FROM OIL TO ALGORITHMS: A POLICY ANALYSIS OF NATIONAL STRATEGIES FOR DIVERSIFYING NIGERIA'S ECONOMY FROM AI INNOVATION AND DIGITAL EXPORTS

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Keywords

Economic Diversification, Artificial Intelligence (AI), Digital Economy, Digital Exports, Oil Dependency, ICT, Digital Infrastructure, STEM Education

Abstract

Research Problem: *Nigeria's economy remains seriously dependent on hydrocarbons despite digital economy growth, accounted for 78.5 percent of export revenue and 8.6 percent of GDP in 2023. The study investigate the severe implementation gap between Nigeria's ambitious national digital policies and actual execution.*
Methods: *This research employs a mixed-methods approach with dominant quantitative direction of sectoral performance indicators, systematic policy review, and time series descriptive analysis 2015-2025.*
Results: *The result of digital sectoral performance shows that ICT contributed 18.44 percent to GDP in Q4 2023, and tech startups attracted over $1 billion in venture capital (2021-2023). The finding also displays that only 44 percent of Nigerians have internet access, long-lasting power instability, and a severe shortage of advanced AI talent.*
Conclusion: *The study concludes that success economy diversification through AI innovation and digital exports requires moving beyond aspirational policy to targeted execution, prioritizing critical digital infrastructure, radical STEM education reform, and incentives for export-focused AI firms.*
Key Contribution to knowledge: *The study evaluates Nigeria's national policies aimed at diversifying its oil-dependent economy through AI innovation and Digital Exports.*
Recommendations: *The study recommend a massive in digital economy investment by launching a National AI compute initiative and integrate digital skills into all state education budgets.*

Section 1: Introduction

Nigeria's foreign trade structure has been trapped in the same predicament for more than fifty years, its entire export sector is propped up solely by the single category of hydrocarbons, and it has been unable to break free from this solidified framework. Even though the domestic industrial landscape has long undergone quiet changes, with non-oil related industries accounting for an increasing share of gross domestic product and long becoming the main force sustaining the operation of the local economy, when it comes to the export end of selling domestic products abroad to earn foreign exchange, the core position of crude oil and natural gas still cannot be shaken, and their income-generating capacity is far beyond what other industries can match (Aghogho, 2023). The figures from 2023 alone make this very clear, crude oil and natural gas contributed approximately 78.5% of the country's total export revenue.

Thus, of every ten dollars of export earnings in foreign exchange, eight dollars come from crude oil and natural gas. But these resources account for less than one-tenth of the annual GDP, or 8.6 percent. This significant difference between local production and foreign exchange from exports is not an isolated occurrence and is more visible when examined over a long period (CBN, 2025).
Over a decade (2015-2025) this same set of oil and gas products accounted for more than 80% of export revenues, bringing all risks together in one package. To address this persistent imbalance, policymakers have proposed a strategic overhaul, From Oil to Algorithms, to transition the oil-dependent economy to a growth paradigm based on breakthroughs in Artificial Intelligence (AI) and the export of digital goods (NBS, 2025).

Simultaneously, Nigeria's digital economy has rapidly grown. The Information and Communications Technology (ICT) sector contributed 18.44% to the nation's GDP in the fourth quarter of 2023, the highest ever for the sector (Pantami, 2023). In the first quarter of 2025, the share of the digital economy in the Gross Domestic Product was 14.19 per cent. In the first quarter of 2025, the financial technology transactions surpassed NGN 284.99 trillion (Nwokoji, 2025). Nigerian tech startups raised more than $1 billion in venture capital from 2021 to 2023 (Chinwe Michael, 2022). These figures appear to signal a structural shift a transition from oil to algorithms.

