knowledge into marketable innovations.

The institutional absorption thesis synthesises these perspectives to identify three context-specific mechanisms. First, the capability primacy mechanism: in institutional void contexts, digital capability (what the firm can actually do) will have a stronger association with innovation than digital orientation (what the firm intends to do), because institutional constraints (infrastructure, talent, capital) widen the gap between strategic intent and operational reality. In mature economies, a digitally oriented firm can readily acquire the resources to execute its strategy. In Cameroon, commitment alone is insufficient when the developer talent pool is shallow, cloud infrastructure is costly, and electricity is unreliable. Realised absorptive capacity becomes more consequential than potential absorptive capacity when the institutional environment constrains conversion.

Second, the founder-culture fusion mechanism: in micro-enterprises where the founder is simultaneously strategist, lead technologist, and culture-setter, digital organisational culture is not analytically separable from digital orientation. The founder's personal commitment to digital technology constitutes both the firm's strategic orientation and its cultural values. Culture may therefore operate as a direct antecedent of innovation rather than as a moderator that amplifies other resources.

Third, the infrastructure attenuation mechanism: the orientation–innovation association will be weaker in institutional void contexts than in mature settings, because unreliable institutional infrastructure constrains conversion of strategic intent into innovation. A Cameroonian IT firm with high digital orientation but intermittent connectivity and limited access to advanced tools will convert less of its orientation into actual innovation than a Malaysian firm with comparable orientation but superior infrastructure.

1.3. Hypotheses

Digital orientation, a firm's commitment to applying digital technology (Khin and Ho, 2018), extends Gatignon and Xuereb's (1997) technology orientation into the digital context. Empirical evidence has been mostly positive: Yang et al. (2012) and Hortinha et al. (2011) found positive effects, while Zhou et al. (2005) reported effects only on technology-based innovation. Khin and Ho (2018) found a significant positive effect ($\beta = 0.351$) in Malaysia. We expect a similar positive relationship, though the institutional absorption thesis predicts attenuation due to infrastructure constraints.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

H1. Digital orientation is positively associated with digital innovation.

Digital capability, the firm's skill, talent, and expertise in managing digital technologies (Moorman and Slotegraaf, 1999), represents an organisation's ability to create new products by reconfiguring technological resources (Teece et al., 1997). Westerman et al. (2012) found that skills gaps are the primary hindrance to digital transformation. In the Cameroonian context, where 78 per cent of IT firms in a regional study cited limited capabilities as a barrier, the capability primacy mechanism predicts a stronger association than for orientation.

H2. Digital capability is positively associated with digital innovation.

Digital innovation is theorised as the mediating mechanism through which resources translate into performance. Chae et al. (2014) found no direct IT capability–performance link, calling for mediating variables. Vial (2019) argued that digital technologies affect performance through changes in value creation mechanisms, of which digital innovation is a primary example. In institutional void contexts, mediation should be particularly important because market inefficiencies further weaken the direct resource–performance link.

H3–H6. Digital innovation mediates the relationships between digital orientation/capability and financial/non-financial performance.

Digital organisational culture, defined as shared assumptions and practices supporting how an organisation functions digitally (Martínez-Caro et al., 2020), may function as a boundary condition for converting digital resources into innovation. A firm with high orientation but a culture resistant to experimentation will struggle to innovate. Proksch et al. (2021) found that digital culture mediates the digital strategy–digitalisation relationship. However, the founder-culture fusion mechanism introduces a competing prediction: in micro-enterprises where the founder embodies both orientation and culture, moderation may not apply because the constructs are not organisationally separable. We test the moderation hypothesis while acknowledging this tension.

H7a. Digital organisational culture positively moderates the digital orientation–digital innovation relationship.

H7b. Digital organisational culture positively moderates the digital capability–digital innovation relationship.

2. Method

2.1. Research design and epistemological positioning

This study adopts a post-positivist epistemological stance (Creswell and Creswell, 2018), acknowledging that social phenomena can be approximated through systematic empirical observation while recognising that measurement is inherently imperfect and that causal claims from cross-sectional data remain provisional. The mode of reasoning is hypothetico-deductive:

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

theoretical propositions derived from the resource-based view, dynamic capabilities theory, absorptive capacity theory, and institutional voids theory are translated into falsifiable hypotheses and tested against empirical data collected from 146 IT SMEs in Cameroon.

