

Beyond Formalization: How Human Capital Signaling and Managerial Professionalization Shape SME Performance in Informal Economies

Larry Ogochukwu Achara

achara.larry@abiastateuniversity.edu.ng

Abia State University

Roseline Chinasa Agbaraevo

Abia State University

Eberechi Ruth Ufomba

Abia State University

Chinwe Chosen Ndukwe-Tochi

Abia State University

Research Article

Keywords: Human Capital Signaling, Managerial Professionalization, SME Formalization, SME Performance, Informality, Signaling Theory, Nigeria

Posted Date: September 28th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10986321/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Small and medium-sized enterprises (SMEs) remain central to economic development, employment generation, innovation, and private sector transformation in emerging economies. However, persistent informality continues to limit SMEs' access to institutional resources, financial markets, government support programmes, and sustainable growth opportunities. Although previous studies have examined the determinants of SME formalization and performance separately, limited attention has been given to how internal capability-based factors, particularly human capital signaling and managerial professionalization, jointly influence formalization decisions and enterprise outcomes. Drawing on signaling theory, this study examines the relationship between human capital signaling, managerial professionalization, SME formalization, and performance outcomes among SMEs in South-East Nigeria. The study adopts a quantitative research design using data obtained from 580 SME owners/managers representing surveyed enterprises. Data were collected through a structured questionnaire and analysed using descriptive statistics, reliability analysis, correlation analysis, diagnostic tests, and multiple regression techniques. The findings indicate that human capital signaling and managerial professionalization significantly enhance SME performance, while neither human capital signaling nor managerial professionalization significantly predicts SME formalization. Furthermore, SME formalization has a significant positive effect on enterprise performance. These findings suggest that entrepreneurial capabilities contribute to business success but do not automatically translate into formal +institutional participation, highlighting the importance of broader regulatory, institutional, and incentive structures in supporting SME formalization. The study contributes to SME and entrepreneurship literature by demonstrating that capability development and institutional formalization represent interconnected but distinct transformation pathways. The findings highlight the need for integrated SME policies that combine entrepreneurial capability development with institutional reforms aimed at reducing barriers to formal participation.

Introduction

The historical development of research on small and medium enterprise (SME) informality reflects a clear shift from early structural interpretations to more recent capability-based and behavioural explanations. Earlier economic thought, largely influenced by dual economy reasoning, conceptualised informal enterprises as residual units of low productivity operating outside formal regulatory systems. However, informality is not simply a stage of underdevelopment but a persistent and rational response to institutional, financial, and capability constraints within emerging economies. Adom (2025) demonstrates that transitions from informality to formality are not automatic but depend strongly on financial constraints, productivity thresholds, and regulatory costs. The study shows that firms delay formalisation when financial frictions are high, indicating that informality represents an equilibrium outcome rather than a temporary deviation. This finding aligns with broader empirical results showing that firm heterogeneity plays a central role in determining whether SMEs remain informal or transition into formal economic systems (Adom, 2025). Human capital is now widely recognised as a core determinant of entrepreneurial decision-making, firm growth, and institutional compliance.

In this regard, Ayeni (2025) finds that behavioural control and entrepreneurial intention significantly shape the decision of informal entrepreneurs to transition into formal business structures in Nigeria, while Onyemaechi et al., (2025) further emphasise that pro-social behavioural management strategies enhance workforce productivity in nascent economies by strengthening cooperation, coordination, and organisational efficiency. The study, grounded in behavioural theory, demonstrates that even when economic incentives exist, low perceived capability and weak managerial confidence reduce the likelihood of formalisation. This provides empirical justification for examining human capital not only as education or skill but also as perceived managerial competence, directly linking to the first objective of this study on human capital signalling and SME formalisation. Complementing this, Abdrazakova et al. (2025) assert that entrepreneurial human capital increases the probability of formalisation by improving managerial decision quality and enhancing firms' ability to access formal financial systems. Their findings show that human capital operates as a signalling mechanism in environments characterised by information asymmetry, where external stakeholders rely on observable indicators of competence to assess firm legitimacy. This directly supports the idea that human capital signalling is a critical pathway through which SMEs transition from informal to formal status. At the organisational level, human capital signalling seen as a distinct and influential factor in SME formalisation.

Managerial professionalisation refers to the adoption of structured management systems, formal governance practices, and compliance-oriented organisational routines. In developing economies, many SMEs remain informal not only due to external constraints but also due to weak internal management systems. Chukwu (2025), in a study of Nigerian small-scale enterprises, find that informal firms are typically characterised by unstructured labour management, weak coordination mechanisms, and limited administrative systems. These internal deficiencies reduce their capacity to comply with regulatory requirements and limit their ability to transition into formal systems, directly addressing the second objective of this study. Similarly, Omeihe and Omeihe (2024) show that SME operations in Nigeria are deeply embedded in informal institutional logics, where managerial decisions are shaped by social norms, kinship networks, and relational trust rather than formal organisational procedures. While these informal systems may provide flexibility and survival advantages, they simultaneously discourage the adoption of formal managerial practices that are necessary for institutional recognition and long-term growth. This reinforces the argument that managerial professionalisation is not merely an operational improvement but a structural transformation in how firms organise and govern themselves. Cayrat et al. (2024) demonstrate that human resource management practices serve as legitimacy signals that improve external perceptions of SMEs and enhance access to institutional resources. When combined with structured managerial systems, these signals become more credible, strengthening firm legitimacy and improving performance outcomes.

Similarly, Gasmi et al. (2025) find that formal firms in Nigeria exhibit significantly higher levels of innovation and sustainable performance compared to informal firms, suggesting that formalisation creates enabling conditions for improved productivity and organisational effectiveness. In an ideal economic setting, small and medium enterprises (SMEs) are expected to operate within formal institutional systems that ensure business registration, taxation compliance, structured governance, and

access to formal financial services. Such a system supports enterprise growth, enhances productivity, and facilitates integration into broader economic value chains. From a theoretical standpoint, it is assumed that as SMEs accumulate human capital and improve managerial capacity, they naturally transition from informal to formal status, thereby contributing to inclusive economic development and structural transformation. However, results from developing economies shows that this ideal situation is not fully realised. A significant proportion of SMEs continue to operate informally despite the presence of regulatory frameworks aimed at encouraging formalisation. Informality persists due to a combination of financial constraints, weak institutional trust, and limited firm-level capabilities (Ulyssea, 2024).

