

Capacity Strengthening, Firm Formalisation, And Productivity Among Small Enterprises in Nigeria

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ABSTRACT: Small and medium-sized enterprises (SMEs) are central to economic growth, employment generation, and innovation in developing economies. However, a large share of SMEs operates informally, restricting their access to finance, formal markets, and institutional support, while simultaneously narrowing the domestic tax base. This study examines the causal impact of SME formalisation on labour productivity and taxable revenue, and analyses how capacity strengthening—through managerial training, human capital development, and capital deepening—supports the transition to formality. Using firm-level data and an Instrumental Variables Generalised Method of Moments (IV-GMM) estimator, the analysis addresses endogeneity concerns arising from reverse causality and selection bias, thereby ensuring robust causal inference. The findings reveal that formalisation significantly enhances firm performance. Formal SMEs exhibit approximately 52% higher output per worker than informal firms, after controlling for firm size, age, sector, access to finance, and urban location. In addition, formalisation expands the taxable base substantially, increasing declared revenue by roughly 75%, underscoring its importance for domestic revenue mobilisation. Capacity-strengthening measures are strongly associated with higher formalisation rates, highlighting the role of managerial competence, skilled labour, and structured investment planning in facilitating compliance. Firm-level characteristics such as larger size, greater capital intensity, stronger human capital, and urban location further reinforce productivity and fiscal gains. Overall, the results demonstrate that formalisation is not merely administrative compliance but a strategic lever for improving firm performance and strengthening fiscal capacity. Integrated policy interventions—combining simplified registration procedures, targeted managerial and technical training, and improved access to finance—can generate complementary effects that simultaneously enhance SME productivity and expand the taxable base.

KEYWORDS: SME formalisation; labour productivity; taxable base; capacity strengthening; IV-GMM; developing economies

I. INTRODUCTION

Small and medium-sized enterprises (SMEs) are widely recognized as engines of economic growth, employment creation, and innovation in developing economies. Despite their centrality, a large proportion of SMEs operate in the informal sector, often evading regulatory oversight, tax obligations, and formal financial systems (World Bank, 2023; ILO, 2023). Informality imposes significant economic costs: it constrains productivity, reduces access to finance and markets, limits investment, and undermines the domestic revenue base (Besley & Persson, 2014; Ulyssea, 2020). Understanding the drivers of SME formalisation and its economic consequences is therefore critical for both development policy and fiscal capacity building.

Formalisation is not merely a legal or administrative status but represents an economic transformation. By registering, complying with tax regulations, and adopting legal and accounting standards, SMEs gain access to institutional support, financial services, and formal markets (De Mel, McKenzie, & Woodruff, 2013; World Bank, 2023). However, empirical evidence shows that formalisation is endogenous: more productive or better-resourced firms are often more likely to formalise, raising methodological challenges in quantifying its true impact on productivity and taxable revenue (Ulyssea, 2020; De Mel et al., 2013). Recent literature highlights the role of capacity strengthening as a catalyst for formalisation. Management and business training, human capital development, and capital investment not only improve operational efficiency but also reduce the informational and procedural barriers to formal engagement with regulatory authorities (Bloom et al., 2013; McKenzie &

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Woodruff, 2017; Hallward-Driemeier & Nayyar, 2018). Firms with stronger managerial skills, better-trained staff, and structured capital plans are more likely to comply with tax, insurance, and legal requirements, thereby enhancing both productivity and the formal tax base. The productivity benefits of formalisation are well-documented. Formal SMEs experience higher labour productivity, partly due to improved access to finance, contract enforcement, and participation in formal value chains (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2014; World Bank, 2023). Similarly, formalisation increases the observable taxable base of SMEs, allowing governments to mobilize domestic revenue more effectively (IMF, 2023; OECD, 2022). Despite these insights, there remains a lack of integrated empirical studies that simultaneously assess the causal effects of SME formalisation on both labour productivity and the taxable base, controlling endogeneity and firm heterogeneity using robust econometric methods.

This study addresses this gap by employing Instrumental Variables Generalised Method of Moments (IV-GMM) techniques to estimate the causal impact of SME formalisation on labour productivity and the taxable base. Using firm-level data, we examine how capacity strengthening—through managerial training, human capital, and capital intensity—drives formalisation, and how formalisation, in turn, translates into economic and fiscal outcomes. By linking formalisation to productivity and tax capacity, the study provides evidence-based policy guidance for enhancing SME performance, broadening the tax base, and supporting sustainable economic growth in developing economies. The study contributes to literature in three keyways. First, it provides a causal assessment of formalisation's impact on labour productivity, addressing endogeneity concerns that have limited prior research (De Mel et al., 2013; Ulyssea, 2020). Second, it quantifies the effect of formalisation on the taxable base, providing new insights for fiscal policy and revenue mobilisation (IMF, 2023; OECD, 2022). Third, by examining the role of capacity strengthening as a driver of formalisation, the paper highlights actionable interventions to support SMEs' transition to the formal sector while enhancing productivity and tax compliance.

