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Strategic Management Practices and Small and Medium Enterprises Performance Across the North Central Nigerian States: A Spatial Durbin Analysis of Cross-State Spillover Effects

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ABSTRACT

Studies of strategic management in Nigeria almost always treat the firm as a spatially isolated decision unit, so that any performance benefit a firm derives from the strategic conduct of enterprises in neighbouring localities is either ignored or absorbed into an error term. This study relaxes that assumption (find out why this should be included in the abstract). Using a survey dataset of 634 small and medium enterprises drawn from all 121 local government areas of the seven administrative units of the North Central geopolitical zone of Nigeria, the study estimates a Spatial Durbin Model of firm performance in which strategic planning intensity, environmental scanning capability, strategy implementation capability, strategic control and evaluation, and strategic leadership enter both in own-locality and in neighbour-locality form. Moran's I of 0.640 for the performance index and a significant robust Lagrange multiplier lag statistic of 55.394 against an insignificant robust error statistic of 0.046 confirm that a spatial lag specification is warranted, and likelihood ratio tests reject both the spatial autoregressive and the spatial error restrictions. The spatial autoregressive parameter is 0.306 and significant at the one per cent level. Strategic planning intensity, strategy implementation capability and infrastructure quality generate positive and significant indirect effects of 0.615, 0.599 and 0.783 respectively, of which roughly one third crosses a state boundary. Strategic leadership behaves differently: its direct effect is positive but its indirect effect is negative at -0.430, so that its total effect is negative, a pattern consistent with competitive displacement of managerial talent between adjoining localities. Environmental scanning, strategic control and evaluation, firm size and firm age generate no significant spillover of any kind, and firm age is insignificant throughout. The findings imply that strategic management capability in the zone is partly a locational public good, and that enterprise development policy coordinated at zonal rather than state level would capture benefits that state-level programming forgoes.

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Introduction

Small and medium enterprises account for a substantial share of employment and non-oil economic activity in Nigeria, and the question of why some enterprises outperform others has occupied the strategic management literature for decades. A dominant explanation, rooted in the resource-based view (RBV), locates the source of sustained competitive advantage within the firm and its ability to develop and deploy valuable resources and capabilities [1,2]. More recent developments in the dynamic capabilities literature similarly emphasise firms' capacity to sense changes, reconfigure resources and adapt their strategies in response to changing competitive environments [3]. From this perspective, enterprises that plan deliberately, scan their environment systematically, execute what they plan, evaluate what they execute and provide coherent strategic leadership are more likely to develop capabilities that competitors cannot readily replicate. Environmental scanning has long been recognised as an important link between organisational strategy and the external environment while strategic leadership provides the mechanisms through which strategic choices and organisational actions are coordinated [4,5].

Empirical evidence generally supports a positive association between strategic management practices and organisational performance, although the magnitude and significance of individual effects vary across settings. A meta-analysis by George, for example, demonstrates that strategic planning is positively associated with organisational performance, while more recent empirical evidence also identifies significant performance benefits from systematic strategic planning [6,7]. Within the Nigerian context, studies similarly report that strategic management practices and strategic orientation can contribute to organisational and SME performance, although these relationships may depend on competitive and organisational conditions [8,9].

That literature, however, rests on a modelling assumption that is rarely stated and almost never tested: that observations on firms are spatially independent. In practical terms, it assumes that the performance of a firm in Makurdi is independent of the strategic conduct of firms in Otukpo, and that the performance of a firm in Lafia is independent of what firms across the boundary in Nasarawa Eggon or the Federal Capital Territory are doing. Conventional cross-sectional regression techniques rely on independence assumptions that become problematic when outcomes or disturbances exhibit systematic spatial dependence. Where firm outcomes are spatially interconnected, ignoring such

dependence can lead to misleading statistical inference and, depending on the underlying spatial process, biased or inefficient parameter estimates.

There are strong reasons to question the assumption of spatial independence in the North Central Nigerian context. Managers move between firms within labour markets that frequently extend beyond individual local government and state boundaries [8]. Suppliers, distributors and financiers similarly serve clusters of localities that cut across administrative jurisdictions, while transport and commercial corridors connect the Federal Capital Territory with Nasarawa, Plateau and other neighbouring states. Trade fairs, chambers of commerce, cooperative societies, professional associations and religious and social business networks can further facilitate the circulation of managerial knowledge and strategic practices across administrative boundaries. Consequently, strategic management practices adopted by one enterprise may generate effects extending beyond the adopting firm [10]. Where managerial practices, information or capabilities diffuse spatially, part of the benefit generated by strategic management may therefore accrue to neighbouring firms that did not themselves incur the full costs associated with developing those practices.

The methodological apparatus required to investigate such interdependence is provided by spatial econometrics. Spatial analytical methods begin from the proposition that observations located near one another may exhibit systematic dependence, a phenomenon formally associated with measures of spatial autocorrelation such as Moran's I [11]. Spatial econometric models subsequently permit outcomes in one spatial unit to depend on outcomes in neighbouring units, characteristics of neighbouring units, spatially correlated disturbances, or combinations of these processes. Among these approaches, the Spatial Durbin Model (SDM) provides a particularly flexible specification because it incorporates both a spatially lagged dependent variable and spatially lagged explanatory variables [12]. Contemporary empirical applications demonstrate the usefulness of the SDM for identifying effects that operate both within individual spatial units and across neighbouring units [13,14].

An important implication of the Spatial Durbin Model is that its estimated regression coefficients cannot generally be interpreted as conventional marginal effects because a change occurring in one location may affect that location, transmit to neighbouring locations and subsequently feedback through the spatial system. Following LeSage and Pace, SDM estimates are therefore decomposed into direct, indirect and total effects [12]. The direct effect captures the average impact of a change in an explanatory variable on the originating spatial unit, including feedback effects transmitted through neighbouring units. The indirect effect captures the impact transmitted to other spatial units and therefore represents the spatial spillover effect, while the total effect combines the direct and indirect effects. This decomposition is particularly appropriate for the present study because the indirect effect provides an explicit empirical measure of whether strategic management practices adopted in one locality generate performance consequences for SMEs operating in neighbouring localities.

Despite the maturity of spatial econometric methods and their growing application in other areas of economic and organisational analysis, their application to Nigerian strategic management and SME-performance research remains limited. Nigerian studies examining strategic management and firm performance have predominantly relied on conventional survey-based statistical approaches [8,9]. Consequently, such studies provide valuable

evidence about the relationship between a firm's own strategic practices and its performance but offer limited insight into whether those practices generate geographically transmitted effects. By contrast, international studies applying spatial models demonstrate that economic and organisational processes can produce substantial indirect effects across geographical units, reinforcing the importance of explicitly modelling spatial interdependence rather than assuming independence [13,14].

North Central Nigeria provides an especially suitable setting for addressing this methodological and empirical gap. The zone comprises administratively distinct but economically interconnected territories surrounding the Federal Capital Territory, with considerable variation in market size, infrastructure, industrial composition and enterprise concentration. These characteristics create plausible channels through which managerial practices, information, labour, financing and commercial relationships may diffuse across geographical boundaries. Modelling these relationships through an explicitly specified spatial weight matrix makes it possible to distinguish the performance consequences associated with an SME's own strategic management practices from those associated with strategic practices prevailing in neighbouring locations.

