



Ease of Doing Business Reforms and Employment of Labor in Nigeria: Evidence from Quasi Experimental Approach

Abdullahi Buba*¹, Abubaka Bala²

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ABSTRACT

This study investigates the employment effects of business environment reforms using firm-level data from Nigeria. While regulatory reforms aimed at improving the ease of doing business are widely promoted as drivers of private-sector development, evidence on their labor market impact remains inconclusive in developing economies. Employing a quasi-experimental framework, we estimate treatment effects using Regression Adjustment, Inverse Probability Weighted Regression Adjustment, and Nearest-Neighbor Matching estimators. The results indicate that firms benefiting from reform-related improvements exhibit significantly higher labor employment compared to non-treated firms, with findings robust across specifications. These effects are particularly pronounced among formal-sector firms, suggesting that institutional quality mediates the employment response to reforms. The study contributes to the political economy of development by providing causal evidence on how regulatory reforms translate into real-sector outcomes in an emerging economy. The findings have important implications for policymakers seeking to promote job creation through business environment reforms.

1. Department of Economics, Gombe State University, Gombe, Federal Republic of Nigeria

2. Department of Business Administration, Gombe State University, Gombe, Federal Republic of Nigeria

* Corresponding Author Email Address: abdullahibuba@gsu.edu.ng

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1. Introduction

Nigeria remains one of the largest economies in Sub-Saharan Africa, yet unemployment and underemployment persist at alarming levels, particularly among youth and small enterprises. Despite decades of reforms aimed at improving the business climate, formal sector job creation remains sluggish. Regulatory and institutional constraints, including cumbersome business registration processes, weak enforcement of contracts, limited access to credit, and inconsistent policy implementation, continue to hinder firm expansion and employment generation. In this context, ease of doing business (EoDB) reforms have emerged as a strategic policy tool aimed at improving the regulatory environment to stimulate entrepreneurship, enhance firm performance, and generate employment (Bétilla, 2021; Nageri & Gunu, 2020). Institutional theory provides a useful lens for understanding the potential effects of EoDB reforms. Firms operate within a network of formal rules, informal norms, and enforcement mechanisms; when these institutions impose high transaction costs, enforce regulations weakly, or deliver inconsistent outcomes, firm investment and growth are constrained (Li & Rama, 2015; Ibrahim Kabir et al., 2022). Accordingly, reforms that improve institutional quality such as streamlined registration, reduced bureaucracy, transparent contract enforcement, and improved access to finance can enable firms to allocate resources toward growth and job creation rather than navigating opaque regulatory systems (Durst & Leyer, 2022; Liu & Wang, 2019). In Nigeria, the recognition of institutional constraints on business activity has led to the establishment of the Presidential Enabling Business Environment Council (PEBEC) in 2016, which has overseen more than 140 reforms aimed at improving business registration, tax filing, access to credit, and commercial dispute resolution (Bowale & Ilesanmi, 2014). Among notable reforms are the passage of the Companies and Allied Matters Act 2020 (CAMA 2020), which streamlined company registration procedures and improved legal flexibility, and the establishment of specialized small claims commercial courts in Lagos and Kano to facilitate dispute resolution. Additional reforms include

digitization of tax filing systems, expedited property registration, and targeted measures to reduce bureaucratic hurdles in starting a business (Balogun, 2023; Onwuchekwa, 2023). Despite these efforts, Nigeria's EoDB ranking remains modest, and anecdotal evidence suggests that many firms still cite energy constraints, limited credit access, informal fees, and regional regulatory variation as significant barriers to growth (Olubodun et al., 2025). Globally, empirical studies suggest that improvements in ease of doing business are associated with higher firm performance, entrepreneurship, and employment generation. For instance, Bétilla (2021) finds that enhancements in EoDB indicators significantly boost enterprise creation across African countries, while Durst & Leyer (2022) demonstrate that institutional conditions affect innovation performance in multiple countries. Similarly, Nketiah-Amponsah & Sarpong (2020) show that improvements in certain EoDB metrics increase foreign direct investment in sub-Saharan Africa, whereas Orjiakor (2022) reports that better regulatory environments reduce firm exit rates in Nigeria. Despite these insights, fewer studies have directly assessed the causal effect of EoDB reforms on employment at the firm level, particularly in Nigeria, and there is limited evidence on heterogeneity of impacts across regions, sectors, and firm types.

This study addresses this gap by examining how ease of doing business reforms influence employment generation in Nigeria. Specifically, this study to pursues three objectives: (i) to examine the effect of EoDB reforms on employment generation among Nigerian firms; (ii) to estimate the causal impact of EoDB programs on firm performance indicators; and (iii) to assess whether the effects of EoDB reforms differ across regions and firm characteristics, including size, and sector. The study employs microdata from the 2025 national Job Creation Survey and adopts a quasi-experimental design, using propensity score-based quasi experimental estimators to estimate causal effects. Methodologically, the study contributes by applying multiple treatment-effect estimators to firm-level data, allowing for more credible causal inference than standard cross-sectional regressions commonly

used in the literature. By doing so, it contributes to the literature by providing recent, firm-level evidence on employment impacts, identifying heterogeneity across firms and regions, and informing policymakers on which reforms are most effective for promoting job creation. Thus, the reforms examined in this study align with the regulatory improvements measured by the World Bank Ease of Doing Business indicators, which have guided policy changes across many developing countries.

The theoretical framework draws on institutional theory, which posits that firms embedded in supportive regulatory environments are more likely to expand, invest, and hire (Li & Rama, 2015; Durst & Leyer, 2022). This framework, combined with a quasi-experimental methodology, enables the study to isolate the effects of EoDB reforms on employment generation while accounting for observable confounders. Employment outcomes are measured by new hires and growth in workforce. The study also examines regional and firm-level heterogeneity to determine whether reforms are more effective under specific contextual conditions. Given the scale of Nigeria's economy and labor force, understanding how firms respond to regulatory reforms provides indispensable evidence for policy design across similar institutional contexts. In summary, while business environment reforms have been widely promoted as instruments for private-sector development, empirical evidence on their labor market effects remains mixed, particularly in developing economies characterized by institutional fragility. By examining firm-level responses to reform measures in Nigeria which is Africa's largest economy this study provides insights relevant to other emerging markets undergoing regulatory transformation. The study therefore provides rigorous evidence on whether and how EoDB reforms contribute to employment creation in Nigeria, addressing a critical knowledge gap for policymakers seeking to reduce unemployment and promote inclusive economic growth. The remainder of the paper is structured as follows: Section 2 presents the theoretical framework and literature review; Section 3 details the data, empirical strategy, and variable construction; Section 4 presents the

discussion of empirical results; Section 5 presents conclusions based on the findings of the study; and Section 6 outlines policy implications, and study limitations and areas for future research.

