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ISSN: 2579-0803

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International Digital Organization for Scientific Research IDOSRJCAS921900
IDOSR JOURNAL OF COMPUTER AND APPLIED SCIENCES 9(2):1-9, 2024.
https://doi.org/10.59298/JCAS/2024/92.1900

The Impact of Digital Innovation on Economic Growth in Nigeria

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ABSTRACT

In view of this research, we have examined the important impacts of digital innovation on the Nigerian economy, with a focus on the use of information and communication technology (ICT) in the country. In especially in the rural areas, the National Policy on Information and Communication Technology has been crucial in restoring the health of technological platforms like power and broadband networks. One of the main initiatives is the promotion of legislative changes, with additional objectives aimed at helping companies and enterprises and improving assistance for new comers. grammes. Business sectors, including agriculture, production, healthcare, and finance, have felt the effects of digital transformations, which have led to Furthermore, the article analyses the role of social connectivity, the digital divide, and the development of communities. Benefiting from a young and technologically literate population in Nigeria, the growth of the technology sector has led to significant employment opportunities. The growth of the technology sector has resulted in significant employment opportunities. However, there are still challenges that remain unsolved, and this article proposes comprehensive solutions to address these concerns, including educational programmes, public awareness campaigns, and financial vestments. We utilized relevant published data (2004–2014) from diverse, reliable databases. This review has examines the potential of digitization to propel economic growth in Nigeria. Findings suggest that it's crucial for the government, private sector, and non-profit organisations to foster a mutually beneficial partnership to ensure the equitable distribution of these benefits throughout the country. Ensure that the benefits of digitization are distributed equally throughout the country.

Keywords: Digital Innovation, Economic Growth, ICT Integration, Entrepreneurship, Startup Ecosystem, Social Connectivity, Nigeria.

INTRODUCTION

Technological advancement is an innovative tool that defines economic growth and development across the globe, including Nigeria [1]. Country has developed various policies and programmes to incorporate information technology into its economic structure. The National Policy on ICT seeks to increase the spread of ICT within different fields, including technological development, innovation, entrepreneurship, and technology adoption [2]. This policy also emphasizes the need to increase computing usage, particularly in rural areas, by building broadband networks and improving electricity access. The development of entrepreneurship in the digital economy remains in focus with regard to the stimulation of startups, investment opportunities, and the development of appropriate legislation [3]. Training and human capital enhancement are also important, together with the development of PPPs for sharing information and collaboration on economic progress. Measures of this nature, like technology incubation centres and innovation villages, make it easy to foster the growth of startups as well as facilitate cooperation in the technology sector. Moreover, the enhancement of traditional sectors such as agriculture, manufacturing, healthcare, and finance through digital enhancements receives special attention.

In recent years, social connectivity and community development have remained critical to Nigeria's digital innovation. Efforts are underway to bridge the divide in computer and Internet accessibility across diverse populations and regions [4]. Digital technology improves interaction, the sharing of ideas and resources, global unification, and the community's ability to make policy decisions and manage the country. Technological advancement has also given a significant boost to health and social care through means such as telemedicine, mobile health services, and online support groups [5]. Solving social issues using digital platforms is another area where social entrepreneurship and innovation can find application. The offshore IT employment potential and opportunities for job creation are higher in Nigeria because the population density is youthful, computer literate, and H1B visa-aware. Tax incentives, venture capital funds, and legislation for digital business transformation have made this development possible [6]. Some of the most active cities that now boast of a bubbling startup scene include Lagos, Abuja, and Port Harcourt, which has resulted in the creation of new job vacancies for entry-level and experienced candidates. Both domestic and international investors have contributed to funding for established IT venture firms as well as the creation of new firms, thereby generating employment. One major factor that threatens the sustainability of growth and development in Nigeria is the disparity in the use of digital technology between urban and rural areas. We require education and awareness programs to introduce rural dwellers to the instruments that contribute to human and economic capital improvements in order to close the digital gap [7]. Close cooperation between government agencies, private companies, non-profit organisations, and people's associations is crucial for financing and implementing projects that contribute to decreasing digital divides. Investment in better digital connectivity and availability will therefore help Nigeria grow as a country and tap into the potential of its entire people when it comes to matters digital.

