

Government Interventions and Nigeria's Innovation Ecosystem: Analysis of Nigeria's Global Innovation Index Standings

Basit Olalekan AJIBADE

Dept. of Business Administration, Fountain University, Osogbo

E-mail: inbox.basitajibade@gmail.com ORCID: [0000-0003-4270-5909](https://orcid.org/0000-0003-4270-5909)

Olatunde Misbaudeen OSUOLALE

Dept. of Business Administration, Fountain University, Osogbo

E-mail: osuolale.olatunde@fuo.edu.ng ORCID: [0009-0002-9234-4339](https://orcid.org/0009-0002-9234-4339)

Abstract

Innovation is a critical driver of economic growth, competitiveness, and sustainable development. In Nigeria, government interventions play a central role in shaping the innovation ecosystem through policy frameworks, institutional support, and funding mechanisms. However, despite various initiatives, Nigeria continues to lag in global innovation performance despite various government interventions designed to enhance its innovation capacity. This study critically examines the impact of government policies on Nigeria's innovation ecosystem, using the Global Innovation Index (GII) as a performance benchmark. By analyzing policy frameworks, institutional capacity, and innovation inputs and outputs, the research uncovers key limitations including underfunded research institutions, weak industry-academic linkages, and infrastructural deficits. Comparative insights from more innovative economies reveal critical gaps between policy intent and practical outcomes in Nigeria. The study further evaluates how these shortcomings contribute to Nigeria's persistently low GII rankings. Through a combination of qualitative policy analysis and global benchmarking, the paper offers targeted policy recommendations to reposition Nigeria's innovation strategy. The findings underscore the need for more coordinated, data-driven, and outcome-oriented government actions to foster a more competitive and sustainable innovation ecosystem in Nigeria.

Keywords: innovation ecosystem, government policy, Global Innovation Index, Nigeria, research and development, innovation strategy

Introduction

Innovation is a key driver of economic growth, competitiveness, and sustainable development in any nation. In Nigeria, the government has recognized the importance of fostering an innovation-driven economy through various policies, programs, and institutional frameworks. However, despite these efforts, Nigeria's innovation landscape remains constrained by structural inefficiencies, inadequate funding, weak research and development (R&D) capacity, and limited collaboration between academia and industry (Akinwale et al., 2020). Government interventions play a crucial role in shaping the innovation ecosystem by addressing these barriers, facilitating technology transfer, and enhancing the country's global competitiveness.

Nigeria's innovation landscape has undergone significant transformation in recent years, driven by both policy interventions and market forces. The country's position as Africa's largest economy, combined with its youthful population of over 200 million people, presents unique opportunities and challenges for innovation-driven development. Government interventions have become increasingly

crucial in shaping this landscape, particularly as Nigeria seeks to diversify its economy beyond traditional sectors (Oaikhenan & Aigheyisi, 2022).

Despite Nigeria's abundant human capital, increasing digital penetration, and a burgeoning entrepreneurial population, the country continues to rank low in the Global Innovation Index (GII). In recent years, Nigeria has fluctuated in the bottom quartile among over 130 economies assessed, revealing persistent weaknesses in innovation infrastructure, R&D investment, policy implementation, and institutional coordination. This poor standing raises concerns about the effectiveness of government-led innovation policies and programs.

The significance of government intervention in Nigeria's innovation ecosystem stems from the recognition that market forces alone cannot address the structural challenges facing entrepreneurs and innovators. According to Adelowo et al. (2021), the Nigerian government's role has evolved from being merely regulatory to becoming an active participant in fostering innovation through various policy instruments and support mechanisms.

Several government interventions including the National Digital Economy Policy, research grants, technology hubs, and tax incentives have been launched to strengthen Nigeria's innovation ecosystem. However, these efforts appear fragmented, poorly monitored, and inadequately aligned with international innovation drivers such as human capital development, knowledge outputs, and business sophistication. Consequently, there is a disconnect between policy ambitions and measurable innovation outcomes.

Moreover, key ecosystem actors: startups, universities, research institutions, and investors face regulatory bottlenecks, limited access to financing, inadequate IP protections, and inconsistent policy support. This undermines Nigeria's ability to translate innovation potential into global competitiveness. The critical problem, therefore, lies in the gap between government interventions and Nigeria's actual innovation performance as reflected in GII indicators.

Despite numerous government policies and initiatives aimed at fostering innovation, Nigeria consistently ranks low on the Global Innovation Index (GII). This paradox raises concerns about the effectiveness of current government interventions in stimulating innovation-driven growth. Key barriers such as weak institutional frameworks, limited R&D funding, and poor infrastructure—may be undermining policy impacts. Understanding how these interventions align with global innovation benchmarks is crucial to reforming Nigeria's innovation ecosystem and improving its international competitiveness.

This study seeks to empirically analyze the structure, effectiveness, and alignment of government innovation interventions in Nigeria with the components of the GII. Addressing this will help determine whether existing strategies sufficiently enhance Nigeria's innovation capacity or if structural reforms are required to reposition the country in the global knowledge economy.

Objectives of the Study

The broad objective of this study is to examine the relationship between government interventions and Nigeria's performance in the Global Innovation Index.

The specific objectives are to:

- i. To evaluate the effectiveness of existing government policies and programs on Nigeria's innovation performance on the GII Index.
- ii. To identify the structural and institutional challenges limiting Nigeria's Global Innovation Index ranking.
- iii. To recommend policy adjustments based on global best practices for strengthening Nigeria's innovation ecosystem.

The findings of this study are significant for policymakers, researchers, and industry stakeholders, as they offer evidence-based recommendations for improving Nigeria's innovation policies. Strengthening government support for research and development, fostering university-industry collaborations, and addressing infrastructure deficits are crucial steps toward achieving a more competitive and innovation-driven economy.

LITERATURE REVIEW

Historical Evolution of Innovation Policy in Nigeria

Innovation policy in Nigeria has evolved over the decades, shaped by various socio-economic and political factors. The country's journey toward an innovation-driven economy has been marked by different policy frameworks aimed at fostering science, technology, and industrialization. The Nigerian government has historically recognized the role of innovation in economic development, leading to the establishment of several institutions and policies to drive technological advancement. However, inconsistencies in implementation, inadequate funding, and weak institutional capacity have hindered the full realization of these policies (Akinwale et al., 2020).