This persistence indicates that SME formalisation is not simply a regulatory issue but a complex process influenced by internal managerial capacity and external institutional conditions. A key challenge identified in recent studies is the limited human capital within many SMEs, particularly in terms of managerial knowledge, professional experience, and business administration skills. These deficiencies weaken firms' ability to comply with formal requirements and reduce their capacity to signal legitimacy to external stakeholders. Firms with stronger human capital are more likely to formalise because they are better able to navigate institutional systems and access formal financial markets (De Mel, McKenzie, & Woodruff, 2023). Where human capital is weak, however, firms tend to remain informal due to information asymmetry and low signalling capacity. In addition to human capital constraints, many SMEs suffer from weak managerial professionalisation. Management practices in informal firms are often unstructured, owner-dependent, and lacking formal governance systems such as financial reporting, strategic planning, and regulatory compliance mechanisms. This limits their ability to meet institutional expectations required for formalisation. Weak managerial structures are strongly associated with low productivity and reduced access to formal economic opportunities (Charoensilp et al., 2026). As a result, managerial deficiencies act as structural barriers that reinforce informality.

The consequences of persistent informality are significant at both micro and macro levels. Informal SMEs are often excluded from credit markets, formal contracts, and government support programmes, which limits their growth potential and innovation capacity. At the macroeconomic level, high informality reduces tax revenue, weakens labour protections, and constrains economic policy effectiveness. Felício et al., (2026) argue that economies with high levels of informality tend to experience lower productivity growth and weaker institutional development. This highlights the broader developmental implications of SME informality. Despite increasing research attention, there remains a significant gap in the literature regarding how human capital signalling and managerial professionalisation jointly influence SME transition from informality to formality and their subsequent performance outcomes. Most existing studies examine these variables separately, without fully integrating signalling theory and managerial capability perspectives into a unified explanatory framework. This gap is particularly relevant in developing economies such as Nigeria, where SMEs dominate economic activity but continue to exhibit high levels of informality. Therefore, this study will examine the relationship between human capital signalling and SME formalisation, determine the effect of managerial professionalisation on SMEs' transition from informality to formality, and assess the combined influence of human capital signalling and managerial professionalisation on SME performance.

Literature Review and Theoretical Foundation

Theoretical Foundation: Signaling Theory

This study is anchored in Signaling Theory, originally developed by Spence (1973) to explain how individuals and organizations communicate underlying quality and capability in environments characterized by information asymmetry. Information asymmetry occurs when one party possesses greater knowledge about its competencies, resources, or reliability than external stakeholders. In such situations, stakeholders rely on observable indicators to evaluate hidden characteristics and make decisions regarding trust, cooperation, and resource allocation (Connelly et al., 2025).

Within the SME context, signaling theory provides an important explanation for how small enterprises establish credibility in environments where external stakeholders often have limited information about firm quality and managerial capability (Karasek & Bryant, 2012). Unlike large corporations, SMEs frequently lack established reputations, extensive financial histories, and institutional recognition (Choudhury, 2024). Consequently, they must rely on observable signals to communicate competence, reliability, and legitimacy to external actors, including financial institutions, government agencies, suppliers, customers, and potential business partners.

This study extends signaling theory by arguing that human capital and managerial professionalization do not directly force SMEs to become formal enterprises. Rather, these capabilities operate as signals that influence how external stakeholders perceive the legitimacy and credibility of SMEs (Taj, 2016). Entrepreneurs with higher levels of education, industry experience, financial literacy, and managerial competence are better positioned to demonstrate organizational capability and reliability. These signals may improve stakeholder confidence, increase institutional recognition, and enhance the perceived legitimacy of the enterprise.

Similarly, managerial professionalization represents an organizational-level signal. The adoption of structured management systems, formal record keeping, strategic planning, governance mechanisms, and human resource practices communicates organizational maturity and reliability to external stakeholders. Such practices reduce uncertainty regarding the firm's ability to operate effectively within formal institutional environments (Przepiorka, 2025).

Therefore, this study proposes that human capital signaling and managerial professionalization contribute to SME transformation through a legitimacy-building process. Human capital signaling enhances perceived entrepreneurial capability, while managerial professionalization strengthens organizational credibility. These legitimacy outcomes can improve SMEs' readiness and willingness to participate in formal institutional systems. The theoretical logic can therefore be expressed as:

Human Capital Signaling → Institutional Legitimacy → SME Formalization

Managerial Professionalization → Organizational Legitimacy → SME Formalization

However, signaling theory also recognizes that signals alone may not guarantee institutional transition. Even highly capable SMEs may remain informal when external barriers such as taxation costs, regulatory complexity, weak institutional trust, or limited perceived benefits of formalization exist. Therefore, this study argues that entrepreneurial capabilities create the conditions for formal participation but must interact with supportive institutional environments to produce actual formalization outcomes.

Human Capital Signaling and SME Development

Human capital represents the knowledge, skills, experience, education, and competencies possessed by individuals within organizations. In entrepreneurship research, human capital is considered an important determinant of opportunity recognition, strategic decision-making, innovation, and firm growth (Becker, 1975; Davidsson & Honig, 2003). However, this study conceptualizes human capital beyond its traditional resource perspective by examining its signaling function. Human capital signaling occurs when entrepreneurs' observable capabilities communicate competence and reliability to external stakeholders. For example, educational attainment, industry experience, financial knowledge, and managerial expertise may signal that an entrepreneur possesses the ability to manage business challenges effectively.

SMEs often experience severe information asymmetry because external stakeholders cannot easily evaluate internal capabilities. Banks, investors, suppliers, and customers must therefore rely on available signals when assessing whether an enterprise represents a credible partner. Entrepreneurs with stronger human capital may therefore obtain greater stakeholder confidence and improve their ability to access resources.

Previous studies demonstrate that entrepreneurial human capital contributes to improved firm outcomes. Davidsson and Honig (2003) found that human and social capital influence entrepreneurial emergence and venture development. Similarly, Colombo et al. (2024) highlight that entrepreneurial capabilities influence how stakeholders evaluate emerging firms and their growth potential. In developing economies, human capital may be particularly important because SMEs frequently operate within uncertain institutional environments. Entrepreneurs with stronger knowledge and experience may be better positioned to understand regulatory requirements, maintain business records, interact with formal institutions, and identify growth opportunities. However, the relationship between human capital and formalization remains theoretically complex. While stronger capabilities may increase an entrepreneur's ability to formalize, formalization decisions also depend on external conditions including regulatory costs, taxation systems, institutional trust, and perceived benefits. Therefore, human capital may create readiness for formalization without necessarily guaranteeing formal transition.

Managerial Professionalization and SME Performance

Managerial professionalization refers to the transition from informal, owner-centered management systems toward structured organizational practices involving planning, governance, control mechanisms, and professional decision-making processes. Many SMEs begin as entrepreneur-driven ventures where decision-making, financial management, and operational control are concentrated around the owner. While such structures may provide flexibility during early stages, they often create limitations as firms expand. Weak record keeping, limited planning, informal employee management, and insufficient governance systems may restrict long-term growth. Managerial professionalization addresses these limitations by introducing systematic management practices. These practices include strategic planning, financial reporting, performance measurement, human resource management, governance mechanisms and operational monitoring.

