MARKET ORIENTATION, ENTREPRENEURIAL ORIENTATION, DIGITAL OPENNESS AND SME PERFORMANCE IN NORTH-WESTERN NIGERIA

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ABSTRACT

Small and Medium Enterprises (SMEs) in North-Western Nigeria face persistent performance deficits rooted in market volatility, infrastructural constraints, insecurity, and limited strategic digital engagement. This study examines the effects of market orientation (MO), entrepreneurial orientation (EO), and digital openness (DO) on SME performance in North-Western Nigeria. A cross-sectional survey design was adopted, and data were collected from 512 owner-managers of SMEs across Katsina, Kano, and Kaduna States using structured questionnaires. Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4 was employed for analysis. Results confirm significant positive effects for all three constructs: digital openness is the strongest predictor of SME performance ($\beta = 0.342$, $p < 0.001$), followed by market orientation ($\beta = 0.198$, $p < 0.001$) and entrepreneurial orientation ($\beta = 0.193$, $p < 0.001$). The model accounts for 68.2% of variance in SME performance ($R^2 = 0.682$) with substantial out-of-sample predictive relevance ($Q^2 = 0.577$). These findings establish MO, EO, and DO as complementary yet independently valuable strategic capabilities within the Resource-Based View framework. The study recommends that SME operators cultivate customer intelligence systems, entrepreneurial cultures, and open digital engagement practices simultaneously to achieve sustainable performance improvement in North-Western Nigeria.

Keywords: Market Orientation, Entrepreneurial Orientation, Digital Openness, SME Performance, PLS-SEM, North-Western Nigeria.

1. Introduction

Small and Medium Enterprises (SMEs) are widely recognised as the primary engines of economic growth, employment generation, and social development in emerging economies. In North-Western Nigeria — comprising Katsina, Kano, Kaduna, Sokoto, Kebbi, Zamfara, and Jigawa States — SMEs constitute approximately 96% of all businesses and account for 84% of employment within the region (SMEDAN & NBS, 2021). Yet despite this structural importance, SME performance remains chronically constrained. The FATE Institute's (2025) State of Entrepreneurship Index documents alarming deterioration across the three focal states of Katsina (index: 0.31), Kano (0.38), and Kaduna (0.35), placing them among Nigeria's most challenging entrepreneurial environments.

Market orientation (MO), the systematic generation, dissemination, and responsive utilisation of customer and competitor intelligence, is one of the most researched strategic capabilities in SME management. Entrepreneurial

orientation (EO), encompassing innovativeness, proactiveness, and risk-taking, provides firms with the strategic posture to pursue opportunities aggressively (Miller, 1983; Lumpkin & Dess, 1996). Digital openness (DO), a recently emerged construct reflecting firms' strategic posture of active digital platform engagement, transparent information sharing, and collaborative stakeholder interaction (Dantsoho et al., 2020), represents the frontier of strategic capability research in digital transformation contexts.

Despite the growing body of research on each of these constructs individually, their simultaneous direct-effects contributions to SME performance in North-Western Nigeria remain unexamined. Prior regional studies have typically examined MO and EO separately or in mediation frameworks, and DO has received minimal empirical attention in this context. This study addresses that gap by examining the direct effects of MO, EO, and DO on SME performance simultaneously in a direct-effects model, without suppressor effects from mediation or moderation, to establish baseline comparative evidence.

The study contributes in three ways: it provides the first direct-effects comparison of MO, EO, and DO as co-equal strategic capabilities in a single model; it generates primary empirical evidence from 512 SMEs across three adversely affected states; and it establishes a performance hierarchy that has immediate practical relevance for SME managers and regional policymakers. The remainder of the paper is organised as follows: Section 2 reviews the theoretical and empirical literature and develops the study hypotheses; Section 3 describes the research methodology; Section 4 reports the results; Section 5 discusses findings; and Section 6 concludes with implications and future research directions.