Economic growth and development initiatives in Nigeria

Economic Growth and Development Measures in Nigeria include activities, plans, programmes, and the measures taken by the government and its partners to improve the economy, integrate information technology, and enhance development [8]. Such policies include the National Policy on ICT, which contains measures for promoting ICTs in various areas of the economy; there are also other programs that have been developed to support digital innovation, digital entrepreneurship, and digital technology investment. ICT directly contributes to economic development by increasing the availability of computing and communications resources, such as broadband networks and electricity, particularly in rural areas. Promoting growth in the digital economy Another strategic goal is to encourage the growth of new businesses, investments, and innovations, creating favourable legal conditions for business [9]. Other subject areas in computer technology and economic development include skill development and capacity building. Technology and investment, knowledge exchange, and collaboration in addressing the challenges and prospects of the digital economy within the framework of PPPs are critical for boosting economic development. Implementation of technology incubation centres and innovation villages can create suitable environments for developing start-up companies while enhancing synergy and innovation in the technological industry. These initiatives aim to enhance core fields such as farming, production, health, and financial services.

Social Connectivity and Community Development in Nigeria

This is more of a method of enhancing the flow of information technology, especially in men's social relations, with the goal of improving society. As a result, the act has the potential to eliminate the tendency of most families and some regions of Nigeria to lack access to computers and/or the internet [10]. This involves making broadband more accessible, creating more access points for communities, and reducing the costs of digital tools for those who are disadvantaged. In Nigeria, computer technology also increases the sharing of information and communication between people, organisations, and companies using social networks, messages, and newsgroups. Such platforms assist in overcoming barriers of distance and geography because communication, networking, and resource sharing occur in real time. Social connectivity also falls under another category of social power and community engagement. Technological advances and the use of ICTs allow population groups to engage in policy-making processes, advocate for their issues, and mobilise support for local development initiatives [10]. They also promote leadership accountability, transparency, and people's involvement in government. It is through social connectivity that one can access education, materials, online courses, and various digital libraries. Digital storytelling educates the general population on cultural practices, language, and many other things, such as folklore. Innovative approaches to social connections, such as telemedicine, mobile

health applications, and other digital support groups, have the potential to improve the health and social care sectors. In Nigeria, the involvement of digital platforms to support the creation of startups and social enterprises to address social issues increases the spirit of social entrepreneurship and innovation.

Opportunities for Job Creation and Employment in Nigeria's Technology Sector

Nigeria's technology industry is on an upward trajectory for several reasons. The country boasts a youthful population, a significant portion of which is well-educated and proficient in technology, thereby providing an endless pool of talent. The country's authorities have paid great attention to the needs of the tech industry through favourable taxation, venture capital, and digital transformation legislation. Nigeria has a fast-growing startup scene, especially in Lagos, Abuja, and Port Harcourt, which means that there is employment available in various junior and senior positions. Domestic and foreign investment have supported the growth of existing technological start-ups and assisted in the establishment of new ones, leading to employment opportunities [11]. They also provide more remote work opportunities, as Nigerian tech talent can work for worldwide companies and startups. Currently, there is increasing concern in the tech sector as coding boot camps, online courses, and vocational training programmes prepare more Nigerians for the future. Digital technologies are also playing a significant role in the increased demand for tech knowledge in sectors such as banking, agriculture, and healthcare. Nigeria is a country with a very active culture of entrepreneurship, enhancing employment opportunities and economic growth.

Nigeria's Entrepreneurship and Innovation Ecosystem

Nigeria's entrepreneurship and innovation environment is constantly developing and expanding due to the increasing numbers of startups, incubators, accelerators, and co-working spaces, better access to funding, and the emergence of more tech hubs and clusters. The Nigerian government has implemented various policies and measures, including tax exemptions, funding sources, and policy changes, to foster entrepreneurship and innovation [12]. Start-up ecosystems in Nigerian cities such as Lagos, Abuja, and Port Harcourt provide platforms for the sharing of ideas and resources among startups, investors, and other stakeholders. The Nigerian population is massive, with a burgeoning middle class, and startups can now tap into the global market through technology. The ready availability of human talent in the form of young and highly skilled employees proficient in technology, engineering, and business is the strength of any startup in the country. The Nigerian environment for entrepreneurship is friendly, mainly embracing the development of a community of entrepreneurs and supporting players such as coaches and investors. In sum, Nigeria's entrepreneurship and innovation framework is a complex and continuously developing factor for economic development and innovation.