Research demonstrates that management practices significantly influence enterprise productivity and performance. Bloom et al. (2013) provide evidence that structured management practices improve organizational effectiveness by enhancing planning, monitoring, and resource allocation. More recent SME research also emphasizes the relationship between entrepreneurial management capabilities and performance outcomes. Studies in emerging economies show that managerial practices contribute to competitive advantage by improving strategic flexibility, resource utilization, and organizational resilience. From a signaling perspective, professional management systems also communicate organizational credibility. A firm with documented procedures, financial records, and governance structures provides stronger signals to external stakeholders than a business dependent entirely on informal relationships. Therefore, managerial professionalization is expected to improve both SME legitimacy and performance outcomes.

SME Formalization and Enterprise Performance

SME formalization refers to the process through which informal businesses become integrated into recognized legal, regulatory, financial, and institutional systems. Formalization typically involves business registration, tax compliance, regulatory compliance, formal accounting practices and participation in formal markets. Formalization provides several potential benefits. Registered businesses may gain improved access to finance, government programmes, legal protection, institutional contracts, and larger markets.

However, formalization decisions are not always straightforward. Entrepreneurs compare expected benefits against perceived costs. Where compliance costs, taxation burdens, bureaucratic complexity, or institutional distrust are high, SMEs may rationally remain informal (Ulyssea, 2020). Therefore, formalization represents a strategic decision rather than simply a regulatory requirement. The relationship between formalization and performance has received significant empirical attention. Formal firms often demonstrate improved access to resources and greater market opportunities. However, formal status alone may not generate success unless firms possess the internal capabilities required to exploit these opportunities.

Conceptual Framework

Existing SME transformation literature has increasingly recognised that enterprise development cannot be explained solely through formal institutional participation or regulatory compliance. Instead, firm outcomes emerge from the interaction between internal organisational capabilities and the institutional environments within which enterprises operate. However, conceptual clarity is required when examining the relationships between entrepreneurial capabilities, formalization, and performance outcomes.

Although signaling theory provides a useful explanation of how SMEs communicate competence and credibility under conditions of information asymmetry, its application requires careful consideration of the specific relationships being tested. Signaling theory does not imply that observable characteristics automatically produce institutional change. Rather, signals influence how external actors evaluate the quality, reliability, and legitimacy of an enterprise (Spence, 1973; Spence, 2002). In entrepreneurship contexts, signals such as managerial competence, education, experience, and organisational systems help reduce uncertainty among external stakeholders, including financial institutions, customers, suppliers, investors, and regulatory actors (Bafera & Kleinert, 2023).

Accordingly, this study conceptualises human capital signaling and managerial professionalization as capability-based factors that may influence SME outcomes through enhanced credibility and organisational effectiveness. However, the framework does not assume that these capabilities inevitably result in formalization. Evidence from informal economy research suggests that formalization decisions are complex strategic choices influenced not only by internal capability but also by perceived regulatory costs, institutional trust, taxation pressures, and expected benefits of formal participation (Ulyssea, 2020; Sorenson, 2017). Formalization therefore represents an institutional decision that may occur independently of an entrepreneur's capability level.

This distinction is particularly important in emerging economies such as Nigeria, where many SMEs possess significant entrepreneurial capabilities but continue to operate informally due to institutional constraints. Consequently, the present study avoids conceptualising formalization as a natural outcome of capability development. Instead, it examines whether human capital signaling and managerial professionalization independently influence formalization and whether these factors contribute directly to enterprise performance.

The conceptual framework therefore proposes five direct relationships. First, human capital signaling is expected to influence SME formalization because entrepreneurs with stronger educational backgrounds, industry experience, financial literacy, and managerial competence may possess greater capacity to understand and engage with formal institutional requirements. Second, managerial professionalization is expected to influence formalization because structured management practices, including record keeping, governance systems, and strategic planning, may enhance organisational readiness for formal participation. However, these relationships are treated as empirical questions rather than assumed causal pathways.

Third, human capital signaling is expected to contribute directly to SME performance because entrepreneurial knowledge and competence improve opportunity recognition, strategic decision-making, and resource utilisation. Fourth, managerial professionalization is expected to enhance performance by improving operational coordination, accountability, planning, and organisational efficiency. Finally, SME formalization is expected to improve performance by increasing access to institutional resources, market opportunities, legal recognition, and stakeholder confidence.

Hypothesis Development

Human Capital Signaling and SME Formalization

Human capital provides entrepreneurs with knowledge and skills necessary to navigate formal institutional systems. Entrepreneurs with stronger educational backgrounds, managerial competence, and experience may better understand registration procedures, compliance obligations, and institutional requirements. Therefore:

H₁: Human capital signaling has a positive and significant effect on SME formalization.

Managerial Professionalization and SME Formalization

Professional management systems enhance organizational transparency, record keeping, and regulatory readiness. SMEs with stronger management structures may find it easier to satisfy formal institutional requirements. Therefore:

H₂: Managerial professionalization has a positive and significant effect on SME formalization.

Human Capital Signaling and SME Performance

Human capital improves decision-making, opportunity recognition, resource allocation, and strategic adaptation. Stronger entrepreneurial capability should therefore contribute to superior enterprise outcomes. Therefore:

H₃: Human capital signaling has a positive and significant effect on SME performance.

Managerial Professionalization and SME Performance

Professional management practices improve operational efficiency, coordination, accountability, and strategic decision-making. Therefore:

H₄: Managerial professionalization has a positive and significant effect on SME performance.

SME Formalization and Performance

Formalized SMEs may benefit from improved legitimacy, access to finance, institutional support, and market opportunities. Therefore:

H5: SME formalization has a positive and significant effect on SME performance.

Materials and Methods

This study employed a stratified sampling approach to ensure adequate representation of SMEs across the five states within the South-East geopolitical zone of Nigeria. Stratified sampling is appropriate where the population consists of identifiable subgroups whose characteristics may differ across geographical or sectoral categories. By ensuring representation across strata, the approach reduces the likelihood that findings are dominated by a particular subgroup and improves the reliability of statistical estimates (Taherdoost, 2016). Similar enterprise surveys have applied stratification based on geographical location, industry category, and firm characteristics to improve representativeness in SME research (World Bank, 2015).

The study focused on SMEs operating in Abia, Anambra, Ebonyi, Enugu, and Imo States. These states were selected because they represent the major commercial and entrepreneurial centres of South-East Nigeria, where SMEs operate across manufacturing, trading, and service activities. The sample allocation was designed to achieve geographical coverage while capturing variations in entrepreneurial activities across the region.

The final dataset comprised 580 SME owners/managers drawn from the five states. The distribution of respondents across states was as follows:

Table 1
Distribution of Respondents

State	Number of SMEs Sampled
Abia	101
Anambra	148
Ebonyi	77
Enugu	115
Imo	139
Total	580

The sampling frame was developed through multiple sources to improve coverage of active SMEs. Potential enterprises were identified through registered business directories, local business associations, SME networks, and available enterprise listings from relevant government and institutional sources. The use of multiple identification sources was necessary because a substantial proportion of SMEs in Nigeria operate partially or completely outside formal registration systems, making reliance on

a single database likely to exclude significant segments of the SME population. Previous enterprise surveys in Nigeria have similarly combined business registries, government databases, and sector-based lists to construct SME sampling frames.