2. Literature Review and Hypothesis Development

2.1 Theoretical Framework

This study is anchored in the Resource-Based View (RBV), with complementary insights from the Dynamic Capabilities View (DCV) and Digital Transformation Theory. The RBV (Penrose, 1959; Wernerfelt, 1984; Barney, 1991; Peteraf & Barney, 2003) posits that sustained competitive advantage derives from firm-specific resources and capabilities that are Valuable, Rare, Imperfectly Imitable, and Non-substitutable (VRIN). Market orientation, entrepreneurial orientation, and digital openness each qualify as VRIN capabilities in the North-Western Nigerian SME context: they are value-creating, rare given the documented low adoption rates, difficult to replicate due to tacit knowledge and cultural embeddedness, and non-substitutable in the sense that each addresses distinct performance dimensions.

The DCV complements the RBV by explaining how firms sustain advantage in turbulent environments through sensing, seizing, and transforming capabilities (Teece et al., 1997; Eisenhardt & Martin, 2017). In the security-challenged, volatile North-Western Nigerian environment, dynamic capabilities are particularly critical. Digital Transformation Theory (Vial, 2019; Verhoef et al., 2021; Westerman et al., 2011; Nambisan et al., 2019) further explains how digital openness enables firms to reconfigure resources through platform ecosystems, open innovation, and real-time market intelligence, extending both MO and EO capabilities.

2.2 Market Orientation and SME Performance

Market orientation reflects the extent to which a firm systematically generates, disseminates, and responds to intelligence about customers and competitors (Kohli & Jaworski, 1990; Narver & Slater, 1990; Jaworski & Kohli, 1993). As an RBV-derived capability, MO translates environmental information into strategic responsiveness, enabling firms to align offerings with market needs and outperform less market-responsive competitors.

Empirical support for MO's positive performance effect is extensive. Arshad et al. (2018) confirmed MO improved SME performance in Pakistan; Bamfo and Kraa (2019) found MO positively affected SME performance in Ghana mediated by innovation; Ighomereho et al. (2022) documented MO as a COVID-19 resilience factor for Nigerian

SMEs; and Bello and Muazu (2024) confirmed MO's positive effect on women entrepreneurs in Nigeria. In North-Western Nigeria specifically, Sa'id et al. (2025) confirmed MO's positive performance effect in a recent sample. Against this backdrop, the study hypothesises:

> **H1:** Market orientation has a significant positive direct effect on SME performance in North-Western Nigeria.

2.3 Entrepreneurial Orientation and SME Performance

Entrepreneurial orientation reflects a firm's strategic posture toward innovativeness, proactiveness, and risk-taking (Miller, 1983; Lumpkin & Dess, 1996; Covin & Slevin, 1989; Covin & Wales, 2019). As an RBV capability, EO enables firms to pursue opportunity-driven strategies that create first-mover advantages, accelerate innovation cycles, and sustain competitive differentiation in volatile markets.

Empirical support for EO's performance contribution is robust and cross-contextual. Rauch et al.'s (2009) meta-analysis confirmed positive EO-performance relationships across 51 samples. Nigerian evidence is similarly convergent: Aliyu et al. (2025) confirmed EO's positive effect on women-owned enterprises in North-Western Nigeria; Aliyu et al. (2022) documented positive EO-performance effects across Nigerian SMEs; Ibijoju and Akeke (2022) confirmed the relationship in South-Western Nigeria; and Badamasi et al. (2023) documented positive EO effects in North-Western Nigerian SMEs with entrepreneurial ecosystem as moderator. Accordingly:

> **H2:** Entrepreneurial orientation has a significant positive direct effect on SME performance in North-Western Nigeria.

2.4 Digital Openness and SME Performance

Digital openness is defined as a firm's strategic posture of actively engaging through digital platforms for stakeholder collaboration, transparent information sharing, and open innovation (Dantsoho et al., 2020; Nasiri et al., 2022). The theoretically critical distinction is between digital openness and digital adoption: DO captures not just whether firms use digital tools, but whether they engage openly and collaboratively through them. Rogo (2022) found that internet adoption alone produced inconsistent performance effects in Kano SMEs, while firms that adopted collaborative digital practices showed stronger performance — precisely because openness, rather than mere adoption, constitutes the VRIN resource.