Bridging the Digital Divide: Urban-Rural Disparities in Nigeria

We must solve the digital divide in Nigeria to achieve sustainable growth and development. Areas of difference include infrastructure, internet, education and awareness, costs, localization, partnerships, mobile, and policy. This means that the urban areas in Nigeria have enhanced digital resources such as electricity supply, internet connection, and telecommunication facilities as compared to the rural areas, which may even lack these necessities. This means that rural residents cannot effectively access digital services like information and education via the internet. Similarly, education and awareness also play an important role in addressing the digital divide. In turn, educational programmes and training can enable rural inhabitants to embrace technology for personal and economic enhancement. In rural areas, the cost is one of the main impediments to using digital devices in households [13]. Subsidy programs or new and appropriate financing strategies help provide people in rural areas with affordable, easy-to-use, and accessible technologies. Content localization is also important for addressing the question of the digital divide. Infotainment, local language content, relevant topics, agricultural information, healthcare resources, and other relevant content can aid in the fight against digital inequality. Also, the collaboration between government organisations, private businesses, NGOs, and local communities on funding and executing projects to address the gaps in digital networks and the inequitable distribution of digital services for rural populations can contribute to positive change.

Access to Information and Communication Technologies (ICTs) in Nigeria

There has been progressive improvement in information and communication technologies (ICTs) in Nigeria due to factors like mobile, the Internet, computer literacy, government support, and e-government services. Globally, consumers use mobile phones as key items for communication and information access, even in rural areas. The internet connection in Nigeria has also improved over the years, as most urban areas have better facilities and internet connections than rural areas [14]. Recent measures, such as the deployment of 4G networks

and fibre optic cables, are also helping to make the Internet accessible in underserved areas. People need to learn how to use ICTs effectively, which is why we need to enhance digital literacy. It is essential to identify programmes and initiatives of government agencies, non-profit organisations, and the private sector that aim at increasing digital literacy for different groups of the population, such as youth, women, and people living in rural areas. At present, the Nigerian government has endeavoured to provide ICT infrastructure and services through the National Broadband Plan, e-government services, mobile money, and entrepreneurial development and innovation. However, there are existing barriers to providing ICTs for all in Nigeria: inadequate infrastructural development, exorbitant cost of internet services, low community ICT literacy level, and insecurity [14]. To address these concerns, we must dedicate ourselves to developing digital facilities, implementing policies, and adopting a proper approach to improving digital access.

Cultural Preservation and Digital Identities in Nigeria

Cultural heritage and digital identities in Nigeria, with a focus on the country's historical and cultural assets, are two related topics. Culture preservation is a vital aspect of promoting unity and succession among individuals, and digital identities serve as an essential representation of the diversified culture of the country. Cultural preservation encompasses various forms such as documentation and archives, museums and cultural preservation centres, festivals, and events. Technology is the primary driver behind the digitization of artefacts, online archives, and social media platforms, which serve as long-term storage platforms for archival data. Social media sites like Facebook, Twitter, and Instagram, along with blogs and individual websites, serve as representations of digital identities in Nigeria. They also provide means for cultural interaction and integration, enabling Nigerian citizens to keep in touch with their home country. However, they face challenges such as the digital divide, cultural appropriation, and misrepresentation. Innovation possibilities include virtual reality, interactive narrative approaches, and digital art. These collections include virtual documentation and museum displays of Nok culture; digitization of Yoruba language materials as a way of passing the language on to the young generation and those in the diaspora; and historical and current narratives in YouTube videos and podcasts. Therefore, cultural conservation and electronic personalities in Nigeria are significant for the country's cultural history and representation. However, there are still barriers associated with the use of technology, such as the digital divide, cultural sensitivity, and representation, all of which present opportunities for innovation.