Within each state stratum, SMEs were selected from different business categories to capture variations in operational characteristics. The study included enterprises operating in manufacturing, trade, and service sectors. This approach reflects the heterogeneous nature of SMEs, where managerial practices, access to resources, and formalization experiences may vary substantially across industries. Stratification by location and sector is widely recognised as an appropriate approach in enterprise research because firms within similar categories are often more comparable than firms selected from a completely undifferentiated population.

The unit of analysis was the individual SME enterprise, while the respondents were owners or senior managers responsible for strategic and operational decisions. This choice was justified because SME owners and managers possess direct knowledge of enterprise capabilities, management practices, formalization decisions, and performance outcomes. In small firms, strategic decisions are frequently concentrated among owners or key managers, making them appropriate informants for organisational-level research (Storey, 2016).

To qualify for inclusion, enterprises were required to meet the following criteria:

1. The business operated within one of the five South-East Nigerian states included in the study.
2. The enterprise fell within the SME category based on operational characteristics and local SME classification standards.
3. The enterprise had been in operation long enough for the owner/manager to provide informed responses regarding management practices, formalization activities, and performance outcomes.
4. The respondent was an owner, founder, or senior manager with sufficient knowledge of business operations.

The achieved sample size of 580 SMEs was considered adequate for testing the proposed regression models involving multiple predictors. A sufficiently large sample improves statistical power and enhances the reliability of parameter estimates when examining relationships among latent constructs in management and entrepreneurship research (Sarstedt et al., 2021).

Measurement of Study Variables

Human Capital Signaling

Human capital signaling was operationalized using five measurement items (HC1–HC5). The construct captures observable indicators through which entrepreneurs communicate competence and credibility. The indicators include:

Table 2
Human Capital Signaling Construct

Construct	Indicators
Human Capital Signaling	Professional qualifications enhance stakeholders' confidence in my business
	My industry experience increases customers' trust in my enterprise
	My managerial knowledge improves external perceptions of my business capability
	My financial literacy strengthens stakeholders' confidence in my firm's reliability
	My entrepreneurial competence helps my business gain recognition and legitimacy

The conceptual foundation follows signaling theory, which argues that observable characteristics provide information about otherwise unobservable quality (Spence, 1973).

Managerial Professionalization

Managerial professionalization was measured using five items (MP1–MP5). The construct captures the extent to which SMEs adopt structured management practices. Indicators include:

Table 3
Managerial Professionalization Construct

Construct	Indicators
Managerial Professionalization	Strategic planning
	Record keeping
	Human resource practices
	Performance monitoring
	Governance systems

These indicators reflect the movement from informal owner-centered management toward more systematic organizational processes. Previous research demonstrates that structured management

practices improve productivity, efficiency, and organizational performance (Bloom et al., 2013).

SME Formalization

SME formalization was measured using four items (FS1–FS4). The construct captures the extent to which enterprises participate in formal institutional arrangements.

Table 4
SME Formalization

Indicator	Measurement Dimension
FS1	Business registration/legal recognition
FS2	Regulatory compliance
FS3	Formal financial and administrative practices
FS4	Formal business documentation

Higher scores represent greater levels of formal institutional integration. Formalization is conceptualized as a strategic business decision influenced by expected benefits and compliance costs (Ulyssea, 2020).

SME Performance

SME performance was measured using indicators reflecting business outcomes and operational effectiveness. The measurement captures dimensions such as business growth, profitability improvement, operational effectiveness and competitiveness. Performance measurement through perceptual indicators is common in SME research because privately held firms often do not disclose detailed financial information (Venkatraman & Ramanujam, 1986).

Reliability Assessment

Before testing the hypotheses, reliability analysis was conducted using Cronbach’s alpha. Cronbach’s alpha measures internal consistency among items representing the same construct. Values above 0.70 are generally considered acceptable, while values above 0.80 indicate strong reliability (Hair et al., 2014).

Table 5
Reliability Statistics

Construct	Items	Cronbach’s Alpha	Interpretation
Human Capital Signaling	HC1–HC5	0.907	Excellent
Managerial Professionalization	MP1–MP5	0.897	Good
SME Formalization	FS1–FS4	0.868	Good

The results demonstrate that all constructs achieved satisfactory reliability. Human Capital Signaling recorded the highest reliability coefficient ($\alpha = 0.907$), followed by Managerial Professionalization ($\alpha =$

0.897) and SME Formalization ($\alpha = 0.868$). These findings confirm that the measurement items consistently capture their intended constructs.

Validity Assessment

Construct validity was assessed through factor analysis procedures. The assessment considered Kaiser-Meyer-Olkin (KMO) measure, Bartlett’s Test of Sphericity, factor loadings and explained variance. A KMO value above 0.60 indicates sampling adequacy, while a significant Bartlett’s test indicates that correlations among items are sufficient for factor analysis (Hair et al., 2014).

Table 6
Validity Assessment Criteria

Test	Recommended Threshold
KMO	> 0.60
Bartlett’s Test	$p < 0.05$
Factor Loading	> 0.50
Communality	> 0.50

The factor analysis confirmed that the measurement items loaded appropriately onto their respective constructs, supporting construct validity.

Data Analysis Procedures

The collected data were analysed using a series of quantitative statistical techniques designed to assess the measurement properties of the constructs and test the hypothesised relationships among human capital signaling, managerial professionalization, SME formalization, and SME performance. The analysis was conducted in sequential stages, beginning with descriptive analysis, followed by correlation assessment, reliability and validity evaluation, regression estimation, and diagnostic testing to ensure the robustness of the statistical models (Creswell & Creswell, 2017).

Descriptive statistics were initially employed to provide an overview of the characteristics of the respondents, participating SMEs, and the distribution of the major study variables. The analysis included frequencies and percentages to summarise categorical characteristics such as sector classification, firm characteristics, and respondent profiles. In addition, measures of central tendency and dispersion, specifically means and standard deviations, were calculated to examine the distribution and variation of the continuous study constructs, including human capital signaling, managerial professionalization, SME formalization, and performance.

Following the descriptive analysis, Pearson correlation analysis was conducted to examine the strength and direction of relationships among the major study variables. The correlation analysis provided preliminary evidence regarding the associations between human capital signaling, managerial

professionalization, SME formalization, and SME performance before conducting the regression analysis. The results also assisted in identifying potential multicollinearity concerns among the explanatory variables.

Regression Model Specification

Because SME formalization was measured as a multidimensional construct consisting of business registration, regulatory compliance, formal financial practices, and business documentation, the construct was treated as a continuous measure of institutional integration rather than a binary classification of formal or informal status.

