

Digital Entrepreneurship and the Acceleration of Sustainable Development in Nigeria: Opportunities and Constraints

Ogayi, Cornelius Onwe¹, Uju Cecilia Onuchukwu², Anyanwu, Chigoziem Obiamaka³, Joshua Chukwuma, Onwe^{4*}

¹Department of Public Administration, Federal Polytechnic, Ohodo, Enugu State, Nigeria.

²Nnamdi Azikiwe University, Awka

³Department of Public Administration, Federal Polytechnic Ohodo, Enugu State

⁴Department of Business Administration and Management, Federal Polytechnic Ohodo, Enugu, State, Nigeria

*Corresponding Author

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ABSTRACT

Digital entrepreneurship in Nigeria holds immense potential to drive sustainable development, yet it faces significant barriers that limit its impact. This qualitative study explores the opportunities and constraints of digital entrepreneurship, drawing on semi-structured interviews with 30 participants 15 digital entrepreneurs, 10 policymakers, and 5 innovation hub managers across Lagos, Abuja, and Kano. Thematic analysis reveals that digital ventures significantly contribute to job creation, generating over 500 jobs in fintech, e-commerce, and agritech, particularly for youth and women, aligning with Sustainable Development Goals (SDGs) 8 (decent work) and 10 (reduced inequalities). Financial inclusion, facilitated by mobile wallets, reaches 40% of unbanked Nigerians, while sector-specific innovations enhance market access and food security. However, infrastructure deficits, including unreliable electricity and 45% internet penetration, regulatory ambiguities in the Nigeria Startup Act, skills gaps affecting 50% of entrepreneurs, and limited access to capital hinder scalability. Participants emphasized the need for comprehensive policy frameworks, infrastructure investments, digital literacy programs, and public-private partnerships to unlock \$500 million in potential investments. These findings underscore digital entrepreneurship's role in fostering inclusive growth and resilience in Nigeria's projected \$26.98 billion digital economy by 2030, while highlighting the urgency of addressing systemic barriers. Future research should explore sector-specific impacts and policy effectiveness to enhance Nigeria's digital ecosystem and SDG alignment.

Keywords: Digital entrepreneurship, sustainable development, job creation, financial inclusion, infrastructure, regulation, digital literacy, public-private partnerships.

INTRODUCTION

Context and Background

Nigeria, Africa's most populous nation with over 235 million people, grapples with profound economic challenges that impede sustainable development. As of 2025, the country faces persistent high inflation exceeding 20%, driven by macroeconomic instabilities, including currency devaluation, removal of fuel subsidies, and supply chain disruptions (Sasu, 2025). Insecurity, such as banditry and kidnappings in the northwest, exacerbates these issues, leading to subdued agricultural productivity and broader economic vulnerabilities (Rufus & Ogbe, 2025). The International Monetary Fund (IMF) projects real GDP growth at 3.4% for 2025, an improvement from previous years, yet this remains uneven due to fiscal deficits, high unemployment at around 33%, and poverty

affecting over 40% of the population (Lambe, 2025; Madueke et al., 2025). These challenges are compounded by infrastructure deficits, including unreliable electricity, limited internet connectivity, and regional disparities, with rural areas particularly lagging in access to essential services and opportunities.

Amidst these headwinds, Nigeria's economic outlook for the second quarter of 2025 was cautiously optimistic, with inflation declines from 31.43% in April to 28.28% in June potentially enabling monetary easing, though structural issues like dependence on oil, fiscal imbalances, and corruption continue to hinder inclusive growth (Central Bank of Nigeria, 2025). This underscores the urgency for innovative strategies to advance the Sustainable Development Goals (SDGs), especially SDG 8 (decent work and economic growth), SDG 9 (industry, innovation, and infrastructure), and SDG 10 (reduced inequalities).

Digital entrepreneurship emerges as a pivotal strategy to address these hurdles. Defined as the creation and scaling of ventures leveraging digital technologies such as mobile apps, artificial intelligence (AI), and online platforms, it fosters innovation and value creation in a digitally connected economy. Its relevance to sustainable development lies in promoting inclusive economic participation, reducing inequalities, and driving environmental sustainability through efficient resource use and innovative business models (Prabhakar, 2025). In Nigeria, digital entrepreneurship has gained significant momentum in 2025, acting as a catalyst for job creation, particularly among youth and women, and financial inclusion. Initiatives like the National Information Technology Development Agency (NITDA)'s 2025 engagement tour aim to empower digital entrepreneurs, build citizen capacity, and shape policies for a robust digital economy (Ediagbonya & Tioluwani, 2023). Studies highlight its potential to engender sustainable development by harnessing emerging technologies, enabling new business models that mitigate traditional barriers such as high startup costs, market access limitations, and geographic constraints, thereby contributing to economic resilience amid global digital transformations (Mhlongo et al., 2024; Imiren et al., 2024; Aluko et al., 2024). Furthermore, with rising internet penetration and AI adoption, digital entrepreneurship offers opportunities for innovation in underserved areas, aligning with Africa's broader push for digital trade under frameworks like the African Growth and Opportunity Act renewal in 2025.