2. Theoretical Framework and Literature Review

2.1 Theoretical Foundations: Institutional Theory

Institutional theory provides the conceptual framework for understanding how ease of doing business (EoDB) reforms influence firm behavior and employment generation. According to the theory, organizations are embedded in a regulatory, social, and normative environment that shapes their incentives, resource allocation, and operational strategies (Li & Rama, 2015). When institutions are weak characterized by ambiguous regulations, inconsistent enforcement, or excessive bureaucracy firms divert resources toward compliance rather than investment and hiring. Conversely, improvements in institutional quality through EoDB reforms reduce transaction costs, promote transparency, and enhance predictability, enabling firms to invest, expand, and generate employment (Durst & Leyer, 2022; Ibrahim Kabir et al., 2022). Institutional theory also emphasizes the interplay between formal rules (laws, regulations) and informal practices (norms, traditions). In Nigeria, despite legislative reforms like the Companies and Allied Matters Act 2020 (CAMA 2020) and digitalization of tax and business registration, informal fees, infrastructural bottlenecks, and regional variations continue to constrain firm expansion (Balogun, 2023). These dynamics underscore the relevance of a micro-level analysis of how EoDB reforms translate into firm-level employment outcomes. Based on institutional theory, we expect firms operating within a more supportive regulatory environment reflected in formal registration, compliance with labor regulations, and exposure to business reforms to exhibit higher employment levels. However, these expectations are theoretical and require empirical verification. The following sections test these hypotheses using firm-level data and quasi-experimental methods.

2.2 Empirical Evidence on Ease of Doing Business and Employment

Empirical studies globally have established a positive relationship between improved business regulatory environments and firm performance or employment outcomes. Bétilla (2021) shows that in African countries, enhanced EoDB metrics significantly increase enterprise creation and reduce firm exit rates. Similarly, Durst & Leyer (2022) find that institutional quality positively influences process innovation across multi-country firm-level data, which indirectly stimulates labor demand. In Asia, Li & Rama (2015) demonstrate that micro and small enterprises are highly sensitive to the institutional environment; reforms that reduce bureaucratic delays and facilitate credit access translate into measurable employment growth. Liu & Wang (2019) show in China that reforms in employment protection and business regulations influence firm expansion decisions and formal sector job creation. Nketiah-Amponsah & Sarpong (2020) highlight that improved ease of doing business indicators attract foreign direct investment (FDI) in sub-Saharan Africa, which correlates with higher employment levels. These studies collectively suggest that EoDB reforms can be an effective lever for stimulating labor demand, particularly when institutional improvements are implemented comprehensively and enforced consistently. In the Nigerian context, studies examining the link between regulatory reforms and employment generation are limited but growing. Bowale & Ilesanmi (2014) found that improved regulatory conditions positively influence SME capacity for employment creation in Lagos State. Onwuchekwa (2023) underscores the role of institutional and policy interventions in promoting sustainable employment through micro, small, and medium enterprises (MSMEs) across Nigeria. Balogun (2023) reports that EoDB reforms such as digitalized business registration, tax simplification, and dispute resolution mechanisms have improved firm growth, albeit unevenly across regions. Furthermore, Olubodun et al. (2025) show that enterprise creation in Africa, including Nigeria, is sensitive to the regulatory environment, with micro-level variation in EoDB reform exposure affecting firm-level employment outcomes. Despite

these contributions, much of the Nigerian literature remains descriptive or correlational, often failing to identify causal effects of reforms or to account for heterogeneity across regions and firm characteristics.

2.3 Gaps in the Literature

While global and African studies highlight the positive role of EoDB reforms in enhancing firm performance and employment, several gaps persist. Namely, micro-level causal evidence: most Nigerian studies rely on descriptive statistics or correlational designs, which do not isolate the causal impact of EoDB reforms on employment generation; firm heterogeneity: limited research explores how the effects of reforms vary by firm size, age, sector, or geographic location; integration of institutional theory with rigorous empirical methods: few studies combine a strong theoretical framework with quasi-experimental techniques such as propensity score matching to control for selection bias in reform exposure; and recent reform analysis: many studies predate key Nigerian reforms (e.g., CAMA 2020, PEBEC interventions), leaving a gap in understanding the impact of the latest policy measures on employment outcomes. This study addresses these gaps by leveraging 2025 Job Creation Survey microdata and adopting a propensity score matching (PSM) approach to estimate the causal effect of EoDB reforms on employment, while also examining regional and firm-level heterogeneity. By doing so, it contributes to both theory and policy: it provides recent, micro-level causal evidence and informs policymakers about which reforms are most effective under different contexts.

3. Methodology and Data

3.1 Measurement of EoDB Reform Exposure

The main treatment variable captures exposure to EoDB reforms through firm incorporation timing relative to the onset of major policy reforms. Specifically, a binary variable (PEBEC) equals 1 for firms incorporated in 2016 or later, coinciding with the establishment of PEBEC and subsequent

waves of regulatory reforms; it equals 0 otherwise. This temporal cut-off allows identification of firms more likely to have benefited from streamlined registration, digitized tax filing, and improved business support systems. In addition, firm-level institutional characteristics such as registration with the Corporate Affairs Commission (CAC) and the existence of a pension scheme are included as complementary indicators of formalization, reflecting the extent of integration into Nigeria's reformed regulatory framework.

3.2 Data Source

The study utilizes microdata from the 2025 Job Creation Survey (JCS) consisting of 2024 Q1– Q4 and 2025 Q1, compiled by the National Bureau of Statistics (NBS) of Nigeria. The dataset captures firm-level information on employment, registration status, sectoral classification, ownership structure, financial access, and operational characteristics across Nigeria's six geopolitical zones. The survey covers formal and semi-formal enterprises with at least one paid employee, thus providing nationally representative evidence on firm behavior and labor demand. Data cleaning procedures included removal of incomplete entries and outlier replacement of extreme values in continuous variables to reduce outlier bias. The JCS dataset is uniquely suited for this analysis because it contains indicators relevant to ease of doing business (EoDB) reforms, such as firm registration, pension compliance, and incorporation period which serve as variables that reflect firms' exposure to key institutional and regulatory changes introduced since 2016 under the Presidential Enabling Business Environment Council (PEBEC).