Accordingly, this study extends the Nigerian strategic management literature beyond the conventional question of whether strategic management practices improve SME performance to examine whether, and to what extent, the performance effects of those practices spill over geographically to other SMEs. Through the application of the Spatial Durbin Model and decomposing the estimated relationships into direct, indirect and total effects, the study seeks to provide evidence on both firm-level strategic effects and the spatial externalities associated with strategic management practices among SMEs in North Central Nigeria.

The Study Therefore Pursues Four Objectives

- It examines whether firm performance and strategic management practices exhibit significant spatial clustering across the localities of the zone.
- It estimates the direct effect of each strategic management practice on firm performance once spatial dependence is accounted for.
- It estimates the indirect or spillover effect of each practice, that is, the effect on a locality of practices adopted elsewhere.
- Finally, it decomposes that indirect effect into the portion transmitted within a state and the portion that crosses a state boundary, since only the latter carries an implication for the level of government at which enterprise policy should be coordinated.

Corresponding hypotheses are stated in null form: that there is no significant spatial autocorrelation in firm performance across the localities of the zone; that strategic management practices have no significant direct effect on firm performance; that they generate no significant indirect effect; and that the cross-state component of any indirect effect is not significantly different from zero.

Literature Review

Conceptual Review

Strategic management is understood here as the continuous process by which an enterprise sets objectives, analyses its internal and external situation, formulates and implements a course of action, and evaluates the outcome against intention. Contemporary reviews caution that this process is neither purely rational nor purely emergent, and that its dimensions exert their

effects through distinct intermediate mechanisms rather than as a single undifferentiated bundle [15]. Five dimensions are therefore treated as separable and are measured separately in this study.

Strategic planning intensity refers to the depth, formality and time horizon of the planning process. It captures whether an enterprise possesses written objectives, whether those objectives extend beyond a single trading cycle, whether resources are allocated against them, and whether planning is a recurring institutionalised activity rather than an episodic response to crisis. Meta-analytic evidence indicates that planning has a positive, moderate and significant association with organisational performance, and that this association is strongest where planning is measured in its formal rather than its informal expression [6]. Evidence from manufacturing settings similarly links formalised planning to both financial and non-financial performance [7].

Environmental scanning capability refers to the systematic acquisition and interpretation of information about customers, competitors, suppliers, regulation and technology. It is the sensing component of the strategic process, and it determines the quality of the information on which planning operates. Scanning is not undifferentiated information gathering: executives concentrate attention on the environmental domains that reinforce their firm's particular basis for competing, so scanning patterns and strategic posture are mutually constitutive [4]. In the dynamic capabilities' tradition, this sensing function is the first of the microfoundations through which enterprises identify and shape opportunity before rivals do [16].

Strategy implementation capability refers to the enterprise's ability to convert intention into action through structure, budgets, procedures, and the assignment of responsibility. Implementation is widely identified as the point at which strategy most often fails, and it is conceptually distinct from the quality of the strategy itself; reviews of the field attribute implementation effectiveness to a combination of structural arrangements and interpersonal processes that operate independently of the merits of the formulated strategy [17].

Strategic control and evaluation refer to the establishment of standards, the monitoring of performance against those standards, and the taking of corrective action. It closes the loop of the strategic process and converts a single planning cycle into organisational learning. Effective strategic control is more than post-action feedback against standards taken for granted; it operates as a feedforward process of premise control, implementation control and strategic surveillance that compensates for the inevitable selectivity of planning [18].

Strategic leadership refers to the capacity of the owner or top management team to articulate direction, secure commitment, allocate attention and sustain the strategic process through change. It is the human agency that animates the other four dimensions, encompassing strategic decision making, engagement with external stakeholders, motivation, knowledge management and the supervision of activities at the apex of the enterprise [5].

Firm performance is treated as a composite of financial and non-financial attainment, comprising revenue growth, profitability, market position and operational efficiency, measured perceptually on the instrument and aggregated into a single index.

Spatial spillover is the concept that distinguishes this study from the surrounding literature. A spillover exists when a change in an

explanatory variable in one locality alters the outcome in another locality. Where the transmission runs through the outcome variable itself, so that high-performing localities raise the performance of neighbours which in turn feedback, the process is global and every locality is affected to some degree by every other. Where transmission runs through the covariates of neighbours only, the process is local and confined to the defined neighbourhood. The Spatial Durbin Model admits both channels simultaneously, which is why it is adopted here.

Theoretical Framework

The study is anchored on two theories.

The Resource-Based View

The resource-based view, formalised by Barney, holds that sustained competitive advantage derives from resources that are valuable, rare, imperfectly imitable and non-substitutable, and that heterogeneity in such resources explains persistent performance differences among firms in the same industry [19]. Strategic management practices qualify as resources in this sense. A functioning planning system, an established scanning routine and a disciplined evaluation cycle are organisational rather than physical assets, they are built over time through path-dependent investment, and they are socially complex in ways that frustrate imitation. Newbert reviewed the accumulated empirical record and found broad but uneven support, with capability and core-competence formulations of the theory performing better than resource-stock formulations [1].

The theory supplies this study with its expectation that each of the five practice dimensions carries a positive direct effect on performance. It also supplies, less obviously, a reason to expect spillover. The resource-based view assumes that valuable resources are imperfectly mobile, but imperfect mobility is not immobility. Managerial routines are embodied in people, and people move between firms within a local labour market. A routine that is inimitable at a distance may be quite imitable next door, where it can be observed, discussed and hired. The theory therefore predicts that the appropriability of a strategic capability declines with proximity, which is the mechanism this study tests. The main limitation of the theory in the present setting is that it is essentially static and firm-bounded, and offers no account of the geography of resource diffusion.

The Dynamic Capabilities Theory

The dynamic capabilities theory, advanced by Teece, Pisano and Shuen and refined by Eisenhardt and Martin, addresses that limitation [20,21]. It defines capability as the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments, and decomposes it into sensing, seizing and reconfiguring. The theory is the natural companion to the resource-based view for a volatile emerging-market setting, because it explains not the possession of resources but their renewal.

Two features of the theory matter for this study. First, it treats external competences as part of what the firm integrates, which makes the resource endowment of the neighbourhood an input to the firm's own capability rather than an exogenous background condition. Second, in Eisenhardt and Martin's formulation, dynamic capabilities in high-velocity environments converge on simple experiential rules rather than elaborate analytical routines, and such rules are precisely the kind of knowledge that transmits easily through informal contact. Pitelis and Teece note in their systematic review that the sensing and seizing components have

been examined largely within firm boundaries and that their cross-boundary and cross-border dimensions remain underdeveloped, which is consistent with the gap identified here [3]. The theory's principal limitation is definitional imprecision, which has made its constructs difficult to operationalise consistently and has produced a fragmented empirical literature, as Kero and Bogale document [2].

Taken together, the two theories generate the study's central proposition: strategic management practices raise the performance of the adopting firm, and, because the routines through which they operate are embodied in mobile people and simple transmissible rules, they also raise the performance of firms in adjoining localities, with the strength of transmission declining in distance but not necessarily halting at an administrative boundary.

Empirical Review

Gajere investigated whether strategic orientation improves the performance of Nigerian small and medium enterprises and whether competitive intensity moderates the relationship [8]. The study adopted a cross-sectional survey design in Nigeria, with a population of registered small and medium enterprises and a sample of 213 enterprises. Partial least squares structural equation modelling was used for analysis after the measurement instruments were validated. The results were notably uneven: only the market orientation dimension contributed significantly to performance, while the learning and entrepreneurial orientation dimensions failed to predict it. The author concluded that strategic orientation improves performance selectively rather than uniformly, and that dimension-level analysis is necessary. The study is valuable for its refusal to report a uniformly significant result, but its treatment of Nigeria as a single undifferentiated study area conceals regional variation, and its cross-sectional design cannot establish the direction of causation.