PLS-SEM was selected as the analytical technique for three methodologically grounded reasons (Hair et al., 2022; Sarstedt et al., 2022). First, the study combines exploratory elements (the institutional absorption thesis, the culture-as-antecedent hypothesis) with confirmatory elements (replication of Khin and Ho's, 2018, core model), and PLS-SEM accommodates this dual orientation more effectively than covariance-based SEM. Second, PLS-SEM handles both formative and reflective measurement specifications within the same structural model, which is relevant given the composite culture construct assembled from multiple validated sources. Third, the sample size (n = 146), while adequate for PLS-SEM given the model's complexity (Hair et al., 2022), would be marginal for CB-SEM estimation of a model with six latent variables and two interaction terms. The analysis follows Anderson and Gerbing's (1988) two-step procedure, assessing the measurement model before testing the structural model, and applies bootstrapping with 5,000 iterations for significance testing (Preacher and Hayes, 2008).

2.2. Sample and data collection

Cross-sectional data were collected from IT SMEs in Cameroon via a web-based survey. Out of 350 firms contacted through professional IT networks, 146 returned complete responses (41.7% response rate), exceeding PLS-SEM minimum requirements (Hair et al., 2022). This sample represents network-embedded, predominantly urban IT SMEs; the convenience sampling approach, common in emerging economy research (Khanna and Palepu, 2010), limits generalisability accordingly.

Non-response bias was assessed by comparing early (first third, n = 48) and late respondents (last third, n = 48) using independent-samples t-tests (Armstrong and Overton, 1977). No significant differences were found: DO ($t = -0.383$, $p = 0.702$), DC ($t = -0.147$, $p = 0.883$), DOC ($t = 0.664$, $p = 0.508$), DI ($t = 0.864$, $p = 0.390$), FP ($t = 0.669$, $p = 0.505$), NFP ($t = 0.184$, $p = 0.854$).

2.3. Measures

All constructs used validated scales adapted from prior literature. Digital orientation was measured with four items from Zhou et al. (2005), assessing strategic commitment to digital technologies (five-point agreement scale). Digital capability was measured with five items from Zhou and Wu (2010) and Paladino (2007), assessing the firm's skill level in acquiring, mastering, and applying digital technologies (five-point proficiency scale). Digital innovation was measured with six items from Paladino (2007) and Khin and Ho (2018), assessing quality, features, uniqueness, and novelty of the firm's digital solutions (five-point agreement scale).

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Organizational performance was measured through both financial (sales, net profit, cash flow) and non-financial (customer satisfaction, market share, employee retention) indicators, using a five-point satisfaction scale consistent with Khin and Ho (2018). We acknowledge that subjective performance measures introduce a potential limitation. Objective financial data are extremely difficult to obtain from Cameroonian SMEs, where most small firms do not publish audited accounts and regard financial data as highly confidential (Dess and Robinson, 1984). Self-report performance measures correlate moderately to strongly with objective indicators in SME contexts (Wall et al., 2004), and their use is standard in PLS-SEM studies of SME innovation (Hair et al., 2022). Nevertheless, results should be interpreted as reflecting managers' perceptions rather than verified financial outcomes.

Digital organisational culture was measured with six items from Martínez-Caro et al. (2020), Westerman et al. (2014), and Proksch et al. (2021). Because this scale was assembled from multiple sources, CFA was conducted: $\chi^2/df = 1.034$, CFI = 0.999, TLI = 0.999, RMSEA = 0.015, GFI = 0.980. All standardised loadings exceeded 0.70 (range: 0.72–0.85), confirming unidimensionality.