Variable Definition and Construction

The empirical analysis employs both dependent and explanatory variables derived from the JCS microdata as summarized in table 1 below:

Table 1. Definition and Measurement of Variables

Variable	Abbreviation	Measurement	Conceptual Definition
Employment	InEmployment	Log of numbers of employees	Firm level labor demand
PEBEC Reform Exposure	PEBEC	1 if a firm is incorporated in 2016 or beyond, otherwise 0	Exposure to EoDB reforms
CAC Registration	CAC	1 if firm is registered with Corporate Affairs Commission, otherwise 0	Formal business status
Pension Scheme	Pension	1 if firm has pension provision for its employees, otherwise 0	Labor formalization
Sole Administration	SoleAdmin	1 if firm is own by sole owner, otherwise 0	Ownership structure
Manufacturing Sector	Manufacturing	Sector dummy	Industrial classification
Wholesale Sector	Wholesale	Sector dummy	Trade activity
Record Keeping	Records	1 if firm keep formal records	Managerial capability
Owner Age Group	Age	Categorical	Entrepreneur's age group
Region	Region	Nigeria's geopolitical zone dummies	Institutional environment

Source: Authors' Design

Dependent Variable: Employment Generation (InEmployment) measured as the natural logarithm of the number of workers employed by each firm. This continuous measure captures proportional changes in firm-level labor demand while minimizing skewness in employment distribution.

Treatment and Institutional Variables: These include variables like PEBEC which is a dummy variable = 1 if firm was incorporated in 2016 or later, 0 otherwise; CAC Registration as a dummy variable = 1 if firm is formally registered with the Corporate Affairs Commission, 0 otherwise; and

Pension Scheme also as a dummy variable = 1 if firm maintains a formal pension plan for employees, 0 otherwise.

Control Variables: The control variables include *Sole Administrator* a dummy variable = 1 if firm has a sole owner/manager, 0 otherwise; *Manufacturing Sector* as a dummy variable = 1 if firm operates in manufacturing, 0 otherwise; *Wholesale Sector* as a dummy variable = 1 if firm operates in wholesale/retail trade, 0 otherwise; *Record Keeping* dummy variable = 1 if firm keeps formal financial or operational records, 0 otherwise; *Owner's Age Group* as a categorical variable capturing the age range of the principal owner; and *Geopolitical Zone* that captures regional fixed effects representing Nigeria's six zones (North Central, North East, North West, South East, South South, South West) to account for subnational institutional heterogeneity.

To empirically estimate the impact of ease of doing business (EoDB) reforms on firm-level employment generation in Nigeria, the study specifies a baseline regression model and extends it to quasi-experimental estimators for robustness and causal inference. The baseline relationship between EoDB reforms and employment generation is modelled as:

$$\ln(\text{employment}_i) = \alpha + \alpha_1 \text{PEBEC}_i + \alpha_2 \text{CAC}_i + \alpha_3 \text{Pension}_i + \alpha_4 X_i + \delta_z + \epsilon_i \quad (1)$$

where:

$\ln(\text{employment}_i)$ is the natural logarithm of total employee in firm i representing employment generation, PEBEC_i is a dummy variable that equal 1 for firms incorporated in 2016 or later (capturing exposure to EoDB reforms), CAC_i indicates whether the firm is registered with the Corporate Affairs Commission or otherwise, Pension_i a dummy for pension provision by a firm, X_i is a vector of control variables including ownership structure, sectoral dummies, record keeping, and owner's age group, δ_z represent regional fixed effects for Nigeria's geopolitical zones that account for subnational institutional

variations, ϵ_i is an idiosyncratic error term, and α_{iS} represent the coefficient of interest, captures the marginal effect of EoDB reform exposure (via the PEBEC dummy) on employment generation, controlling for firm-level and regional characteristics. The baseline model is estimated using the Linear Probability Model (LPM) to facilitate interpretation of binary outcomes and to maintain consistency with quasi-experimental estimators used subsequently. Robust standard errors are applied to account for heteroskedasticity.

Quasi-Experimental Estimators

Recognizing that firms incorporated after 2016 may differ systematically from those established earlier, the study employs three quasi-experimental estimators to mitigate potential selection bias and strengthen causal inference.

(a). Regression Adjustment (RA)

The RA approach models the conditional expectation of the outcome variable given treatment and covariates:

$$E[\ln(\text{employment}_i | \text{PEBEC}_i, X_i)] = \alpha + \text{PEBEC}_i + \gamma X_i \quad (2)$$

This method adjusts for observable covariate differences through parametric regression, providing an estimate of the average treatment effect (ATE).

(b) Inverse Probability Weighted Regression Adjustment (IPWRA)

The IPWRA estimator combines propensity score weighting and regression adjustment, offering double robustness consistent estimation if either the treatment model or the outcome model is correctly specified. The weighting equation is given by:

$$w_i = \frac{\text{PEBEC}_i}{\hat{P}_i} + \frac{1 - \text{PEBEC}_i}{1 - \hat{P}_i} \quad (3)$$

Where $\hat{P}_i = P(\text{PEBEC}_i = 1 | X_i)$ is the estimated propensity score.

The outcome regression is then estimated within treated and control groups using these weights to derive both ATE and ATT.

(c) Nearest Neighbor Matching (NNMATCH)

In the NNMATCH estimator, each treated firm is matched to one or more untreated firms with the closest propensity score values. The treatment effect is computed as the mean difference in employment between matched pairs:

$$ATE = \frac{1}{N_T} \sum_{i \in T} [\ln(\text{employment}_i^T) - \ln(\text{employment}_j^C)] \quad (4)$$

Where

T & C = denote the sets of treated and control firms,

N_T = number of treated firms

employment_i^T = is the employment of treated firms

employment_j^C = is the employment of mtched control firm(s) j

respectively.

Matching is performed with replacement and a caliper threshold to ensure quality matches and reduce bias.

Heterogeneity Analysis

To explore differential effects of EoDB reforms across regions and firm characteristics, the study estimates the regression-adjusted treatment effect within subgroups defined by:

- i. **Region:** this includes all the six geopolitical zones (North Central, North East, North West, South East, South South, and South West);
- ii. **Sector:** manufacturing, wholesale/retail, and services;
- iii. **Ownership structure:** sole proprietorship vs. partnership or limited liability.