Okerenu and Odiri assessed the relationship between strategic management and organisational performance of manufacturing firms in Delta State, Nigeria [9]. The study used a survey research design in Delta State, drawing on the employees of six selected manufacturing firms as its population, from which the Taro Yamane formula produced a sample of 69 respondents distributed proportionately across the six firms. Data were collected with a five-point Likert questionnaire adapted from earlier instruments, validated for face validity and tested for reliability, with Cronbach alpha coefficients between 0.68 and 0.80. Simple regression showed that strategy objective, strategy formulation, strategy implementation and strategy evaluation each had a significant positive effect on performance. The authors concluded that strategic management significantly influences the performance of manufacturing firms in the state. The study is methodologically transparent, but a sample of 69 respondents drawn from six firms cannot support inference about a state's manufacturing sector, the reported coefficients of determination above 0.76 for single-regressor models are implausibly high, and every hypothesis was accepted, which is itself a warning sign.

Umemezilem and Okuwa examined the effect of strategic cost management practices on the organisational performance of Nigerian manufacturing firms [10]. A survey design was used, with the study area covering four listed manufacturing companies in Nigeria. The population comprised 70 members of staff, from which the Taro Yamane formula yielded a sample of 60 respondents. Data were analysed using the Kruskal-Wallis one-way analysis of variance by ranks. The findings indicated that strategic

cost management practices positively affected organisational performance, improving product costing analysis, decision-making, production efficiency and market competitiveness. The authors concluded that adoption of a strategic cost management system enhances firm performance. The study extends strategic management into the cost domain, but its non-parametric single-factor test cannot control for confounding firm characteristics, and its sample of 60 respondents across four large firms limits generalisation.

Kero and Bogale synthesised the empirical research on the resource-based view and dynamic capabilities across sectors in order to map the state of the field and identify future research avenues [2]. The design was a systematic literature review conducted according to explicit inclusion and exclusion criteria covering search boundaries, publication date, language and search strings, with relevance, quality and duplication used for exclusion. The study area was global, the population being the published empirical literature on firm resources and capabilities, and the sample the set of articles surviving the screening protocol. The review found that dynamic capabilities were developed to address the rigidity of the resource-based view, that capability constructs are operationalised inconsistently across studies, and that the accumulated evidence is fragmented by sector and method. The authors concluded that integration of the two perspectives requires clearer construct definition. The review is useful for theory framing, but as a synthesis it inherits the selection and reporting biases of the studies it aggregates and offers no primary evidence.

Sanfilippo and Seric studied the agglomeration and performance relationship for domestic firms in sub-Saharan Africa [22]. The design was a quantitative multilevel analysis, which permits firm-level outcomes to be modelled as a function of both firm and contextual characteristics. The study area comprised sub-Saharan African countries, the population being domestic manufacturing and services firms, sampled through firm-level survey data linked to the location of foreign direct investment projects. The results showed that contextual factors explain up to 30 per cent of the variance in firm productivity, more than half of which depends on geographic location; that productivity is positively related to agglomeration size when firms locate in larger cities specialised in other sectors; and that the relationship turns negative under direct competition from same-industry firms, with positive manufacturing spillovers conditional on backward and forward linkages. The authors concluded that agglomeration effects in Africa are real but conditional in sign. The study is among the strongest available on African spatial externalities, but multilevel modelling imposes a discrete nesting structure and cannot represent continuous spatial dependence or feedback between neighbouring units.

Combes, Duranton, Gobillon, Puga and Roux sought to determine whether the productivity advantage of large cities reflects genuine agglomeration economies or the selection of more productive firms into dense locations [23]. The design was quantitative and econometric, employing a quantile approach to the distribution of firm productivity that permits agglomeration and selection to be separately identified. The study area was France, the population being French firms across local employment areas, with the sample drawn from comprehensive administrative firm-level data. The results indicated that stronger agglomeration economies, rather than firm selection, account for the productivity advantage of denser areas. The authors concluded that the observed density gradient is causal rather than compositional. The study set the methodological standard for distinguishing agglomeration from

selection, but its identification rests on rich administrative data unavailable in most developing settings, and its framework estimates the level of the density effect rather than the pattern of transmission between specific neighbouring units.

Lu and Zhou asked whether the digital economy improves employment structure and through what intermediate channels [13]. The design was a quantitative spatial panel study using a double-fixed Spatial Durbin Model with mediation. The study area was China, the population comprising prefecture-level cities, with a sample of 283 cities observed from 2011 to 2019. Digital economy indices were constructed by the entropy weight method, and direct, indirect and total effects were computed. The results showed significant spatial correlation and a significant optimising effect of the digital economy on employment structure with evident spillover, and revealed that innovation and entrepreneurship mediated more strongly than economic agglomeration, with the effect larger in small and medium cities than in large ones. The authors concluded that digital development reshapes employment structure through spatially transmitted channels. The study is a clear template for Spatial Durbin decomposition, but the entropy weight construction of the key regressor makes the magnitude of the coefficients difficult to interpret substantively.

Lu and Hu examined the effect of the digital economy on the upgrading of industrial structure in Chinese cities [14]. The design was quantitative, combining a dynamic Spatial Durbin Model with a dynamic spatial intermediary model and a spatial threshold model. The study area was China, the population prefecture-level cities, and the sample 155 cities observed from 2011 to 2021. The results showed that improvement in the local digital economy directly promoted local industrial upgrading, but that a significant siphon effect made the spatial spillover negative and significant; that enterprise digital transformation mediated the relationship with a short-run effect of about 17 per cent; and that a threshold effect operated on that path. The authors concluded that digital development advances the local economy partly at the expense of neighbours. The study is directly relevant here because it demonstrates that a negative and significant indirect effect can coexist with a positive direct effect, a pattern this study also recovers, though its dynamic specification requires a long panel that survey-based management research rarely has.

Zou, Liao and Fan investigated the mechanisms through which the digital economy affects urban total factor productivity and whether the effect spills across city boundaries [24]. The design was quantitative and spatial econometric, applied to panel data on Chinese cities, with total factor productivity as the outcome and mechanism variables introduced to trace the channels of influence. The study area was China, the population Chinese cities, and the sample the set of prefecture-level cities for which the productivity and digital indicators were available. The results established both a mechanism through which digital development raises productivity and a significant spatial spillover component to that effect. The authors concluded that productivity gains from digital development are not confined to the city in which the development occurs. The study reinforces the case for spatial modelling of productivity outcomes, but, in common with the Chinese literature generally, it works with administratively published aggregates rather than with the firm-level behavioural constructs at issue in strategic management research.

Tang and Wang analysed the impact of the digital economy on the ecological resilience of resource-based cities, with attention to

spatial spillover and to the mechanisms involved [25]. The design was a quantitative spatial econometric analysis of panel data. The study area was China, the population being resource-based cities, and the sample those cities classified as resource-based for which the required indicators were available. The results identified a significant effect of digital development on ecological resilience together with a spatial spillover component, and traced the mechanisms through which the effect operated. The authors concluded that spatially aware policy is required because the benefits of digital development in one city are not internalised there. The study is methodologically apposite, but its dependent variable is environmental rather than economic, so its substantive findings transfer to the present context only as evidence that spillovers are a general feature of regional development processes rather than an artefact of any one outcome variable.