2.4. Sample profile

Firms were distributed across Douala (56.8%), Bafoussam (15.8%), Yaoundé (13.7%), and Ngaoundéré (13.7%). Size: 55.5% had 1–10 employees, 44.5% had 11–25. Most (82.2%) were less than five years old. Activities: IT services (30.1%), software development (28.8%), digital marketing/e-commerce (17.8%), fintech (16.4%), hardware (6.8%). Respondents were owners/founders (52.1%), CEOs (28.1%), and managers (19.9%).

3. Analysis and results

Data were analysed using PLS-SEM (Hair et al., 2022; Sarstedt et al., 2022), following Anderson and Gerbing's (1988) two-step procedure.

3.1. Common method variance

CMV was assessed through two approaches (Podsakoff et al., 2003; Fuller et al., 2016). Harman's test showed the first factor accounted for 34.0% of variance (below 50%). The full collinearity VIF approach (Kock, 2015) yielded: DO (1.49), DC (1.53), DOC (1.28), DI (1.92), FP (1.34), NFP (1.75), all below the 3.3 threshold. Procedural remedies included separating predictor and criterion variables and using different scale anchors.

3.2. Measurement model

Convergent validity was assessed through indicator loadings, average variance extracted (AVE), and composite reliability (CR). As shown in Table I, all factor loadings exceeded 0.70, all AVE values exceeded 0.50, and all CR values exceeded 0.70, confirming convergent validity (Hair et

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

al., 2014; Hair et al., 2022). Cronbach's alpha values ranged from 0.781 to 0.897, indicating good internal consistency across all constructs.

Discriminant validity was assessed using both the Fornell–Larcker criterion (Fornell and Larcker, 1981) and the heterotrait–monotrait ratio (HTMT; Henseler et al., 2015). As shown in Table II, the square root of the AVE for each construct is higher than its correlation with any other construct. All HTMT values were below 0.85 (highest: HTMT(NFP, DI) = 0.68), confirming discriminant validity under both criteria.

Table I. Construct validity and reliability

Construct	Items	Loadings	AVE	CR	α	CFA
Digital orientation	4	0.806–0.864	0.697	0.902	0.854	n/a
Digital capability	5	0.759–0.824	0.655	0.905	0.867	n/a
Digital org. culture	6	0.775–0.869	0.662	0.922	0.897	χ^2/df=1.03; CFI=0.999
Digital innovation	6	0.703–0.853	0.620	0.907	0.877	n/a
Financial perf.	3	0.859–0.880	0.758	0.904	0.840	n/a
Non-fin. perf.	3	0.822–0.844	0.696	0.873	0.781	n/a

Source: Author's computation

Table II. Discriminant validity (Fornell–Larcker)

	DO	DC	DOC	DI	FP	NFP
DO	0.835					
DC	0.404	0.809				
DOC	0.349	0.387	0.814			
DI	0.494	0.533	0.384	0.787		
FP	0.350	0.247	0.221	0.340	0.871	
NFP	0.431	0.407	0.260	0.566	0.472	0.834

Note: Diagonal values are square roots of AVE.

Source: Author's computation

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

3.3. Structural model

Inner-model VIF values ranged from 1.02 to 1.34 (below 5.0; Hair et al., 2022). Stone–Geisser's Q^2 confirmed predictive relevance: DI (0.351), FP (0.061), NFP (0.294). SRMR was 0.061 (below 0.08; Henseler et al., 2016). Controls (firm size and age) were non-significant.

Digital orientation was positively associated with innovation ($\beta = 0.309$, $t = 4.617$, $p < 0.001$), supporting H1. Digital capability showed a stronger association ($\beta = 0.389$, $t = 5.519$, $p < 0.001$), supporting H2 and the capability primacy mechanism. $R^2(DI) = 0.377$. All four mediation paths were significant via bootstrapping (5,000 iterations; Preacher and Hayes, 2008; Table III), supporting H3–H6. Culture showed a significant direct association ($\beta = 0.114$, $p = 0.028$) but neither interaction was significant: DO × DOC ($\beta = 0.076$, $p = 0.173$), DC × DOC ($\beta = 0.049$, $p = 0.384$). H7a and H7b are not supported. Effect sizes (f^2) were: DC→DI 0.213 (medium), DO→DI 0.149 (small-medium), DI→NFP 0.472 (large), DI→FP 0.131 (small).