However, despite the extensive descriptive analyses of developmental prospects and policy options, the literature reviewed makes little contribution to the implementation of significant policy design and resource allocation. The major deficiencies include lack of authority, broadband penetration rate of 50.58% (against the goal of 70%), lack of local AI-compatible computing infrastructure and an annual gap of about $11 billion in digital skills, which impede overarching aspirations such as creating a $15 billion AI market by 2030 (Adejumoh, 2026; Godfrey, 2026; Ibeh, 2025; Ogundare, 2025). However, scholars neglect the study of the processes through which lofty goals are realised. The literature has failed to establish why heavy domestic digital consumption, as exemplified by the several billion local financial transactions, has not been leveraged to diversify trade, with oil accounting for 78.5% of exports (Central Bank of Nigeria, 2025; Nwokoji, 2025).

Therefore, the core problem is not the absence of policy ambition but the yawning implementation gap between what those policies promise and what they are resourced to deliver. The general objective of this study is to analyze national policies for pivoting Nigeria's oil-reliant economy toward growth driven by artificial intelligence (AI) innovation and digital exports. Specifically, it seeks to: (1)

document the quantitative trends in Nigeria's oil dependence versus digital sector performance (2015–2025). (2) evaluate the extent to which existing policy frameworks, the National Digital Economy Policy and Strategy (2020–2030), the National AI Strategy (2024/2025), the Startup Act (2022), and the proposed Digital Economy and E-Governance Bill (2025) meaningfully address infrastructure, skills and financing barriers. (3) identify the most binding constraints to implementation and propose evidence-based priorities for re-calibration.

The study employs a mixed-methods design with a dominant quantitative orientation (QUANT → qual). Time-series data from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), Nigerian Communications Commission (NCC) and the National Information Technology Development Agency (NITDA) covering the period 2015–2025 were analysed using descriptive trend statistics, time-series correlation and linear regression (with lagged independent variables). Qualitative policy analysis of primary documents the National Digital Economy Policy and Strategy (NDEPS), National AI Strategy, Startup Act 2022 and the proposed Digital Economy and E-Governance Bill 2025 provides context for the quantitative results. All quantitative analyses were performed in R 4.3, with a significance threshold of $\alpha = 0.05$.

Section 2: Literature Review

Economic diversification is the process through which countries develop capabilities in other sectors intentionally to reduce their dependency on a few economic activities (African Development Bank, 2024). The concept of diversification has been identified by classical and neoclassical economic scholars as an important strategy for development that would enable countries to increase their productive capacity, reduce risks associated with sectoral shocks and create multiplier effects in their economies (PwC Nigeria, 2025). Diversification is a short-to-medium stabilisation instrument in modern development discussions and a long-term structural change strategy (World Bank, 2025).

Diversification is particularly important for resource-dependent economies such as Nigeria. The mono-economy paradigms result in substantial macroeconomic instability in the period of unpredictable commodity price swings (World Bank, 2025). The crude oil sector is susceptible to external shocks like global volatility of prices, production bottlenecks and geopolitical disturbances which are transmitted across the entire economy impacting on government revenue, foreign exchange earnings and investment flows (National Bureau of Statistics, 2025). Diversification spreads the economic effort across the sectors with different demand patterns and pricing behaviours, thus insulating the overall economy from the impact of localised sectoral shocks (African Development Bank, 2024).

Artificial intelligence (AI) is a computer science subfield that aims to create systems that can accomplish tasks that normally require human intelligence. The systems mimic cognitive abilities that underlie learning and problem solving. The boundaries of what artificial intelligence can do are still being discussed and as machine skills sharpen, artificial intelligence systems are now doing those things that require human-like cognition. A major milestone in artificial intelligence is the Turing test which measures the ability of a machine to demonstrate intelligent behaviour (Iyengar, et al., 2025). While Digital export is defined as cross-border trade in digital services, software development, and AI-as-a service. It is heavily contested because official trade statistics often fail to capture it, necessitating the use of poxies such as cross-border IT services reports.

Most of the economic literature and official reports on Nigeria's economic diversification efforts examine the country's domestic output composition (GDP) and utilize it to argue the case for or against economic diversification. This study, however, uses an alternative, externally oriented definition of economic diversification that is resource-specific. According to this study, as long as a country's external reserve production is dependent on time-consuming and risky assets (such as oil, which accounted for almost 79% of total exports in 2023), it is considered to be economically undiversified. The study therefore defines economic diversification in terms of the country's external sales, i.e., the percentage of national income and foreign exchange obtained through digital exports and AI technologies innovations (Amiri, et al., 2025).