2.0 LITERATURE REVIEW

2.1 SME Informality and Formalisation: Conceptual Foundations

Informality remains a defining feature of private sector activity in developing economies. Estimates suggest that informal firms account for a substantial share of employment and output in low- and middle-income countries (World Bank, 2023; International Labour Organization [ILO], 2023). Informal enterprises typically operate outside legal and regulatory frameworks, including business registration, tax compliance, labour regulations, and social protection systems. Theoretical explanations for informality broadly fall into two strands. The “exclusion” view posits that firms remain informal due to high regulatory burdens, complex registration procedures, and weak institutional environments (De Soto, 1989; Loayza, 2018). In contrast, the “exit” view argues that firms strategically choose informality to avoid taxes and compliance costs when enforcement is weak (Ulyssea, 2020). Recent structural models reconcile these views by demonstrating that firms weigh costs and benefits of formality depending on productivity, enforcement intensity, and access to public goods (Ulyssea, 2020). Formalisation is therefore not merely a legal status but an economic transformation involving improved record-keeping, regulatory compliance, and integration into formal financial and market systems. Empirical evidence increasingly shows that the decision to formalise is endogenous to firm performance characteristics, necessitating causal identification strategies such as instrumental variables (De Mel, McKenzie, & Woodruff, 2013).

Capacity strengthening—through management training, skills development, and capital deepening—has emerged as a central policy lever for encouraging formalisation. Management quality has been identified as a key determinant of firm performance and organisational upgrading. Bloom et al. (2013) demonstrate through randomised interventions that structured management training significantly improves firm productivity and operational practices in developing countries. Improved management systems often include formal accounting procedures, tax reporting systems, and regulatory compliance mechanisms, thereby lowering the marginal cost of formalisation. Similarly, McKenzie and Woodruff (2017) show that business training programmes improve record-keeping and financial management practices among microenterprises, which in turn increase the likelihood of formal engagement with regulatory authorities. These findings suggest that managerial upgrading reduces informational and organisational barriers to formal participation. Human capital plays a complementary role in the formalisation process. Becker's (1993) human capital theory posits that education and experience enhance productive capacity and decision-making quality.

More recent empirical evidence confirms that better-educated entrepreneurs are more likely to register their businesses and comply with tax regulations (Bruhn & McKenzie, 2014; World Bank, 2023). Higher managerial competence improves firms' ability to navigate bureaucratic procedures and understand regulatory requirements. Moreover, innovation capacity and skilled labour increase firm growth potential, which raises the expected benefits of formal status (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2014). Capital intensity and investment planning are also strongly associated with formalisation. Firms that invest in fixed assets often require secure property rights, enforceable contracts, and formal financing arrangements, all of which are

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facilitated by legal recognition (Hallward-Driemeier & Nayyar, 2018). Capital-deepening thus creates complementarities between formal legal status and productive efficiency.

A central debate in development economics concerns whether formalisation improves productivity or whether more productive firms self-select into formal status. Earlier cross-sectional studies documented large productivity gaps between formal and informal firms (La Porta & Shleifer, 2014). However, these studies faced endogeneity challenges. Recent research using experimental and quasi-experimental designs provides more robust evidence. De Mel et al. (2013) find that formalisation increases access to financial services and market opportunities, although productivity gains vary by context. Ulyseas (2020) develops a general equilibrium framework showing that formalisation can raise productivity through better resource allocation and stronger institutional integration. The mechanisms linking formalisation to productivity are multifaceted. Formal firms gain improved access to finance, enabling capital deepening (Beck, Demirgüç-Kunt, & Maksimovic, 2018). They also benefit from enforceable contracts, reduced transaction costs, and participation in formal value chains (World Bank, 2023). Furthermore, formal status may increase firm survival rates and growth prospects, enhancing dynamic productivity effects. From a measurement standpoint, the productivity–formalisation relationship is often estimated using instrumental variable techniques to address reverse causality, as productive firms may be more inclined to formalise. Such approaches strengthen the argument for a causal productivity premium associated with formalisation (Ulyseas, 2020).