Table III. Hypothesis testing results

Hypothesis	β	t	p / 95% CI	Decision
H1: DO → DI	0.309	4.617	p < 0.001	Supported
H2: DC → DI	0.389	5.519	p < 0.001	Supported
H3: DO → DI → FP	0.123	3.237	[0.055, 0.201]	Supported
H4: DO → DI → NFP	0.189	3.958	[0.099, 0.288]	Supported
H5: DC → DI → FP	0.155	3.436	[0.076, 0.250]	Supported
H6: DC → DI → NFP	0.238	4.295	[0.135, 0.353]	Supported
H7a: DO×DOC → DI	0.076	1.369	p = 0.173	Not supported
H7b: DC×DOC → DI	0.049	0.874	p = 0.384	Not supported

Note: Mediation via bootstrapping (5,000 iterations). Supported if 95% CI excludes zero.

Source: Author's computation

3.4. Post-hoc model comparison

Three specifications were compared. Model A (Moderation): $R^2(DI) = 0.419$, neither interaction significant. Model B (Direct antecedent): $R^2(DI) = 0.400$, DOC → DI positive ($\beta = 0.119$, $p =$

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

0.053), consistent with PLS-SEM estimate (β = 0.114, p = 0.028). Model C (Partial mediator): indirect paths DO → DOC → DI (0.030) and DC → DOC → DI (0.041) are small; direct paths remain stronger. Model B is most parsimonious, supporting the founder-culture fusion mechanism.

Table IV. Summary of key findings and theoretical mechanisms

Finding	Theoretical mechanism	Evidence	Implication
DC stronger than DO in predicting DI	Capability primacy mechanism	β = 0.389 vs. 0.309; f^2 = 0.213 vs. 0.149	Prioritise skills investment over strategic planning
DO→DI weaker than in Malaysia	Infrastructure attenuation mechanism	β = 0.309 vs. 0.351 (Khin and Ho, 2018)	Reduce institutional barriers to resource–innovation conversion
Culture: direct antecedent, not moderator	Founder-culture fusion mechanism	H7a/H7b not supported; post-hoc Model B most parsimonious	Specify size/maturity thresholds for culture moderation hypotheses
DI mediates DO/DC→performance	Value creation mechanism (Vial, 2019)	H3–H6 supported; 95% CI excludes zero	Innovation is the conversion mechanism, not resources directly

Source: Author's computation. DO = Digital orientation; DC = Digital capability; DI = Digital innovation; DOC = Digital organisational culture.

4. Discussion and implications

4.1. Theoretical discussion

The positive association of digital orientation with innovation (β = 0.309) is consistent with Khin and Ho's (2018) Malaysia finding (β = 0.351). The lower coefficient supports the infrastructure attenuation mechanism: in Cameroon, intermittent connectivity, limited cloud access, and high software costs constrain conversion of intent into innovation. From an absorptive capacity perspective (Cohen and Levinthal, 1990), potential absorptive capacity exceeds realised capacity because institutional infrastructure is unreliable.

The stronger association of digital capability (β = 0.389) confirms the capability primacy mechanism. In institutional void contexts, what a firm can do matters more than what it intends.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

This extends Zhou and Wu's (2010) argument into the digital domain and resonates with the African innovation systems literature (Kraemer-Mbula and Wamae, 2010), documenting that African innovation is driven by practical problem-solving. Khin and Ho's model requires context-specific recalibration: driver weights are shaped by institutional environment.

The mediation results replicate Khin and Ho (2018) and align with Vial's (2019) argument that digital technologies affect performance through value creation mechanisms. The stronger indirect effect on non-financial performance reflects institutional void conditions: customer satisfaction improves faster than financial returns, which are subject to limited distribution channels, price sensitivity, and cash-dominant transactions.

The null moderation combined with culture's significant direct effect is the most theoretically productive finding. The post-hoc model comparison confirms that culture operates as a direct antecedent rather than a boundary condition. We develop this finding through the founder-culture fusion mechanism.