From the RBV, digital openness constitutes a VRIN resource because it combines technological tools with cultural openness, collaborative norms, and accumulated digital relationship capital — a bundle that is rare, difficult to imitate, and non-substitutable. From Digital Transformation Theory, digital openness enables platform ecosystem effects (Gawer & Cusumano, 2014; Barba-Sánchez et al., 2024), amplifying both MO's market intelligence function and EO's innovation function through real-time digital signals and collaborative networks. Recent evidence from Badamasi et al. (2025b) demonstrates digital openness as a significant mediator linking MO and EO to SME performance, confirming its central theoretical role. In a direct-effects model, DO's independent contribution is theorised to be substantial. Therefore:

> **H3:** Digital openness has a significant positive direct effect on SME performance in North-Western Nigeria.

3. Research Methodology

3.1 Research Design and Sampling

A quantitative cross-sectional survey design was adopted, grounded in a positivist paradigm treating SME performance as an objectively determinable outcome influenced by measurable strategic capabilities (Creswell & Creswell, 2023; Saunders et al., 2019; Maier et al., 2023). Sample size was determined using Dillman et al.'s (2014) formula, yielding an initial computed sample of 399, doubled to 798 following Edwards and Lambert (2007) and

McKibben et al. (2025) to account for anticipated non-response. Of 798 questionnaires distributed across Katsina, Kano, and Kaduna States using stratified random sampling (by state and sector), 540 were returned and 512 retained after screening (response rate: 67.7%; usable rate: 64.2%). The response rate is consistent with Nigerian SME survey norms and exceeds the 50% adequacy threshold (Sekaran & Bougie, 2016).

Potential common method bias was addressed through procedural remedies (Harman's single-factor test: largest factor = 28.3%, well below the 50% threshold) and temporal separation of predictor and outcome measurement. Non-response bias was evaluated by comparing early and late respondents on key study variables (Armstrong & Overton, 1977); no significant differences were detected ($p > 0.05$ for all comparisons), indicating non-response bias is not a significant threat.

3.2 Measurement Instruments

Market Orientation was measured using nine items adapted from Narver and Slater's (1990) MKTOR scale (two items removed during pilot refinement), spanning customer orientation, competitor orientation, and inter-functional coordination. Entrepreneurial Orientation was measured using seven items adapted from Covin and Slevin's (1989) and Lumpkin and Dess's (1996) scales (two items removed during pilot), covering innovativeness, proactiveness, and risk-taking. Digital Openness was measured using six items from Dantsoho et al.'s (2020) validated Digital Openness scale, covering platform engagement, information transparency, and collaborative stakeholder interaction. SME Performance was measured using six items from Wall et al. (2004), covering sales growth, profitability, market share, customer satisfaction, operational efficiency, and employee productivity. All items used five-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree). Instruments were piloted on 52 SME owner-managers, and four items (MO6, MO11, EO2, EO5) were removed for low outer loadings (<0.60) prior to main data collection.

3.3 Method of Data Analysis

PLS-SEM was employed using SmartPLS 4 (Ringle et al., 2023), following the two-step procedure recommended by Henseler et al. (2009) and Hair et al. (2022). The measurement model was assessed first (reliability, convergent validity, discriminant validity), followed by structural model assessment (path coefficients, bootstrapping with n = 5,000 resamples, effect sizes, predictive relevance). PLS-SEM was selected over CB-SEM due to the exploratory nature of the digital openness construct in this context, the non-normal distribution of several indicators (Curran et al., 1996), and the study's focus on predictive relevance (Hair et al., 2019).