In the pre-independence era, Nigeria's innovation activities were largely informal and driven by indigenous knowledge systems. Traditional industries such as blacksmithing, textile weaving, and herbal medicine dominated the local economy. With the advent of colonial rule, Western education and industrial technologies were introduced, leading to a gradual shift toward a modernized economy (Adejumo & Adejumo, 2019). However, colonial policies focused primarily on resource extraction rather than developing indigenous technological capabilities. This lack of emphasis on research and development (R&D) created a weak foundation for innovation policy in post-independence Nigeria. Following independence in 1960, the Nigerian government sought to strengthen science and technology through national development plans. The first National Development Plan (1962–1968) focused on industrialization and infrastructural development but paid little attention to innovation policy. The Second and Third National Development Plans (1970–1985) emphasized the

establishment of research institutions, including the National Science and Technology Development Agency (NSTDA), which later became the Federal Ministry of Science and Technology (Obi et al., 2021). These efforts laid the groundwork for structured R&D initiatives, but political instability and economic challenges limited their effectiveness.

The 1980s and 1990s witnessed more structured efforts to institutionalize science, technology, and innovation (STI) policies. The government introduced the first National Science and Technology Policy in 1986, which aimed to promote indigenous technological capacity. This policy led to the creation of key institutions such as the National Office for Technology Acquisition and Promotion (NOTAP) and the Raw Materials Research and Development Council (RMRDC) (Onwuka et al., 2022). Despite these efforts, the policy suffered from weak implementation, a lack of industry collaboration, and inadequate funding.

By the early 2000s, Nigeria began aligning its innovation policies with global trends, particularly in response to the knowledge economy. The National Science, Technology, and Innovation Policy (NSTIP) was revised in 2003 and later in 2012 to address emerging challenges in technology development and commercialization. The policy aimed to foster partnerships between universities, research institutions, and the private sector (Akinyemi & Adediji, 2021). However, challenges such as poor coordination between government agencies and weak intellectual property rights enforcement continued to undermine its impact.

In recent years, the Nigerian government has increased efforts to strengthen its innovation ecosystem. Initiatives such as the Presidential Executive Order No. 5 (2018), which prioritizes local content in science and engineering projects, and the National Digital Economy Policy and Strategy (NDEPS) (2019), which focuses on digital innovation and ICT development, have been introduced (Egbetokun et al., 2020). These policies signal a shift toward a more innovation-driven economy, but their success depends on sustained investment in R&D, improved infrastructure, and stronger industry linkages. The trajectory of Nigeria's innovation policy can be traced through distinct phases of economic development. The early 2000s marked the beginning of structured government intervention in the innovation space, with the establishment of the National Information Technology Development Agency (NITDA) through the NITDA Act of 2007. This period, as noted by Adeola and Evans (2020), laid the foundation for subsequent policy initiatives aimed at promoting technological innovation and entrepreneurship.

A significant milestone was reached in 2016 with the establishment of the Presidential Enabling Business Environment Council (PEBEC). According to Osinbajo (2021), PEBEC's formation represented a strategic shift towards creating an enabling environment for business and innovation through systematic removal of bureaucratic constraints. The Council's work has been instrumental in improving Nigeria's ranking in the World Bank's Ease of Doing Business index.

The National Digital Innovation and Entrepreneurship Policy, launched in 2021, marked another crucial development. Adebayo and Wilson (2023) argue that this policy framework represented the government's most comprehensive attempt to integrate digital innovation into national development strategy. The policy's emphasis on indigenous technology development and adoption has been particularly noteworthy.

Historically, Nigeria has struggled to establish a strong foundation for innovation due to inconsistent policies, political instability, and an overreliance on oil revenues. The need for economic diversification has prompted successive governments to prioritize science, technology, and innovation (STI) policies as a means to foster industrialization and reduce dependence on resource exports (Adejumo & Adejumo, 2019).

Overall, the historical evolution of innovation policy in Nigeria reflects a transition from a resource-based economy to a knowledge-driven one. While various policy interventions have been introduced over the years, the country still faces significant challenges in fostering a sustainable innovation ecosystem. Strengthening institutional capacity, increasing funding for R&D, and promoting industry-academia collaborations remain critical to enhancing Nigeria's innovation potential.

Key Government Interventions and Policy Frameworks

The Nigerian government has introduced various policy measures to stimulate innovation, including the establishment of the National Office for Technology Acquisition and Promotion (NOTAP), the National Science, Technology, and Innovation Policy (NSTIP), and funding mechanisms such as the Tertiary Education Trust Fund (TETFund) (Obi et al., 2021). While these interventions have contributed to increased research activities and technological development, their effectiveness in translating research into marketable innovations remains limited. A persistent challenge is the weak linkage between research institutions and industry, leading to a low commercialization rate of locally developed technologies (Onwuka et al., 2022).

A. Regulatory Framework

The Nigeria Startup Act of 2022 stands as a watershed moment in the country's innovation policy landscape. The Nigeria Startup Act of 2022 is a legislative framework aimed at fostering the growth and development of startups in Nigeria, particularly within the technology sector. The Act is designed to position Nigeria as a leading digital technology hub in Africa by supporting startups through various initiatives, including the establishment of a Startup Investment Fund to provide financial relief and support to technology laboratories, accelerators, incubators, and hubs (Okolie & Akwiwu, 2023). The Act has been praised for its potential to drive economic growth by encouraging foreign direct investment and portfolio investment, which are crucial for diversifying Nigeria's economy away from its traditional reliance on oil (Ogbu, 2023). In practice, the Act has already shown a

positive impact on fintech startups, as evidenced by the significant increase in the number of agents, transactions, and transaction volumes for Moniepoint agents in Anambra State (Agogbua et al., 2024).

Research by the Nigerian Economic Summit Group (2023) indicates that the Act has created a more structured approach to supporting startups through various incentives and regulatory provisions. The Act's implementation has been supported by key regulatory bodies including the Securities and Exchange Commission (SEC) and the Central Bank of Nigeria (CBN).