In our sample, 52% of respondents are owners and founders, 82% of firms are less than five years old, and 56% have fewer than ten employees. In such micro-enterprises, the founder is simultaneously the strategist, the lead developer, the culture-setter, and often the primary client-facing representative. Under these conditions, digital orientation and digital organisational culture are not analytically independent constructs. They are expressions of the same underlying phenomenon: the founder's digital disposition. The founder's personal commitment to digital technology constitutes both the firm's strategic orientation (what the firm aims to do) and its cultural values (what behaviours are encouraged and rewarded). When culture is embedded in the founder rather than distributed across an organisational system, it cannot moderate the effect of orientation because it is not structurally separable from it.

This interpretation is consistent with Schein's (2010) argument that founders impose their personal assumptions on the organisations they create, and that culture becomes organisationally distinct only as the firm grows, professionalises, and develops governance structures separating strategic decision-making from cultural norm-setting. It is also consistent with the absorptive capacity framework: in founder-centric firms, the firm's absorptive capacity is substantially the founder's personal absorptive capacity, their prior knowledge, exposure to external knowledge, and ability to transform information. The culture-as-moderator hypothesis presupposes a firm where culture is an organisational-level phenomenon distinct from individual-level dispositions. In micro-enterprises, this presupposition fails.

This finding reveals a firm-size and firm-maturity threshold below which moderation logic does not apply, because below that threshold, the constructs are not organisationally separable. This is

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

a contribution to the resource–innovation literature extending beyond the Cameroonian context: it suggests that moderation hypotheses involving organisational culture should explicitly specify the organisational conditions (size, maturity, governance complexity) under which they are expected to hold.

4.2. Contributions

First, the institutional absorption thesis provides a context-specific theoretical mechanism that explains why the digital resource–innovation relationship operates differently in emerging African economies. By integrating the resource-based view, dynamic capabilities, absorptive capacity, and institutional voids theory, the thesis generates predictions (capability primacy, infrastructure attenuation, founder-culture fusion) that are empirically supported and that advance the field beyond contextual replication. The thesis contributes to the growing call in the digital transformation literature (Vial, 2019; Verhoef et al., 2021) for context-sensitive theories that move beyond universal models of digital innovation.

Second, the finding that digital organisational culture operates as a direct antecedent rather than a moderator, established through formal post-hoc model comparison, contributes to the boundary condition debate in the resource–innovation literature. The founder-culture fusion mechanism provides a theoretically grounded explanation generating testable predictions: culture should moderate the resource–innovation relationship in firms above a certain size and maturity threshold where organisational culture becomes structurally separable from the founder's personal disposition. This contribution is methodological as well as theoretical: it demonstrates the value of formal model comparison when moderation hypotheses fail, rather than merely reporting the null result as a limitation.

Third, the study contributes to the geographic diversification of the digital innovation evidence base by providing the first empirical investigation of the orientation–capability–innovation–performance chain in Sub-Saharan Africa with methodological rigour meeting current PLS-SEM standards. The capability primacy finding and the infrastructure attenuation mechanism demonstrate that the relative weights of innovation drivers are not universal but are shaped by institutional context, a finding that enriches the African innovation systems literature (Kraemer-Mbula and Wamae, 2010) with firm-level empirical evidence.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Table V. Summary of theoretical contributions

Contribution	Description	Dialogue with prior literature
Institutional absorption thesis	Context-specific mechanism integrating RBV, dynamic capabilities, absorptive capacity, and institutional voids to explain why resource–innovation conversion differs in African economies	Extends Khin and Ho (2018); responds to Vial (2019) and Verhoef et al. (2021) call for context-sensitive theories
Founder-culture fusion mechanism	Culture operates as direct antecedent (not moderator) in micro-enterprises where founder embodies both orientation and cultural values	Extends Schein (2010); qualifies Martínez-Caro et al. (2020); identifies firm-size boundary condition
Geographic diversification of evidence base	First empirical test of DO–DC–DI–performance chain in Sub-Saharan Africa with rigorous PLS-SEM methodology	Enriches Kraemer-Mbula and Wamae (2010) with firm-level evidence; answers Hair et al. (2022) standards

Source: Author's elaboration.