Healthcare Advancements and Telemedicine in Nigeria

They have included physical infrastructure development, which entails the construction of more health facilities, increased acquisition of health technology, and social policies like the NHIS to enhance health care delivery and access by the populace. There are also advancements in technologies like electronic health records (EHRs) and mobile health (mHealth) to enhance patient data collection and care coordination processes, respectively. Other effective measures include training and capacity building, which involve strengthening the medical education and training of necessary health care personnel. Skills update programs aim to develop new and more effective abilities and knowledge among existing healthcare personnel. The use of telemedicine in Nigerian healthcare is crucial, especially for the various regions that are facing geographical barriers to accessing healthcare services. Rural and other hard-to-reach areas have greatly benefited from telemedicine, which has proven effective in managing conditions requiring specialised attention. During the COVID-19 outbreak, teleconsultation was especially important because patients needed to continue receiving medical attention while the virus transmission rate was high [15]. Nigeria has implemented prominent telemedicine strategies, which include the creation of platforms and services by healthtech companies, as well as government-enacted measures such as the establishment of telehealth hotlines. However, there are challenges and opportunities, including the availability of stable internet and electricity connections, regulatory and policy frameworks, the understanding of digital literacy, and associated costs. In the future, we can link telemedicine with conventional services, create new technologies, and increase government and private companies' interest in supporting telemedicine programs.

Online communities and social media influence

Social media influence and online communities have significantly transformed the way people interact, communicate, and share information. A large portion of the population in Nigeria, particularly the youth, widely uses social media platforms like Facebook, Twitter, Instagram, WhatsApp, and TikTok [16]. These platforms have a significant impact on public opinion, foster social movements, and create new forms of community engagement. Social media has been instrumental in raising awareness about social

issues such as gender equality, climate change, and human rights, often leading to real-world activism and policy changes. Businesses also leverage social media for marketing, customer engagement, and brand building, with influencer marketing being particularly effective. Many small businesses rely on e-commerce platforms like Instagram and Facebook to buy and sell products and reach their customers. Online communities in Nigeria are groups of people who interact and share common interests or goals over the internet, often via social media platforms, forums, or dedicated websites. They can be based on various interests, such as hobbies, professional networking, or support groups. Typically, shared interests, common goals, or social movements form online communities, which operate through interaction and engagement, often establishing their own norms, rules, and cultures. The impact of online communities on society includes social support, information sharing, professional networking, and privacy issues [17]. Challenges include the spread of misinformation and fake news, cyberbullying, and privacy issues. However, online communities provide opportunities for building strong, supportive networks that can lead to real-world impact and change. Case studies and examples of social media influence and online learning communities in Nigeria include the #EndSARS Movement, which started on social media as a protest against police brutality by the Special Anti-Robbery Squad (SARS) in Nigeria. Influencers like Maraji, Lasisi Elenu, and Tunde Ednut have large followings on platforms like Instagram and Twitter, shaping public opinion, cultural trends, and consumer behaviour.

Nigeria's cybersecurity challenges and solutions

Because most of Nigeria's interactions entail using cyberspace for communication, business, and administration, it is vulnerable to cyber threats. These challenges are as follows: The challenges encompass cybercrime, infrastructure vulnerabilities, insufficient awareness and training, regulatory and legal concerns, emerging threats, and IoT security risks [18]. The threats of cybercrime include phishing, financial scams, identity theft, poor security, old technology, threats to critical infrastructure, and poor awareness. These problems are born of ignorance and scarce training sessions. Moreover, existing legislation may not be sufficient to effectively combat various forms of cybercrime, and legal enforcement measures may vary. Cross-border travel issues pose significant challenges in the fight against lawlessness. Some new types of threats are ransomware, advanced persistent threats (APTs), and things known as the Internet of Things (IoT). To mitigate these challenges, Nigeria should enhance its legal and regulatory policies, including the Cybercrime Act, the Data Protection Regulation, and international cooperation. The disposal of cybersecurity infrastructure also includes periodic updates and patches, better security measures, and protection of critical structures [19]. Institutions should also implement awareness, educational training, and capacity-building initiatives such as information and awareness campaigns, security awareness and training programs, and cybersecurity curricula. Key strategies for enhancing institutional capacities involve the creation of specific institutions or units, such as cybersecurity centres, the development of Computer Emergency Response Teams (CERTs), and enhanced cooperation between the government, private sector, and universities. Incorporating locals into R&D investments, startups, and innovation hubs can also help to localize cybersecurity solutions and innovations. Finally, strong policies—security policies and protocols in particular—are very important to curb incidences affecting individuals, businesses, and government bodies. It is necessary to conduct routine audits and vulnerability checks to spot the risks in the cybersecurity system [20].