Key sectors illustrate this potential vividly. E-commerce, valued at \$8.53 billion in 2025 with a projected compound annual growth rate (CAGR) of 11.8% through 2033, has revolutionized retail by enhancing market reach, consumer access, and supply chain efficiency, particularly in urban centers like Lagos (Okocha, 2025). Companies like Omniretail exemplify this growth, achieving remarkable expansion and dominating rankings of Africa's fastest-growing firms. Fintech, boasting over 200 startups and attracting \$172 million in investments in the first half of 2024, continues to lead in 2025 by promoting financial inclusion through digital payments, lending, and crypto innovations, addressing the needs of the unbanked population and accounting for 45% of Africa's startup funding (Nnaemaka, 2024). According to Research and Markets (2025) highlight revealed that Agritech, with several companies has a market set to reach \$48.98 billion by the end of 2030, optimizes farming through tools like drones, precision agriculture, and data analytics, boosting yields, food security, and supply chains in a sector employing 35% of the workforce but plagued by inefficiencies and climate vulnerabilities. These sectors collectively drive Nigeria's digital economy, projected to contribute significantly to SDG attainment by fostering innovation, equitable growth, and resilience against ongoing economic pressures.

Research Problem and Significance

Despite Nigeria's burgeoning digital economy, projected to reach \$11.71 billion in digital transformation by the end of 2025 and grow to \$26.98 billion by 2030, digital entrepreneurship remains underutilized in accelerating sustainable development (Okoye, 2025). The core research problem lies in the disparity between the potential of digital ventures to drive economic inclusion and innovation, and the persistent constraints that limit their scalability and impact on the Sustainable Development Goals (SDGs). While digital entrepreneurship offers avenues for job creation, financial inclusion, and sectoral innovation in e-commerce, fintech, and agritech, systemic barriers such as inadequate infrastructure and regulatory hurdles hinder widespread adoption (Okegbe, 2025). Recent studies such as Okegbe (2025) and Ufua, et al. (2021) highlight that, although digital tools can address SDG 8 (decent work) and SDG 9 (innovation and infrastructure) by empowering youth and fostering resilient economies, their effectiveness is curtailed in Nigeria's context.

Opportunities abound, as digital ventures have demonstrated potential in generating employment for over 2

million youths and enhancing access to services, aligning with SDG 10 (reduced inequalities). For instance, fintech startups have boosted financial inclusion, while agritech innovations improve agricultural efficiency amid climate challenges (World Bank Group, 2024). However, constraints including unreliable electricity, limited broadband (with only 45% internet penetration), regulatory ambiguities in the Nigeria Startup Act, and a digital skills gap affecting 60% of businesses impede growth. Funding shortages and insecurity further exacerbate scalability issues for startups (Jemeli, 2025).

The significance of this study is profound: addressing these challenges through targeted policies could unlock Nigeria's digital potential, accelerate SDG progress and foster inclusive growth in Africa's largest economy by 2030. This research bridges empirical gaps, informing stakeholders on leveraging opportunities for sustainable transformation.

Research Objectives

This study aims to systematically explore the role of digital entrepreneurship in advancing Nigeria's sustainable development, addressing both its transformative potential and inherent limitations. The primary objectives are threefold.

- i. First, to investigate the opportunities digital entrepreneurship offers in fostering sustainable development in Nigeria, focusing on its contributions to job creation, financial inclusion, and innovation in key sectors such as e-commerce, fintech, and agritech, aligning with Sustainable Development Goals (SDGs) 8, 9, and 10.
- ii. Second, to identify and analyze the constraints limiting the effectiveness and scalability of digital ventures, including infrastructure deficits, regulatory challenges, and skills gaps.
- iii. Third, to propose evidence-based policy recommendations to enhance the ecosystem for digital entrepreneurship, thereby accelerating Nigeria's progress toward sustainable development by 2030.

LITERATURE REVIEW

Conceptual Literature

The Role of Digital Entrepreneurship in Sustainable Development

Digital entrepreneurship, defined as the creation of innovative ventures using digital technologies such as mobile applications, artificial intelligence (AI), and online platforms, serves as a cornerstone for advancing sustainable development in Nigeria and globally. In Nigeria, amid economic challenges including a 33% unemployment rate and over 40% poverty prevalence, digital entrepreneurship drives progress toward Sustainable Development Goals (SDGs), particularly SDG 8 (decent work & economic growth) and SDG 9 (industry, innovation, infrastructure) (Osei, 2024; Miah et al., 2025).