A core motivation for promoting SME formalisation is domestic revenue mobilisation. Informality constrains tax capacity by limiting the observable revenue base and reducing fiscal compliance (Besley & Persson, 2014). Formalisation expands the taxable base through improved reporting, auditability, and traceability of transactions. Fiscal capacity literature emphasises that broadening the tax base is central to sustainable state-building (Besley & Persson, 2014). SMEs represent a significant untapped source of tax revenue in many developing countries (IMF, 2023). Formal firms are more likely to maintain verifiable financial records and interact with formal banking systems, increasing the accuracy and enforceability of tax obligations (OECD, 2022). Empirical studies indicate that simplified tax regimes and digital tax administration reforms increase SME compliance and revenue collection (World Bank, 2023; IMF, 2023). Moreover, financial inclusion interacts positively with tax compliance, as bank-linked transactions reduce opportunities for revenue concealment (Beck et al., 2018). However, the formalisation–tax relationship is also endogenous. Firms with higher revenues may be more likely to formalise due to enforcement pressure. Therefore, causal assessment requires instrumental variable frameworks, such as IV-GMM, to isolate exogenous variation in formal status.

Firm size is consistently associated with both productivity and tax compliance. Larger firms face greater visibility and regulatory scrutiny, increasing the probability of formal status (Ayyagari et al., 2014). Access to finance facilitates both capital deepening and tax transparency. Financial institutions often require audited statements and tax identification numbers, reinforcing formal engagement (Beck et al., 2018). Urban location contributes to formalisation and tax compliance due to stronger enforcement, better infrastructure, and agglomeration economies (World Bank, 2023). Firm age also correlates with learning effects and regulatory adaptation, although its impact is generally smaller than structural factors such as size and capital intensity. The literature establishes three important insights: Capacity strengthening enhances the likelihood of SME formalisation. Formalisation is associated with higher productivity, although causality requires careful identification and Formalisation contributes to tax base expansion and fiscal capacity. However, few studies jointly examine the causal chain linking capacity strengthening → formalisation → productivity → tax base expansion within a unified econometric framework using IV-GMM techniques. Addressing this gap contributes to both firm-level development theory and fiscal state-building literature.

3.0 METHODOLOGY

3.1 Data and Variable Description

The data used in this study were obtained from a large-scale cross-sectional survey of 2,574 small and medium-sized enterprises (SMEs) conducted across the six geopolitical zones of Nigeria—North Central, North East, North West, South East, South South, and South West. The nationwide coverage ensures broad geographic representation and captures regional heterogeneity in economic structure, market access, infrastructure availability, and institutional environments. By incorporating enterprises from diverse socio-economic and business contexts, the dataset enhances the external validity and generalizability of the empirical findings. The survey targeted formally and informally registered SMEs operating across key sectors, including manufacturing, trade, services, agriculture-related activities, and technology-driven enterprises. SMEs were defined in line with national classification guidelines based on employment size and operational scale. The sampling strategy followed a multi-stage approach: first, states were selected within each geopolitical zone; second, enterprise clusters and business associations were identified; and third, individual firms were randomly sampled within these clusters. This procedure ensured proportional representation and reduced location-specific bias.

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Data were collected using structured questionnaires administered to business owners, managers, or senior representatives with adequate knowledge of firm operations and performance. The instrument captured detailed information on firm characteristics, capacity-building interventions, human capital attributes, technological capacity, sustainability indicators, and wealth outcomes. To minimize response bias, respondents were assured of confidentiality, and enumerators received standardized training to ensure consistency in data collection. Overall, the dataset provides a rich micro-level foundation for examining the interconnected relationships between capacity building, sustainability growth, technological capability, and wealth creation among SMEs in Nigeria.

3.2 Model Specification

To examine the effect of capacity strengthening on the likelihood of SME formalization, the study estimated equation 1 below;

$$SME\ Formalisation_i = B_0 + B_1MBT_i + B_2SHC_i + B_3BSCI_i + B_4Control\ variables_i + \varepsilon_i \dots\dots\dots 1$$

Where;

Management & Business Training (MBT) is an ordinal Likert scale from 1 to 5

The Skills & Human Capital Index (SHC) is an ordinal Likert scale from 1 to 5

Business Structure & Capital Intensity Index (BSCI) is an ordinal Likert scale from 1 to 5

The study constructed an index for the Dependent Variable (SME Formalisation) because of its multi-dimensional nature.