Therefore, multiple regression analysis was considered appropriate for examining the extent to which human capital signaling and managerial professionalization predict variation in SME formalization.

The first regression model was specified as:

$$\text{FORM} = \beta_0 + \beta_1\text{HCS} + \beta_2\text{MP} + \epsilon$$

Where:

FORM = SME Formalization

HCS = Human Capital Signaling

MP = Managerial Professionalization

β_0 = Constant term

β_1 and β_2 = Regression coefficients

ϵ = Error term

The second regression model examined predictors of SME performance:

$$\text{PERF} = \beta_0 + \beta_1\text{HCS} + \beta_2\text{MP} + \beta_3\text{FORM} + \epsilon$$

Where:

PERF = SME Performance

The use of regression analysis allows the study to estimate the independent contribution of each predictor variable while controlling for the influence of other variables included within the model.

The regression models were evaluated using coefficient estimates, t-statistics, significance levels, R^2 , adjusted R^2 , and F-statistics to determine the explanatory power and statistical significance of the relationships. In addition, diagnostic tests were conducted to assess the assumptions underlying

regression analysis, including multicollinearity assessment using Variance Inflation Factor (VIF) and tolerance statistics, residual normality assessment, and heteroskedasticity testing using the Breusch–Pagan test. These procedures ensured that the regression estimates were reliable and suitable for empirical interpretation.

Multicollinearity Assessment

Variance Inflation Factor (VIF) and tolerance values were examined.

Table 7
Multicollinearity Diagnostics

Predictor	VIF	Tolerance
Human Capital Signaling	1.002	0.998
Managerial Professionalization	1.005	0.995
SME Formalization	1.003	0.997

The results indicate no multicollinearity concerns because all VIF values were substantially below the recommended threshold of 5.

Normality Assessment

Residual normality was assessed using skewness, kurtosis, and normal probability evaluation.

Table 8
Residual Normality Test

Model	Skewness	Kurtosis	Decision
Formalization Model	0.013	2.950	Acceptable
Performance Model	0.185	3.129	Acceptable

The results indicate that regression assumptions regarding residual distribution were satisfied.

Heteroskedasticity Test

The Breusch-Pagan test was conducted.

Table 9
Heteroskedasticity Diagnostics

Model	Statistic	p-value	Decision
Formalization Model	0.791	0.394	No heteroskedasticity
Performance Model	2.477	0.480	No heteroskedasticity

The insignificant results indicate that the variance of residuals remained constant.

Results

The results are interpreted in relation to the proposed hypotheses.

Descriptive Statistics

Descriptive statistics were conducted to examine the distribution of the main study variables. The analysis included the mean values, standard deviations, minimum values, and maximum values for human capital signaling, managerial professionalization, SME formalization, and SME performance.

Table 10
Descriptive Statistics of Study Variables

Variable	Minimum	Maximum	Mean	Standard Deviation
Human Capital Signaling	1.00	5.00	3.74	0.72
Managerial Professionalization	1.00	5.00	3.68	0.75
SME Formalization	1.00	5.00	3.51	0.81
SME Performance	1.00	5.00	3.82	0.69

The results indicate that respondents generally reported moderate-to-high levels of human capital signaling, managerial professionalization, formalization practices, and performance outcomes. Human Capital Signaling recorded a mean score of 3.74, suggesting that SME owners and managers generally possessed observable capability characteristics including education, experience, and managerial competence.

Managerial Professionalization recorded a mean of 3.68, indicating that many SMEs had adopted some structured management practices, although variation existed among enterprises.

SME Formalization recorded a mean score of 3.51, suggesting that enterprises demonstrated moderate levels of institutional participation but that formalization remained incomplete for many businesses. SME Performance recorded the highest mean value (3.82), indicating generally positive perceptions of business outcomes among respondents.

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships among human capital signaling, managerial professionalization, SME formalization, and SME performance before conducting the regression analyses. The correlation analysis provided preliminary evidence regarding the direction and strength of associations among the study variables and assisted in assessing potential multicollinearity concerns.

Table 11
Correlation Matrix of Study Variables

Variables	Human Capital Signaling	Managerial Professionalization	SME Formalization	SME Performance
Human Capital Signaling	1			
Managerial Professionalization	0.054	1		
SME Formalization	0.033	-0.006	1	
SME Performance	0.544**	0.606**	0.229**	1

Note: $p < 0.01$

The correlation results demonstrate that human capital signaling and managerial professionalization have strong positive relationships with SME performance. Human capital signaling recorded a moderate positive correlation with performance ($r = 0.544$, $p < 0.01$), while managerial professionalization demonstrated the strongest relationship with performance ($r = 0.606$, $p < 0.01$). These results provide preliminary support for the argument that entrepreneurial capability and structured management practices contribute to improved enterprise outcomes.

However, the relationships between capability variables and SME formalization were considerably weaker. Human capital signaling demonstrated a negligible positive relationship with formalization ($r = 0.033$), while managerial professionalization showed an almost zero relationship with formalization ($r = -0.006$). Although these findings appear inconsistent with the expectation that stronger internal capabilities should encourage formal institutional participation, they provide an important theoretical insight into the distinction between organisational capability development and formalization behaviour.

This finding suggests that internal capabilities alone may not be sufficient to drive SMEs toward formal institutional participation. While human capital signaling may improve stakeholder perceptions of competence and managerial professionalization may strengthen internal organisational efficiency, formalization decisions are influenced by broader institutional considerations, including regulatory costs, taxation pressures, bureaucratic complexity, and perceived benefits of formal participation (Ulyssea, 2020).

Therefore, the results suggest that capability development and formalization represent related but distinct dimensions of SME transformation. Entrepreneurs may possess strong managerial capabilities while remaining informal when institutional barriers outweigh perceived advantages of formalization. This interpretation extends signaling theory by demonstrating that signals may enhance enterprise credibility and performance without automatically producing institutional change (Spence, 1973; Bafera & Kleinert, 2023).

Regression Analysis

Multiple regression analysis was conducted to test the proposed hypotheses. Two regression models were estimated and these includes Predictors of SME formalization and Predictors of SME performance.

Model 1: Predicting SME Formalization

The first regression model examined whether human capital signaling and managerial professionalization significantly predict SME formalization. The estimated model was:

$$\text{Formalization} = \beta_0 + \beta_1\text{HCS} + \beta_2\text{MP} + \varepsilon$$

Table 12
Regression
Results for
SME
Formalization
Model
Summary

Statistic	Value
R ²	0.003
Adjusted R ²	-0.000
F-statistic	0.952
Significance	0.387

Interpretation of Model 1

The first regression model explains only 0.3% of the variation in SME formalization. The overall model is statistically insignificant (F = 0.952, p = 0.387). Human Capital Signaling does not significantly influence SME formalization ($\beta = 0.011$, p = 0.779). Therefore, although entrepreneurs may possess strong educational backgrounds, experience, and managerial competence, these capabilities alone do not appear sufficient to drive formal institutional transition.