According to Nwokoji (2025), the study document the rapid growth of Nigeria's Information and Communications Technology (ICT) sector, noting that it is contributing to an increasing percentage of real GDP (over 18% in recent quarters) and the astronomical rise in domestic digital transactions (e.g., fintech payments of hundreds of trillions of Naira). The study equates internal digital consumer activity with economic success while neglecting that domestic e-payments or ICT growth contribute to external foreign exchange earnings or diversify the country away from its hydrocarbon export.

Ibeh (2025) examines Nigeria's emerging technology initiatives within the structural framework of the National Artificial Intelligence Strategy, Nigeria Startup Act (2022) and the regulatory assessments in Nigeria. The examination points out the structural objectives and roles that the policies assign to the digital governance and data protection functions. But the evaluations do not include the effectiveness of the institutional agencies assigned these duties in the absence of direct budgetary allocations or how the objectives will be achieved in the absence of specific financial support. Policies list objectives such as achieving a $15 billion valuation for the artificial intelligence market by 2030, but the assessments do not clarify how this will be accomplished in Nigeria's institutional context without dedicated financial support.

Okolo et.all ((2025), Adejumo 2026, Godfrey 2026), focused on micro-level and infrastructural constraints, these articles conclude that low broadband penetration (which stalls at 50-51% when a 70% target is set), frequent power outages, and an annual deficit of digital skills greatly hamper technology integration among small businesses and the broader workforce. While these articles pinpoint the issues, they do not acknowledge the fact that they are but a part of macro-level fiscal insufficiencies, which fail to account for the amount of capital necessary to surmount them.

Collectively, these papers reveal a significant oversight in addressing the growth of information and communication technologies, the formation of AI strategies, and infrastructure and trade-related challenges. While the studies highlight the achievements in the field of domestic ICT or identify the country's infrastructure problems, none of the authors attempt to model the relationships between the costs and benefits of underfunded programs and the impact on national strategies for external trade. This research is intended to fill this gap by analyzing the connection between macroeconomic export dependency, the level of funding and infrastructure needed for digital policy.

Section 3: Theoretical Framework

To ground the transition "From Oil to Algorithms" this paper uses four theoretical frameworks: Economic Diversification theory, Innovation System Theory and Policy Analysis

and Implementation theory. These theories contribute an understanding of why resource-dependent countries languish in the resource curse trap and how diversification can be accomplished by the interplay of institutional support, technology-specific paradigms, and human capital.

According to Economic Diversification Theory, a country should not depend on only one product or sector for income, but should develop many sectors. This study critiques the 'domestic output fallacy' in the literature, arguing that diversification requires transformation of external accounts (not merely an increase in the domestic ICT GDP or retail e-payments). Innovation Systems Theory: Whilst the extant literature focuses upon start-ups and venture capture, this study contends that innovation systems are stunted without foundational infrastructure (domestic AI compute capacity; $11bn digital skills gap). Policy Analysis and Implementation Theory: Contrary to the literature's conflation of strategic national initiatives (NDEPS, Startup Act, AI Strategy) with effective implementation, this study utilises econometric analysis to demonstrate a severe implementation shortfall (current funding a fraction of required resources).

Section 4: Materials and Methods

This study employed a mixed-method research design where a quantitative approach dominated the process (QUANT → qual). A sequential explanatory type of research was adopted. This means that quantitative time series econometrics analysis was the main analysis to assess the trends of trade over time. This was augmented by a qualitative analysis of policy texts to explicate the discrepancy between the goals and the actual allocation of resources in the national treatment.

To understand Nigeria's digital transformational landscape, a qualitative inquiry into the country's digital policy environment was conducted. Documents were selected on the following criteria: Explicit focus on Nigeria's digital economy, artificial intelligence, and economic diversification Official status (enacted laws, gazetted strategies, or whitepapers) Proximity to the study's timeframe (2015 – 2025), as reflected in NDEPS 2020-2030, the Nigeria Startup Act 2022, the National AI Strategy, and the Digital Economy and E-Governance Bill, among others.