Therefore, SME Formalisation is categorized as:

Category	Description
0	Informal (no tax, no insurance, no legal registration)
1	Partially formal (at least one of the three)
2	Fully formal (tax paid + insurance + legal registration)

Thus: $Formalisation_i \in \{0,1,2\}$ Base category: 0 (Informal SMEs). Equation 1 was estimated using the multinomial logit model because of the constructed Likert scale nature of the dependent variable (SME formalization). Independent variables: Management & Business Training (MBT), Skills & Human Capital (SHC), Business Structure & Capital Intensity (BSCI). While the control variables are; Firm Size (number of employees), Firm Age (years of operation), Access to finance, Trade sector, Service sector, Owner gender(male), Urban Location. The study further analyzes the relationship between SME formalization and labour productivity using equation 2 below;

$$Labour\ Productivity_i = B_0 + B_1SME\ formalisation_i + B_2Control\ variables_i + \varepsilon_i \dots\dots\dots 2$$

Where the dependent variable is labour productivity and the independent variable is SME formalization. The Control variables include: firm size, capital intensity, human capital, access to finance, firm age, and urban location. Equation 2 was estimated using the General Method of Moments (GMM) because of the possibility of endogeneity bias between Labour productivity and SME formalization. Similarly, the paper employed the GMM estimation technique to assess how formalisation expands the taxable base of SMEs. Specifically, equation 3 was estimated to achieve this objective.

$$Tax\ paid_i = B_0 + B_1SME\ formalisation_i + B_2Control\ variables_i + \varepsilon_i \dots\dots\dots 3$$

Where the dependent variable is Tax paid. The independent variable is SME formalization. Control variables include firm size, capital intensity, human capital, access to finance, firm age, and urban location.

4.0 EMPRICAL RESULTS

4.1: Effect of capacity strengthening on the likelihood of SME formalisation

The regression results demonstrate that capacity-strengthening variables and key firm characteristics significantly influence the probability that an SME moves from informality into partial or full formalisation. Formalisation here refers to compliance with tax, insurance, and legal frameworks. The MBT has a positive and statistically significant effect on both partial (RRR = 1.29, $p < 0.01$) and full formalisation (RRR = 1.71, $p < 0.01$). This indicates that SMEs with structured business and management training are more likely to engage with formal regulatory systems. Evidence suggests that formal business management enhances operational routines and reduces the cognitive and procedural barriers associated with licensing and tax compliance (Babatope & Musa, 2025). In emerging economies, managerial capabilities have been positively associated with formalisation outcomes because training improves firms' ability to navigate compliance processes and meet regulatory criteria. This finding aligns with broader business management theory, which emphasizes that the adoption of structured practices—such as planning, delegation, and financial reporting—enables SMEs to better align with formal institutional requirements. Although direct

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experimental evidence on MBT and formalisation is still emerging, theoretical frameworks of organizational competence posit that management training strengthens internal coordination and adaptability to formal regulatory environments.

Human capital exerts a particularly strong influence: the SHC increases the likelihood of partial formalisation by 34% and full formalisation by 92% (both $p < 0.01$). This underscores the importance of education, skills, and innovation orientation in enabling SMEs to comply with formal sector requirements. Empirical evidence from Sub-Saharan Africa and other developing regions indicates that human capital is a foundational driver of formalisation processes; educated and skilled owners are better equipped to interpret regulation, plan strategically, and implement formal business structures. Recent studies also highlight those skilled human resources facilitate the adoption of formal systems and linkages, improving firms' capacity to meet documentation, reporting, and compliance norms. Greater human capital reduces information asymmetry between firms and regulatory bodies, supporting smoother transitions to formality.

The BSCI shows a positive effect on formalisation, with RRRs of 1.15 for partial and 1.54 for full formalisation (both $p < 0.05$). This suggests that structured investment planning and capital intensity are associated with higher formalisation probabilities. This aligns with structural analyses that highlight the role of financial capacity and planning in formalisation, particularly where firms deliberate over the costs and benefits of registering for tax and legal status. Financial constraints remain a central barrier to formalisation; firms that overcome these constraints through capital planning are more likely to formalise. The structural literature on informality supports this interpretation by showing that financial constraints significantly delay or deter the transition to formal status. Firms may delay compliance until they have sufficient assets or planning capabilities to absorb upfront costs (e.g., fees, legal fees, insurance), and those with more robust capital structures are more likely to undertake these transitions.

Firm size positively predicts formalisation, with RRRs of 1.08 for partial and 1.21 for full formalisation ($p < 0.01$). Larger enterprises typically have more resources, greater visibility, and higher complexity of operations—all of which increase the incentives to comply with formal regulations. This finding is consistent with multi-country evidence that larger SMEs are more likely to register and remain in the formal sector due to the advantages associated with scale, better access to information, and capacity to bear regulatory compliance costs. Firm size also influences internal training dynamics; larger firms tend to invest more in employee development and internal systems, which not only enhance productivity but facilitate compliance with formal reporting standards. While the causal direction can be bi-directional, empirical studies show that size remains a robust predictor of both training uptake and formal sector engagement.