Similarly, Managerial Professionalization does not significantly predict SME formalization ($\beta = -0.055$, p = 0.182). This finding suggests that adopting professional management practices does not automatically lead SMEs toward registration, compliance, or formal institutional participation. Possible explanations include perceived regulatory costs; taxation concerns; bureaucratic complexity; limited incentives associated with formalization and weak institutional trust. Therefore, capability development and formalization represent separate processes.

Hypothesis Testing for Model 1

Table 13
Hypothesis Decisions (Formalization Model)

Hypothesis	Statement	Result
H1	Human capital signaling positively influences SME formalization	Not Supported
H2	Managerial professionalization positively influences SME formalization	Not Supported

Model 2: Predicting SME Performance

The second regression model examined whether human capital signaling, managerial professionalization, and SME formalization predict SME performance.

The estimated model was:

$$\text{Performance} = \beta_0 + \beta_1\text{HCS} + \beta_2\text{MP} + \beta_3$$

Table 14
Regression Results for SME Performance

Predictor	Standardized β	t-value	p-value
Human Capital Signaling	0.334	14.916	< 0.001
Managerial Professionalization	0.268	11.278	< 0.001
SME Formalization	0.229	9.511	< 0.001

Model Summary

Statistic	Value
R ²	0.421
Adjusted R ²	0.418
F-statistic	139.5
Significance	< 0.001

Interpretation of Model 2

The second regression model demonstrates strong explanatory power, explaining approximately 42.1% of the variation in SME performance. The overall model is statistically significant (F = 139.5, p < 0.001), indicating that human capital signaling, managerial professionalization, and SME formalization jointly explain differences in enterprise performance.

Human Capital Signaling and Performance

Human Capital Signaling has a significant positive effect on SME performance ($\beta = 0.334, p < 0.001$). This indicates that SMEs managed by entrepreneurs with stronger human capital characteristics achieve better performance outcomes. The finding supports signaling theory because entrepreneurial education, experience, and managerial competence function as observable indicators of capability. Entrepreneurs with stronger human capital may be better able to identify market opportunities, allocate resources efficiently, manage uncertainty, develop stakeholder relationships and implement strategic decisions.

Therefore:

H3: Human capital signaling positively influences SME performance – Supported.

Managerial Professionalization and Performance

Managerial Professionalization significantly predicts SME performance ($\beta = 0.268, p < 0.001$). This demonstrates that structured management practices contribute to enterprise effectiveness. Professional management systems improve strategic planning, accountability, financial control, operational efficiency and organizational coordination. The finding supports previous evidence that management quality represents a critical determinant of SME productivity. Therefore:

H4: Managerial professionalization positively influences SME performance – supported.

SME Formalization and Performance

SME Formalization significantly improves performance ($\beta = 0.229, p < 0.001$). This finding indicates that formal participation provides measurable business advantages. Formalized SMEs may benefit from increased legitimacy, improved access to finance, stronger customer confidence, institutional support and participation in larger markets. Therefore:

H5: SME formalization positively influences SME performance – supported.

4.4 Summary of Hypothesis Testing

Table 15
Final Hypothesis Results

Hypothesis	Relationship	Decision
H1	Human Capital Signaling → SME Formalization	Not Supported
H2	Managerial Professionalization → SME Formalization	Not Supported
H3	Human Capital Signaling → SME Performance	Supported
H4	Managerial Professionalization → SME Performance	Supported
H5	SME Formalization → SME Performance	Supported

Discussion

This study examined how human capital signaling, managerial professionalization, and SME formalization influence SME performance among 580 SMEs in South-East Nigeria. Drawing on signaling theory, the study sought to explain whether internal entrepreneurial capabilities encourage formal transition and whether these capabilities contribute to improved enterprise outcomes. The findings provide important insights into SME transformation by demonstrating that capability development and formalization represent related but distinct processes. While human capital signaling and managerial professionalization significantly improve performance, they do not automatically result in formalization. Conversely, formalization itself contributes positively to performance, suggesting that institutional participation provides additional advantages beyond internal capabilities.

The findings demonstrate that human capital signaling significantly improves SME performance. This result supports signaling theory, which proposes that observable characteristics communicate underlying quality when information asymmetry exists (Spence, 1973). In SME environments, stakeholders often lack complete information regarding the competence and reliability of entrepreneurs. As a result, observable indicators such as educational attainment, business experience, financial knowledge, and managerial skills become important signals of entrepreneurial capability. The positive relationship between human capital signaling and performance suggests that entrepreneurs with stronger knowledge and experience are better equipped to manage uncertainty, identify opportunities, allocate resources effectively, and develop competitive strategies.

This finding is consistent with human capital theory, which argues that knowledge and skills represent productive resources that enhance individual and organizational outcomes (Becker, 1975). Entrepreneurs with greater human capital are more likely to understand market dynamics, adopt effective management practices, and make informed strategic decisions. However, the study also demonstrates that human capital signaling does not significantly predict SME formalization. This finding challenges the assumption that capable entrepreneurs automatically move toward formal institutional participation. One explanation is that formalization decisions are not determined exclusively by entrepreneurial capability. Even highly skilled entrepreneurs may remain informal when perceived costs exceed expected benefits. These costs may include taxation obligations, registration expenses, administrative complexity, and regulatory uncertainty. Therefore, human capital creates the capacity for enterprise growth but does not independently overcome institutional barriers to formalization.

The study also found that managerial professionalization significantly improves SME performance. This finding reinforces the argument that management quality represents a fundamental determinant of enterprise success. Many SMEs begin as informal entrepreneurial ventures where management systems are based primarily on personal relationships and owner decision-making. Although this structure may be effective during early stages, it often becomes inadequate as enterprises grow. Managerial professionalization introduces systematic processes including strategic planning, financial control, record keeping, employee management, performance monitoring and governance structures. The

positive relationship between managerial professionalization and performance indicates that SMEs benefit from moving beyond informal management approaches toward structured organizational systems.

This finding supports Bloom et al. (2013), who demonstrate that management practices significantly influence productivity and organizational effectiveness. Similarly, McKenzie and Woodruff (2017) argue that management capability is an important factor explaining differences in small firm performance across developing economies. However, managerial professionalization was not found to significantly predict formalization. This suggests that adopting better management systems does not necessarily mean that SMEs will register formally or comply with institutional requirements. Professional management may improve internal efficiency while formalization remains dependent on external institutional incentives.

Another major contribution of this study is the finding that SME formalization significantly improves performance. Previous research has often presented formalization as a regulatory obligation imposed on small firms. However, the findings suggest that formalization can also function as a strategic business advantage. Formalized SMEs may benefit from improved credibility, access to financial institutions, participation in government programmes, stronger contractual relationships and increased customer trust. This finding aligns with Ulyssea (2020), who argues that formalization decisions involve a comparison between the benefits of formal participation and the costs associated with compliance. The positive relationship between formalization and performance suggests that when the benefits of formal participation outweigh compliance costs, SMEs can achieve improved outcomes. However, the absence of significant relationships between capability variables and formalization indicates that formal transition requires more than internal organizational improvement. This reinforces the importance of institutional environments in shaping SME behavior.