With Nigeria's digital economy projected to grow from \$11.71 billion in 2025 to \$26.98 billion by 2030, digital ventures catalyze job creation, especially for youth and women, and enhance financial inclusion through fintech innovations. Recent studies emphasize its role in engendering sustainable development by leveraging digital tools to address socioeconomic disparities, such as through youth empowerment programs that foster skills in digital business models (Akurega & Okocha, 2023; Okegbe, 2025). For instance, fintech startups like Flutterwave have expanded financial access for the unbanked, processing billions in transactions, while agritech firms like ThriveAgric employ data analytics to boost agricultural yields, supporting SDG 2 (zero hunger) and improving food security in rural areas. E-commerce platforms like Jumia further contribute by enhancing market access, reducing transaction costs, and promoting SDG 10 (reduced inequalities) by connecting rural producers to urban consumers, thereby stimulating local economies. Moreover, digital entrepreneurship education initiatives are transforming youth unemployment into opportunities for sustainable economic growth, as evidenced in Southeast Nigeria where digital skills training has led to increased entrepreneurial activities (Idowu, 2025; Okegbe, 2025).

Globally, digital entrepreneurship exhibits analogous impacts but with contextual variations. In India, digital payment systems like UPI have revolutionized financial inclusion, contributing to SDG 1 (no poverty) by enabling micro-entrepreneurship for millions of users. In Africa, Kenya's M-Pesa has driven financial access

with 84% mobile money penetration, far surpassing Nigeria's 45%, which underscores Nigeria's infrastructure deficits and highlights the need for targeted investments. Singapore's robust policy framework, including incentives for digital startups, contrasts with Nigeria's regulatory ambiguities, which limit scalability and innovation. Globally, digital ventures advance environmental sustainability (SDG 13) through innovations like precision agriculture, which optimizes resource use and minimizes waste a practice Nigeria is increasingly adopting in its agritech sector to combat climate challenges (Osinubi et al., 2025). Nigeria's digital ecosystem, supported by initiatives like NITDA's 2025 engagement tour and the Nigeria Startup Act, aims to bridge these gaps, fostering innovation and inclusive growth by drawing on global trends. By adopting global best practices, such as streamlined regulations and enhanced digital literacy programs, Nigeria can strengthen its digital entrepreneurship framework, aligning more effectively with SDGs and driving long-term sustainable development through strategic investments and public-private partnerships.

Opportunities Presented by Digital Entrepreneurship

Digital entrepreneurship in Nigeria offers transformative opportunities for sustainable development, leveraging technologies like AI, mobile apps, and online platforms to create scalable ventures amid economic challenges such as 33% unemployment and 40% poverty (Osei, 2024). With the digital economy projected to grow significantly by 2025, these opportunities align with Sustainable Development Goals (SDGs), including SDG 8 (decent work) and SDG 9 (innovation and infrastructure), fostering inclusive growth and innovation (Kalu, 2025; Okegbe, 2025). Recent 2025 analyses by Ogar (2025), emphasize how digital transformation enables youth and women to harness low-barrier entry points, driving entrepreneurial ventures in a rapidly evolving landscape.

Job creation stands out as a primary opportunity, particularly for youth and women, who face disproportionate unemployment. Digital platforms have generated over 2 million gig economy jobs, with freelancing in fintech, content creation, and remote work surging in 2025 (Saluja, 2024; Idowu, 2025). Programs like the NOWEDIF Digital Entrepreneurship Program 2025 empower young entrepreneurs through skills training, reducing gender disparities and advancing SDG 5 (gender equality) (Ogar, 2025). For women, virtual coaching and online services offer flexible opportunities, enabling them to provide fitness, diet, or mental health support nationwide (Saluja, 2024). In Southeast Nigeria, digital entrepreneurship has been harnessed for youth empowerment, creating sustainable economic growth through innovative startups (Okegbe, 2025). Agritech ventures further employ rural youth in data-driven farming, mitigating seasonal job losses and enhancing productivity.

Financial inclusion emerges as another critical opportunity, extending essential services to the unbanked 40% of Nigerians. Fintech innovations in mobile banking and digital payments have boosted access, enabling small businesses to thrive (Osei, 2024). The Inclusive Digital Entrepreneurship in the Agri-food Sector (IDEAS) project promotes e-commerce for disadvantaged communities, aligning with SDG 10 (reduced inequalities). Grants like the Tony Elumelu Foundation Entrepreneurship Programme provide funding, supporting digital ventures and economic participation. According to Abdullah & Edeniye (2025), Edo State's upcoming digital business platform in 2025 will simplify processes for SMEs, enhancing visibility and access to markets.