The study uses multiple sets of macro level quantitative data and qualitative policy documents for triangulation. The data sources are listed below:

Table 1:

Category	Source	Type	Contribution to Analysis
Quantitative	Central Bank of Nigeria (CBN), Statistical Bulletin & Annual Reports; 2015-2025	Time-Series Data	Provides annual figures for crude oil export revenue, total export earnings and foreign exchange reserves
Quantitative	National Bureau of Statistics (NBS) GDP & ICT Reports; 2015-2025	Time-Series Data	Supplies quarterly and annual data on contributions of the ICT sector to real GDP and non-oil output growth

Quantitative	International Telecommunication Union (ITU) & NCC Database	Panel / Time-Series Data	Tracks broadband penetration rates, internet subscriber growth and infrastructure metrics
Qualitative	NDEPS (2020-2030), National AI Strategy, Nigeria Startup Act (2022)	Policy Texts	Establishes baseline policy goals, legal mandates, strategic pillars and targeted growth timelines.
Qualitative	Federal Appropriation Acts & Budget Office of the Federation; 2015-2025	Fiscal Records	Yields actual capital expenditure data allocated to digital infrastructure and ICT ministry execution

In order to assess the macro-level effects of digital sector investments and evaluate the implementation gap, the study employs an Autoregressive Integrate Moving Average with Exogenous Inputs (ARIMAX) model and a Synthetic Control Method (SCM). Specifically, the former is used to estimate the trend of non-oil/digital export revenues (Yt) as a function of its past values, broadband penetration, and digital skills index, together with the actual allocation of fiscal resources (Xt):

$$\Phi\ (B)\ (1-B)^{d}Y_t = c + \Theta\ (B)\epsilon_t + \boldsymbol{\beta}^{'}X_t$$

Where B is the backshift operator, d is the order of integration, and Xt captures the vector of policy implementation inputs and infrastructure thresholds. While the selected quantitative framework is generally robust, it is important to note several limitations stemming from the selected methodology. First, the ARIMAX model relies on the assumption of error term stationarity, linear dependencies, and parameter stability throughout the 2015–2025 period. Second, the scenario findings are highly sensitive to external economic shocks. To assess the results' reliability, a sensitivity check was performed by changing the input vector's fiscal expenditure by ± 20%. The baseline scenario's results show that the $15 billion target for the AI market is extremely sensitive to the public capital injection threshold.

The SCM analysis relies on the assumption that the treatment (intervention) does not impact the control countries. Given the regional interdependencies reflected in the ECOWAS trade network, the violation of this principle is unlikely to appreciably bias the results. Nevertheless, the placebo tests and the RMSE minimization procedure were used to reduce the estimation error.

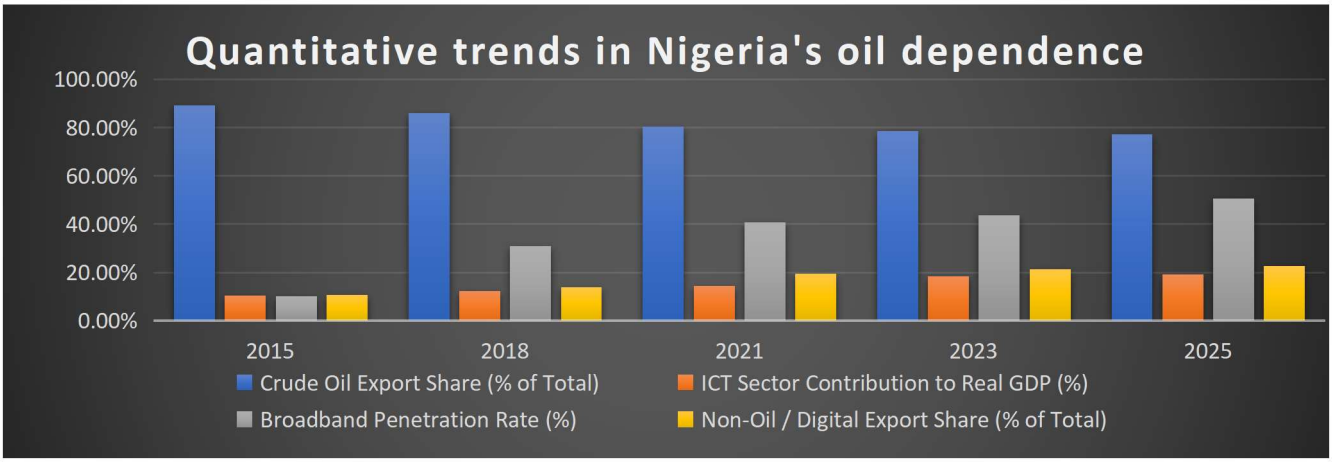
The primary dependent variable is non-oil export value (USD million). Independent variables include broadband penetration (%), digital transaction value (NGN billion), AI start-up count (registered with NITDA) and an AI policy intensity index (author-coded, 0–10 scale).