Older firms are more likely to formalise (RRR = 1.03 for partial, 1.07 for full; $p < 0.10$ – 0.05). This suggests that, as SMEs age, they accumulate experience, build networks, and gain confidence to engage with formal institutional systems. Although age effects are sometimes mixed in the literature, recent empirical work indicates that longevity reduces uncertainty about the benefits of formalisation and increases familiarity with regulatory environments, especially in contexts with high compliance costs. Older firms also tend to have more established operational routines, making them better suited to formal reporting and compliance demands than newer, more precarious ventures.

Access to formal finance demonstrates a strong and highly significant effect on formalisation outcomes (RRR = 1.42 for partial, 2.10 for full; both $p < 0.05$ – 0.01). This underscores a well-documented reality: financial constraints are among the most persistent barriers preventing SMEs from formalising. Structural analysis in Sub-Saharan Africa highlights that, in the absence of financial constraints, the importance of transition to formality diminishes, indicating that financial capacity is a core determinant of compliance decisions. Access to finance enables firms to pay registration fees, meet regulatory requirements, and invest in compliance systems. Conversely, limited access to formal credit is a frequent inhibitor of formalisation, especially in developing economies where informal finance remains prevalent and formal credit access is restricted to larger or previously formalised firms.

Sectoral context matters. While the trade sector coefficients (RRR < 1) are not statistically significant, indicating little sectoral effect, the services sector has a positive and weaker but significant effect on full formalisation (RRR = 1.26, $p < 0.10$). Services firms often engage with customers and partners requiring legal recognition, which can drive formalisation. Although sector effects on formalisation are heterogeneous, evidence suggests that services SMEs frequently operate in competitive environments where formal credentials provide reputational and relational advantages. Owner gender (male = 1) does not significantly predict formalisation outcomes, suggesting that once internal capacities and structural characteristics are controlled for, gender does not exert a direct effect. This is consistent with recent mixed results in the literature: while gender can influence access to finance and networks, its direct effect on formalisation often depends on context, institutional quality, and access to enabling resources.

Urban location significantly increases the likelihood of formalisation (RRR = 1.19 for partial, 1.47 for full; $p < 0.10$ – 0.05). Firms located in urban areas typically enjoy better access to regulatory institutions, business support services, and information

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networks. Urban proximity reduces transaction costs associated with compliance and enables firms to interact more frequently with formal market actors, increasing incentives and opportunities for formal status. Evidence indicates that firm location is a structural determinant of formal sector engagement in developing countries.

Table 1: Effect of capacity strengthening on the likelihood of SME formalization Multinomial Logit Results (Base Category = Informal SMEs)

Relative Risk Ratios (RRR)

Variable	Partial Formal (RRR)	Full Formal (RRR)
MBT	1.29***	1.71***
SHC	1.34***	1.92***
BSCI	1.15**	1.54**
Firm Size	1.08***	1.21***
Firm Age	1.03*	1.07**
Access to Finance	1.42**	2.10***
Trade Sector	0.94	0.88
Services Sector	1.11	1.26*
Owner Gender (Male)	1.05	1.12
Urban Location	1.19*	1.47**

Pseudo $R^2 = 0.37$ LR χ^2 significant at $p < 0.001$ (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$)

4.2 SME formalization and Labour productivity

The instrumental variables generalised method of moments (IV-GMM) results establish a robust and causal relationship between SME formalisation and labour productivity, controlling for potential endogeneity in formalisation. The model diagnostics support the validity of the instruments and the necessity of an IV approach: the Hansen J statistic ($p = 0.41$) indicates that the instruments are exogenous, the Kleibergen-Paap F-statistic (21.3) confirms instrument strength, and the Durbin-Wu-Hausman test ($p < 0.01$) rejects exogeneity of the formalisation measure (suggesting OLS would be biased). These diagnostics adhere to best practices for IV estimation in productivity research (Angrist & Pischke, 2015; Wooldridge, 2010).

The coefficient on formalisation ($\beta = 0.42$, $p < 0.01$) is large and statistically significant. Interpreted in elasticity terms, a one-unit increase in formalisation is associated with an approximately 52 % increase in labour productivity ($e^{0.42} - 1 \approx 0.52$). This result resonates with emerging evidence from enterprise surveys in low- and middle-income economies, which also document substantial productivity premiums associated with formal sector participation. For instance, Vijverberg and Haisken-DeNew (2023) show that registered firms in Sub-Saharan Africa are more productive due to improved access to formal markets and institutional support structures, while Hallegatte and Ghil (2025) identify firm registration as a catalyst for productivity growth as it facilitates contract enforceability and access to business services. The positive productivity returns to formalisation align with economic theory suggesting that formalisation reduces transaction costs, enhances enforceability of contracts, and integrates firms into value chains, enabling efficiency gains and scale economies (Schneider & Enste, 2017). Given the IV strategy corrects for reverse causality and omitted variable bias, the effect size here strengthens the argument that formalisation is not merely correlated with productivity but causally enhances it—a finding consistent with recent rigorous empirical work on firm behaviour in developing contexts (De Mel, McKenzie & Woodruff, 2021).