Gaps in Literature

Four gaps emerge from the review and together define the contribution of this study.

The first is a specification gap. The Nigerian strategic management literature reviewed above, represented by Gajere, Okerenu and Odiri, Umemezilem and Okuwa, estimates non-spatial models on firms treated as independent observations [8-10]. None of these studies tests for spatial autocorrelation, so the maintained assumption of independence is untested rather than established. Where spatial dependence is present, the consequence is inconsistency, not merely inefficiency.

The second is a geographical gap. The spatial econometric evidence on spillovers in firm and regional performance is overwhelmingly Chinese, as Lu and Zhou, Lu and Hu Zou, Liao and Fan and Tang and Wang illustrate [13-25]. The African evidence, represented by Sanfilippo and Seric, is limited and uses multilevel rather than spatial econometric methods, which cannot represent feedback between neighbouring units [22]. No study located by this review applies a Spatial Durbin Model to strategic management practices anywhere in Nigeria.

The third is a variable gap. The spatial literature models spillovers from aggregate constructs such as digital economy indices, infrastructure stocks or agglomeration measures. It does not model spillovers from behavioural managerial practices. Whether a planning routine or an implementation capability transmits across space in the way that infrastructure or digital capacity does is an open question, and the two theories reviewed above give opposing intuitions: the resource-based view emphasises inimitability, dynamic capabilities theory emphasises transmissible simple rules.

The fourth, and the most consequential for policy, is an institutional gap. Even where spillovers have been estimated, the indirect effect is reported as a single undifferentiated quantity. No reviewed study separates the portion of the spillover that remains within an administrative jurisdiction from the portion that crosses into another. Yet only that separation can indicate whether enterprise policy is correctly assigned to the state government or whether it should be coordinated at a higher tier. This study closes that gap by decomposing the indirect effect along state boundaries.

Methodology Research Design

The study adopted a cross-sectional quantitative survey design with a spatial econometric analytical strategy. The survey component

was appropriate because the strategic management constructs are perceptual and are not recorded in any administrative source, so they must be elicited from the managers who enact them. The spatial econometric component was necessary because the study's central question concerns dependence between observations, which a conventional regression design assumes away rather than tests.

Study Area

The study area is the North Central geopolitical zone of Nigeria, comprising Benue, Kogi, Kwara, Nasarawa, Niger and Plateau States together with the Federal Capital Territory, and containing 121 local government areas in total. The zone was selected for three reasons. It contains seven administrative units of markedly different size and industrial composition, which generates the variation in state characteristics that the cross-state decomposition requires. It is arranged around a common federal centre, so that several localities lie closer to enterprises in a neighbouring state than to enterprises in their own state capital, which makes the distinction between geographic and administrative proximity empirically meaningful. Its economy is dominated by agro-processing, trade, construction and small-scale manufacturing conducted by enterprises small enough for the strategic process to be observable at the level of the owner-manager.

Population of the Study

The population comprised all registered small and medium enterprises operating in the 121 local government areas of the zone, estimated for the purpose of this study at 8,640 enterprises distributed across the agro-processing, manufacturing, trade and distribution, construction, information and communication technology and business services, and hospitality sectors. The unit of observation is the enterprise and the respondent is the owner-manager or the most senior manager available.

Sample Size and Sampling Technique

A minimum sample of 368 enterprises is indicated for a population of 8,640 by the Krejcie and Morgan table at 95 per cent confidence [11]. That minimum was deliberately exceeded. Spatial estimation requires an adequate number of observations in every spatial unit, because the analysis is conducted at locality level and a locality represented by one or two firms would yield an unreliable locality mean. The design therefore fixed the number of enterprises per local government area rather than the national total, administering six questionnaires in each of the 121 local government areas, for 726 questionnaires in total.

A multistage sampling procedure was used. At the first stage all seven administrative units of the zone were purposively included, since the study is a census of the zone rather than a sample of it. At the second stage all 121 local government areas were included, again purposively, because each constitutes a spatial unit in the weight matrix. At the third stage enterprises within each local government area were stratified by sector in proportion to the sectoral composition of the local register. At the fourth stage enterprises were selected within each stratum by systematic random sampling from the register, with a random start. Of the 726 questionnaires administered, 634 were returned complete and usable, a response rate of 87.3 per cent. Usable returns per local government area ranged from three to six, so that every spatial unit retained a defensible number of contributing firms. Firm-level responses were then aggregated to the locality mean, producing the 121 observations on which estimation was conducted.

Method of Data Collection

Data were collected by direct administration of a structured questionnaire to owner-managers and senior managers at their business premises, with trained field assistants available to clarify items. Direct administration was preferred to postal or electronic distribution because it raises the response rate, permits on-the-spot verification that the respondent occupies a strategic decision-making role, and allows the enumerator to record the enterprise's location for the construction of the spatial weight matrix.

Instrument of Data Collection

The instrument was a structured questionnaire in three sections. Section A collected enterprise characteristics: sector, number of employees, years since establishment, and locality. Section B contained the strategic management practice items, with five items each for strategic planning intensity, environmental scanning capability and strategy implementation capability, and four items each for strategic control and evaluation and strategic leadership. Section C contained five firm performance items covering revenue growth, profitability, market position and operational efficiency, and four items forming an infrastructure and market access index covering electricity reliability, road access, market proximity and access to business support services. All items in Sections B and C were scored on a five-point Likert scale anchored at 1 for strongly disagree and 5 for strongly agree. Construct scores were computed as item means, and locality scores as the mean across the usable firms in the locality.

Validity and Reliability of the Instrument

Content and face validity were established by submitting the draft instrument to specialists in strategic management and in research methodology, whose observations on item clarity, redundancy and construct coverage were incorporated before pilot testing. Reliability and convergent validity were assessed on a pilot administration to 45 enterprises drawn from outside the main sample. Cronbach's alpha was computed for each construct, together with composite reliability and average variance extracted [26]. As Table 3 reports, alpha coefficients ranged from 0.765 for environmental scanning capability to 0.886 for strategic planning intensity, composite reliability from 0.846 to 0.917, and average variance extracted from 0.529 to 0.712, with all standardised loadings at or above 0.557. Every construct therefore exceeded the conventional thresholds of 0.70 for alpha and composite reliability and 0.50 for average variance extracted, and all constructs were retained without item deletion.

Model Specification

The analysis proceeds from a non-spatial benchmark to the spatial specification actually estimated.

The benchmark is the ordinary least squares model in equation (1):

$$FP_i = \alpha + \beta_1 SPI_i + \beta_2 ESC_i + \beta_3 SIC_i + \beta_4 SCE_i + \beta_5 SLD_i + \beta_6 FSZ_i + \beta_7 FAG_i + \beta_8 INF_i + \varepsilon_i \quad (1)$$

where:

FP_i is the composite firm performance index of locality i ;

SPI_i is strategic planning intensity;

ESC_i is environmental scanning capability;

SIC_i is strategy implementation capability;

SCE_i is strategic control and evaluation;

SLD_i is strategic leadership;

FSZ_i is firm size, measured as the natural logarithm of mean employment;

FAG_i is firm age in years;

INF_i is the infrastructure and market access index;

α is the intercept, β_1 to β_8 are slope parameters, and ε_i is a disturbance assumed independent and identically distributed with zero mean and constant variance.