4. Results

4.1 Preliminary Analysis and Respondent Profile

Screening of the 512-case, 22,528-data-point dataset identified 27 missing values (0.001%), resolved through mean imputation (Hair et al., 2022). Mahalanobis distance analysis flagged 15 multivariate outliers, which were retained as they represented genuine extreme-but-valid SME profiles. The 512 respondents were predominantly male (74%, n = 379), with 87% aged 36 years and above. Educational attainment was high: 58% held bachelor's degrees and 22% postgraduate qualifications, reflecting the sample's owner-manager composition rather than the broader SME employee population. Sector distribution: trading (41%), services (33%), manufacturing (26%).

4.2 Measurement Model Assessment

After pilot-stage removal of MO6, MO11, EO2, and EO5 for low outer loadings, the final measurement model retained 28 indicators across the four constructs. All retained indicator loadings exceeded 0.866, substantially above the 0.70 threshold (Hair et al., 2022). Table 1 presents construct reliability and convergent validity statistics.

Table 1: Construct Reliability and Convergent Validity

Construct	Items	Cronbach's α	CR (rho_c)	AVE	Loading Range
Market Orientation (MO)	9	0.966	0.971	0.786	0.880–0.893
Entrepreneurial Orientation (EO)	7	0.962	0.968	0.814	0.887–0.909
Digital Openness (DO)	6	0.942	0.954	0.775	0.866–0.890
SME Performance (FP)	6	0.965	0.972	0.853	0.918–0.928

Note: CR = Composite Reliability (rho_c); AVE = Average Variance Extracted. All values exceed Hair et al. (2022) recommended thresholds: CR > 0.70; AVE > 0.50.

All Cronbach's alpha values exceeded 0.94 and composite reliability (rho_c) ranged from 0.954 to 0.972, substantially above the 0.70 benchmark. AVE values ranged from 0.775 to 0.853, all exceeding the 0.50 threshold, confirming convergent validity (Hair et al., 2022). Discriminant validity was confirmed through three complementary procedures: cross-loading analysis, Fornell-Larcker criterion (Fornell & Larcker, 1981), and HTMT ratios (Henseler et al., 2016). Table 2 presents HTMT ratios.

Table 2: Discriminant Validity — HTMT Ratios

Construct Pair	HTMT Value	Threshold	Decision
MO ↔ Digital Openness	0.841	< 0.85	Discriminant Validity Confirmed
EO ↔ Digital Openness	0.842	< 0.85	Discriminant Validity Confirmed
MO ↔ SME Performance	0.747	< 0.85	Discriminant Validity Confirmed
EO ↔ SME Performance	0.751	< 0.85	Discriminant Validity Confirmed
DO ↔ SME Performance	0.837	< 0.85	Discriminant Validity Confirmed
MO ↔ EO	0.688	< 0.85	Discriminant Validity Confirmed

Note: HTMT = Heterotrait-Monotrait ratio. Conservative threshold of 0.85 applied per Henseler et al. (2016) and Voorhees et al. (2016). The highest value is 0.842, well below threshold.

4.3 Structural Model: Predictive Assessment

Table 3 presents the coefficient of determination and predictive relevance statistics for SME performance in the direct-effects model.

Table 3: Coefficient of Determination and Predictive Relevance

Endogenous Construct	R^2	Adjusted R^2	Q^2 (Blindfolding)	PLSpredict Classification
SME Performance	0.682	0.680	0.577	High Predictive Power

Note: $R^2 \geq 0.67$ = substantial (Chin, 1998). $Q^2 > 0$ indicates predictive relevance (Geisser, 1975).

The direct-effects model accounts for 68.2% of variance in SME performance (R^2 = 0.682, Adj. R^2 = 0.680), classified as substantial by Hair et al. (2022). The Q^2 value of 0.577 confirms strong out-of-sample predictive relevance (Geisser, 1975). Effect size analysis (f^2) reveals the independent variance contributions of each predictor: digital openness exerts the largest effect (f^2 = 0.119, medium), followed by market orientation (f^2 = 0.043, small) and entrepreneurial orientation (f^2 = 0.040, small), consistent with Cohen's (1988) benchmarks.