B. Financial Support Mechanisms

Government funding initiatives have evolved to address various stages of the innovation lifecycle. The Nigerian government has introduced several funding mechanisms aimed at strengthening research and development (R&D), entrepreneurship, and industrial innovation. These financial interventions are implemented through direct budgetary allocations, specialized funding agencies, grants, and public-private partnerships (Akinwale et al., 2020).

The Youth Entrepreneurship Support (YES) Program and the Creative Industries Financing Initiative (CIFI) represent targeted interventions aimed at specific sectors and demographics. According to the Central Bank of Nigeria's 2023 report, these programs have disbursed over ₦500 billion to support innovative enterprises.

Additionally, the National Science, Technology, and Innovation Fund (NSTIF) was established to provide targeted financial support for science and technology development. This initiative, managed by the Federal Ministry of Science, Technology, and Innovation (FMSTI), aims to promote indigenous technological capabilities and foster the growth of innovative startups (Obi et al., 2021). However, limited funding allocations and inconsistent policy implementation have constrained its impact on Nigeria's innovation landscape.

The Bank of Industry (BOI) has also played a significant role in financing innovative businesses, particularly in the manufacturing and technology sectors. The BOI provides low-interest loans and grants to startups and SMEs engaged in innovation-driven enterprises (Akinyemi & Adediji, 2021). Programs such as the Youth Entrepreneurship Support (YES) program and the Graduate Entrepreneurship Fund (GEF) have been instrumental in supporting young innovators. Despite these initiatives, accessibility to funding remains a major challenge, especially for early-stage startups due to stringent eligibility criteria.

Moreover, the Central Bank of Nigeria (CBN) has introduced several intervention funds to support technological innovation. The Creative Industry Financing Initiative (CIFI) and the Agri-Business/Small and Medium Enterprises Investment Scheme (AGSMEIS) provide financial assistance to entrepreneurs in technology, agriculture, and creative industries (Onwuka et al., 2022).

These programs have contributed to job creation and economic diversification, but challenges such as corruption, lack of transparency, and mismanagement of funds have been noted.

The Nigerian government has also sought to attract international funding through partnerships with global innovation financing agencies. Initiatives such as the Tony Elumelu Foundation (TEF) Entrepreneurship Programme and the Africa Development Bank (AfDB) Innovation Fund have provided additional resources for Nigerian startups and researchers (Adejumo & Adejumo, 2019). However, reliance on external funding raises concerns about sustainability and long-term financial independence in driving innovation.

C. Digital Economy Initiatives

The National Digital Economy Policy and Strategy 2020-2030 has emerged as the cornerstone of Nigeria's digital transformation agenda. Adeyemi and Johnson (2023) note that this policy framework has catalyzed significant investments in digital infrastructure and skills development. The policy's implementation has led to the establishment of numerous innovation hubs and technology clusters across the country.

Implementing Nigeria's innovation policies has been challenging due to poor institutional coordination, limited private sector involvement, and inadequate infrastructure. To drive economic transformation, it's crucial to understand the evolution of these policies and their effectiveness. Nigeria's innovation policy has historically transitioned from a resource-based to a knowledge-driven approach. Despite various interventions, significant challenges persist in fostering a sustainable innovation ecosystem. To enhance Nigeria's innovation potential, strengthening institutional capacity, increasing R&D funding, and promoting industry-academia collaborations are critical next steps.

The Nigerian government has recognized the digital economy as a critical driver of innovation and economic growth, leading to the introduction of several initiatives aimed at fostering a robust digital ecosystem. These initiatives are designed to promote digital infrastructure, entrepreneurship, financial technology (FinTech), e-governance, and the digitalization of traditional industries (Pantami, 2021). By leveraging information and communication technology (ICT), these policies aim to enhance Nigeria's innovation capacity and position the country as a leader in Africa's digital economy.

A major initiative in this regard is the National Digital Economy Policy and Strategy (NDEPS) 2020-2030, launched by the Federal Ministry of Communications and Digital Economy (FMCDE). The NDEPS provides a framework for integrating digital technologies across sectors to boost economic productivity. The policy outlines key pillars such as digital infrastructure, cybersecurity, digital

entrepreneurship, and human capital development (Pantami, 2021). The strategy aims to ensure that Nigeria fully transitions into a knowledge-based economy driven by innovation.

The Nigerian Startup Act 2022 represents another key intervention aimed at supporting tech-driven enterprises and startups. The Act provides incentives such as tax breaks, funding opportunities, and regulatory support to foster innovation-driven businesses (Olayemi et al., 2023). The Startup Act aligns with global best practices and aims to create a thriving digital innovation ecosystem in Nigeria, particularly by addressing regulatory challenges faced by startups in the tech industry.

Furthermore, the government has been instrumental in advancing digital financial inclusion through policies such as the Cashless Policy and the Digital Financial Services (DFS) Framework introduced by the Central Bank of Nigeria (CBN). These initiatives have significantly increased financial technology (FinTech) adoption, enabling startups and small businesses to leverage digital payment solutions for seamless transactions (Akinyemi & Okonkwo, 2022). The rise of companies such as Flutterwave and Paystack highlights the impact of government-backed policies on the innovation ecosystem.

The National Broadband Plan (NBP) 2020-2025 has also been a cornerstone of Nigeria's digital economy transformation. The plan seeks to expand broadband penetration to at least 70% by 2025, ensuring greater access to digital services across rural and urban areas. Reliable and affordable internet access is essential for fostering innovation, attracting foreign investment, and enabling businesses to scale (Egbetokun et al., 2022). However, challenges such as inadequate infrastructure, high operational costs, and regulatory bottlenecks still hinder full implementation.

To encourage digital skills and innovation, the government has launched initiatives such as Digital Nigeria, a program that provides training in software development, artificial intelligence (AI), and cybersecurity. These initiatives aim to equip the youth with relevant skills to drive the digital economy and innovation ecosystem (Onwuka & Asogwa, 2023). Additionally, the Technology Innovation Hubs Program, spearheaded by the National Information Technology Development Agency (NITDA), has established innovation hubs across Nigeria to support tech entrepreneurs and startups.