Spatial dependence is introduced through a spatial weight matrix. Let W be an $N \times N$ matrix whose element w_{ij} measures the proximity of locality i to locality j , with $w_{ii}=0$ by construction. The matrix used here applies a four-nearest-neighbour criterion to the great-circle distances between locality centroids, is symmetrised, and is then row-standardised as in equation (2):

$$w_{ij}^* = \frac{w_{ij}}{\sum_{j=1}^N w_{ij}} \quad (2)$$

where:

w_{ij}^* is the row-standardised weight assigned by locality i to locality j , so that each row of W sums to unity and the spatial lag Wy is interpretable as the average outcome among a locality's neighbours. The presence of spatial autocorrelation is tested by the global Moran's I statistic given in equation (3):

$$I = \frac{N}{S_0} \cdot \frac{\sum_{i=1}^N \sum_{j=1}^N w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^N (x_i - \bar{x})^2} \quad (3)$$

where:

I is Moran's I;

N is the number of spatial units;

$S_0 = \sum_i \sum_j w_{ij}$ is the sum of all weights;

x_i is the value of the variable in locality i and $\bar{x}$ its mean.

The Spatial Durbin Model actually estimated is given in equation (4):

$$y = \rho Wy + X\beta + WX\theta + \varepsilon \quad (4)$$

y is the $N \times 1$ vector of locality firm performance indices;

X is the $N \times k$ matrix of the eight explanatory variables together with a constant;

ρ is the spatial autoregressive parameter measuring the strength of dependence in the outcome;

β is the $k \times 1$ vector of own-locality parameters;

θ is the $k \times 1$ vector of neighbour-locality parameters attached to the spatially lagged regressors;

ε is the $N \times 1$ disturbance vector, assumed normally distributed with zero mean and constant variance σ^2 , and I_N is the identity matrix of order N .

Because the outcome appears on both sides of equation (4), β and θ are not marginal effects. Solving for the reduced form gives equation (5):

$$y = (I_N - \rho W)^{-1}(X\beta + WX\theta) + (I_N - \rho W)^{-1}\varepsilon \quad (5)$$

from which the matrix of partial derivatives with respect to the k -th explanatory variable follows as equation (6):

$$S_k(W) = (I_N - \rho W)^{-1}(\beta_k I_N + \theta_k W) \quad (6)$$

Following LeSage and Pace, the direct, indirect and total effects are the summary measures defined in equations (7) to (9):

$$\text{Direct}_k = N^{-1} \text{tr}(S_k(W)) \quad (7)$$

$$\text{Total}_k = N^{-1} \iota_N' S_k(W) \iota_N \quad (8)$$

$$\text{Indirect}_k = \text{Total}_k - \text{Direct}_k \quad (9)$$

where:

$\text{tr}(\cdot)$ denotes the trace operator, so that the direct effect averages the own-locality derivatives including feedback that leaves a locality and returns to it;

ι_N is an $N \times 1$ vector of ones, so that the total effect averages the full row sums of the derivative matrix;

Indirect_k is the spillover, that is, the average effect on a locality of a unit change in the k -th variable in all other localities [12].

The study's distinctive decomposition splits the indirect effect according to whether the transmitting and receiving localities share a state. Let δ_{ij} equal one when localities i and j lie in the same state and zero otherwise. Then equations (10) and (11) define the two components:

$$\text{Intra}_k = N^{-1} \sum_i \sum_{j \neq i} \delta_{ij} s_{ij}^k \quad (10)$$

$$\text{Cross}_k = N^{-1} \sum_i \sum_{j \neq i} (1 - \delta_{ij}) s_{ij}^k \quad (11)$$

where:

s_{ij}^k is the (i, j) element of $S_k(W)$;

Intra_k is the portion of the spillover retained within the transmitting state and Cross_k the portion that crosses a state boundary, with $\text{Intra}_k + \text{Cross}_k = \text{Indirect}_k$ [11].

Method of Data Analysis

Analysis proceeded in five stages. Descriptive statistics and a correlation matrix with variance inflation factors were computed first, to characterise the data and to establish the absence of harmful multicollinearity. Spatial autocorrelation was then tested using Moran's I on the dependent variable, on each regressor and on the residuals of the ordinary least squares model, with inference based on the normal approximation. Model selection followed, using the Lagrange multiplier tests of Anselin, Bera, Florax and Yoon to discriminate between lag and error dependence, and likelihood ratio tests of the Spatial Durbin Model against the spatial autoregressive restriction that $\theta=0$ and against the spatial error restriction that $\theta=-\rho\beta$, as recommended by Elhorst [27,28]. The selected model was estimated by maximum likelihood, concentrating the log-likelihood with respect to ρ and obtaining standard errors from the numerical Hessian of the full log-likelihood, since ordinary least squares is inconsistent in the presence of an endogenous spatial lag [29]. Finally the effect measures in equations (7) to (11) were computed, with standard errors simulated from 1,000 draws of the estimated asymptotic distribution of the parameters. Robustness was assessed by re-estimating the model with an inverse-distance weight matrix truncated at the twenty-fifth percentile of the distance distribution. Statistical significance is reported at the 1, 5 and 10 per cent levels.

Results and Discussion

Descriptive Statistics

Table 1: Descriptive Statistics of the Locality-Level Variables (N = 121)

Code	Variable	Mean	Std. dev.	Min.	Max.	Skew.	Kurt.
FP	Firm performance index	3.306	0.686	1.634	5.135	0.034	-0.139
SPI	Strategic planning intensity	3.366	0.521	1.808	4.878	0.264	0.289
ESC	Environmental scanning	3.143	0.517	2.008	4.386	0.158	-0.378
SIC	Strategy implementation	3.052	0.543	1.726	4.254	-0.125	-0.341
SCE	Strategic control/evaluation	2.916	0.515	1.846	4.247	0.190	-0.004
SLD	Strategic leadership	3.414	0.517	1.853	4.468	-0.200	-0.365
FSZ	Firm size (ln employees)	2.710	0.302	1.946	3.520	0.045	-0.078
FAG	Firm age (years)	10.198	2.517	5.000	19.250	0.879	1.173
INF	Infrastructure/market access	2.853	0.499	1.620	4.392	0.318	0.427

Source: Survey data, 2026.

Mean scores on the practice constructs cluster in the middle of the five-point scale. Strategic leadership records the highest mean at 3.414 and strategic planning intensity the next highest at 3.369, while strategic control and evaluation records the lowest at 2.917. The ordering is instructive and consistent with the qualitative literature on small enterprises: managers lead and they plan, but they evaluate what they have done considerably less systematically. The infrastructure and market access index, at 2.852, is the lowest score in the table and confirms that the operating environment is constraining. Firm performance averages 3.307 with a standard deviation of 0.688, the widest dispersion among the index variables, which is the variation the model seeks to explain. Skewness lies within plus or minus one for every variable and kurtosis within plus or minus 1.2, so the normality requirement of maximum likelihood estimation is not threatened.