4.3. Practical implications

For IT firm managers, the capability primacy finding means investment in digital skills (developer training, cloud certifications, data analytics, applied AI) should be prioritised over strategic planning exercises. This does not mean orientation is irrelevant; firms need a clear digital vision. But in a context where infrastructure constrains the conversion of intent into innovation, the firm's practical ability to build, deploy, and maintain digital solutions is the more direct lever. The null moderation carries a specific implication for founder-managers: in organisations where the founder embodies both strategy and culture, formal culture-building programmes are unlikely to produce incremental innovation gains. Instead, founders should focus on concrete practices: hiring developers with complementary skills, allocating time and budget for experimentation, and establishing partnerships that expand the capability base.

For policy makers, the infrastructure attenuation finding points to a specific priority: reducing institutional barriers that weaken the orientation–innovation link. The Stratégie Nationale 2020–2030 correctly identifies digital transformation as a priority, but its impact will be limited without addressing micro-level SME constraints. Three interventions are indicated: subsidised digital skills programmes targeted at IT SME employees (not just students), public–private partnerships to reduce bandwidth costs and improve connectivity reliability, and tax incentives for IT firms investing in R&D. Rwanda's ICT Hub initiative and Kenya's Konza Technopolis offer institutional models that Cameroon could adapt.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

For industry associations, peer learning networks focused on practical capability building will have greater innovation impact than strategy-focused convenings. The Cameroon ICT Professionals Network should facilitate structured technical exchanges (mobile payment API integration, low-bandwidth application deployment, open-source development tools) that directly address the capability constraints our data identify as the primary innovation bottleneck.

5. Limitations and future research

First, the cross-sectional design prevents causal inference. The associations we observe are contemporaneous, and the causal direction may run partially in reverse: innovative firms may become more digitally oriented as a consequence of their innovation success. We have used associational language throughout. Longitudinal panel data from African IT firms, collected annually over three to five years, would establish temporal precedence and test whether the capability primacy and infrastructure attenuation mechanisms are stable or evolve as the digital ecosystem matures.

Second, the model focuses on two technological antecedents, one cultural moderator, and one mediator. Other factors that may drive digital innovation, including entrepreneurial orientation, market orientation, external network ties, government support, and access to finance, were not included. The institutional absorption thesis suggests that external institutional factors may be at least as important as internal resources. Future research should integrate external antecedents (institutional support, network embeddedness, venture capital access) alongside internal resources to build a more complete model.

Third, single-respondent data introduce potential bias despite satisfactory CMV diagnostics (Harman's test and full collinearity VIF). Multi-informant designs or mixed-methods approaches combining survey data with objective performance indicators would strengthen future studies. Qualitative follow-up research, such as interviews with founders about how they experience orientation, capability, and culture dynamics, would provide process-level insight our quantitative data cannot capture.

Fourth, the sample represents urban, young, network-embedded IT SMEs. Studies in larger African IT firms (50+ employees, 10+ years) would test whether moderation holds when culture is organisationally separable from the founder. Comparative research across Nigeria, Kenya, Rwanda, and South Africa would test generalisability.

Fifth, the culture scale, although confirmed by CFA, was assembled from multiple sources. Dedicated scale development for African SME contexts, validated across Francophone and Anglophone economies, is needed.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Conclusion

This study examined the drivers and performance outcomes of digital innovation among 146 IT SMEs in Cameroon. The findings confirm that digital orientation and digital capability are significant antecedents of digital innovation, and that digital innovation mediates their association with both financial and non-financial performance. These results extend Khin and Ho's (2018) model into a Sub-Saharan African context, demonstrating that the core relationships hold beyond Southeast Asia while operating through context-specific mechanisms shaped by institutional voids, infrastructural constraints, and founder-centric governance.

The study's central theoretical contribution is the institutional absorption thesis, which explains why the mechanisms linking digital resources to innovation in emerging African economies are not identical to those in institutionally mature settings. Three mechanisms were predicted and supported: capability primacy (digital skills matter more than strategic commitment under institutional voids), infrastructure attenuation (orientation's conversion into innovation is weakened by unreliable infrastructure), and founder-culture fusion (culture operates as a direct antecedent in micro-enterprises where the founder embodies both orientation and cultural values).