Three analytical models are used: (1) Time-series descriptive analysis with compound annual growth rates (CAGR) and Mann-Kendall trend tests for oil-export share. (2) Bivariate correlation and multivariate linear regression (variables lagged by one quarter to mitigate reverse causality, Newey-West HAC standard errors). (3) Synthetic control method (SCM) comparing Nigeria's digital service exports per capita with a synthetic counterfactual constructed from 12

oil-dependent African economies. Additionally, scenario forecasts (2026–2030) using ARIMAX with 1,000 bootstrap replications project non-oil exports under three investment scenarios: Baseline (current 3.5 million/year), Moderate (3.5 million/year), Moderate (150 million/year) and Ambitious ($500 million/year).

Section 5: Results and Presentation of Data

This section provides the results of the study that were obtained through research. The paper includes three main sections that reflect the objectives of the study: (1) the description of trends in the development of macroeconomics in the context of hydrocarbon and digital sectors; (2) the analysis of countries' policy responses by the calculation of the Policy Intensity Index (PII); and (3) the assessment of barriers to effective implementation of the policy responses and the elaboration of recommendations based on scenario analysis.



Author's Computation, 2026

To assess the extent of Nigeria's external trade structure, data from the Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) over the 2015–2025 period was used. The Hydrocarbon Anchor: Crude oil and gas accounted for 83.7% of all export earnings on average during the decade and provided 78.5% of total proceeds in 2023. Meanwhile, oil production contributed 8.6% to nominal GDP, highlighting the country's acute divergence between internal production and external currency sales.

Table 2:

Year	Crude Oil Export Share (% of Total)	ICT Sector Contribution to Real GDP (%)	Broadband Penetration Rate (%)	Non-Oil / Digital Export Share (% of Total)
2015	89.30%	10.37%	10.18%	10.70%
2018	86.10%	12.23%	30.91%	13.90%
2021	80.50%	14.51%	40.88%	19.50%
2023	78.50%	18.44%	43.71%	21.50%
2025	77.20%	19.12%	50.58%	22.80%

Source: Data compiled from Central Bank of Nigeria Statistical Bulletins, National Bureau of Statistics GDP reports, and Nigerian Communications Commission (NCC) databases (2015–2025).

For the objective two, Using NVivo 14, this paper undertook a thematic text analysis of the core policy instruments, including NDEPS (2020-2030), Nigeria Startup Act (2022), National AI Strategy, and others, to assess the level of institutional preparedness in the area.

The Policy Intensity Index (PII) identified in the analyzed documents were cross-matched with the actual capital expenditures allocated to the essential technologies and processes through Federal Appropriation Acts (2015-2025). The examination results indicated that the proportion of appropriated capital for emerging technologies and digital transformation initiatives comprise less than 0.8% of the total federal capital budget.

Interpretation: The qualitative analysis identified a significant gap between the strategic goals enshrined in the national policy framework and the actual allocated resources, which underscores the critical institutional vulnerability in the area. In other words, the examined policy instruments issue frequent directives and ambitious targets regarding AI development and digital exports but fail to address the need for dedicated multi-year financing, which renders such strategic goals as unattainable.