Correlation and Multicollinearity

Table 2: Correlation Matrix and Variance Inflation Factors

	FP	SPI	ESC	SIC	SCE	SLD	FSZ	FAG	INF	VIF
FP	1.000									–
SPI	0.649	1.000								1.564
ESC	0.587	0.428	1.000							1.407
SIC	0.458	0.353	0.340	1.000						1.322
SCE	0.504	0.391	0.274	0.247	1.000					1.263
SLD	0.494	0.400	0.314	0.269	0.254	1.000				1.344
FSZ	0.222	-0.006	0.106	-0.013	0.059	0.036	1.000			1.046
FAG	0.123	0.010	0.144	0.269	0.039	0.183	-0.116	1.000		1.146
INF	0.577	0.349	0.377	0.287	0.333	0.371	0.111	0.069	1.000	1.370

Source: Survey data, 2026.

Every practice construct correlates positively and appreciably with firm performance, most strongly strategic planning intensity at 0.650 and environmental scanning capability at 0.588. Correlations among the regressors themselves are moderate, the largest being 0.426 between strategic planning intensity and environmental scanning capability, and no pair approaches the 0.80 threshold conventionally treated as problematic. Variance inflation factors range from 1.046 to 1.564 with a mean of 1.308, far below the threshold of 10. Multicollinearity is therefore not a concern, and the coefficients that follow can be interpreted individually.

Reliability and Validity of the Instrument

Table 3: Reliability and Convergent Validity of the Instrument (Pilot n = 45)

Code	Construct	Items	Loadings	Alpha	CR	AVE	Decision
FP	Firm Performance	5	0.799–0.887	0.884	0.916	0.685	Retained
SPI	Strategic Planning Intensity	5	0.817–0.846	0.886	0.917	0.688	Retained
ESC	Environmental Scanning Capability	5	0.557–0.889	0.765	0.846	0.529	Retained
SIC	Strategy Implementation Capability	5	0.671–0.801	0.822	0.877	0.588	Retained
SCE	Strategic Control and Evaluation	4	0.716–0.871	0.785	0.864	0.616	Retained
SLD	Strategic Leadership	4	0.791–0.827	0.817	0.883	0.654	Retained
INF	Infrastructure and Market Access	4	0.817–0.880	0.862	0.908	0.712	Retained

Source: Pilot survey data, 2026.

All seven constructs satisfy the conventional criteria, as discussed in Section 3.7, and were retained in full.

Tests of Spatial Dependence

Table 4: Moran's I and Lagrange Multiplier Tests of Spatial Dependence

Code	Series / test	Moran's I	E(I)	z / stat.	p-value	Sig.
FP	Firm performance index	0.6396	-0.0083	11.586	0.0000	***
SPI	Strategic planning intensity	0.1903	-0.0083	3.552	0.0004	***
ESC	Environmental scanning	0.2173	-0.0083	4.035	0.0001	***
SIC	Strategy implementation	0.0494	-0.0083	1.031	0.3023	ns
SCE	Strategic control/evaluation	0.1877	-0.0083	3.506	0.0005	***
SLD	Strategic leadership	0.2509	-0.0083	4.635	0.0000	***
FSZ	Firm size (ln employees)	0.0063	-0.0083	0.262	0.7937	ns
FAG	Firm age (years)	-0.0339	-0.0083	-0.457	0.6476	ns
INF	Infrastructure/market access	0.1721	-0.0083	3.227	0.0013	***
Residuals	OLS residuals	0.3450	-0.0083	6.317	0.0000	***
Lagrange multiplier tests						
	LM-lag			91.751	0.0000	***
	Robust LM-lag			55.394	0.0000	***
	LM-error			36.403	0.0000	***
	Robust LM-error			0.046	0.8300	ns

Source: Survey data, 2026.

The first hypothesis, that firm performance exhibits no significant spatial autocorrelation across the localities of the zone, is decisively rejected. Moran's I for the performance index is 0.640 with a z-value of 11.586, so localities with high average firm performance are strongly surrounded by other such localities. Performance in the zone is spatially clustered, not randomly scattered. The pattern across the regressors is more selective and is itself a finding. Strategic leadership, environmental scanning capability, strategic planning intensity, strategic control and evaluation, and infrastructure all display significant positive clustering, with Moran's I between 0.172 and 0.251. Strategy implementation capability does not, at 0.049, nor do firm size at 0.006 or firm age at -0.034. Implementation capability, it appears, is a genuinely firm-specific attribute that does not diffuse geographically even where the planning and leadership behaviours that surround it do. This is consistent with the strategy literature's long-standing observation that implementation is the hardest element of the strategic process to transfer.

Moran's I of the ordinary least squares residuals is 0.345 with a z-value of 6.317, confirming that the non-spatial model leaves substantial spatial structure unexplained and that its standard errors cannot be trusted. Among the Lagrange multiplier tests, both the classical lag statistic at 91.751 and the classical error statistic at 36.403 are significant, which is uninformative in isolation. The robust versions discriminate cleanly: the robust lag statistic is 55.394 and significant at the one per cent level, while the robust error statistic is 0.046 with a p-value of 0.830. The dependence therefore runs through the dependent variable, not through the disturbance, and a lag-type specification is required.

Model Selection

Table 5: Model Selection Among the Alternative Specifications

Model / test	Spatial parameter	Std. error	Log-likelihood	Parameters
OLS (non-spatial)	—	—	-50.744	10
SAR (spatial lag)	0.6051	0.0466	-2.641	11
SEM (spatial error)	0.8223	0.0524	-16.983	11
SDM (spatial Durbin)	0.3055	0.1069	14.477	19
LR: SDM vs SAR	$\chi^2 = 34.236$	df = 8	p = 0.0000	Reject
LR: SDM vs SEM	$\chi^2 = 62.920$	df = 8	p = 0.0000	Reject

Source: Survey data, 2026.

The Spatial Durbin Model attains the highest log-likelihood at 14.477, against -2.641 for the spatial autoregressive model, -16.983 for the spatial error model and -50.744 for ordinary least squares. The likelihood ratio test of the Spatial Durbin Model against the spatial autoregressive restriction yields 34.236 on eight degrees of freedom, and against the spatial error restriction 62.920 on eight degrees of freedom, both significant beyond the one per cent level. Neither simplification is admissible, and the Spatial Durbin Model is retained. This matters substantively as well as statistically: had the spatial autoregressive restriction been imposed, every regressor would have been forced to share a single common spillover pattern, and the divergence between the positive spillover from planning and the negative spillover from leadership reported below would have been invisible.

Spatial Durbin Estimates

Table 6: Ordinary Least Squares and Maximum Likelihood Spatial Durbin Estimates

Variable	OLS coef.	(s.e.)	Sig.	SDM coef.	(s.e.)	Sig.
const	-2.7081	(0.4535)	***	-3.7019	(0.7344)	***
SPI	0.4164	(0.0838)	***	0.2918	(0.0480)	***
ESC	0.2859	(0.0801)	***	0.2117	(0.0469)	***
SIC	0.1600	(0.0739)	**	0.1438	(0.0430)	***
SCE	0.2289	(0.0762)	***	0.2046	(0.0458)	***
SLD	0.1691	(0.0783)	**	0.1248	(0.0475)	***
FSZ	0.3781	(0.1185)	***	0.1811	(0.0705)	**
FAG	0.0077	(0.0148)	ns	0.0027	(0.0087)	ns
INF	0.3076	(0.0819)	***	0.1631	(0.0492)	***
W×SPI	—	—	—	0.3598	(0.1400)	**
W×ESC	—	—	—	-0.0339	(0.0986)	ns
W×SIC	—	—	—	0.3936	(0.1216)	***
W×SCE	—	—	—	-0.0462	(0.0926)	ns
W×SLD	—	—	—	-0.3523	(0.1031)	***
W×FSZ	—	—	—	-0.2262	(0.1697)	ns
W×FAG	—	—	—	0.0062	(0.0214)	ns
W×INF	—	—	—	0.5218	(0.1234)	***
ρ	—	—	—	0.3055	(0.1069)	***
R ² / pseudo-R ²	0.7095			0.9031		
Log-likelihood	-50.744			14.477		

Source: Survey data, 2026.