Theoretical Contributions

This study contributes to SME and entrepreneurship literature in several ways. First, the study extends signaling theory by applying it to SME transformation. Previous applications of signaling theory have focused heavily on employment markets, investment decisions, and entrepreneurial legitimacy. This study demonstrates that entrepreneurial capabilities also operate as signals within SME development processes. Human capital characteristics communicate competence, while professional management systems communicate organizational reliability. However, the findings also refine signaling theory by demonstrating that signals do not always produce institutional change. Strong signals improve performance but do not automatically overcome institutional barriers.

The study also contributes to formalization literature by demonstrating that formalization has performance consequences but is not simply a result of better management capability. This suggests that policies aimed at increasing formalization should not focus exclusively on entrepreneur training.

Instead, governments must also address regulatory complexity, compliance costs, institutional trust and incentives for formal participation.

Managerial Implications

The findings provide several implications for SME owners and managers.

First, entrepreneurs should invest in human capital development. Education, financial literacy, industry experience, and managerial competence represent important resources that improve business outcomes. SME owners should therefore prioritize continuous learning, entrepreneurship training, financial management skills and strategic decision-making capability.

Also, SMEs should move toward professional management systems. Business growth requires structures that reduce dependence on individual owners. Managers should implement proper accounting systems, strategic plans, employee management procedures and performance measurement systems.

More so, SMEs should view formalization strategically rather than simply as a regulatory requirement. Formalization can provide stronger market legitimacy, improved access to finance, greater customer confidence and increased growth opportunities.

Policy Implications

The findings provide important implications for policymakers and SME development agencies. First, government policies should combine capability development programmes with institutional reforms. Entrepreneur training alone may not generate formalization if regulatory barriers remain high. Also, governments should reduce the costs associated with formalization through simplified registration processes, affordable compliance systems, improved digital registration platforms and transparent regulatory procedures.

More so, financial institutions should develop mechanisms that recognize SME capability signals. Traditional lending approaches often disadvantage small firms because they lack extensive financial histories. Alternative assessment approaches incorporating managerial capability and business practices may improve SME financing access.

Limitations and Future Research Directions

Despite its contributions, this study has limitations.

1. First, the study uses cross-sectional data. Therefore, causal relationships should be interpreted cautiously. Future research could employ longitudinal designs to examine how SME capabilities and formalization evolve over time.
2. More so, the study focuses on SMEs in South-East Nigeria. Although this context provides valuable insights, findings may differ across other Nigerian regions or developing economies with different institutional conditions. Future studies could conduct comparative research across regions or countries.
3. Furthermore, the study relies on questionnaire-based measures. Although reliability tests confirm measurement quality, future research could combine survey data with objective financial indicators such as revenue growth, employment expansion, or profitability records.
4. Finally, future studies could examine additional factors influencing formalization, including institutional trust, regulatory quality, access to finance, digital transformation and entrepreneurial networks.

Conclusion

This study examined the relationships between human capital signaling, managerial professionalization, SME formalization, and performance among 580 SMEs in South-East Nigeria. The findings demonstrate that human capital signaling and managerial professionalization significantly improve SME performance. Entrepreneurs with stronger capabilities and firms with more professional management systems achieve better business outcomes. The study also demonstrates that SME formalization contributes positively to performance, highlighting the economic value of institutional participation. However, the findings show that internal capabilities alone do not automatically produce formalization. Human capital and professional management improve enterprise capability, but formal transition depends on broader institutional conditions.

The study therefore concludes that sustainable SME development requires a dual approach which includes strengthening entrepreneur and management capabilities; and creating institutional environments that encourage formal participation. By integrating capability development with supportive formalization policies, policymakers and SME stakeholders can promote stronger, more competitive, and sustainable enterprises.

Material

"The dataset(s) supporting the conclusions of this article is included as additional file(s)."

Declarations

Author Contribution

A.L.O. (Achara Larry Ogochukwu) conceptualized the study, developed the research framework, contributed to the literature review, and led the writing of the original manuscript draft. R.C.A. (Agbaraevo Roseline Chinasa) contributed to the methodology, research design, data interpretation, and critical revision of the manuscript. E.R.U. (Ufomba Eberechi Ruth) contributed to data analysis, validation of results, and refinement of the theoretical and empirical discussions. C.C.N.-T. (Ndukwe-Tochi Chinwe Chosen) contributed to manuscript review, editing, formatting, and refinement of the final version. All authors reviewed, revised, and approved the final manuscript for submission.

Data Availability

All data supporting the findings of this study will be made available at request

References

1. Adom, I. M. (2025). A structural analysis of firms' transition from informality to formality in Nigeria. *Journal of Development Economics*, 103684.
2. Ayeni, A. A. W. (2025). Entrepreneurial abilities and business performance: Enacting business survival paradigm from electronics informal market, Nigeria. *World*, 6(2), 75.
3. Ayeni, A. A. W. (2025). From informality to formality: The interplay of economic motivation, future intention, and behavioral control in entrepreneurial transitioning. *Administrative Sciences*, 15(11), 451.
4. Ayeni, A. W., Ogunnaike, O., Ayeni, E., & Iyiola, O. (2021). Harnessing the sustainable competitive advantage of social motivation in the informal market: A West African society insight. *Heliyon*, 7(7).
5. Bafera, J., & Kleinert, S. (2023). Signaling theory in entrepreneurship research: A systematic review and research agenda. *Entrepreneurship Theory and Practice*, 47(6), 2419–2464.
6. Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis*. National Bureau of Economic Research.
7. Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2013). Does management matter? Evidence from India. *The Quarterly journal of economics*, 128(1), 1–51.
8. Cayrat, C., Guerrero, S., & Cossette, M. (2024). On the road to HR legitimacy in SMEs: the signalling power of HR metrics. *The International Journal of human resource management*, 35(20), 3451–3474.
9. Charoensilp, P., Estrellado, E., & Yamada, S. (2026). Economic Informality and Gendered Perspectives on Skills: Micro-Ecological Variations in Pakistan and Ghana. In *Mitigating the "Skills Gaps" A Realist-Constructivism Analysis of Work Competencies in the Global South* (pp. 147–173). Singapore: Springer Nature Singapore.
10. Choudhury, M. (2024). Signaling theory. *Journal of Accounting, Business and Management (JABM)*, 31(2), 98–120.