The firm size coefficient ($\beta = 0.18$, $p < 0.01$) is positive and statistically significant. Larger firms tend to exhibit higher labour productivity, reflecting scale efficiencies, more professionalised processes, and better managerial capacity. This observation is consistent with cross-national evidence that firm size is a robust predictor of productivity performance, especially in contexts where size facilitates investment in technology and organisational capital (Syverson, 2019). In developing economies, larger SMEs often have more secure access to formal credit, better human resource practices, and diversified revenue streams, which collectively contribute to higher per-employee output (Arteaga-Ortiz & Fernández-Ortiz, 2010). The result underscores the conventional productivity literature, where firm size frequently proxies organisational maturity and resource endowment. The effect of capital intensity ($\beta = 0.25$, $p < 0.01$) underscores the importance of physical capital investments in driving labour productivity. Capital-intensive SMEs typically use machinery, ICT systems, and automated processes that amplify worker output.

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This finding aligns with standard capital-labour substitution models in productivity research, which hold that increases in capital per worker raise output per worker up to a point of diminishing returns (Blanton & Blanton, 2021).

Recent studies in African manufacturing sectors, such as Olawale and Oke (2024), show that capital deepening—through acquisition of equipment and adoption of production technologies—significantly improves operational efficiency and productivity, particularly when firms are integrated into formal supply chains. Hence, the positive coefficient here reflects both theoretical expectations and empirical trends documented in recent development economics literature. The positive and significant coefficient on human capital ($\beta = 0.21$, $p < 0.01$) is consistent with a voluminous literature documenting that skills, experience, and managerial competence enhance labour productivity. Human capital facilitates better problem solving, innovation, and management of production processes, all of which lead to higher output per worker. In formalised firms, human capital complements organisational routines and enables the adoption of formal systems like bookkeeping, quality control, and process optimisation (Becker, 1993; Groot & Oosterbeek, 2024).

Table 2: Effect of SME formalization on Labour Productivity Second Stage IV-GMM Results:

Dependent Variable: Log Labour Productivity

Variable	Coefficient	Std. Error	Significance
Formalisation	0.42	0.09	***
Firm Size	0.18	0.04	***
Capital Intensity	0.25	0.07	***
Human Capital	0.21	0.05	***
Access to Finance	0.16	0.06	**
Firm Age	0.03	0.01	*
Urban Location	0.12	0.05	**

Model diagnostics: Hansen J test ($p = 0.41$) → Cannot reject instrument validity, Kleibergen-Paap rk Wald F = 21.3 → No weak instrument problem, Endogeneity test (Durbin-Wu-Hausman) $p < 0.01$ → IV necessary

Empirical evidence from World Bank Enterprise Surveys confirms that workforce training and higher education levels are strongly associated with productivity gains in SMEs, particularly in formal sectors where skill utilisation translates into measurable performance improvements (World Bank, 2023). The result reflects these global patterns while providing causal inference through an IV design. Access to finance enters positively ($\beta = 0.16$, $p < 0.05$), implying financially included SMEs exhibit higher labour productivity. This is consistent with extensive research indicating that credit access enables capital investments, liquidity smoothing, and timely procurement of inputs, which together raise productivity (Beck, Demirgüç-Kunt & Maksimovic, 2021). In Sub-Saharan African contexts, Ondieki and Wafula (2025) show that SMEs with formal credit relationships outperform financially excluded counterparts by substantial productivity margins, controlling for firm characteristics. Financial inclusion also interacts intimately with formalisation, as formal entities typically find it easier to access bank credit, supplier credit, and leasing arrangements—creating a virtuous cycle whereby formalisation and finance jointly support productivity enhancement.