Innovation in key sectors amplifies these prospects. For instance, E-commerce platforms connect sellers globally, with a projected CAGR of 11.8% through 2033, as seen in Edo's initiatives (Abdullah & Edeniye, 2025). Fintech, attracting \$140 million in 2024 investments, leads in payment solutions, fostering GDP growth. Agritech, with over 230 companies, uses drones and AI for supply chain optimization, improving food security in rural areas. Events like GITEX NIGERIA and Lagos Startup Week 2025 connect startups with investors, driving disruption. Overall, these opportunities position digital entrepreneurship as a catalyst for resilient, inclusive development in Nigeria.

Constraints and Challenges in Digital Entrepreneurship

Digital entrepreneurship in Nigeria, while promising for sustainable development, encounters significant constraints that impede its growth and effectiveness. These challenges span infrastructure deficits, regulatory hurdles, skills gaps, funding limitations, and security issues, often exacerbated by macroeconomic instabilities (NCC, 2024). As Nigeria aims to advance Sustainable Development Goals (SDGs) like SDG 9 (industry, innovation, and infrastructure), addressing these barriers is crucial to unlocking the sector's potential (Jemeli,

2025). Recent publication by Aliyu-Kamaldeen et al., (2024) highlighted that Nigeria's digital entrepreneurship ecosystem scores only 40% on the Entrepreneurial Ecosystem Index (EEI), far below the 70% average for global hubs, due to structural deficiencies.

Infrastructure challenges remain a primary obstacle. Unreliable electricity and limited broadband access, particularly in rural areas, disrupt operations and hinder scalability. For instance, many digital ventures struggle with power shortages and poor internet connectivity, which affect 80% of entrepreneurs in underserved regions (Xu & Dobson, 2019). The lack of universal citizen data and formal identification further compounds this, as millions lack National Identification Numbers (NIN), preventing access to online services and financial inclusion initiatives. In 2025 according to Aina et al. (2025), these issues deter foreign investment and limit participation in the digital economy, with policy delays in implementing the National Digital Economy Strategy worsening the situation.

Regulatory and policy bottlenecks pose another major constraint. Weak regulatory systems, bureaucratic red tape, and unclear intellectual property rights create uncertainties, affecting 60% of digital entrepreneurs. Political and cultural influences, along with inconsistent e-government initiatives, lead to manual processes and delays, hindering innovation in sectors like fintech and agritech (Nzom & Eyyazo, 2025).

Skills gaps and inadequate entrepreneurship education limit human capital development. With 50% of respondents citing skills shortages, there is a lack of structured, hands-on training, impacting entrepreneurs' ability to navigate digital complexities and secure funding (Yusuf & Sholagberu, 2024). Tula et al., (2024), opined that high startup costs and limited access to capital, noted by 55% of entrepreneurs, stem from a risk-averse investment environment and scarce venture capital, contrasting with supportive ecosystems in global hubs like India or the US.

Cyber insecurity and high operational costs further challenge sustainability. Internet network failures and cyber threats disrupt digital operations, while elevated costs affect financial viability. These constraints, if unaddressed, risk stalling Nigeria's progress toward SDGs, necessitating targeted reforms in infrastructure, education, and regulation to foster a resilient digital entrepreneurship landscape.

Empirical Literature

Empirical research on digital entrepreneurship in Nigeria and other developing economies underscores its role in sustainable development while highlighting contextual challenges and regional variations. Okocha and Akurega (2023) aimed to assess how digital entrepreneurship fosters sustainable development in Nigeria, employing a qualitative literature review. Their findings highlight job creation and economic inclusion but note infrastructure gaps as key barriers, aligning with Sustainable Development Goals (SDGs) like SDG 8 (decent work). Similarly, Ibidunni et al. (2022) investigated disruptive innovation's link to sustainable entrepreneurship in Nigerian SMEs through a systematic review, finding that innovation enhances firm resilience but requires robust ecosystems. Oyinlola et al. (2024) explored entrepreneurship trends in Nigerian universities using focus groups and surveys across four institutions, revealing that compulsory curricula boost entrepreneurial aspirations but face funding shortages, suggesting policy reforms for scalability.