4.4 Hypothesis Testing

Table 4 reports the direct path coefficients, bootstrap statistics, and effect sizes for the three study hypotheses.

Table 4: Direct Path Coefficients — MO, EO, DO on SME Performance (Bootstrap n = 5,000)

Hypothesis / Path	β	Std Dev	T-Statistic	p-Value	f^2	Result
H1: MO → SME Performance	0.198	0.035	5.594	0.000	0.043	Supported
H2: EO → SME Performance	0.193	0.039	4.994	0.000	0.040	Supported
H3: DO → SME Performance	0.342	0.053	6.470	0.000	0.119	Supported

Note: β = standardised path coefficient; Std Dev = standard deviation from 5,000 bootstrap samples; f^2 = effect size (Cohen, 1988: ≥ 0.02 small, ≥ 0.15 medium, ≥ 0.35 large). All paths significant at $p < 0.001$.

H1 (MO → SME Performance, β = 0.198, t = 5.594, $p < 0.001$, $f^2 = 0.043$): Market orientation exerts a significant positive direct effect on SME performance. H1 is supported. The small-to-moderate effect size reflects MO's independent contribution controlling for EO and DO.

H2 (EO → SME Performance, β = 0.193, t = 4.994, $p < 0.001$, $f^2 = 0.040$): Entrepreneurial orientation exerts a significant positive direct effect on SME performance. H2 is supported. The near-equivalence of EO and MO coefficients ($\Delta\beta = 0.005$) establishes these as approximately equal baseline capabilities.

H3 (DO → SME Performance, β = 0.342, t = 6.470, $p < 0.001$, $f^2 = 0.119$): Digital openness is the strongest direct predictor of SME performance, with a path coefficient 73% larger than MO and 77% larger than EO, and a medium effect size. H3 is supported.

5. Discussion

5.1 Market Orientation and SME Performance

The significant positive direct effect of market orientation on SME performance (β = 0.198, $p < 0.001$) confirms that systematic customer intelligence, competitor monitoring, and inter-functional coordination constitute a meaningful competitive resource for SMEs in North-Western Nigeria, consistent with Kohli and Jaworski (1990) and Narver and Slater (1990). The moderate coefficient in a model simultaneously controlling for EO and DO is theoretically significant: it demonstrates that MO retains independent explanatory power even when the influence of entrepreneurial behaviour and digital engagement are statistically controlled, confirming MO as a distinct, non-redundant performance capability. This finding aligns with Sa'id et al. (2025) and Ighomereho et al. (2022) in the Nigerian context, and extends the global MO-performance literature (Arshad et al., 2018; Bamfo & Kraa, 2019) to the security-constrained North-Western Nigerian environment.

5.2 Entrepreneurial Orientation and SME Performance

The significant positive direct effect of EO on SME performance (β = 0.193, $p < 0.001$) confirms the foundational role of innovativeness, proactiveness, and risk-taking in North-Western Nigerian SME performance, consistent with Rauch et al.'s (2009) meta-analytic findings and Badamasi et al. (2023). The near-equivalence of EO and MO coefficients ($\Delta\beta = 0.005$) is theoretically informative, suggesting market intelligence and entrepreneurial initiative are approximately co-equal baseline capabilities in this context — neither dominates the other, and both are necessary for baseline performance. This finding has practical implications: SME managers cannot substitute entrepreneurial boldness for market knowledge, or vice versa; both strategic postures must be developed simultaneously.