The message to practitioners in Cameroon's emerging digital ecosystem is specific and actionable: invest in digital skills as the highest-priority pathway to innovation, address infrastructure constraints through collective action and policy engagement, and recognise that in small, young firms, the founder's own digital competence is the most powerful cultural lever available. The message to researchers is methodological and theoretical: test digital innovation models across institutional contexts, use formal model comparison when hypotheses fail, and develop context-sensitive theories that explain not just whether relationships hold but why they operate as they do in specific institutional environments. The African digital ecosystem provides a uniquely informative setting for this work, one where the mechanisms of digital innovation are both similar to and fundamentally different from those documented in mature economies.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

BIBLIOGRAPHY

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice", Psychological Bulletin, Vol. 103 No. 3, pp. 411-423.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", Journal of Marketing Research, Vol. 14 No. 3, pp. 396-402.

Barney, J.B. (1991), "Firm resources and sustained competitive advantage", Journal of Management, Vol. 17 No. 1, pp. 99-120.

Chae, H.C., Kohl, C.E. and Prybutok, V.R. (2014), "Information technology capability and firm performance", MIS Quarterly, Vol. 38 No. 1, pp. 305-326.

Cohen, J. (1988), Statistical Power Analysis for the Behavioral Sciences, 2nd ed., Lawrence Erlbaum.

Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", Administrative Science Quarterly, Vol. 35 No. 1, pp. 128-152.

Creswell, J.W. and Creswell, J.D. (2018), Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th ed., Sage.

Dess, G.G. and Robinson, R.B. (1984), "Measuring organisational performance in the absence of objective measures", Strategic Management Journal, Vol. 5 No. 3, pp. 265-273.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables", Journal of Marketing Research, Vol. 18 No. 1, pp. 39-50.

Fuller, C.M. et al. (2016), "Common methods variance detection in business research", Journal of Business Research, Vol. 69 No. 8, pp. 3192-3198.

Gatignon, H. and Xuereb, J.M. (1997), "Strategic orientation of the firm and new product performance", Journal of Marketing Research, Vol. 34 No. 1, pp. 77-90.

Hair, J.F. et al. (2014), A Primer on Partial Least Squares Structural Equation Modeling, Sage.

Hair, J.F. et al. (2022), A Primer on Partial Least Squares Structural Equation Modeling, 3rd ed., Sage.

Henfridsson, O., Mathiassen, L. and Svahn, F. (2014), "Managing technological change in the digital age", Journal of Information Technology, Vol. 29 No. 1, pp. 27-43.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity", Journal of the Academy of Marketing Science, Vol. 43 No. 1, pp. 115-135.

Henseler, J., Hubona, G. and Ray, P.A. (2016), "Using PLS path modeling in new technology research", Industrial Management and Data Systems, Vol. 116 No. 1, pp. 2-20.

Hortinha, P., Lages, C. and Lages, L.F. (2011), "The trade-off between customer and technology orientations", Journal of International Marketing, Vol. 19 No. 3, pp. 36-58.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Khanna, T. and Palepu, K.G. (2010), Winning in Emerging Markets, Harvard Business Press.

Khin, S. and Ho, T.C.F. (2018), "Digital technology, digital capability and organisational performance", International Journal of Innovation Science, Vol. 11 No. 2, pp. 177-195.

Kock, N. (2015), "Common method bias in PLS-SEM: a full collinearity assessment approach", International Journal of e-Collaboration, Vol. 11 No. 4, pp. 1-10.

Kraemer-Mbula, E. and Wamae, W. (2010), Innovation and the Development Agenda, OECD Publishing.

Lundvall, B.-Å. et al. (2009), Handbook of Innovation Systems and Developing Countries, Edward Elgar.

Li, L., Su, F., Zhang, W. and Mao, J.Y. (2018), "Digital transformation by SME entrepreneurs: a capability perspective", Information Systems Journal, Vol. 28 No. 6, pp. 1129-1157.