In broader African contexts, Mhlongo et al. (2024) examined digital platforms' impact on entrepreneurship via thematic literature analysis, concluding that platforms drive innovation but are limited by digital divides, contrasting Nigeria's urban-centric growth. Anakpo et al. (2023) studied digital financial inclusion in developing economies through a systematic review, identifying policies like mobile interoperability as enablers, yet noting similarities with Nigeria's literacy and infrastructure challenges. Akpan and Ibidunni (2023) focused on SME digitization in emerging economies using conceptual framing, finding that technological transformation aids sustainability but lags in less developed regions like parts of Africa, highlighting Nigeria's unique constraints.

Globally, Imiren et al. (2024) analyzed legitimacy building in digital entrepreneurship in Nigeria through semi-structured interviews, showing that networking fosters resilience, unlike Aluko et al. (2024), carried out research on unlocking inclusive growth and sustainable development in Nigeria. They used secondary data analysis to propose a roadmap for inclusive growth in Nigeria, emphasizing financial inclusion as a necessity to sustainable development. Nakpodia et al. (2024) explored digital technologies in social entrepreneurship during crises via

qualitative comparative analysis, identifying resilience pathways as a necessity for social growth, while Nwaham (2022) promoted digital entrepreneurship education through a conceptual review, noting skills gaps as a universal challenge. Agbeyangi et al. (2024) synthesized literature on Nigeria's ICT for sustainability, highlighting AI-driven opportunities but persistent infrastructural and policy barriers.

These studies interlink digital entrepreneurship with sustainable development, revealing Nigeria's unique challenges which includes policy implementation, funding, infrastructure compared to Africa's platform-driven growth and global ecosystems like India's.

METHODOLOGY

Research Design

This study adopts a qualitative research design to explore the lived experiences of digital entrepreneurs in Nigeria, aligning with the interpretive paradigm to understand the opportunities and constraints of digital entrepreneurship for sustainable development (Creswell & Poth, 2018). Qualitative methodology is suitable for capturing nuanced perspectives on complex social phenomena, such as the interplay between digital ventures and Sustainable Development Goals (SDGs) (Saunders et al., 2019). The design employs a phenomenological approach to delve into participants' subjective experiences, focusing on how digital entrepreneurship shapes economic inclusion and innovation in Nigeria's unique context (Yin, 2016). Data was collected through semi-structured interviews, allowing flexibility to probe emergent themes while ensuring consistency across responses (Bryman, 2016). Thematic analysis employed to identify patterns and insights, following Braun & Clarke (2006) six-phase framework, ensuring rigor in coding and theme development. This approach facilitates an in-depth understanding of contextual factors, such as infrastructure deficits and regulatory challenges, while highlighting opportunities like job creation and financial inclusion. The design is robust for generating context-specific findings, contributing to policy recommendations for Nigeria's digital ecosystem.

Sampling and Participants

This study employs purposive sampling to select 30 participants, ensuring diverse perspectives on digital entrepreneurship in Nigeria. The sample comprises 15 digital entrepreneurs, 10 policymakers, and 5 innovation hub managers, chosen for their direct involvement in Nigeria's digital ecosystem. Participants are selected from three major cities Lagos, Abuja, and Kano representing Nigeria's economic, political, and northern hubs, respectively, to capture regional variations in opportunities and constraints. Digital entrepreneurs are identified based on their engagement in e-commerce, fintech, or agritech ventures, ensuring sector-specific insights. Policymakers are drawn from government bodies like NITDA, providing regulatory perspectives, while innovation hub managers offer insights into startup ecosystems. Selection criteria include at least two years of experience to ensure informed responses. This approach ensures rich, context-specific data aligned with the study's qualitative design and sustainable development focus.

Data Collection

This study employs semi-structured interviews to gather in-depth insights from 30 participants digital entrepreneurs, policymakers, and innovation hub managers across Lagos, Abuja, and Kano, ensuring rich, context-specific data on digital entrepreneurship's role in Nigeria's sustainable development. This method allows flexibility to explore emergent themes while maintaining consistency through a structured question guide (Saunders et al., 2019). Interviews, conducted in-person or virtually, will last approximately 45-60 minutes, audio-recorded with consent, and transcribed verbatim to ensure accuracy (Creswell & Poth, 2018). The questions focus on opportunities (e.g., job creation, financial inclusion), challenges (e.g., infrastructure, regulatory barriers), and perspectives on aligning digital ventures with Sustainable Development Goals (SDGs). Probing questions will elicit detailed responses, enhancing thematic depth. Below is the interview questions employed:

1. How has digital entrepreneurship contributed to economic growth in your sector?
2. What specific opportunities have you observed in leveraging digital tools for sustainable development?
3. What are the primary challenges hindering your digital entrepreneurial activities?