METHODOLOGY

Research Design: This study adopts a qualitative research design anchored on content analysis of Nigeria's innovation performance as captured in the Global Innovation Index (GII) 2024 and supported by critical reviews of relevant literature and policy documents. This approach is appropriate because it allows for an in-depth, interpretative understanding of how government interventions correlate with the country's global innovation rankings without relying on primary data collection.

Data Sources: The analysis relies exclusively on secondary data, drawn from the following key sources:

- i. The Global Innovation Index 2024 report, particularly Nigeria's profile, rankings, and performance across the seven GII pillars.
- ii. National policy documents such as the National Digital Economy Policy and Strategy (2020–2030), National Science, Technology and Innovation Policy (NSTIP), and innovation-related initiatives from agencies like NITDA, NOTAP, and the Tertiary Education Trust Fund (TETFund).
- iii. Scholarly literature and prior studies that analyze Nigeria's innovation ecosystem, public sector interventions, and the factors influencing national innovation capabilities.

Data Collection and Analysis: The study follows a two-level content analysis:

- i. **GII 2024 Performance Analysis:** Nigeria's rankings across the seven innovation pillars; Institutions, Human Capital & Research, Infrastructure, Market Sophistication, Business Sophistication, Knowledge & Technology Outputs, and Creative Outputs were extracted and analyzed to identify strengths, weaknesses, and longitudinal trends (2020–2024). Particular attention was paid to key indicators where Nigeria underperforms, such as regulatory quality, infrastructure readiness, and venture capital availability, as well as areas of relative strength, such as human capital and creative outputs.
- ii. **Policy–Indicator Alignment Review:** Government programs and strategic documents were reviewed to assess their alignment with the specific indicators within the GII framework. A thematic matrix was developed to map policy intentions (e.g., digital economy frameworks, R&D funding, innovation hubs) against Nigeria's actual performance in corresponding GII indicators. This approach allowed the identification of policy-performance gaps.

Analytical Framework: The analysis draws from the Global Innovation Index's conceptual model, which categorizes indicators into Innovation Inputs (policy, education, infrastructure, etc.) and Innovation Outputs (knowledge production, patents, technology exports). This framework provides a structured basis for evaluating how effectively Nigeria's innovation policies translate into tangible outcomes.

Additionally, a trend analysis of Nigeria's GII rankings from 2020 to 2024 was conducted to identify patterns of improvement or decline and their correlation with major policy shifts or government interventions during the period.

Validity and Reliability: The use of globally recognized datasets (e.g., GII by WIPO) and official government policy documents enhances the credibility and reliability of the findings. To ensure

analytical rigor, only verified and peer-reviewed sources were used. A transparent content coding scheme was employed to mitigate subjectivity in the interpretation of textual data.

Limitations: The study is limited by the absence of primary data and by Nigeria's gaps in data availability across several GII indicators. Additionally, due to the descriptive nature of the GII, the study cannot establish causality but rather highlights patterns and associations between government interventions and innovation performance.

ANALYSIS AND PRESENTATION OF DATA

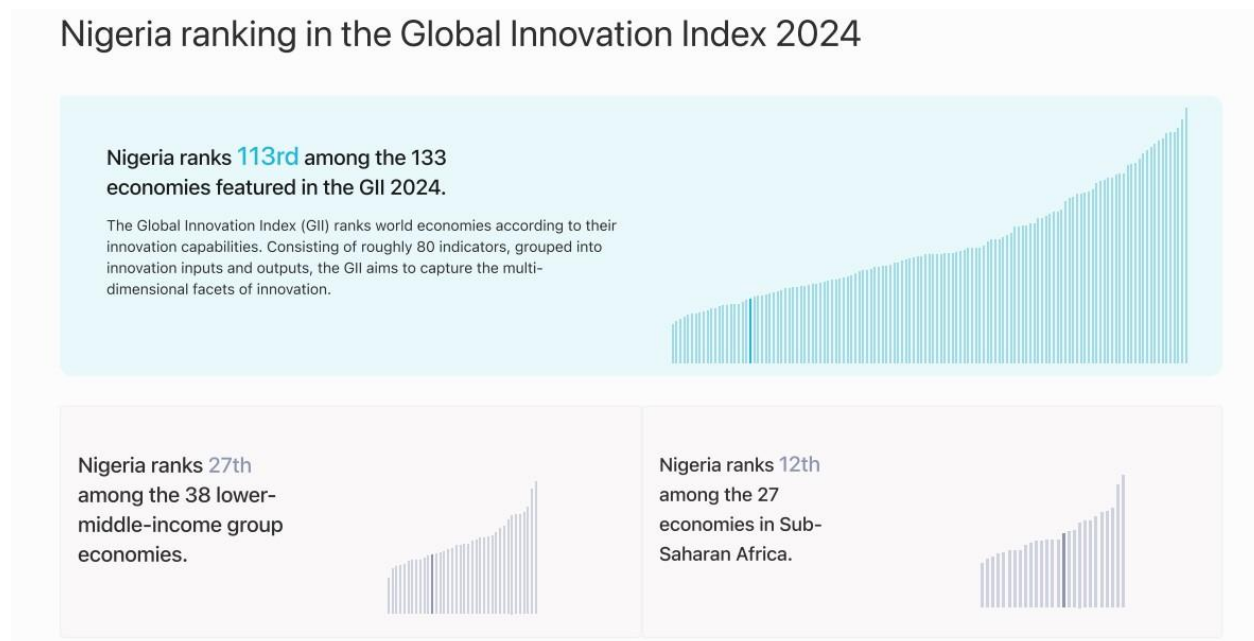
The impact of government interventions in Nigeria's innovation landscape has been mixed. Government interventions in Nigeria's innovation ecosystem have shown varied impacts on entrepreneurship and economic growth. Research indicates that while local content initiatives significantly enhance business startups, other policies like ease of doing business and export promotion require further refinement to effectively support entrepreneurship development (Okolo-Obasi et al., 2024).