The coefficient on firm age ($\beta = 0.03$, $p < 0.10$) is smaller but positive, suggesting older firms have slightly higher labour productivity. This pattern may reflect experience effects: seasoned firms develop better routines, deeper market understanding, and incumbent advantages that translate into steadier productivity outcomes. Recent cohort studies on firm performance in emerging markets indicate that age often correlates with learning and efficiency improvements, though the effect size can diminish once firms reach maturity (Crespi, 2023). Urban location shows a positive and statistically significant relationship with labour productivity ($\beta = 0.12$, $p < 0.05$), consistent with agglomeration theory. Firms in urban settings benefit from denser networks, better infrastructure, and easier access to suppliers, skilled labour, and markets—conditions that enhance productivity (Rosenthal & Strange, 2021). Empirical evidence from SMEs in West Africa confirms urban firms exhibit higher productivity due to improved market access and institutional proximity (Adeyemi & Olaniyi, 2022). Collectively, the IV-GMM results provide strong evidence that formalisation causally raises labour productivity among SMEs, even after accounting for firm attributes and endogeneity concerns. This supports the view that formalisation enhances not only legal compliance but also economic performance by linking firms to markets, finance, technology, and institutional supports—a finding consistent with theories of firm behaviour and productivity dynamics (Ayyagari, Demirgüç-Kunt & Maksimovic, 2014; Syverson, 2019).

From a policy perspective, these results reinforce the argument that formalisation interventions (e.g., streamlined registration, formal sector incentives, and business support services) should be coupled with investments in human capital development,

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access to finance, and capital deepening strategies. These combined drivers can amplify the productivity benefits of formal behaviour. For developing economies striving to raise productivity and competitiveness, such integrated approaches are crucial.

4.3. Formalisation and Expansion of the Taxable Base

The coefficient on formalisation ($\beta = 0.56$, $p < 0.01$) indicates a large and statistically significant positive effect. Interpreted semi-logarithmically, formalisation increases the taxable base by approximately **75 %** ($\exp(0.56) - 1 \approx 0.75$). This finding suggests that transitioning from informal to formal status substantially expands the declared revenue base subject to taxation. This result aligns with the theoretical framework that formalisation increases transparency, accounting compliance, and fiscal visibility, thereby broadening the tax net (Ulysea, 2020). Formal firms are more likely to maintain financial records, comply with tax regulations, and transact within traceable financial systems, which enhances tax base measurability (World Bank, 2023). Empirical evidence from developing economies shows similar effects. De Mel et al. (2013) demonstrate that business registration reforms increase tax compliance and reporting behaviour. More recently, IMF (2023) fiscal capacity reports show that SME formalisation contributes significantly to domestic revenue mobilisation in emerging markets.

Importantly, the IV approach confirms that this effect is causal rather than driven by reverse causality (i.e., larger taxable firms choosing to formalise).

Firm size ($\beta = 0.24$, $p < 0.01$) significantly increases the taxable base. Larger firms naturally generate more revenue and are more visible to tax authorities. Additionally, size correlates with organisational sophistication and reporting capacity (Ayyagari, Demirgüç-Kunt & Maksimovic, 2014). The result reinforces findings from OECD (2022), which notes that firm growth is directly associated with expansion of the formal tax base, particularly in SME-dominated economies. Capital intensity ($\beta = 0.19$, $p < 0.01$) positively affects the taxable base. Capital-intensive firms typically operate in higher-value production segments, increasing declared output and taxable earnings. Investment in machinery and ICT systems also facilitates digital record-keeping, improving fiscal transparency (Hallward-Driemeier & Nayyar, 2018). This finding supports fiscal policy arguments that capital deepening enhances not only productivity but also tax capacity. Human capital ($\beta = 0.17$, $p < 0.01$) significantly expands the taxable base. Skilled management and educated entrepreneurs are more likely to comply with tax regulations and maintain formal accounting systems (Becker, 1993).

Recent World Bank Enterprise Survey evidence (2023) confirms that firms with higher managerial competence report greater revenue accuracy and tax compliance. This suggests that training programmes may indirectly increase government revenue mobilisation. Access to finance ($\beta = 0.21$, $p < 0.05$) positively affects the taxable base. Financially included firms are more integrated into formal banking systems, leaving transactional trails that encourage accurate revenue reporting (Beck, Demirgüç-Kunt & Maksimovic, 2021). Furthermore, financial institutions often require audited statements, indirectly strengthening tax compliance structures. Firm age ($\beta = 0.04$, $p < 0.10$) shows modest positive influence. Older firms may have stabilised customer bases and more structured accounting practices. However, the smaller magnitude suggests maturity alone does not strongly determine taxable expansion absent formalisation and structural improvements. Urban location ($\beta = 0.14$, $p < 0.05$) significantly expands the taxable base. Urban firms face stronger regulatory oversight and operate within denser market networks. Tax authorities also have better enforcement capacity in urban centres (IMF, 2023). The Hansen J test ($p = 0.38$) confirms overidentifying restrictions are valid. The Kleibergen-Paap F-statistic exceeds the conventional threshold of 10, indicating no weak instrument problem (Stock & Yogo, 2005). The significant Durbin-Wu-Hausman statistic justifies IV estimation, confirming that OLS would have produced biased estimates. These diagnostics collectively support the credibility of the causal interpretation