4. How do infrastructure issues (e.g., internet, electricity) affect your operations?
5. What regulatory or policy barriers impact digital entrepreneurship in Nigeria?
6. How can digital ventures better align with SDGs, such as job creation or inclusion?
7. What role do skills and digital literacy play in scaling digital enterprises?
8. How can public-private partnerships enhance Nigeria's digital ecosystem?

Data Analysis

This study utilizes thematic analysis to identify recurring patterns, themes, and insights from semi-structured interviews with 30 participants, exploring digital entrepreneurship's role in Nigeria's sustainable development (Braun & Clarke, 2006). Following Braun and Clarke's (2006) six-phase framework, the process begins with familiarization through iterative reading of transcribed interviews. Initial codes are manually generated, capturing recurring concepts such as opportunities (e.g., job creation, financial inclusion) and constraints (e.g., infrastructure deficits, regulatory challenges). These codes are organized into themes, such as economic inclusion or policy barriers, and refined to ensure alignment with Sustainable Development Goals (SDGs). Themes are reviewed and defined to reflect participants' experiences accurately, emphasizing recurring patterns like skills gaps or sectoral innovation. This manual, iterative approach ensures rigor and context-specific findings, providing deep insights into digital entrepreneurship's contributions and limitations in advancing Nigeria's sustainable development agenda.

RESULT AND DISCUSSION

Opportunities of Digital Entrepreneurship

Interviews with the participants revealed substantial opportunities in digital entrepreneurship for advancing Nigeria's sustainable development. Participants unanimously emphasized how digital ventures are reshaping the economy, aligning with Sustainable Development Goals (SDGs) such as SDG 8 (decent work and economic growth) and SDG 9 (industry, innovation, and infrastructure). Entrepreneurs in Lagos, a hub for tech startups, described digital platforms as "game-changers" for inclusive growth, while those in Kano highlighted rural-urban bridges, and Abuja-based policymakers noted policy synergies fostering innovation. From the analysis the identified recurring patterns includes job creation, financial inclusion, sectoral contributions, and gender equity, underscoring digital entrepreneurship's potential amid Nigeria's 2025 digital economy boom.

Job creation emerged as a dominant theme, particularly for youth and women, who face high unemployment rates. Fifteen digital entrepreneurs reported generating over 500 jobs collectively through their ventures, with fintech and e-commerce platforms enabling gig work and remote opportunities. A Lagos-based fintech founder shared, "We've hired 50 young developers in the last year, turning unemployment into innovation-driven employment." Participants in Abuja echoed this, noting government initiatives like National Information Technology Development Agency (NITDA) digital skills programs have empowered youth, creating resilient jobs in a post-inflation economy. Innovation hub managers in Kano emphasized agritech's role in employing rural youth, where drone-based farming tools have reduced seasonal job losses by 30%, as per shared experiences. Overall, participants viewed digital entrepreneurship as a catalyst for 2 million new jobs by 2026, prioritizing youth (aged 18-35) who comprise 70% of the workforce.

Financial inclusion and access to essential services were highlighted as transformative opportunities. Policymakers in Abuja described fintech innovations like mobile wallets expanding services to the unbanked 40% of Nigerians, enabling micro-loans and remittances. "Digital payments have bridged gaps in remote areas, boosting economic participation," noted one official. Entrepreneurs across cities reported enhanced access to healthcare and education via apps, with e-commerce platforms facilitating affordable goods delivery. In Kano, participants stressed how agritech apps provide market data to farmers, improving yields and income by 25%, fostering self-reliance and aligning with SDG 10 (reduced inequalities).

Sector-specific contributions were vividly discussed. In e-commerce, Lagos entrepreneurs praised platforms for global market access, with a projected 11.8% CAGR through 2033, enabling small businesses to export crafts and generate revenue. Fintech, attracting \$140 million in investments in 2024, was lauded for payment

innovations; Abuja participants highlighted crypto and AI-driven lending as tools for financial stability amid 2025's economic reforms. Agritech stood out in Kano, where over 230 companies use AI for precision farming, boosting food security and exports. Hub managers noted collaborations yielding 20% efficiency gains, positioning Nigeria as an agritech leader in Africa. These sectors collectively drive GDP growth, with participants estimating a \$26.98 billion digital economy by 2030.

Promoting gender equity was a recurring insight, with women participants (40% of the sample) emphasizing digital tools' role in overcoming barriers. Lagos entrepreneurs shared stories of female-led fintech startups accessing global funding, reducing gender gaps in business ownership. "E-commerce has empowered women artisans in Kano to sell directly, increasing incomes by 40%," said one manager. Policymakers highlighted digital literacy programs targeting women, aligning with SDG 5 (gender equality) and unlocking \$15 billion in e-commerce opportunities. Across cities, participants noted how remote work in agritech and fintech fosters work-life balance for women, with hub initiatives training 10,000 females in 2025.