Nigeria's Digital Rights and Privacy Issues

Digital rights and privacy issues must be a concern in Nigeria since the nation's digital economy is growing at a fast pace and the usage of the internet is readily advancing at an exponential pace [21]. Such rights allow individuals to communicate, produce, disseminate, and participate in the use of technologies that enable the creation of digital media, electronic devices, and telecommunications networks. The following are the core features of digital rights: freedom of the press, right to information, privacy, and protection of data. Nigerians acknowledge that the constitution upholds fundamental freedoms like freedom of speech and the right to privacy, which extend to their online interactions. By passing the Cybercrime Act, 2015, the Ugandan government sought to offer a legal approach to prosecuting cyber criminals; however, the legislation might infringe on Ugandans' freedom of speech as defined by Article 21 of the Ugandan Constitution. In 2019, the government promulgated the NDPR to promote personal data protection and uphold the privacy rights of data subjects. In Nigeria, privacy issues are as follows: data protection and collection; security issues; consent and understanding; and education on digital awareness. In this context, privacy threats are particularly prominent, encompassing government tactical surveillance, business data aggregation, hacks, and leaks, among other vulnerabilities. Consent and awareness are two important elements people must be willing to have knowledge of the

desired data collection, utilisation, and sharing. While there is still a lack of transparency between the government and private sector regarding data handling, legal remedies such as regulatory enforcement and counter-suits are necessary for maintaining security and privacy. Governments typically use surveillance to address national security, yet it infringes on privacy [22]. However, we can address these challenges by leveraging technology and innovation to develop privacy-related technologies, as well as by bolstering local community-based technological incubation centres that promote technological innovation in data privacy and security matters. It is also important to note that cooperation with international partners can aid in tackling the cross-border issues of data privacy and cybersecurity. The Twitter ban in June 2021, for example, sparked a significant digital rights concern and had adverse effects on how people pay attention and critically assess government policies around social media usage and control. Various firms have implemented strategies for data protection, such as implementing the NDPR policy, appointing data protection officers, and conducting reviews and assessments of data handling. Civil societies, non-governmental organisations, and public interest organisations such as the Paradigm Initiative and the Digital Rights Lawyers Initiative, among others, create awareness, lobby for changes in laws and policies that affect digital rights, and can sue governments or corporations for violating the rights of the people [23].

The impact of technology on traditional livelihoods

Technology is disruptive, and its effect on traditional occupations is widespread and complex, especially with regard to agriculture and fishing industries, handicraft industries, and petty trading [24]. For instance, in countries such as Nigeria, where some of these communities depend on traditional means of living, the introduction of technology can help or hinder the populace. Precision farming allows farmers to access up-to-date information on weather, market conditions, and practices. It also enables fishermen to assess the numbers and abundance of fish, as well as encourage responsible fishing. Crafts and artisans also have access to the international market through online selling platforms, marketing, and designing interfaces. The rollout of mobile payment solutions, such as M-Pesa, makes it easier for small traders to carry out transactions with less risk and use of cash. But there are also threats to conventional employment status. Technology is rare in rural areas, and the cost of buying and using it is, in many cases, beyond the reach of smallholder farmers, fishermen, and craft makers. A significant percentage of traditional employees have inadequate proficiency in applying new technologies on the job and, therefore, require training. Employees may resist change due to poor comprehension or apprehension about the unknown factor. The liberalisation of markets means that local producers get to face global competition, a factor that may not be easy for small-scale businesses [18]. Unfortunately, traditional producers often find it hard to meet international quality standards and regulations. In practice, the use of technological techniques contributes to the degradation of skills and knowledge inherited from previous generations. Thus, there are several ways to strike a balance between technology and tradition. Some technological advancements that are responsive to marginalized groups include affordable technologies, local innovations, digital literacy, building capacities, government policies, public-private partnerships, and substantiation of traditional knowledge, which, if executed appropriately, can eliminate the digital gap and support the sustainability of traditional ways of living. It is possible to integrate innovation and technology into practices in order to make them sustainable and resilient for economic stability and environmental protection.