The Government Enterprise and Empowerment Program (GEEP) has positively influenced women's entrepreneurship by increasing profitability and reducing production costs, although disparities in access between urban and rural women persist (Okolo-Obasi & Uduji, 2023). Additionally, government policies aimed at small-scale enterprises (SSEs) have been linked to improved performance and economic growth, emphasizing the need for supportive frameworks that facilitate access to financial resources and promote innovation (Onyedikachi et al., 2022).

Data from National Bureau of Statistics (2023) shows that the digital economy now contributes approximately 15% to Nigeria's GDP, up from 8% in 2015. However, it is imperative to compare Nigeria's standing in the global innovation landscape. The Global Innovation Index (GII) by World Intellectual Property Organization (WIPO) ranks world economies according to their innovation capabilities.

Fig 1: Nigeria Ranking in the Global Innovation Index 2024 Overview

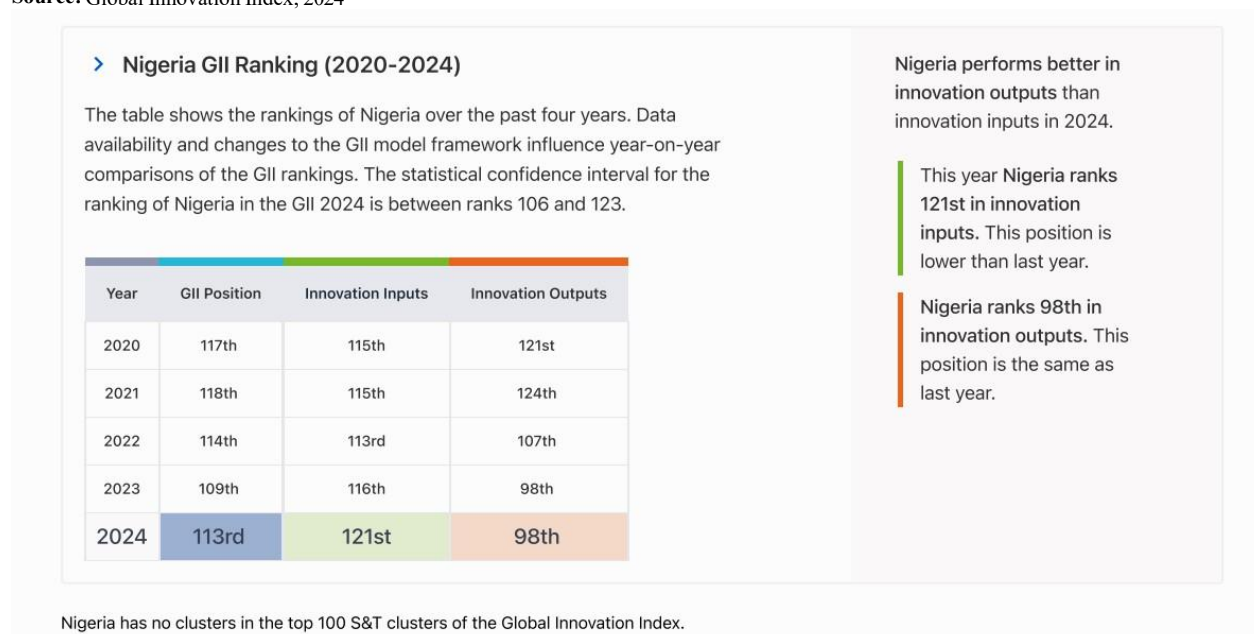
Source: Global Innovation Index, 2024



From Fig. 1 above, Nigeria's performance in the Global Innovation Index (GII) 2024 presents a mixed picture of the country's innovation landscape. Globally, Nigeria ranks 113rd out of 133 economies evaluated, placing it in the bottom quartile of countries featured in the index. When compared with peers in similar economic categories, Nigeria stands 27th among the 38 lower-middle-income economies, suggesting room for improvement even within its economic classification. Regionally, Nigeria performs somewhat better, ranking 12th among the 27 Sub-Saharan African economies included in the assessment. This positioning reflects Nigeria's moderate innovation capabilities within the African context, while highlighting significant challenges when measured against global standards. The GII, which evaluates economies using approximately 80 indicators grouped into innovation inputs and outputs, provides a comprehensive framework for understanding Nigeria's innovation strengths and weaknesses across multiple dimensions, offering insights for potential policy interventions to enhance the country's innovation ecosystem.

Fig 2: Nigeria GII Ranking 2020 – 2024

Source: Global Innovation Index, 2024



From *Fig. 2* above, Nigeria's overall GII ranking has improved from 117th in 2020 to 113rd in 2024, with its best position being 109th in 2023. For innovation inputs, Nigeria ranks 121st in 2024, which is lower than 2024's position. The input ranking fluctuated between 113rd (2022) and 121st (2024) over the period. For innovation outputs, Nigeria shows significant improvement, moving from 124th in 2021 to 98th in both 2023 and 2024. This indicates Nigeria performs better in innovation outputs than inputs in 2024. The statistical confidence interval for Nigeria's 2024 GII ranking is between 106 and 123. The fig. also notes that Nigeria has no clusters in the top 100 S&T clusters of the Global Innovation Index. Overall, while Nigeria's input ranking has worsened in 2024, its output ranking has remained steady at a relatively better position, suggesting more effective utilization of available innovation resources.

Fig 3: Science and Innovation Investment Trend



Fig 3 presents science and innovation investment trends. Scientific publications declined by 7.7% from 2022-2023 but show 12.5% growth over the decade (2013-2023). R&D investments grew by

11.1% from 2007-2019, though recent data is unavailable. Venture capital metrics show concerning recent declines (-35.1% in deal numbers and -29.3% in deal values for 2022-2023) despite strong decade-long growth (30.9% in deals and 6% in values from 2013-2023). International patent filings remained flat (0%) for 2022-2023 but show a 5.4% decline from 2013-2023, suggesting challenges in international intellectual property development.