The heterogeneity model takes the form:

$$\ln(\text{employment}_i) = \alpha + \beta_1 \text{PEBEC}_i + (\text{PEBEC}_i \times H_i) + \gamma X_i + \delta_z + \varepsilon_i \quad (5)$$

Where

H_i represents subgroup indicators (e. g region, sector, ownership), and $(PEBEC_i \times H_i)$ is the interaction term that captures the differential effects of EoDB reforms within each subgroup. This specification provides a rigorous framework for assessing both the average and heterogeneous treatment effects of ease of doing business reforms on employment generation among Nigerian firms, ensuring the robustness and policy relevance of the results presented in the subsequent section.

The study adopts a quasi-experimental approach to identify the causal effect of EoDB reforms on employment generation. The empirical analysis proceeds in three stages. Firstly, a baseline regression is estimated using the Linear Probability Model (LPM) framework to establish preliminary associations between EoDB reform exposure and employment outcomes while controlling for firm characteristics and regional fixed effects. Secondly, to address potential selection bias and ensure robustness of causal inference, the study employs three alternative estimation strategies: Regression Adjustment (RA) controls for observable characteristics through parametric regression models; Inverse Probability Weighted Regression Adjustment (IPWRA) combines weighting and regression adjustment to achieve doubly robust estimates of the Average Treatment Effect (ATE) and Average Treatment Effect on the Treated (ATT); and Nearest Neighbor Matching (NNMATCH) matches treated and control firms with similar propensity scores to estimate counterfactual outcomes non-parametrically. Also, the study conducts a heterogeneity analysis using the Regression Adjustment (RA) framework to assess differential treatment effects across regions, firm size, sector, and ownership characteristics. This analysis identifies whether the benefits of EoDB reforms are more pronounced among specific firm groups or geographic zones, offering nuanced policy insights into regional and structural dynamics of employment generation. Finally, the paper adopts regression Adjustment (RA) as the baseline quasi-experimental estimator because the outcome variable is continuous and the covariates capture the

primary sources of observable heterogeneity across firms. Thus, RA provides efficient parametric estimates of the Average Treatment Effect (ATE) when the conditional expectation function is correctly specified. In addition, RA is believed to be computationally stable and less sensitive to propensity score misspecification compared to matching-only approaches. To address potential concerns regarding linearity assumptions, we complement RA with IPWRA, which offers doubly robust estimation, and NNMATCH, a non-parametric method. The convergence of results across these estimators therefore indicates that the findings are robust to alternative identification strategies (Imbens & Wooldridge, 2009).

4. Discussion of Empirical Research

4.1 Descriptive Statistics

The descriptive statistics presented below illustrate patterns of firm characteristics and reform exposure but do not imply causal relationships. Causal effects are evaluated in subsequent regression and treatment-effect analyses. These descriptive patterns provide initial evidence of regional and institutional asymmetries in Nigeria's business environment important contextual factors that may influence firm-level employment outcomes. Table 1 presents the distribution of firms across Nigeria's six geopolitical zones according to three major ease of doing business (EoDB) indicators: registration with the Corporate Affairs Commission (CAC), presence of a formal pension scheme, and year of incorporation (used as a proxy for exposure to PEBEC reforms). The statistics from table 2 reveal that approximately 62% (4,151 out of 6,727 firms) of sampled enterprises are registered with the Corporate Affairs Commission (CAC). Regional disparities are evident: the South West and South South zones account for the highest concentrations of registered firms (about 35% and 19%, respectively), consistent with prior findings that formal sector activity is concentrated in Nigeria's commercial and coastal regions (Bowale & Ilesanmi, 2014; Balogun, 2023). In contrast, registration rates are relatively lower in the

northern zones, reflecting persistent institutional and infrastructural barriers that deter formalization (Onwuchekwa, 2023). This spatial variation aligns with institutional theory, which posits that firms' strategic responses to regulatory environments are shaped by local institutional quality and enforcement mechanisms (North, 1990; Scott, 2014). Regions with more efficient regulatory agencies, digital infrastructure, and enforcement capacity tend to attract more registered firms due to lower transaction and compliance costs (Durst & Leyer, 2022).

Table 2. Distribution of Firms Based on EoDB Reforms in Nigeria

Variable	Region						Total
	NC	NE	NW	SE	SS	SW	
Registered with CAC							
Yes	743	323	491	340	789	1,465	4,151
No	474	299	478	279	522	524	2,576
Pension Scheme							
Yes	137	63	73	27	107	338	745
No	1,080	559	896	592	1,204	1,651	5,982
Incorporated 2016 >							
Yes	442	197	355	249	622	776	2,641
No	775	425	614	370	689	1,213	4,086

Source: Authors' Computation Using Nigeria's Job Creation Survey Dataset (2025)

Pension Compliance and Employment Formalization

Also, descriptive statistics from table 2 shows that only 11% of firms (745 out of 6,727) report maintaining a formal pension scheme, suggesting that a large share of enterprises especially micro and small firms operate informally or partially outside the social protection framework. This finding is consistent with Nageri & Gunu (2020), who observed that weak enforcement of labor and pension regulations has constrained formal employment expansion in Nigeria's SME sector. The concentration of pension-compliant firms in the South West (45%) mirrors regional differences in institutional enforcement and financial literacy. Similar patterns were found in Ghana and Kenya, where

firm compliance with employment-related regulations correlated strongly with institutional capacity and access to financial intermediation (Nketiah-Amponsah & Sarpong, 2020; Li & Rama, 2015).

Exposure to PEDEC Reforms

In addition, statistics from table 1 indicate that roughly 39% of firms (2,641) were incorporated in 2016 or later, thus classified as having direct exposure to the Presidential Enabling Business Environment Council (PEDEC) reforms. The South West (29%) and South South (24%) again record the highest shares of recently incorporated firms, consistent with reports that PEDEC reforms such as digitalized registration, one-stop business portals, and improved dispute resolution were most effectively implemented in these regions (Balogun, 2023; Olubodun et al., 2025). The relatively lower incorporation rates in the North East and North West likely reflect infrastructural gaps, insecurity, and limited access to regulatory institutions, which continue to impede the diffusion of EoDB benefits (Ibrahim Kabir et al., 2022).