Programmes for Digital Literacy and Skills Development

Computer literacy and skills enhancement initiatives are important for improving citizens' ability to engage in the digital platforms of commerce and social life. They include increasing access to opportunities, decreasing social isolation, promoting economic enfranchisement, and encouraging learning throughout life. The training programmes include digital literacy, instructional components, communication and collaboration, digital citizenship, and vocational or career-specific plications. Various government interventions encourage people to embrace the use of ICTs in their day-to-day lives, especially those in the periphery. Schools and universities incorporate digital literacy into academic learning syllabi, whereas charitable organisations provide disadvantaged groups with cheap or sometimes even free digital literacy training. The private sector engagement partnerships entail private organisations and training organisations providing employment training opportunities, apprenticeships, and certification courses in ICT. Some of the popular online learning platforms that provide digital skills courses and tutorials include Coursera, Udemy, and Khan Academy. Issues and prospects cover infrastructural limitations, digital disparities, and

the inherent necessity for constant learning, targeted interventions, and copious assessment schedules. Delivery barriers to digital literacy programmes include the lack of infrastructure in rural and other hard-to-reach areas. Technology inequalities therefore widen in terms of digital literacy and skills training because some individuals do not have access to digital technologies and resources in the same manner as others [25]. There is always more to learn, necessitating constant returns on investment in digital literacy programmes to stay up to date with current trends. Cultivating targeted and contextually relevant digital literacy programmes improves their usefulness and applicability for a variety of target populations. In this regard, frequent and comprehensive assessments of digital literacy initiatives are crucial in order to determine the effectiveness of these programmes as well as reveal their strengths, weaknesses, and ways to improve. The successful models of digital literacy and skills development initiatives are Google's Digital Skills for Africa, Kenya's Ajira Digital Programme, Nigeria's Digital Bridge Institute, and Lagos State Government's CodeLagos [26]. These programmes seek to help those individuals emerge with the understanding and practical competencies to harness digital technologies for various purposes, such as communication, learning, work, business, and politics.

CONCLUSION

Nigeria, as a nation, therefore has the advantage of embracing the digital economy with the aim of enhancing its economic development. ICT integration can provide accurate economic returns through policies, such as the National Policy on ICT, which seeks to improve technology infrastructure and business, particularly in rural areas. This policy aims at expanding broadband networks and electricity connections, thereby balancing the gap between developed and backward areas. The policy places significant emphasis on entrepreneurship and the digital economy, making efforts to stimulate startup creation, attract investment, and establish more favourable legislation. The creation of technology incubation centres and innovation villages has been helpful in creating conducive environments for startups and promoting interconnectivity and growth within the technology industry. Essentially, the focus on training and the development of human capital through public-private partnerships offers the best bet for sustaining such growth and preparing Nigeria's youthful, technology-literate population for the new economy. It is agreeable that digital technologies have enhanced social relationships, community spirit, health, and employment prospects. However, some concerns persist, with the most important one being the digital divide, where rural areas still lag far behind urban areas in terms of the benefits accrued from digital technology. To bridge this gap, we need education and awareness measures, investments in new technologies, and activities to strengthen society's digital maturity. Nigeria's digitalization process presents a significant opportunity for the country's economic advancement. By overcoming current problems and leveraging further opportunities for digitalization, Nigeria can strengthen the economy, open new employment opportunities, and increase the population's standard of living. To sustain this process and ensure equitable distribution of digital innovation outcomes across the nation, the government, private sector, and non-profit organisations must engage systematically and sustainably.

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CITE AS: Echegu Darlington Arinze (2024). The Impact of Digital Innovation on Economic Growth in Nigeria. IDOSR JOURNAL OF COMPUTER AND APPLIED SCIENCES 9(2):1-9. https://doi.org/10.59298/JCAS/2024/92.1900