Fig 4: Technology Adoption

Technology adoption				
Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 2.2% 2021 - 2022	n/a	n/a	n/a	n/a
▲ 2.2% 2012 - 2022	▲ 36.5% 2012 - 2022		n/a	n/a
32 per 100 inhabitants in 2022	0.2 per 100 inhabitants in 2022	n/a		n/a

Source: Global Innovation Index, 2024

Fig 4 covers technology adoption metrics in Nigeria. Safe sanitation shows modest improvement at 2.2% growth for both short-term (2021-2022) and long-term (2012-2022) periods, reaching 32 per 100 inhabitants by 2022. Fixed broadband connectivity shows significant growth of 36.5% from 2012-2022, but the absolute number remains extremely low at just 0.2 per 100 inhabitants. Data for 5G, robots, and electric vehicles all show "n/a" values, suggesting very limited or non-existent adoption of these advanced technologies, highlighting significant digital and technological gaps.

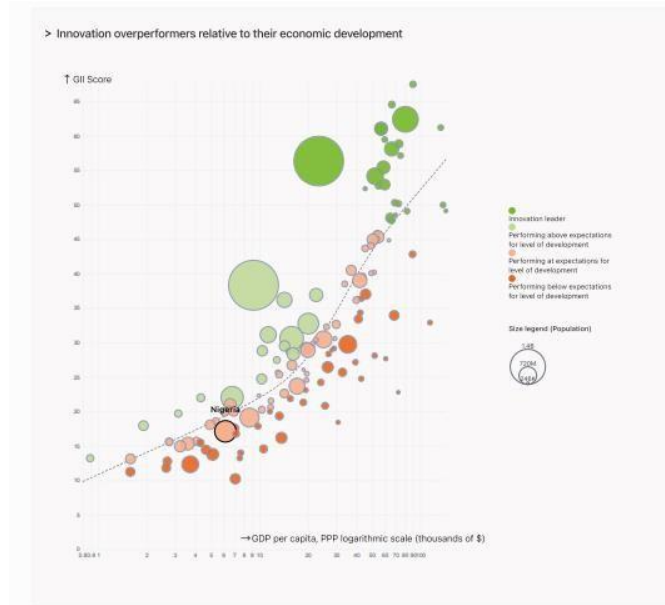
Fig 5: Socioeconomic Impact

Socioeconomic impact		
Labor productivity	Life expectancy	Temperature change
▼ -0.5% 2022 - 2023	▲ 1.8% 2021 - 2022	▲ 1.4°C 2023
▼ -1.8% 2013 - 2023	▲ 0.4% 2012 - 2022	n/a
16,341 USD in 2023	53.6 years in 2022	

Fig 5 displays socioeconomic impact metrics for Nigeria. Labor productivity shows concerning negative trends: -0.5% for 2022-2023 and -1.8% for 2013-2023, with an absolute value of \$16,341 USD in 2023. Life expectancy shows positive growth of 1.8% for 2021-2022 and 0.4% for 2012-

2022, reaching 53.6 years in 2022, though this remains relatively low globally. Temperature change shows a concerning 1.4°C increase in 2023, highlighting environmental challenges that may impact economic development and innovation capacity.

Fig 6: Innovation Performance and Economic Development Trend

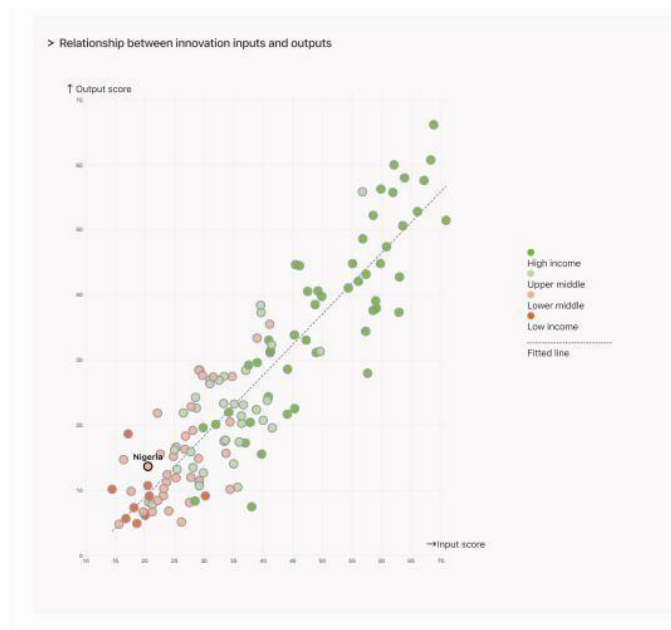


Source: Global Innovation Index, 2024

Fig 6 positions Nigeria relative to economic development expectations for innovation. Nigeria appears close to the trend line, suggesting it's performing roughly as expected for its GDP per capita level. The chart uses a logarithmic GDP scale and plots countries' overall GII scores, with bubble sizes representing population. Nigeria

appears as a medium-sized bubble slightly below the trend line, indicating it's performing slightly below expectations for innovation given its level of economic development, but not dramatically underperforming.

Fig 7: Innovation I/O Trend



Source: Global Innovation Index, 2024

Fig 7 illustrates the relationship between innovation inputs and outputs through a scatter plot. Nigeria appears in the lower-left quadrant with both low input and output scores relative to global standards. The fitted trend line shows the positive correlation between innovation inputs and outputs across countries. Higher-income economies (green dots) cluster in the upper-right

quadrant with both high inputs and outputs, while lower-income economies (orange dots) including

Nigeria cluster in the lower-left, demonstrating the innovation gap between developed and developing economies.

Fig 8: Nigeria's Performance against other Economic Groupings



Source: Global Innovation Index, 2024

Fig 8 benchmarks Nigeria against other economy groupings across seven areas of the GII Index. Nigeria scores below the lower-middle-income average in most categories, particularly in institutions (21.11), infrastructure (19.72), and knowledge/technology outputs (9.48). However, Nigeria outperforms in creative outputs (17.9) relative to both lower-middle-income and Sub-Saharan Africa averages. Nigeria performs above the Sub-

Saharan African regional average in human capital/research and business sophistication but lags significantly in other categories.