Demographic Composition of Firm Owners

Furthermore, the socio-demographic distribution of the sampled firms was presented in table 3 which indicate that most firm owners (approximately 70%) are aged 36 years and above, suggesting a relatively mature entrepreneurial base across regions. This age distribution aligns with earlier findings by Nageri & Gunu (2020) and Onwuchekwa (2023), which observed that middle-aged and older entrepreneurs dominate Nigeria's formal enterprise sector, likely due to accumulated experience, capital, and networks required to navigate regulatory systems. Only about 12% of firms are owned by individuals aged 15–35 years, highlighting persistent barriers for youth entrepreneurship such as limited access to finance, high registration costs, and lack of institutional support. This outcome resonates with Li & Rama (2015), who found that institutional constraints disproportionately affect younger entrepreneurs in developing economies, reducing their entry and survival

rates. Gender distribution shows that male-owned firms (77%) substantially outnumber female-owned firms (23%). The South South and South East zones record relatively higher female participation, reflecting growing female entrepreneurship in commerce and services sectors. However, the persistent gender gap underscores structural inequalities in access to credit, information, and regulatory compliance assistance (Durst & Leyer, 2022).

Legal and Organizational Structure

The majority of firms (about 75.5%) operate as sole proprietorships, with relatively few incorporated as private limited liability companies (14%) or partnerships (5%). This pattern indicates a predominantly informal and individually managed enterprise landscape, consistent with Bowale & Ilesanmi (2014), who observed that the dominance of micro and small sole proprietorships in Nigeria reflects low barriers to entry but limited scalability and job creation potential. The low representation of joint ventures, cooperatives, and incorporated firms highlights structural bottlenecks in business formalization, including cumbersome registration procedures and weak enforcement of corporate governance frameworks. These findings reinforce the rationale for PEBEC and CAMA 2020 reforms aimed at simplifying incorporation and improving legal flexibility (Balogun, 2023).

Table 3. Firm's Characteristics Distribution

Variable	Region						Total
	NC	NE	NW	SE	SS	SW	
Owner's Age Group							
15-35 Years	149	105	165	54	143	199	815
36 and Above	780	386	584	450	917	1,144	4,261
Not Specified	288	131	220	115	251	646	1,651
Gender							
Male	727	455	695	353	763	918	3,911
Female	205	36	54	150	298	427	1,170

Variable	Region						Total
	NC	NE	NW	SE	SS	SW	
Legal Status							
Sole Proprietorship	932	491	749	504	1,061	1,345	5,082
Partnership	60	57	59	17	36	128	357
Joint Venture	19	15	12	8	11	25	90
Private Ltd. Liability	172	32	112	69	155	430	970
Public Ltd. Liability	9	4	16	10	12	29	80
Cooperative	14	18	10	4	8	6	60
Faith Based Org.	7	4	4	7	11	12	45
Other (Specify)	4	1	7	0	17	14	43
Record Keeping							
Yes	895	386	493	413	963	1,512	4,662
No	322	236	476	206	348	477	2,065

Source: Authors' Computation Using Nigeria's Job Creation Survey Dataset (2025)

Record-Keeping Practices

Approximately 69% of firms (4,662) maintain formal record-keeping systems, while 31% (2,065) do not. Regional variation again appears: the South West and South South exhibit the highest record-keeping prevalence, likely due to greater financial literacy, digital penetration, and access to business services. Proper record keeping is positively associated with productivity and access to credit (Durst & Leyer, 2022; Liu & Wang, 2019). The observed disparities therefore suggest that firms with weak managerial or accounting capacity often smaller and informally managed may be less able to benefit from EoDB reforms, as compliance with simplified procedures still requires minimum documentation and digital engagement. Overall, the descriptive results in Tables 1 and 2 highlight three important insights: (i). *Regional disparities* persist in firm formalization, institutional compliance, and reform exposure,

suggesting uneven diffusion of EoDB benefits; (ii). *Structural informality* remains widespread, as indicated by the predominance of sole proprietorships and low pension coverage; and (iii). *Entrepreneurial demographics* especially age, gender, and managerial capacity play a critical role in determining firms' ability to engage with and benefit from institutional reforms. These characteristics justify the inclusion of corresponding control variables in the econometric models and underscore the importance of a quasi-experimental design to isolate genuine reform effects from compositional differences. The next subsections quantify these effects using regression and quasi-experimental estimations to determine whether EoDB reforms have significantly enhanced employment generation among treated firms.

Baseline Regression Results

Table 4 presents the baseline regression estimates examining the relationship between *Ease of Doing Business (EoDB)* reforms and job creation among Nigerian firms. The model explains about 30.3% of the variation ($R^2 = 0.303$) in employment generation across firms, which is reasonable given the cross-sectional nature of the dataset and heterogeneity in firm characteristics. Robust standard errors are reported to address potential heteroskedasticity. The coefficient for CAC Registration (0.405, $p < 0.01$) is positive and statistically significant, suggesting that firms formally registered with the Corporate Affairs Commission employ significantly more workers than unregistered firms. This finding supports institutional theory predictions that *formalization enhances firms' access to resources, markets, and legal protections*, thereby facilitating expansion and job creation (North, 1990; Scott, 2014). Empirically, this aligns with Djankov et al. (2006) and World Bank (2020), who found that reduced entry barriers and improved registration processes are associated with higher firm performance and employment in developing economies. It also corroborates Obioma & Ilesanmi (2022), who documented that Nigerian SMEs that formalized under post-2016 CAC reforms experienced stronger employment growth and financial inclusion.

The Pension Scheme dummy (0.783, $p < 0.01$) exhibits the largest positive coefficient, indicating that firms that offer pension schemes employ substantially more labor on average. This suggests that labor formalization and social protection mechanisms are positively correlated with firm scale and stability. This result is consistent with Ajakaiye et al. (2021) and Adegboye and Olubusoye (2018), who found that formal labor benefits and compliance with employee welfare regulations correlate with higher productivity and firm longevity in Nigeria. The implication is that labor-regulatory reforms contribute indirectly to job growth by encouraging firms to adopt sustainable human resource practices.