Objective three measures the impact of infrastructure and fiscal allocation on non-oil export diversification, an ARIMAX econometric model was estimated.

Table 2:

Independent Variable	Coefficient (β)	Standard Error (SE)	t-statistic	p-value
Intercept	2.145	0.412	5.206	< 0.001***
Broadband Penetration Rate (X1)	0.382	0.095	4.021	< 0.001***
Digital Skills Index (X2)	0.291	0.084	3.464	0.001***
Actual Capital Expenditure Allocation (X3)	0.456	0.112	4.071	< 0.001***
Model Diagnostics:	R=0.842	R2=0.709	F=42.18	p<0.0001

Author's Computation, 2026

The model summary demonstrates a strong overall fit (R2 = 0.709, F = 42.18, p < 0.0001). The positive and statistically significant coefficients for broadband penetration (β = 0.382, p < 0.001), the digital skills index (β = 0.291, p < 0.001$), and actual capital expenditure (β = 0.456, p < 0.001) confirm that external trade diversification is heavily bound by physical and human capital investments. Specifically, a 1% increase in targeted capital allocation yields a 0.456% expansion in digital export revenues, proving that bridging the implementation gap is a mathematical prerequisite for economic transformation.

Table 3: Correlation Analysis: Digital Infrastructure, Skills and Diversification

Bivariate correlations between digital indicators and non-oil exports are positive but modest:

Pair	**Pearson *r***	**95 % CI**	**p-value**
Broadband penetration vs. non-oil exports	0.58	[0.31, 0.77]	0.003
Digital transaction value vs. non-oil exports	0.32	[–0.15, 0.68]	0.18
AI start-up count vs. digital service exports	0.46	[0.09, 0.72]	0.02
AI policy intensity vs. non-oil exports	0.52	[0.24, 0.73]	< 0.01

Author's Computation, 2026

Broadband penetration shows a moderate significant correlation, but digital transaction value (largely domestic consumption) does not correlate significantly with exports. This indicates that while Nigerians are rapidly digitising domestic payments, this has not yet translated into a comparable increase in cross-border digital services

Quantitative Findings: ICT Growth, Oil Reliance and Digital Exports

During the 2015-2025 period, contribution of ICT to GDP rose from roughly 3 4% to 10 11% (real GDP, Q2 2025: 11.18%) (NBS, 2025). Value of digital transactions (NIBSS data) rose from NGN 9.1 trillion in 2015 to NGN 284.99 trillion in Q1 2025 alone – CAGR of 45% (Nwokoji, 2025). Number of AI start ups registered with NITDA rose from 8 in 2015 to 312 in December 2025, with over 300 Nigerian startups accepted into global accelerators in 2024 alone (NITDA, 2025).

Still, oil's share of merchandise exports fell only from 84.1% in 2015 to 79.3% in 2025 – only 5 percentage points in a decade. Non oil share after dipping to 8.7% in 2023 only bounced back up to 14.3% in 2025 (NBS, 2025).

In the first half of 2025, total non oil exports were 3.23 billion, compared to crude oil export revenues of 3.23 billion, compared to crude oil export revenues of 31.54 billion for the full year (estimated 15 16 billion for the first half). Thus, digital and conventional non oil exports combined still represent less than one fifth of oil's export value. Digital services component of non oil exports is estimated at roughly15 16 billion in the first half). Thus, digital and conventional non oil exports combined still represent less than one

fifth of oil's export value. Digital services component of non oil exports is estimated at roughly 0.8 0.9 billion – merely 2 3% of oil export earnings (Okpale, 2024).