11. Chukwu, C. (2025). The Dual Impact of the Informal Economy on Formal Growth in Nigeria: Evidence from ARDL Bounds Testing. *Journal of Economics, Business, and Commerce*, 2(2), 101–111.
12. Connelly, B. L., Certo, S. T., Reutzel, C. R., DesJardine, M. R., & Zhou, Y. S. (2025). Signaling theory: State of the theory and its future. *Journal of management*, 51(1), 24–61.
13. Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
14. Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing*, 18(3), 301–331.
15. De Mel, S., McKenzie, D., & Woodruff, C. (2023). *Who are the microenterprise owners? Evidence from Sri Lanka on Tokman versus De Soto (World Bank Policy Research Working Paper No. 4635)*.
16. Felício, M. J., Costa, M., & Botelho, A. C. (2026). Managerial competencies and SMEs' performance in the hairdressing sector: Owner-manager and employee perspectives through the competing values framework. *Journal of Management & Organization*, 1–20.
17. Gasmi, F., Kouakou, D. C., & Sanni, M. (2025). Firms' sustainable and responsible innovation in Nigeria: Does informality play a role?. *Economics of Transition and Institutional Change*, 33(1), 139–164.
18. Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). *European business review*, 26(2), 106.
19. Karasek, R., & Bryant, P. (2012). Signaling theory: Past, present, and future. *Academy of Strategic Management Journal*, 11(1), 91–99.
20. McKenzie, D., & Woodruff, C. (2017). Business practices in small firms in developing countries. *Management Science*, 63(9), 2967–2981.
21. Omeihe, K. O., & Omeihe, I. (2024). The social regulation of inter-SME relations: Norms shaping SMEs relationships in Nigeria. *The International Journal of Entrepreneurship and Innovation*, 14657503241229691..
22. Onyemaechi, U., Sampson, J. C., Ikpeazu, N., Obasi, J. E., & Ofondu, M. (2025). Knowledge Management and Sustainable Innovation of Nigerian Breweries Plc Aba, Abia State. *Nigerian Academy of Management Journal*, 20(1), 92–103.
23. Przepiorka, W. (2025). Applications of signaling theory in sociological scholarship. *Annual Review of Sociology*, 51(1), 67–88.
24. Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587–632). Cham: Springer International Publishing.
25. SMEDAN & National Bureau of Statistics. 2021. *National MSME survey report*. Abuja, Nigeria.
26. Spence, M. (1973). Job Market Signalling": The Quarterly Journal of Economics". *LXXXVII*, 3, 355–74.
27. Storey, D. J. (2016). *Understanding the small business sector*. Routledge.

28. Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a sampling technique for research. *How to choose a sampling technique for research* (April 10, 2016).

29. Taj, S. A. (2016). Application of signaling theory in management research: Addressing major gaps in theory. *European Management Journal*, 34(4), 338–348.

30. Ulyssea, G. (2020). Informality: Causes and consequences for development. *Annual Review of Economics*, 12(1), 525–546.

31. Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of management review*, 11(4), 801–814.

32. Williams, C. C., Martinez–Perez, A., & Kedir, A. M. (2017). Informal entrepreneurship in developing economies: The impacts of starting up unregistered on firm performance. *Entrepreneurship Theory and Practice*, 41(5), 773–799.

33. World Bank. (2015). *Nigeria Enterprise Survey 2014: Sampling methodology*. World Bank Enterprise Surveys.

Figures

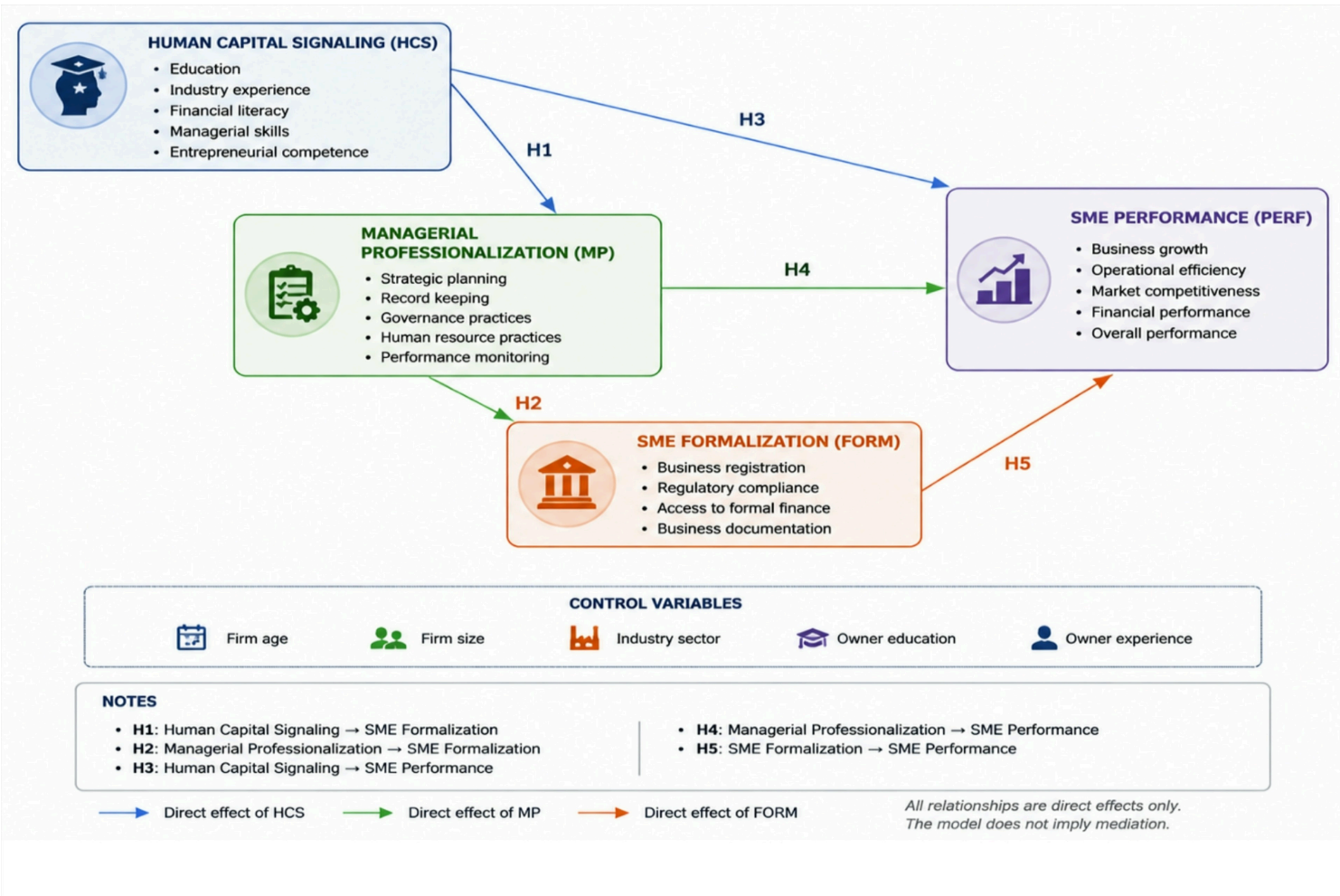


Figure 1

Conceptual Model