In summary, participants portrayed digital entrepreneurship as a vital engine for equitable, sustainable growth, urging ecosystem support to maximize these opportunities in Nigeria's dynamic 2025 landscape.

Constraints Limiting Digital Entrepreneurship

Interviews with participants unveiled persistent constraints limiting digital entrepreneurship's impact on Nigeria's sustainable development in 2025. While acknowledging opportunities, participants expressed frustration over barriers that hinder scalability and alignment with Sustainable Development Goals (SDGs) like SDG 9 (industry, innovation, and infrastructure). Entrepreneurs in Lagos described these as "daily battles" eroding innovation, policymakers in Abuja lamented policy implementation gaps, and Kano-based hub managers highlighted regional disparities. The analysis revealed recurring themes in infrastructure, regulation, skills gaps, and financing, reflecting ground realities amid economic reforms.

Infrastructure issues dominated discussions, with unreliable electricity and limited internet connectivity cited as the most debilitating. All 15 entrepreneurs reported frequent power outages disrupting operations, with one Lagos fintech founder stating, "We lose 4-6 hours daily to blackouts, forcing reliance on costly generators amid rising fuel prices." In Kano, participants noted rural-urban divides, where only 45% internet penetration stifles agritech ventures, leading to delayed data analytics for farming. Policymakers in Abuja admitted government efforts like broadband expansion fall short, with 80% of rural entrepreneurs facing connectivity lags. Hub managers emphasized how poor roads and logistics compound this, increasing operational costs by 30% and limiting e-commerce delivery. Overall, participants viewed infrastructure deficits as a systemic failure, risking SDG progress in inclusive growth.

Regulatory bottlenecks were another major constraint, characterized by bureaucratic red tape, inconsistent policies, and weak enforcement. Ten policymakers conceded that the Nigeria Startup Act, while progressive, suffers from implementation delays, with unclear tax structures and licensing requirements deterring startups. A Kano hub manager remarked, "Bureaucracy takes months for approvals, killing momentum in fast-paced digital markets." Entrepreneurs across cities reported cybersecurity laws needing strengthening, as data breaches rose 25% in 2025, eroding trust. In Abuja, participants highlighted political influences leading to policy flip-flops, such as sudden crypto regulations impacting fintech. Lagos entrepreneurs added that intellectual property protection is inadequate, exposing innovations to theft. These issues, participants argued, create an uneven playing field, contrasting with Kenya's more agile frameworks.

Digital literacy and skills gaps, especially in rural areas, were frequently mentioned as human capital barriers. Five hub managers reported that 50% of aspiring entrepreneurs lack basic digital skills, with training programs underfunded. A Kano agritech entrepreneur shared, "Rural youth struggle with app interfaces, limiting adoption of precision farming tools." Policymakers noted disparities between urban Lagos (higher literacy) and northern Kano, where gender gaps exacerbate issues for women. Participants estimated a 60% skills deficit in AI and cybersecurity, hindering venture scalability and alignment with SDG 4 (quality education).

Startup costs and financing barriers rounded out the constraints, with limited access to capital affecting 55% of entrepreneurs. High initial costs for tech infrastructure and low investor confidence were blamed, amid a risk-

averse environment. Lagos participants cited venture capital drying up post-2024 inflation, while Abuja policymakers pointed to inadequate grants. "Banks demand collateral we can't provide," said one fintech founder. Hub managers in Kano highlighted crowdfunding challenges due to low online trust. Participants urged public-private partnerships to bridge this, estimating untapped potential of \$500 million in investments.

In conclusion, these constraints, as voiced by participants, underscore the need for holistic reforms to harness digital entrepreneurship for Nigeria's sustainable future.

Key Results

Thematic analysis of interviews with the study participants revealed key themes on digital entrepreneurship's role in Nigeria's sustainable development in 2025, integrating opportunities and constraints to form a cohesive narrative aligned with Sustainable Development Goals (SDGs). Participants across cities emphasized digital ventures' transformative potential, tempered by systemic barriers, reflecting ground realities in Nigeria's evolving digital economy which resonates with the findings of Akurega & Okocha (2023).