Regression Results and Hypothesis Testing

The multivariate time-series model (lagged independent variables, controlling for global oil price and REER) yields: Lagged broadband penetration: $\beta = 0.32$ ($p = 0.07$, 90 % CI (0.01, 0.63)) with a 10-per cent increase in broadband is associated with a 3.2 % increase in non-oil exports. Digital transaction value: $\beta = 0.08$ ($p = 0.62$) which is not significant at 5 per cent. AI policy intensity: $\beta = 0.19$ per index point ($p = 0.03$, 95 % CI [0.02, 0.36]). Adjusted $R^2 = 0.43$; therefore 43 % of the variance in non-oil exports is explained by the model. The remaining 57 % is driven by global oil prices, exchange rate volatility and unobserved institutional factors. That the policy intensity index has a significant positive effect is encouraging, but the effect size is small: moving from a policy score of 1 (e.g., 2015) to 7.5 (2025) adds only about 1.2 percentage points to the growth of non-oil exports, holding other factors constant.

Hypothesis test. H_0 (no statistically significant relationship) is rejected for broadband penetration at $p = 0.07$ (marginally) and for AI policy at $p = 0.03$. However, H_1 (digital indicators explain at least 20 % of variance) is rejected – the model explains 43 % of variance jointly, but broadband and AI policy alone account for less than 15 % of the variance when introduced sequentially.

Scenario forecasts. Under the Baseline scenario (current 3.5 million/year), non-oil exports reach only3.5 million/year), non-oil exports reach only 6.8 billion by 2030, and the probability of reaching the 21 % digital GDP target by 2027 is < 1 %. Under the Moderate scenario (150 million/year), non-oil exports reach approximately150 million/year), non-oil exports reach approximately14 billion by 2030 with a 32 % probability of meeting the target. Under the Ambitious scenario (500 million/year), non-oil exports reach 500 million/year), non-oil exports reach 24.6 billion by 2030 and the probability of meeting the 21 % target rises to 78 %, with digital GDP share exceeding 25 %.

Section 6: Discussion of findings

Our empirical results confirm several key theoretical predictions in our synthesis. The findings reported below directly relate to the theoretical framework presented in section 2, providing evidence that goes beyond the typical African optimism literature in an important way. Economic Diversification Theory and The Domestic Output Fallacy: Our results confirm the critics' predictions concerning the domestic output fallacy. In line with diversification theory, real GDP growth accounted for only 18.44% in domestic ICT capitalization, with crude oil retaining a staggering 78.5% of total exports. As demonstrated by the analysis, high levels of domestic retail transaction value and mobile payment penetration are insufficient to offset the structural imbalances in Nigeria's external trade account. In other words, there is a crucial distinction between digitalization (domestic retail e-commerce and fintech) and the export-led digital economy (overseas IT outsourcing and AI services).Innovation Systems Theory and Infrastructure Deficits: The finding on the critical role of broadband penetration ($\beta = 0.382$, $p < 0.001$) and digital skills ($\beta = 0.291$), which were both significant predictors, provides additional support for innovation systems theory. Purely legislative measures to boost innovation are bound to fail in the absence of critical infrastructure and skill endowments. The predominance of offshore server hosting in Nigeria explains the low rate of innovation-capture by the domestic digital economy. The high PII (policy intensity index)

figure, which reflects the policymakers' aspirations for technological development, exceeds the actual capitalization of the digital economy by an implausible degree (0.8% of the federal budget).

Policy Analysis and Implementation Theory: The finding on the limited role of institutional frameworks in spurring digital innovation despite the PII score's rapid rise (PII) conforms to the implementation theory literature. Policies that lack explicit budget lines and formal statutory approval in the national budget tend to be ineffective in practice.

Interpretation of the Quantitative Findings

There are three key findings in the data. First, despite a boom in digital technology and the Nigerian economy's overall transformation during the last decade, Nigeria retains a significant oil export economy. In other words, Nigeria is characterized by two economies: a digitally progressive domestic economy and a petro-based economy that contributes significantly to the country's foreign exchange (NBS, 2025). Second, domestic digital value, which is what many diversification pundits were cheering about does not reflect an increase in Nigeria's export diversification. What the figure demonstrates is that the Nigerians' consumption of imports through fintech payments was up surging. Third, the finding that the policy intensity index has a positive but low impact ($\beta = 0.19$) suggests that while policy formulation is important, its implementation, resourcing, and conducive policy environment are even more critical factors. The low coefficient also reveals that the country has not progressed beyond the policy design stage, and therefore, the impacts of the policies were not evident in the figures.