Table 4. Baseline Regression Result Estimating the Effects of Ease of Doing Business Programs on Job Creation in Nigeria

Independent Variables	Coefficients
EDB Programs	
Registered with CAC	0.405*** (0.028)
Pension Scheme	0.783*** (0.056)
PEBEC	-0.242*** (0.025)
Control Variables	
Sole Administrator	-0.424*** (0.051)
Manufacturing	0.299*** (0.041)
Wholesale	-0.277*** (0.027)
Record Keeping	0.265*** (0.029)
Owner's Age group	0.153*** (0.03)
Region (North Central as Reference)	
North East	0.163*** (0.05)

Independent Variables	Coefficients
North West	0.278*** (0.044)
South East	-0.098* (0.05)
South South	-0.15*** (0.041)
South West	0.04 (0.038)
Constant	1.512*** (0.104)
Observations	6727
R-squared	0.303

Note: Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ refer to statistical significance at 99%, 95%, and 90% confidence intervals.

Source: Authors' Computation Using Nigeria's Job Creation Survey Dataset (2025)

Contrary to expectation, the PEBEC variable (-0.242, $p < 0.01$) is negative and statistically significant. This suggests that firms incorporated after 2016 during or after the implementation of PEBEC's reforms employ fewer workers on average compared to older firms. Several factors may explain this outcome. First, new firms may be smaller and younger, still in early growth stages, and therefore employ fewer workers despite easier entry conditions. Second, while reforms have reduced administrative bottlenecks, they have not necessarily lowered financing or infrastructure constraints that limit early-stage expansion (World Bank, 2023; Siba, 2020). This finding echoes Hallward-Driemeier & Pritchett (2015), who cautioned that regulatory simplification alone does not automatically yield job creation unless accompanied by complementary reforms in credit markets and infrastructure. Thus, while PEBEC may have enhanced entry, its immediate employment impact appears limited or lagged. Among control variables, Sole Administrator (-0.424, $p < 0.01$) negatively predicts employment, suggesting that individually managed firms are less likely to expand employment compared to those with managerial teams or partnerships. This aligns with Bloom & Van Reenen (2010), who highlighted

managerial quality as a key determinant of firm productivity and labor absorption. Firms in the manufacturing sector (0.299, $p < 0.01$) are significantly more employment-intensive than those in services or other sectors, consistent with structural transformation theories (Rodrik, 2016). Conversely, wholesale firms (-0.277, $p < 0.01$) employ fewer workers, likely due to higher automation and lower labor requirements. Record keeping (0.265, $p < 0.01$) positively predicts employment, supporting evidence that managerial capability and financial literacy are essential for scaling operations (Durst & Leyer, 2022). Similarly, owner's age group (0.153, $p < 0.01$) implies that mature entrepreneurs tend to manage larger or more stable enterprises, consistent with human capital theory (Becker, 1964). Regional disparities are evident. Firms in the North East (0.163) and North West (0.278) regions show significantly higher employment relative to North Central, possibly reflecting post-conflict reconstruction and expansion of small-scale manufacturing clusters in those zones. In contrast, firms in the South East (-0.098) and South South (-0.150) zones exhibit lower employment. These regions, while industrially active, may face infrastructure deficits, insecurity, and higher business costs (NBS, 2024). The South West coefficient, though positive (0.04), is not statistically significant likely reflecting its already mature and competitive business environment, where marginal EoDB effects on employment may be minimal. Overall, the baseline regression underscores that institutional reforms fostering business and labor formalization rather than mere procedural simplification have the most substantial effects on job creation. The findings emphasize that while PEBEC reforms have improved entry processes, complementary efforts to deepen financial access, infrastructure, and managerial support remain essential for translating reform-induced efficiency into broad-based employment gains. This empirical finding is consistent with institutional theory, which predicts that the quality and depth of enforcement institutions matter more than the formal existence of reform policies (Rodrik, Subramanian & Trebbi, 2004).

Overall Treatment Effects Estimation Results

Table 5 presents the estimated *Average Treatment Effects (ATE)* of key Ease of Doing Business (EoDB) reforms on employment generation among Nigerian firms, using three quasi-experimental estimators: Regression Adjustment (RA), Inverse Probability Weighted Regression Adjustment (IPWRA), and Nearest Neighbor Matching (NNMATCH). These estimators collectively enhance the robustness of causal inference by controlling for selection bias and observable firm characteristics (Imbens & Wooldridge, 2009).

Impact of Business Registration (CAC) on Employment

Across all three estimators, the Average Treatment Effect (ATE) for Firms that are *registered with CAC* is positive and consistent, ranging between 0.476 and 0.496. This implies that, on average, formally registered firms employ about 48–50% more workers than comparable unregistered firms after accounting for confounding factors. This result corroborates findings from Djankov et al. (2006) and Bétilla (2021), who observed that formalization substantially enhances firms' access to credit, contracts, and market networks mechanisms that promote expansion and job creation. It also supports institutional theory, which posits that formal institutional alignment reduces transaction costs and improves predictability, thereby incentivizing firm growth (North, 1990; Li & Rama, 2015).

Table 5. Overall Treatment-Effects Estimation Results

Estimator	Treatment Variable	ATE Coefficient	Robust Std. Error
RA	Registered with CAC	0.496	0.032
NNMATCH	Registered with CAC	0.476	0.048
IPWRA	Registered with CAC	0.496	0.032
RA	Pension Scheme	0.472	0.076
NNMATCH	Pension Scheme	0.639	0.092
IPWRA	Pension Scheme	0.472	0.076
RA	PEBEC	-0.254	0.025
NNMATCH	PEBEC	-0.237	0.026
IPWRA	PEBEC	-0.254	0.025

Source: Authors' Computation Using Nigeria's Job Creation Survey Dataset (2025)

From a policy perspective, the evidence suggests that Nigeria's recent CAC reforms especially the digitization of business registration under the *Companies and Allied Matters Act (CAMA 2020)* are translating into tangible employment benefits. However, regional heterogeneity (as discussed later) may moderate these impacts.

Impact of Pension Scheme on Employment

The treatment effect of Pension Scheme participation is also strongly positive across estimators, ranging from 0.472 (RA/IPWRA) to 0.639 (NNMATCH). This indicates that firms with formal pension arrangements employ between 47% and 64% more workers on average than otherwise similar firms without pension schemes. This finding is consistent with Ajakaiye et al. (2021) and Adegboye & Olubusoye (2018), who found that adherence to formal labor regulations correlates with business stability, improved worker retention, and firm growth. The positive and sizable ATE suggests that labor market formalization mechanisms beyond easing business entry are crucial drivers of job creation. In essence, offering pension benefits may signal organizational credibility and long-term sustainability, attracting both skilled labor and institutional financing. This highlights the complementarity between *business formalization* and *labor formalization* as dual pillars of employment generation in Nigeria's enterprise ecosystem.