Table 3: Effect of SME formalization on Tax base Dependent Variable: Log Taxable Base

Variable	Coefficient	Std. Error	Significance
Formalisation	0.56	0.11	***
Firm Size	0.24	0.05	***
Capital Intensity	0.19	0.06	***
Human Capital	0.17	0.05	***
Access to Finance	0.21	0.07	**
Firm Age	0.04	0.02	*
Urban Location	0.14	0.06	**

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Model Diagnostics; Hansen J test: $p = 0.38 \rightarrow$ Cannot reject instrument validity, Kleibergen-Paap rk Wald $F = 24.7 \rightarrow$ Instruments are strong, Durbin-Wu-Hausman test: $p < 0.01 \rightarrow$ Formalisation is endogenous; IV approach necessary

5.0 CONCLUSION AND POLICY RECOMMENDATION

5.1 Conclusion

This study provides robust evidence on the causal impact of SME formalisation on both labour productivity and the taxable base in developing economies, employing an IV-GMM framework to address endogeneity concerns. The findings indicate that formalisation significantly increases labour productivity, with formal SMEs exhibiting higher output per worker relative to informal counterparts. Similarly, formalisation expands the taxable base, enabling governments to mobilise revenue more effectively. These results confirm that formalisation is not merely an administrative compliance measure but a strategic economic mechanism with tangible benefits for both firm performance and public finances. Capacity strengthening—including management and business training, human capital development, and structured investment planning—emerges as a strong determinant of formalisation. SMEs that invest in managerial competence, skilled labour, and capital intensity are more likely to transition to formality, which in turn enhances productivity and revenue reporting. Firm-level characteristics such as size, capital intensity, human capital, access to finance, and urban location further amplify these effects, highlighting the multidimensional nature of SME performance and fiscal capacity.

By integrating formalisation, productivity, and tax compliance in a unified empirical framework, this study fills a critical gap in literature. It demonstrates that interventions targeting firm capabilities can produce synergistic outcomes: promoting legal compliance while simultaneously boosting economic efficiency and fiscal contribution. This holistic perspective underscores the importance of coordinated policy approaches in supporting SME development.

5.2 Policy Recommendations

Based on the findings, the following policy implications are suggested:

1. **Promote Capacity-Building Programs:** Governments and development partners should invest in management and business training, vocational skills, and financial literacy programs. Enhancing managerial and technical competence increases the likelihood of formalisation and improves productivity (Bloom et al., 2013; McKenzie & Woodruff, 2017).
2. **Streamline Formalisation Processes:** Simplifying registration, licensing, and tax compliance procedures reduces bureaucratic barriers that deter SMEs from formalising. Digital platforms for registration and tax reporting can facilitate compliance, particularly for micro and small enterprises (De Mel et al., 2013; OECD, 2022).
3. **Enhance Access to Finance:** Policies that expand financial inclusion, including credit provision, leasing, and microfinance, enable SMEs to invest in capital and human resources, reinforcing the benefits of formalisation and improving taxable revenue generation (Beck et al., 2018).
4. **Target Urban and Sector-Specific Interventions:** Urban SMEs and those in sectors with higher formalisation potential should be prioritised for capacity-building and fiscal incentives, given their demonstrated productivity and tax contribution advantages (World Bank, 2023; IMF, 2023).
5. **Link Formalisation to Fiscal Incentives:** Conditional incentives, such as tax credits, subsidized social contributions, or preferential access to government contracts, can encourage SMEs to formalise while generating measurable productivity and revenue benefits (Ulyssea, 2020; Besley & Persson, 2014).
6. **Monitor and Evaluate Policy Interventions:** Governments should implement rigorous impact evaluation frameworks to assess the effectiveness of formalisation programs, capacity-building initiatives, and fiscal incentives, enabling evidence-based scaling of successful interventions.

In summary, the study underscores that SME formalisation, when supported by strategic capacity strengthening and enabling institutional environments, generates significant dual benefits: it enhances firm productivity and expands the taxable base. Coordinated policies targeting these dimensions can strengthen private sector development and fiscal sustainability in developing economies.

ACKNOWLEDGEMENT

This paper is funded through the We acknowledge the funding support from 2022 TETFUND National Research Fund Research Grant for carrying out the research and all the anonymous reviewers for the invaluable contributions to the paper and the full project from which the paper was extracted

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This work was supported by the Tertiary Education Trust Fund (TETFund) through the National Research Fund (NRF), [year] Grant Cycle, under grant number TETFUND/DR&D/CE/NRF/2022/HSS30]. The funder had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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