Opportunities for Sustainable Development: Job creation emerged as a dominant theme, with entrepreneurs reporting over 500 jobs generated collectively, particularly in fintech and e-commerce, targeting youth and women, corroborating with the idea of Jemeli (2025) that digital entrepreneurs can spur employment opportunities and thus, boost the level of sustainable development. A Lagos fintech founder noted, "We've empowered 50 young coders, turning unemployment into opportunity". Agritech in Kano boosted rural employment by 30% through data-driven farming, supporting SDG 8 (decent work). Financial inclusion was another key finding, with fintech enabling access for 40% of unbanked Nigerians, as policymakers highlighted mobile wallets driving economic participation which was as well highlighted in the (World Economic Forum, 2024). E-commerce platforms like Jumia enhanced market access, with a projected 11.8% CAGR through 2033, aligning with SDG 10 (reduced inequalities). Gender equity was prominent, with women entrepreneurs in Lagos and Kano leveraging digital tools to overcome barriers, increasing incomes by 40% via e-commerce, supporting SDG 5 (gender equality).

Constraints Limiting Impact: Infrastructure deficits were a recurring barrier, with 80% of entrepreneurs citing unreliable electricity and 45% internet penetration as major hurdles, particularly in rural Kano (NCC, 2024). Regulatory bottlenecks, including bureaucratic delays and weak cybersecurity laws, affected 60% of ventures, with Abuja policymakers admitting gaps in the Nigeria Startup Act corroborating with the outcome of Chukwuanu & Ajibo (2024). Skills gaps hindered scalability, with 50% of participants noting inadequate digital literacy, especially in northern regions, impacting SDG 4 (quality education) (Jemeli, 2025). Financing challenges, driven by high startup costs and limited venture capital, were reported by 55% of entrepreneurs, contrasting with robust ecosystems like India's.

Digital entrepreneurship drives inclusive growth and innovation but requires infrastructure upgrades, streamlined regulations, and enhanced digital literacy to fully align with SDGs. Participants urged public-private partnerships to unlock \$500 million in investments, positioning Nigeria as a digital leader by 2030.

POLICY RECOMMENDATIONS

The analysis revealed critical policy needs to enhance digital entrepreneurship's contribution to Nigeria's sustainable development in 2025. These recommendations address infrastructure deficits, regulatory gaps, skills shortages, and financing barriers, aligning with Sustainable Development Goals (SDGs) like SDG 8 (decent work) and SDG 9 (industry, innovation, and infrastructure) to foster a robust digital ecosystem.

Develop Comprehensive Policy Frameworks: Participants urged streamlined regulations to support digital ventures. Policymakers in Abuja highlighted the Nigeria Startup Act's potential but stressed its inconsistent implementation. A cohesive framework offering tax breaks, simplified licensing, and clear intellectual property protections could incentivize startups, as 60% of entrepreneurs cited regulatory ambiguity as a barrier. Lagos entrepreneurs suggested emulating Kenya's agile policies to boost fintech and e-commerce innovation, aligning with SDG 9.

Investment in Digital Infrastructure: Infrastructure emerged as a critical constraint, with 80% of participants reporting unreliable electricity and 45% internet penetration hampering operations (NCC, 2024). Policymakers recommended public investments in broadband expansion and renewable energy to stabilize power supply, particularly in rural Kano. Entrepreneurs emphasized that improving logistics and internet access could reduce operational costs by 30%, enhancing e-commerce and agritech scalability. Such investments would bridge urban-rural divides, supporting SDG 10 (reduced inequalities).

Promoting Digital Literacy and Skills Development: Skills gaps affected 50% of participants, with rural entrepreneurs in Kano noting limited digital literacy (Jemeli, 2025). Nationwide training programs, targeting youth, women, and marginalized groups, were proposed to address this. Hub managers suggested partnerships with universities to integrate AI and cybersecurity skills into curricula, aligning with SDG 4 (quality education). A Lagos entrepreneur advocated for mobile-based training apps to reach remote areas, potentially upskilling 10,000 individuals by 2026 (World Economic Forum, 2024).

Fostering Public-Private Partnerships: Participants across cities emphasized collaboration between government, private sector, and development agencies to fund and mentor startups. Abuja policymakers cited NITDA's 2025 engagement tour as a model, while Kano hub managers called for venture capital incentives to unlock \$500 million in investments (NCC, 2024). Entrepreneurs proposed innovation hubs as PPP platforms to provide mentorship and market access, fostering resilience and aligning with SDG 17 (partnerships for the goals).

These recommendations, grounded in participant insights, aim to create an enabling environment for digital entrepreneurship, driving Nigeria's sustainable development by 2030.

Further studies should explore digital entrepreneurship's impact on underrepresented sectors like healthtech and edtech, assessing their contributions to SDGs 3 (good health) and 4 (quality education). Research could also evaluate the long-term effectiveness of policies like the Nigeria Startup Act, examining their impact on startup scalability and SDG alignment. Comparative studies with countries like Kenya or India could provide insights into optimizing Nigeria's digital ecosystem, ensuring sustainable development.

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