Impact of PEBEC Reforms (Post-2016 Incorporation)

Unexpectedly, the ATE for PEBEC is negative and statistically significant across all estimators (ranging from -0.237 to -0.254). This implies that firms incorporated after the establishment of the Presidential Enabling Business Environment Council (PEBEC) in 2016 employ about 24–25% fewer workers than comparable firms incorporated earlier. This finding, though counterintuitive, aligns with emerging evidence that early-stage firms especially those founded post-reform tend to be smaller and more capital-constrained (World Bank, 2023; Siba, 2020). While PEBEC reforms have

streamlined entry procedures, they may not yet have produced a full-scale employment impact due to persistent structural bottlenecks such as poor electricity supply, limited credit access, and regional insecurity (Balogun, 2023; Onwuchekwa, 2023). Furthermore, Hallward-Driemeier & Pritchett (2015) argue that the *de jure* simplification of business procedures often diverges from *de facto* outcomes, as implementation gaps and informal practices dilute the intended benefits of reforms. Thus, while Nigeria's reform architecture has improved institutional accessibility, its labor market effects appear lagged or uneven. The overall treatment effects provide robust support for the hypothesis that business and labor formalization are central to job creation in Nigeria, whereas administrative reforms alone may not suffice. The positive impacts of CAC registration and pension scheme participation reinforce the importance of institutional credibility and compliance mechanisms in expanding formal employment. In contrast, the negative PEBEC effect highlights the limits of procedural reforms in the absence of deeper structural and financial interventions. These results collectively suggest that Ease of Doing Business reforms yield the highest employment dividends when complemented by supportive institutional and financial ecosystems an insight consistent with Rodrik, Subramanian, & Trebbi (2004) and Durst & Leyer (2022), who emphasize the interdependence between institutional quality, firm incentives, and labor market outcomes.

Heterogeneity Analysis of Regional and Firm Differences in Treatment Effects

Table 6 presents the results of the heterogeneity analysis, estimating how the employment effects of *Ease of Doing Business (EoDB)* reforms vary across regions and firm-level characteristics. Using the Regression Adjustment (RA) estimator, the analysis reveals substantial differences in treatment effects, suggesting that the benefits of EoDB reforms are not evenly distributed across Nigeria's economic and institutional landscape.

Regional Heterogeneity

The regional estimates highlight notable disparities in how EoDB reforms translate into employment gains. The South West region shows the highest average treatment effect (ATE = 0.703, $p < 0.01$), suggesting that firms in Nigeria's most industrialized zone benefit disproportionately from business environment improvements. This may reflect stronger institutional capacity, better infrastructure, and greater financial depth in states such as Lagos and Ogun, where reforms are more effectively implemented which may simplify achieving a sustainable labour market outcome (Miraskari & Pitenoei, 2022). Similarly, South South (0.497) and North East (0.485) exhibit relatively strong positive effects. The South South's performance likely stems from increased diversification and public-private investment initiatives in post-oil economic restructuring, while the North East's positive result could reflect ongoing reconstruction efforts that have stimulated SME expansion despite conflict-related disruptions. The North West (0.455) also records significant gains, consistent with emerging evidence that improving administrative efficiency and financial inclusion in the region supports small-scale industrial clusters (Olubodun et al., 2025). Conversely, the South East (0.234) shows the weakest and statistically less robust effect. This may be due to infrastructural deficiencies, high operating costs, and regulatory inconsistencies across states such as Anambra and Abia (Onwuchekwa, 2023). The North Central (0.358) presents moderate gains, possibly reflecting mixed institutional performance in business administration and credit facilitation. Overall, these findings underscore spatial inequality in reform effectiveness, consistent with the institutional theory view that contextual institutional quality shapes the extent to which reforms yield tangible outcomes (Rodrik, Subramanian & Trebbi, 2004; North, 1990).

Table 6. Heterogeneity Analysis of Regional and Firm Differences in Treatment-Effects

Region/Firm Characteristic	Estimator	ATE Coefficient	Robust Std. Error
North Central	RA	0.358	0.079
North East	RA	0.485	0.090
North West	RA	0.455	0.070
South East	RA	0.234	0.147
South South	RA	0.497	0.074
South West	RA	0.703	0.078
Manufacturing	RA	0.626	0.095
Record Keeping	RA	0.668	0.047
Sole Administrator	RA	0.372	0.029

Source: Authors' Computation Using Nigeria's Job Creation Survey Dataset (2025)

Firm-Level Heterogeneity

The results for firm characteristics reveal that manufacturing firms exhibit a notably strong positive treatment effect ($ATE = 0.626, p < 0.01$). This confirms that regulatory simplification and formalization reforms have a larger payoff in labor-intensive, productive sectors. Manufacturing enterprises benefit from improved contract enforcement, access to inputs, and financing factors amplified by formal business status (Li & Rama, 2015; Siba, 2020). Firms that maintain formal record keeping also experience significantly higher employment gains ($ATE = 0.668, p < 0.01$), implying that managerial capability and transparency complement the benefits of EoDB reforms. This aligns with Durst & Leyer (2022), who find that data-driven management practices strengthen the relationship between institutional efficiency and firm growth. On the other hand, sole administrators have a smaller, though still positive, employment effect ($ATE = 0.372, p < 0.01$). The relatively lower impact among these firms suggests that managerial structure and decision-making capacity constrain their ability to leverage institutional reforms for expansion. This echoes Bloom & Van Reenen (2010), who identified managerial heterogeneity as a major determinant of productivity and employment differentials. The heterogeneity results collectively highlight that

institutional reforms are most effective where complementary capacities managerial, infrastructural, and financial are stronger. The large effects in the South West and among manufacturing or record-keeping firms demonstrate that reforms interact with existing institutional and managerial capabilities to produce greater employment outcomes. These findings have two major implications (i). *Policy complementarity* reforms aimed at reducing administrative bottlenecks should be accompanied by programs that enhance managerial training, access to credit, and record-keeping capacity, especially among small firms and in lagging regions; and (ii). *Spatial targeting* given the uneven regional effects, policy interventions should prioritize regions like the South East and North Central by strengthening local business support institutions, improving infrastructure, and addressing informal regulatory practices that dilute reform effectiveness. The results are consistent with the broader literature emphasizing that institutional reforms yield heterogeneous impacts depending on local implementation capacity and firm-level absorptive ability (Rodrik, 2016; World Bank, 2020).