Fig 9: Nigeria's Innovation Strength and Weaknesses

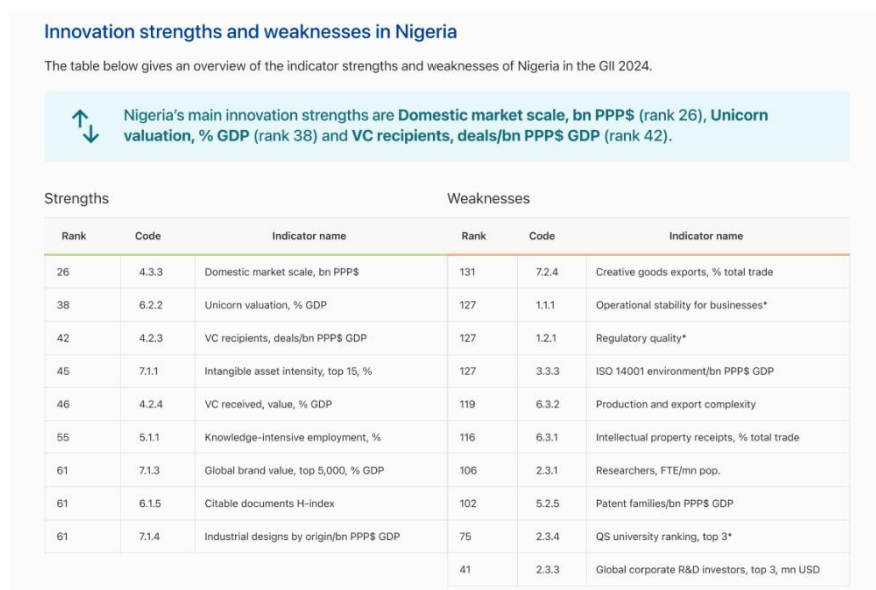


Fig 9 presents Nigeria's innovation strengths and weaknesses based on the GII 2024 rankings, revealing a dual pattern of market-driven capabilities alongside critical structural deficiencies. Nigeria demonstrates significant strengths in market-scale indicators,

ranking 26th globally in domestic market scale and performing competitively in venture capital metrics (38th in unicorn valuation, 42nd in VC recipients). The country also shows reasonable performance in knowledge assets, ranking 55th in knowledge-intensive employment and maintaining decent positions in intangible asset intensity (45th) and global brand value (61st).

However, Nigeria exhibits severe weaknesses in foundational innovation infrastructure. The country ranks poorly at 127th in both operational stability for businesses and regulatory quality, indicating substantial institutional barriers to innovation. Research and development capacity remain critically underdeveloped, with Nigeria ranking 106th in researchers per population and 102nd in patent families. Educational infrastructure also underperforms, with the top three universities ranking only 75th globally. Additionally, Nigeria lags significantly in environmental integration (127th in ISO 14001 standards) and struggles with low creative goods exports (131st) and limited production complexity (119th). This pattern suggests Nigeria possesses strong domestic market foundations and growing private investment but lacks the institutional, regulatory, and research infrastructure necessary to translate these advantages into sustained innovation-led economic development.

Policy Recommendations

Based on empirical evidence and stakeholder feedback, several strategic recommendations are vital to strengthening government interventions in Nigeria's innovation ecosystem:

i. Strengthening Implementation Mechanisms

A study by the African Development Bank (2023) emphasizes that Nigeria must institutionalize rigorous policy execution frameworks. These should include clear success metrics, time-bound targets, and independent performance audits. The Nigerian Economic Summit Group (2023) further advocates for a National Innovation Implementation Unit that

reports directly to the Presidency, with the authority to coordinate federal, state, and private-sector innovation agendas.

ii. Enhancing Inter-Agency Coordination

Poor synergy among government bodies weakens innovation delivery. Okonjo and Partners (2023) recommend a central innovation coordination secretariat housed under the Office of the Vice President, empowered to harmonize national R&D efforts, streamline funding channels, and reduce policy duplication across ministries such as Education, Science & Technology, and Digital Economy.

iii. Infrastructure Development

The World Bank's Nigeria Digital Economy Diagnostic Report (2023) underscores the urgent need to close Nigeria's digital divide. Key recommendations include:

- a. Expanding fiber-optic broadband penetration, especially in rural areas;
- b. Incentivizing public-private partnerships for smart infrastructure;
- c. Establishing innovation hubs and tech parks in each geopolitical zone to decentralize opportunity and foster regional innovation clusters.

iv. Boosting R&D and Higher Education Linkages

Increased funding for research institutions and universities must be matched with incentives for industry-academia collaboration, such as R&D tax credits, competitive grants, and startup incubators. Nigeria should emulate best practices from economies that have successfully integrated universities into their national innovation strategies.

v. Legal and Regulatory Reform

Outdated or inconsistent laws around intellectual property, venture capital, and startup formation deter innovation. A streamlined Innovation Regulation Reform Taskforce could review and modernize these frameworks, ensuring that Nigeria's legal environment is innovation-friendly and globally competitive.

vi. Data Governance and Monitoring

Robust innovation policy requires reliable, real-time data. Nigeria should strengthen data collection, benchmarking, and monitoring systems related to innovation inputs and outputs, enabling timely course corrections and evidence-based planning.

Conclusion

Nigeria's innovation ecosystem remains underperforming despite numerous government-led efforts to improve its global competitiveness. According to the Global Innovation Index (GII) 2024, Nigeria ranks 113th out of 133 economies, with particularly low scores in infrastructure (127th), institutions (125th), and market sophistication (121st). While Nigeria performs relatively better in human capital and research (78th) and creative outputs (87th), these gains are undermined by insufficient R&D investment, regulatory inefficiencies, and weak innovation linkages. Moreover, although Nigeria generates relatively stronger innovation outputs than its input investments would predict, this points to a structural inefficiency: the inability to scale innovation through sustainable, high-quality infrastructure and policy frameworks.

The findings suggest that to advance its GII standing, Nigeria must go beyond fragmented policy interventions and adopt a holistic, evidence-based approach that enhances institutional stability, boosts R&D funding, and fosters industry-academia collaboration. Strategic alignment with global innovation standards is crucial for Nigeria to translate potential into measurable progress.