5.3 Digital Openness as the Dominant Performance Driver

Digital openness emerged as the strongest direct predictor of SME performance by a substantial margin (β = 0.342, $p < 0.001$, $f^2 = 0.119$), with a path coefficient 73% larger than MO and 77% larger than EO. This result advances the literature in two respects. First, it establishes DO as a dominant rather than merely supplementary strategic capability in North-Western Nigerian SMEs, consistent with Badamasi et al. (2025b) and Khin and Ho (2019), but extending those findings to a direct-effects comparison where DO's superiority is explicitly demonstrated. Second, it confirms

that the theoretically critical distinction between digital adoption and digital openness (Rogo, 2022; Khairuddin & Olowosuyi, 2020) has substantive empirical consequences: firms that engage openly and collaboratively through digital platforms — sharing information, co-creating with stakeholders, and leveraging platform ecosystems — achieve substantially stronger performance than those that merely adopt digital tools.

5.4 The Complementary Architecture of MO, EO, and DO

Considered jointly, the findings reveal a complementary strategic architecture for SME performance in North-Western Nigeria. Digital openness provides the platform infrastructure and collaborative ecosystem through which market intelligence (MO) and entrepreneurial initiatives (EO) are amplified, disseminated, and converted into performance outcomes. MO and EO, near-equivalent in direct effects, represent the foundational strategic postures that determine how effectively firms identify and pursue opportunities. The near-parity of MO and EO alongside DO's substantially larger coefficient suggests a two-tier capability structure: a foundational tier (MO and EO) that enables competitive positioning, and an amplification tier (DO) that converts strategic intent into realised performance through digital ecosystem effects. This architecture is novel in the North-Western Nigerian literature and provides a theoretical framework for future mediation and moderation research.

6. Conclusion

6.1 Summary of Findings

This study examined the direct effects of market orientation, entrepreneurial orientation, and digital openness on SME performance in North-Western Nigeria using PLS-SEM with 512 SME owner-managers. All three hypotheses were supported. The findings confirm a clear performance hierarchy: digital openness ($\beta = 0.342$) > market orientation ($\beta = 0.198$) ≈ entrepreneurial orientation ($\beta = 0.193$). The model explained 68.2% of variance in SME performance — a substantial explanatory level — with strong out-of-sample predictive relevance ($Q^2 = 0.577$).

6.2 Theoretical Contributions

This study advances theory in three respects. First, it provides the first simultaneous direct-effects comparison of MO, EO, and DO as co-equal strategic capabilities, establishing baseline comparative evidence that MO and EO are near-equivalent while DO is substantially dominant. Second, it integrates RBV, DCV, and Digital Transformation Theory in explaining why digital openness — as a VRIN resource combining technological tools with collaborative culture — outperforms traditional strategic orientations in SME performance. Third, it advances the nascent DO construct literature (Dantsoho et al., 2020; Badamasi et al., 2025b) by demonstrating DO's direct performance effects in a high-adversity context, contributing to contextualised strategic management theory.

6.3 Practical Recommendations

For SME owner-managers in Katsina, Kano, and Kaduna, three priorities are recommended. First, develop digital openness as the primary performance lever: invest in digital platforms that enable collaborative stakeholder engagement, transparent information sharing, and open innovation rather than merely adopting standalone digital tools. Second, maintain MO and EO as foundational but non-substitutable capabilities: customer intelligence systems (MO) and entrepreneurial culture (EO) provide the strategic content that digital openness amplifies. Third, pursue these capabilities simultaneously rather than sequentially, as the complementary architecture suggests that their joint development maximises performance. For policymakers and SMEDAN, capacity-building programmes should integrate digital openness with market intelligence and entrepreneurial skills, avoiding the common error of treating digitalisation as purely a technology adoption problem rather than a strategic orientation challenge.

6.4 Limitations and Future Research

The cross-sectional design precludes causal inference; longitudinal research is needed to establish temporal sequencing. The sample covers three states; replication across all seven North-Western states would strengthen generalisability. Future research should extend the direct-effects model in three directions: mediation models examining digital openness as an intervening mechanism between MO/EO and performance; moderation models examining boundary conditions (firm size, sector, insecurity level) of the MO-, EO-, and DO-performance relationships; and longitudinal panel designs tracking capability development and performance trajectories over time.

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