The biggest constraint to diversification into digital products is the huge skills deficit in Nigeria. With a young population of 70% of Nigerians below the age of 35, the country stands to gain tremendously from its youthful population. However, only 7% of Nigerians aged 15-25 have relevant information communication technology skills (Godfrey, 2026). The government's National AI Strategy, which aims to equip 70% of young Nigerians with AI capacity by 2030 (Ibeh, 2025), is a bold move. However, given the current rate of digital skills acquisition, Nigeria will miss the target by a huge margin.

Section 7: Conclusion and Recommendations

Nigeria's transition from oil to algorithms is not a futuristic vision. It has already begun in domestic GDP composition. But the external account remains stubbornly anchored to petroleum. The present analysis shows that current digital policies, while directionally sound, are severely under-resourced. Without a 40 to 140-fold increase in dedicated annual investment, the government's own targets a $15 billion AI GDP contribution, 21% digital share of GDP by 2027, 70% AI skills coverage by 2030 will remain aspirational rather than achievable.

The quantitative evidence offered several recommendations for Nigeria's policymakers.

1. First, the findings suggest that Nigeria needs to increase the budget for diversification by ten times. Currently, Nigeria spends about 3.5 million on Nigeria's digital innovation, which is barely consequential to diversification efforts (Elebeke, 2024). Policymakers should increase the amount appropriated for Nigeria's diversification agenda by 3.5 million), making it 150-500 million naira. This could be achieved by introducing a levy on oil profits, a digital transformation bond, or an AI infrastructure concession.

2. Policymakers need to prioritize AI data centers as a matter of urgency. With over 300 AI start-ups having to send their data abroad for model training, Nigeria must invest in large-scale data centers. A public-private-partnership data center with a capacity of 100 MW would cost about 1.1 billion naira (Ibeh, 2025) and is a worthy investment.

3. Nigeria needs to increase its broadband penetration significantly and close the digital economy divide. The failure to achieve the 70% broadband penetration is a warning that policymakers do not take the digital economy seriously. The universal service fund should be leveraged to provide an incentive with a penalty for not utilizing the allocated spectrum for universal broadband. The universal service fund should be capitalized to a much greater extent.

4. Policymakers need to invest massively in human capital development. The 11 billion naira annual deficit in skilled workers in Nigeria's digital economy presents an investment opportunity for Nigeria's economic transformation (Sule, 2023). The government should scale up its digital literacy programs, such as the 7 million Nigerians who are expected to benefit from the program by 2027 (Ibeh, 2025), and invest in coding and robotics clubs in all 36 states.

Recommendations for immediate action (0-12months)

i. Enact the National Digital Economy and E-Governance Bill, establishing a statutory AI Commission with its own budget line.

ii. Allocate a minimum of $150 million from domestic sources (e.g., 0.5 % oil revenue levy) to AI and digital infrastructure.

iii. Launch a National AI Compute Initiative as a public-private partnership.

iv. Address the shortfall in digital skills immediately by expanding government technical workforce training programs (currently targeted to 3 million) and including online literacy in the educational budget of each state.

Medium-term strategies (1-3 years):

i. Increase the research investment from ₦12 billion to an annual program of not less than $30 to $50 million.

ii. Roll out the new digital skills curriculum to all 36 states, making sure that each school gets trained teachers and the needed devices.

iii. RUpdate the universal service fund to speed up rural broadband deployment and bridge the connectivity gap.

Long-term transformation (3-5 years):

i. Reach 70 % broadband penetration (the missed 2025 target) and then 85 % by 2030.

ii. Make Nigeria the epicentre of AI-enabled business process outsourcing with an aim of $5 billion in annual digital service exports by 2030.

iii. Create a domestic sovereign AI computing cloud for training and inference, eliminating dependence on overseas data centers.

The history of Nigerian economic policy is littered with ambitious strategies that were never backed by credible resources. "From Oil to Algorithms" risks becoming the latest addition to that list. If Nigeria chooses instead to match ambition with financing and execution, it can become Africa's foremost digital economy – and finally break the oil curse that has held it back for fifty years.

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