References

- Adebayo, K., & Wilson, E. (2023). Digital Innovation Policy Implementation in Nigeria: Challenges and Prospects. *Journal of African Digital Economy*, 15(2), 45–62.
- Adejumo, G., & Adejumo, O. (2019). Science, Technology, and Innovation Policies in Nigeria: Challenges and Prospects. *African Journal of Science, Technology, Innovation and Development*, 11(4), 567–578.
- Adelowo, C., Adeola, O., & Adeyemi, K. (2021). Innovation Policy and Economic Development in Nigeria. *African Journal of Science, Technology, Innovation and Development*, 13(1), 23–35.
- Adeola, G., & Evans, O. (2020). Digital Technology and Economic Growth in Nigeria: Challenges and Opportunities. *International Journal of Economics and Financial Issues*, 10(3), 182–190.
- Adewale, T., & Thompson, R. (2023). Fintech Revolution in Nigeria: Policy Framework and Market Response. *Journal of Financial Technology*, 8(4), 312–328.
- African Development Bank. (2023). Nigeria innovation policy assessment report. Abidjan: *AfDB Publications*.
- Agogbua, S. N., Umeaniba, A. I., & Mgbatogu, C. D. (2024). Nigeria Start-Up Act, 2022 Disruption on Financial Services Technology Startups (Fintech): A study of Moniepoint (Point of Sales) POS Agents in Anambra State. *International Journal of Small Business and Entrepreneurship Research*. <https://doi.org/10.37745/ijssber.2013/vol12n25971>
- Akinwale, Y., Adepoju, A., & Olayemi, T. (2020). Assessing Nigeria's Innovation Ecosystem: The Role of Government Policies and Funding Mechanisms. *Technovation Review*, 35(3), 250–267.
- Akinyemi, E., & Adedeji, A. (2021). Innovation Policies in Africa: Nigeria's Experience and Lessons for Emerging Economies. *Journal of Policy Research*, 28(2), 99–118.
- Akinyemi, O., & Okonkwo, J. (2022). The Role of Digital Financial Services in Nigeria's Innovation landscape: Challenges and opportunities. *African Journal of Digital Transformation*, 8(1), 45–62.
- Central Bank of Nigeria. (2023). Annual Report on Financial Technology and Innovation. Abuja: CBN Press.
- Egbetokun, A., Siyanbola, W., & Adeniyi, A. (2020). R&D Policies and Innovation Performance in Nigeria: Evaluating Recent Trends and Implications. *African Journal of Economic Development*, 15(1), 45–67.
- Egbetokun, A., Siyanbola, W., & Adeniyi, T. (2022). Broadband Penetration and its Impact on Nigeria's Digital Economy: A policy evaluation. *Journal of ICT Policy and Innovation*, 12(4), 89–106.
- Lagos Business School. (2023). Innovation and Entrepreneurship in Nigeria: Case studies and analysis. Lagos: LBS Research Series.
- McKinsey & Company. (2023). Africa Innovation Report: Focus on Nigeria. New York: McKinsey Global Institute.

- National Bureau of Statistics. (2023). Digital Economy Contribution to Nigeria's GDP. Abuja: NBS Publications.
- Nigerian Economic Summit Group. (2023). Policy Implementation Framework for Innovation in Nigeria. Lagos: NESG Research.
- Nigerian Institute of Social and Economic Research. (2023). Sustainable Innovation in Nigeria: Trends and prospects. Ibadan: NISER Publications.
- Nigerian Investment Promotion Commission. (2023). Startup Act implementation report. Abuja: NIPC Press.
- Obi, C., Nwosu, K., & Ogunleye, J. (2021). Government Support for R&D in Nigeria: Evaluating the Impact of TETFund and NOTAP initiatives. *Journal of Policy Research*, 28(2), 99–118.
- Ogbu, E. (2023). A Review of the Nigerian Startup Act, 2022. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.4529678>
- Okolo-Obasi, E. N., & Uduji, J. I. (2023). Government Enterprise and Empowerment Program (GEEP) and Women's Performance in Entrepreneurship Development in Nigeria. *Development in Practice*, 1–18. <https://doi.org/10.1080/09614524.2023.2178639>
- Okolo-Obasi, E. N., et al. (2024). Government Policies and Business Start-ups in Sub-Saharan Africa. *African Journal of Management and Business Research*, 17(1), 378–400. <https://doi.org/10.62154/ajmbr.2024.017.010544>
- Okolie, C. N., & Akwiwu, I. (2023). A Review of the New Nigeria Startup Act 2022: Benefits and Challenges for the Tech Ecosystem in Nigeria. *International Journal of Social Science and Humanity*. <https://doi.org/10.18178/ijssh.2023.v13.1166>
- Okonjo and Partners. (2023). Government Coordination in Innovation Policy: A critical analysis. *Nigerian Journal of Public Administration*, 12(3), 145–160.
- Onwuka, E., & Asogwa, C. (2023). Assessing the Impact of Digital Skills Training Programs on Nigeria's Innovation Ecosystem. *African Journal of Science, Technology, and Development*, 19(3), 77–94.
- Onwuka, E., Asogwa, C., & Akpan, J. (2022). University-industry Linkages in Nigeria: Barriers and Policy Recommendations for Improved Commercialization of Research. *African Journal of Economic Development*, 15(1), 73–91.
- Onyedikachi, N. J., Mintah, C., & Funmilayo, A. K. (2022). The Impact of Government Policies and Small-scale Enterprise Development Activities on Economic Growth: Evidence from Nigeria. *International Journal of Academic Research in Business & Social Sciences*, 12(12). <https://doi.org/10.6007/ijarbss/v12-i12/15719>
- Osinbajo, Y. (2021). Creating an Enabling Environment for Business in Nigeria. *Nigerian Journal of Economics and Social Studies*, 63(1), 1–18.
- Pantami, I. (2021). National Digital Economy Policy and Strategy: Driving Innovation in Nigeria. Abuja: Federal Ministry of Communications and Digital Economy.
- United Nations Conference on Trade and Development. (2023). E-commerce Development in Africa: Focus on Nigeria. Geneva: UNCTAD Publications.
- World Bank. (2023). Nigeria Digital Economy Diagnostic Report. Washington, DC: World Bank Group.
- World Economic Forum. (2023). Africa Competitiveness Report: Nigeria Innovation Ecosystem. Geneva: WEF Publications.