5. Conclusions

This study examined the effects of Ease of Doing Business (EoDB) reforms on employment generation in Nigeria, using evidence from the 2025 Job Creation Survey and applying a quasi-experimental framework. Grounded in institutional theory, the study explored how regulatory quality and institutional efficiency influence firm behavior and labor demand. By employing multiple estimators including Regression Adjustment (RA), Inverse Probability Weighted Regression Adjustment (IPWRA), and Nearest Neighbor Matching (NNMATCH) the study provided robust causal estimates of EoDB reforms' impacts on job creation and firm heterogeneity across regions and sectors. Empirical results show that formalization indicators, notably firm registration with the Corporate Affairs Commission (CAC) and the existence of pension schemes, significantly increase firm-level employment. These findings affirm the institutional argument that strong and

predictable regulatory environments reduce transaction costs, encourage firm expansion, and support labor absorption. Conversely, the negative treatment effects associated with PEBEC-related reforms suggest that while Nigeria's business reforms have improved the general investment climate, their direct employment impact remains uneven and possibly transitional, reflecting persistent implementation and coordination challenges. The heterogeneity analysis further revealed substantial regional and firm-type disparities in treatment effects, with firms in the South-West and South-South zones, as well as those engaged in manufacturing and formal record-keeping, benefiting most from EoDB reforms. This suggests that institutional and infrastructural readiness conditions the extent to which reforms translate into job creation. Overall, the findings underscore that institutional reforms matter for employment outcomes, but their effectiveness depends on depth, consistency, and inclusiveness. Strengthening subnational implementation capacity, enhancing firm-level compliance incentives, and integrating reform design with capacity-building programs for SMEs are crucial for maximizing the employment potential of Nigeria's business environment reforms. In conclusion, this study contributes to both academic and policy discourse by providing micro-level causal evidence linking EoDB reforms to labor market outcomes in Nigeria. It highlights the need for sustained, context-sensitive, and evidence-based reform strategies to achieve inclusive economic growth and employment generation in the post-reform era. Eventually, improving the business environment can enhance employment growth, but its effectiveness depends critically on institutional capacity and firm characteristics. Regulatory reform alone is not a sufficient condition for inclusive job creation in developing economies.

The findings from this study offer several significant policy insights for improving the employment impact of Ease of Doing Business (EoDB) reforms in Nigeria. First, the positive effects of firm registration (CAC) and pension scheme adoption on employment generation highlight the importance of formalization and regulatory compliance as key channels for sustainable job

creation. Policies that simplify registration processes, reduce associated costs, and expand digital access to Corporate Affairs Commission (CAC) services could further enhance firm entry and expansion. This aligns with the argument by Djankov et al. (2006) and Nketiah-Amponsah and Sarpong (2020) that streamlined entry procedures significantly raise enterprise creation rates in developing economies. Second, the negative coefficient for PEBEC reforms suggests that while institutional reforms under the Presidential Enabling Business Environment Council have improved Nigeria's business climate ranking, their direct employment effects remain weak or possibly transitional. This may be due to uneven implementation across states, administrative delays, or sectoral differences in responsiveness. Hence, government interventions should focus on ensuring reform consistency across sub-national levels, strengthening accountability, and improving coordination between PEBEC and state-level ease-of-doing-business councils, as emphasized by Onwuchekwa (2023). Third, the strong regional and firm-type heterogeneities found in the treatment-effects analysis indicate that a "one-size-fits-all" approach to EoDB reforms may be ineffective. Regions such as the South-West and South-South demonstrated the highest employment impact, while others, notably the South-East, lagged behind. This underscores the need for region-specific business support strategies, particularly in infrastructure, credit access, and security stability. In line with Ajakaiye, Jerome, and Ncube (2021), policies should target localized institutional bottlenecks to reduce the asymmetry in reform benefits. Fourth, firms engaged in manufacturing and those practicing record-keeping exhibited stronger employment responses to EoDB interventions. These results reinforce the importance of enterprise management quality and financial literacy programs for small and medium-scale enterprises (SMEs). Policymakers could strengthen partnerships between the Bank of Industry, SMEDAN, and industrial clusters to enhance managerial training, accounting transparency, and productivity support. By and large, the study provides evidence that the quality of institutional reforms not merely their introduction determines employment outcomes.

Strengthening regulatory enforcement, transparency, and private-sector participation in reform design would help Nigeria realize the full employment potential of its EoDB initiatives.

While this study provides novel quasi-experimental evidence, several limitations should be acknowledged. First, the analysis relies on the 2025 Job Creation Survey dataset, which, though comprehensive, is cross-sectional. Consequently, it captures associations and treatment effects at one point in time, without observing dynamic or long-term employment trajectories. Future studies could employ panel data or difference-in-differences frameworks to examine persistence and temporal spillovers of EoDB reforms. Second, the measure of EoDB reform exposure particularly the PEBEC dummy (post-2016 incorporation) is a useful proxy but may not fully capture the intensity or quality of reform exposure across states. Incorporating state-level reform indices or PEBEC sub-indicators (e.g., business registration time, tax administration, construction permits) could enrich causal precision. Third, unobserved firm characteristics such as entrepreneurial ability, innovation capacity, or access to finance might still bias estimated effects, despite the use of matching estimators (RA, IPWRA, and NNMATCH). Future research could integrate instrumental variable (IV) or structural modelling techniques to control for potential endogeneity. Finally, although this study identifies regional heterogeneity, it does not explore sector-specific transmission channels beyond manufacturing and wholesale trade. A disaggregated sectoral analysis especially of service and agro processing sectors would deepen understanding of reform pathways and inform targeted interventions. Despite these limitations, the study offers robust and policy-relevant evidence that Nigeria's Ease of Doing Business reforms, if sustained and better targeted, can significantly enhance employment generation, promote firm formalization, and strengthen institutional resilience.

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Conflicts of Interest

The authors declare that they have no known competing financial or non-financial interests that could have influenced the work reported in this manuscript.

Data Availability

The data used in this study are derived from the National Bureau of Statistics (NBS) 2025 Job Creation Survey. Restrictions apply to the availability of these data, which were used under license. Data may be obtained from NBS upon reasonable request and with permission. <https://microdata.nigerianstat.gov.ng/index.php/catalog/166/get-microdata>

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