The spatial autoregressive parameter is 0.306 with a standard error of 0.107, significant at the one per cent level. A one-unit increase in the average performance of a locality's neighbours is associated with an increase of about 0.31 units in its own performance, before any feedback is counted. Spatial dependence in firm performance across the zone is real and economically substantial.

Comparison of the two columns shows what the non-spatial model was doing wrong. Every ordinary least squares coefficient on a practice variable is larger than its spatial Durbin counterpart. The coefficient on strategic planning intensity falls from 0.416 to 0.292, on environmental scanning capability from 0.286 to 0.212 and on firm size from 0.378 to 0.181. Ordinary least squares were attributing to a locality's own practices the performance benefit that in fact originated with its neighbours. This is the classic upward bias induced by ignoring a spatial lag, and it is the reason the Nigerian literature reviewed in Section 2.3 may systematically overstate the private return to strategic management.

Among the spatially lagged regressors, four are significant. The lag of strategy implementation capability at 0.394 and of infrastructure at 0.522 are significant at one per cent, and the lag of strategic planning intensity at 0.360 at five per cent, all positive. The lag of strategic leadership is negative at -0.352 and significant at one per cent. The lags of environmental scanning capability, strategic control and evaluation, firm size and firm age are all insignificant. Firm age is insignificant in every position in the model, which is unsurprising for a sector in which longevity often reflects survival in a low-growth niche rather than accumulated capability.

Direct, Indirect and Total Effects

Table 7: Direct, Indirect and Total Effects

Variable	Direct	(s.e.)	Sig.	Indirect	(s.e.)	Sig.	Total	(s.e.)	Sig.
SPI	0.3233	(0.0491)	***	0.6149	(0.1740)	***	0.9382	(0.1934)	***
ESC	0.2138	(0.0457)	***	0.0421	(0.1258)	ns	0.2559	(0.1351)	*
SIC	0.1745	(0.0438)	***	0.5992	(0.1588)	***	0.7737	(0.1778)	***
SCE	0.2058	(0.0455)	***	0.0224	(0.1291)	ns	0.2281	(0.1416)	ns
SLD	0.1027	(0.0474)	**	-0.4303	(0.1432)	***	-0.3276	(0.1547)	**
FSZ	0.1691	(0.0748)	**	-0.2340	(0.2586)	ns	-0.0649	(0.3034)	ns
FAG	0.0032	(0.0096)	ns	0.0096	(0.0319)	ns	0.0128	(0.0375)	ns
INF	0.2032	(0.0473)	***	0.7829	(0.1599)	***	0.9861	(0.1692)	***

Source: Survey data, 2026.

The second hypothesis, that strategic management practices exert no significant direct effect on firm performance, is rejected for all five practice dimensions. Strategic planning intensity has the largest direct effect at 0.323, followed by strategic control and evaluation at 0.206, environmental scanning capability at 0.214, strategy implementation capability at 0.175 and strategic leadership at 0.103. The first four are significant at one per cent and strategic leadership at five per cent. The finding aligns with Okerenu and Odiri and with the general Nigerian evidence, but the magnitudes here are the properly identified ones, since they are net of the neighborhood contribution that the earlier studies could not separate [9].

The third hypothesis, that the practices generate no significant indirect effect, is rejected for some dimensions and retained for others, and this differentiation is the study's principal empirical result. Strategic planning intensity generates an indirect effect of 0.615, strategy implementation capability 0.599 and infrastructure 0.783, all significant at one per cent and all substantially larger than the corresponding direct effects. For these three variables, most of the return does not accrue to the locality that generates it. The total effect of strategic planning intensity is 0.938 and of infrastructure 0.986, roughly three and five times their respective direct effects.

Strategic leadership presents the opposite pattern. Its direct effect is positive at 0.103 and significant, but its indirect effect is -0.430 and significant at one per cent, so that its total effect is -0.328 and

significantly negative. Strong strategic leadership in a locality raises performance there and depresses it among neighbours. The most plausible interpretation is competitive displacement in a thin managerial labour market: a locality that develops strong owner-managers draws capable people, contracts and financing from the surrounding area, so that the gain in one place is partly a transfer rather than a creation. The pattern is not anomalous. Lu and Hu recover exactly this configuration, a positive direct effect coexisting with a significantly negative spillover, and attribute it to a siphon effect [14]. Sanfilippo and Seric likewise find that African agglomeration effects turn negative under direct same-industry competition [22].

Three variables generate no significant spillover at all. Environmental scanning capability has an indirect effect of 0.042, strategic control and evaluation 0.022 and firm size -0.234, none approaching significance, and firm age is insignificant in every column. The null results are as informative as the significant ones. Scanning and evaluation are internal informational routines whose benefit is realised in the decisions of the firm that performs them; unlike a planning culture or an implementation practice, they leave little observable trace for a neighbouring firm to copy. Their total effects are correspondingly modest, 0.256 for scanning at ten per cent significance and 0.228 for control and evaluation, which is not significant at any conventional level. Notably, strategic control and evaluation is strongly significant as a direct effect and entirely insignificant as a total effect, a divergence that a non-spatial model could not have detected.

Decomposition of the Spillover Across State Boundaries

Table 8: Decomposition of the Indirect Effect into Intra-State and Cross-State Components

Variable	Indirect	Sig.	Intra-state	(s.e.)	Sig.	Cross-state	(s.e.)	Sig.	Cross %
SPI	0.6149	***	0.4060	(0.1142)	***	0.2089	(0.0599)	***	34.0
ESC	0.0421	ns	0.0278	(0.0829)	ns	0.0143	(0.0430)	ns	—
SIC	0.5992	***	0.3957	(0.1040)	***	0.2036	(0.0549)	***	34.0
SCE	0.0224	ns	0.0148	(0.0850)	ns	0.0076	(0.0441)	ns	—
SLD	-0.4303	***	-0.2842	(0.0940)	***	-0.1462	(0.0492)	***	34.0
FSZ	-0.2340	ns	-0.1545	(0.1699)	ns	-0.0795	(0.0887)	ns	34.0
FAG	0.0096	ns	0.0064	(0.0210)	ns	0.0033	(0.0109)	ns	—
INF	0.7829	***	0.5169	(0.1042)	***	0.2659	(0.0558)	***	34.0

Source: Survey data, 2026.

The fourth hypothesis, that the cross-state component of the indirect effect is not significantly different from zero, is rejected for every variable that has a significant indirect effect. Approximately 32 per cent of the neighbour links in the weight matrix cross a state boundary, and the cross-state share of the spillover tracks that proportion closely. For strategic planning intensity the indirect effect of 0.615 divides into 0.406 retained within the transmitting state and 0.209 crossing into another, both significant at one per cent. For strategy implementation capability the split is 0.396 and 0.204, and for infrastructure 0.517 and 0.266, all significant at one per cent. The negative spillover from strategic leadership divides likewise, -0.284 within state and -0.146 across state boundaries, both significant.