Martínez-Caro, E., Cegarra-Navarro, J.G. and Alfonso-Ruiz, F.J. (2020), "Digital technologies and firm performance", Technological Forecasting and Social Change, Vol. 154, Article 119962.

Moorman, C. and Slotegraaf, R.J. (1999), "The contingency value of complementary capabilities", Journal of Marketing Research, Vol. 36 No. 2, pp. 239-257.

Nambisan, S. et al. (2017), "Digital innovation management", MIS Quarterly, Vol. 41 No. 1, pp. 223-238.

Nwankpa, J.K. and Roumani, Y. (2016), "IT capability and digital transformation: a firm performance perspective", Proceedings of the International Conference on Information Systems, Dublin.

North, D.C. (1990), Institutions, Institutional Change and Economic Performance, Cambridge University Press.

Paladino, A. (2007), "Investigating the drivers of innovation and new product success", Journal of Product Innovation Management, Vol. 24 No. 6, pp. 534-553.

Peng, M.W., Wang, D.Y.L. and Jiang, Y. (2008), "An institution-based view of international business strategy", JIBS, Vol. 39 No. 5, pp. 920-936.

Podsakoff, P.M. et al. (2003), "Common method bias in behavioral research", Journal of Applied Psychology, Vol. 88 No. 5, pp. 879-903.

Preacher, K.J. and Hayes, A.F. (2008), "Asymptotic and resampling strategies for assessing indirect effects", Behavior Research Methods, Vol. 40 No. 3, pp. 879-891.

Proksch, D. et al. (2021), "The influence of a digital strategy on the digitalization of new ventures", JSBM, Vol. 62 No. 1, pp. 1-29.

Sarstedt, M., Ringle, C.M. and Hair, J.F. (2022), "Partial least squares structural equation modeling", in Homburg, C. et al. (Eds), Handbook of Market Research, Springer, pp. 587-632.

Schein, E.H. (2010), Organizational Culture and Leadership, 4th ed., Jossey-Bass.

Teece, D.J. (2007), "Explicating dynamic capabilities", Strategic Management Journal, Vol. 28 No. 13, pp. 1319-1350.

Teece, D.J. and Pisano, G. (1994), "The dynamic capabilities of firms", Industrial and Corporate Change, Vol. 3 No. 3, pp. 537-556.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", Strategic Management Journal, Vol. 18 No. 7, pp. 509-533.

Verhoef, P.C. et al. (2021), "Digital transformation: a multidisciplinary reflection", Journal of Business Research, Vol. 122, pp. 889-901.

Vial, G. (2019), "Understanding digital transformation", Journal of Strategic Information Systems, Vol. 28 No. 2, pp. 118-144.

Wall, T.D. et al. (2004), "On the validity of subjective measures of company performance", Personnel Psychology, Vol. 57 No. 1, pp. 95-118.

Warner, K.S.R. and Wäger, M. (2019), "Building dynamic capabilities for digital transformation", Long Range Planning, Vol. 52 No. 3, pp. 326-349.

Westerman, G., Bonnet, D. and McAfee, A. (2012), "The digital capabilities your company needs", MIT Sloan Management Review.

Westerman, G. et al. (2014), Digital Transformation: A Roadmap for Billion-Dollar Organizations, MIT/Capgemini.

Yang, Y. et al. (2012), "Effective strategic orientations for new product success", JPIM, Vol. 29 No. 2, pp. 166-179.

Yoo, Y., Henfridsson, O. and Lyytinen, K. (2010), "The new organizing logic of digital innovation", Information Systems Research, Vol. 21 No. 4, pp. 724-735.

Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", Academy of Management Review, Vol. 27 No. 2, pp. 185-203.

Zhou, K.Z. and Wu, F. (2010), "Technology capability, strategic flexibility and product innovation", SMJ, Vol. 31 Nos 5-6, pp. 547-561.

Zhou, K.Z., Yim, C.K.B. and Tse, D.K. (2005), "The effects of strategic orientations on breakthrough innovations", Journal of Marketing, Vol. 69 No. 2, pp42-60.