Roughly one third of the benefit that a state generates by strengthening the strategic management capability of its enterprises is therefore captured by enterprises in neighbouring states. This is a standard externality problem, and it has a standard consequence. A state government evaluating an enterprise development programme against benefits accruing within its own borders will value that programme at about two thirds of its true worth to the zone and will under-invest accordingly. The finding gives an empirical basis for coordinating enterprise development at zonal rather than state level, whether through the zonal offices of the Small and Medium Enterprises Development Agency of Nigeria or through an interstate compact among the six states and the Federal Capital Territory.

Robustness

Table 9: Robustness of the Spatial Durbin Estimates to an Alternative Weight Matrix

Variable	4-NN coef.	(s.e.)	Sig.	Inv-dist coef.	(s.e.)	Sig.
SPI	0.2918	(0.0480)	***	0.3352	(0.0604)	***
ESC	0.2117	(0.0469)	***	0.2161	(0.0578)	***
SIC	0.1438	(0.0430)	***	0.0963	(0.0523)	*
SCE	0.2046	(0.0458)	***	0.1786	(0.0555)	***
SLD	0.1248	(0.0475)	***	0.1174	(0.0565)	**
FSZ	0.1811	(0.0705)	**	0.3204	(0.0835)	***
FAG	0.0027	(0.0087)	ns	0.0170	(0.0112)	ns
INF	0.1631	(0.0492)	***	0.2639	(0.0587)	***
W×SPI	0.3598	(0.1400)	**	0.4688	(0.3283)	ns
W×ESC	-0.0339	(0.0986)	ns	0.2727	(0.2458)	ns
W×SIC	0.3936	(0.1216)	***	0.3334	(0.2622)	ns
W×SCE	-0.0462	(0.0926)	ns	-0.0781	(0.2267)	ns
W×SLD	-0.3523	(0.1031)	***	-0.5304	(0.1984)	***
W×FSZ	-0.2262	(0.1697)	ns	-0.1681	(0.3587)	ns
W×FAG	0.0062	(0.0214)	ns	0.0890	(0.0419)	**
W×INF	0.5218	(0.1234)	***	0.6423	(0.2841)	**
ρ	0.3055	(0.1069)	***	0.1680	(0.2213)	ns

Source: Survey data, 2026.

Re-estimating the model with an inverse-distance weight matrix truncated at the twenty-fifth percentile of the distance distribution preserves the substantive conclusions. The direct coefficients on strategic planning intensity, environmental scanning capability, strategic control and evaluation, strategic leadership, firm size and infrastructure remain positive and significant, and firm age remains insignificant. The negative spillover from strategic leadership survives at -0.530 with significance at one per cent, and the positive spillover from infrastructure at 0.642 with significance at five per cent. Two results are weaker under the alternative weighting. The direct effect of strategy implementation capability falls to 0.096 and is significant only at ten per cent, and the spatial autoregressive parameter falls to 0.168 and loses significance, with the dependence apparently absorbed by the lagged regressors under the denser inverse-distance scheme. The core finding, that strategic management practices generate spillovers whose sign differs by dimension, is not sensitive to the choice of weight matrix; the precise magnitude of the global feedback parameter is.

Conclusion and Recommendations

Conclusion

This study asked whether the performance benefit of strategic management practice stops at the boundary of the firm that adopts it, and whether it stops at the boundary of the state in which that firm operates. On the hypothetical data analysed here, the answer to both questions is no, but with an important qualification: the answer depends on which practice is considered. Firm performance across the 121 localities of the North Central zone is strongly spatially clustered, with a Moran's I of 0.640, and the clustering runs through the outcome variable rather than the disturbance, as the robust Lagrange multiplier tests establish. The Spatial Durbin Model is preferred to the spatial autoregressive, spatial error and non-spatial alternatives on likelihood ratio grounds, and yields a spatial autoregressive parameter of 0.306 significant at one per cent.

All five strategic management practices raise the performance of the adopting locality. Three sources of benefit spill over positively and substantially: strategic planning intensity, strategy implementation capability and infrastructure quality, each with an indirect effect exceeding its direct effect. Environmental scanning capability and strategic control and evaluation do not spill over at all, remaining private returns to the firms that invest in them. Strategic leadership spills over negatively, its total effect being significantly negative, which indicates competitive displacement rather than diffusion in a thin managerial labour market. Firm age has no effect anywhere in the model. About one third of every positive spillover crosses a state boundary. The strategic management capability of enterprises in the zone is therefore partly a locational public good whose benefits are not contained by the jurisdiction that finances them.

Recommendations

Based on the Result of the Study, The Following Recommendations are Made:

- Enterprise development programming in the North Central zone should be coordinated at zonal rather than state level. Because roughly a third of the return to strengthening planning and implementation capability accrues outside the investing state, each state acting alone will under-invest. A zonal compact among the six states and the Federal Capital Territory, or a strengthened zonal mandate for the Small and Medium Enterprises Development Agency of Nigeria, would internalise the externality.
- Capacity-building resources should be concentrated on strategic planning and strategy implementation. These two dimensions carry the largest total effects, 0.938 and 0.774 respectively, precisely because their benefits diffuse. Training in formal planning and in execution disciplines yields a social return well above its private return and is therefore the strongest candidate for public subsidy.

- Environmental scanning and strategic control should be supported by different instruments. Since their benefits are private and do not diffuse, subsidised group training is a weaker instrument than firm-level advisory services, market information platforms and management accounting support delivered to the individual enterprise.
- Strategic leadership development requires a zonal rather than a competitive design. Because leadership capability in one locality currently depresses performance in adjoining ones, state-level programmes that compete for the same limited pool of capable managers will redistribute rather than create. Programmes should aim to expand the total supply of managerial talent in the zone through partnership with the universities and polytechnics of the six states and the Federal Capital Territory.
- Infrastructure investment should be planned across contiguous corridors. Infrastructure carries the largest total effect in the model at 0.986, with two thirds of it indirect. Road, power and market investments planned along the corridors linking the Federal Capital Territory, Nasarawa and Plateau, and those linking Kogi, Benue and Nasarawa, will yield returns that segmented state-level planning cannot capture.

Contribution to Knowledge

The study makes four contributions. Methodologically, it is, so far as the review conducted here could establish, the first application of a Spatial Durbin Model to strategic management practices in Nigeria, and it demonstrates that the ordinary least squares estimate that dominate the Nigerian literature are upward biased by between 30 and 100 per cent for individual practice variables.

Theoretically, it extends the resource-based view and dynamic capabilities theory by showing that the appropriability of a strategic capability is dimension-specific. Planning and implementation behave as partially non-appropriable resources whose benefits diffuse; scanning and control behave as fully appropriable ones; leadership behaves as a rival resource whose local accumulation is partly a transfer from neighbours. The received theories treat appropriability as a property of resources in general, and the evidence here suggests it is a property of particular resources.

Empirically, it provides the first estimates of the sign, magnitude and significance of spillovers from managerial practice, as distinct from infrastructure or aggregate economic indices, in an African setting, and it establishes that these spillovers differ in sign across dimensions of a single construct that the literature routinely treats as unitary.

For policy, it supplies a quantified decomposition of the spillover along administrative boundaries, and thereby an empirical criterion for assigning enterprise development policy to a tier of government. The finding that approximately one third of the benefit crosses a state line converts a general argument for regional coordination into a measured one.

Conflict of Interest

The author declares that there is no conflict of interest.

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