



Leveraging on Innovation and Technological Entrepreneurship in achieving economic growth in Nigeria

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Abstract: In today's increasingly interconnected and fast-paced world, innovation and technological entrepreneurship have emerged as key drivers of economic growth, fostering job creation, competitiveness, and sustainable development. Nigeria, Africa's largest economy, is poised to leverage these crucial elements to propel its own economic transformation. Technological entrepreneurship has become a critical catalyst for economic growth worldwide. This paper explores the potential of technological entrepreneurship as a key driver to propel Nigeria's economy forward, generate employment opportunities, and foster innovation. The paper highlights the current landscape of technological entrepreneurship in Nigeria and identifies the challenges and barriers hindering techno-entrepreneurship growth in Nigeria. It further describes the various government initiatives as well as key issues, difficulties, and opportunities for growth of technological entrepreneurship in Nigeria. It draws on some global best practices and case studies on technological entrepreneurship to provide valuable insights into successful strategies and approaches that can guide the case of Nigeria. The paper closes with achievable recommendations to policymakers, entrepreneurs and stakeholders' to harness Nigeria's technological potential and position it as a prominent player in the global innovation ecosystem.

Keywords: Entrepreneurship, Micro-businesses, Tertiary-level, University-based economy, Commercial ecosystem

1. INTRODUCTION

Innovation and technological entrepreneurship play a crucial role in driving economic growth, and Nigeria is no exception to this trend. These two elements are interconnected, with innovation acting as the catalyst for technological entrepreneurship, and both fueling economic development [5]. The theory of technological entrepreneurship, innovation, startups states that techno-entrepreneurship refers to the process of using technology-driven innovations and entrepreneurial activities to create and grow businesses technological entrepreneurship differs from mainstream entrepreneurship in that it focuses on creating and driving these opportunities through technological innovation [17]. Technological entrepreneurship aims at creating and generating economic value through the exploration and exploitation of new technology-based solutions [31]. To achieve this, techno-entrepreneurs must navigate the existing world to (re)create a new world where their ideas and visions can be harnessed [33]. The concept of technology entrepreneurship involves discovering and exploring

technology ideas and opportunities that lead to the creation and growth of new businesses. Combining various elements and factors, such as ideas, talents and markets, to commercialize technology projects and add value [8]. This was further emphasized by [28] they stated that technological entrepreneurship, involves the identification and exploitation of entrepreneurial opportunities that arise from technological innovations, while innovation can be characterized as modifications and perturbations of the economic equilibrium that promote growth and development.. Innovation refers to the creation and implementation of new ideas, products, or processes that bring about significant improvements or advancements. The significance of "Innovation," which denotes the improvement or an entirely new product, method, or organizational structure in the design, manufacturing, and distribution of goods and services, is one significant aspect of Nigeria's 2011 Science and Technology Policy [25]. Startups are organizations where individuals search for the best business strategy to produce novel goods and/or services under the extreme uncertainty. Technological Entrepreneurs

are the ones who are expected to be innovative and do startups [30].

Technology entrepreneurship can be seen as a style of business management focused on identifying high-potential, technology-intensive business opportunities, amassing resources such as people and capital, and using principled decision-making skills to manage rapid growth and material risks [10]; [15]. Similarly, [9] further explained that technological entrepreneurship combines the field of entrepreneurship and technological innovation. It is characterized by the creation of products and/or services that are based on the application of technology and advanced technological knowledge. The process of technology entrepreneurship involves identifying opportunities, generating ideas, developing products, and launching new technology companies. New technology companies play an important role in the development of local, regional and national economies by creating jobs, attracting foreign direct investment, and increasing innovation and profitability. The link between innovation, technological entrepreneurship, and economic growth is clear. By encouraging and supporting innovative ideas, countries can foster the creation of new technologies and industries, leading to job creation, increased productivity, and improved living standards.

Klynveld Peat Marwick Goerdeler (KPMG) (2015), argued that there is an exponential increase in technology innovation which has led to the creation and development of successful technology ventures such as Google, Facebook, and Alibaba. These entrepreneurs play an important role in the conception and efficient operation of commercial initiatives, and their contribution to the area of entrepreneurship is well acknowledged [7].

Regardless of advances in technology and their continuing impact on world civilization, most developing countries have made little effort, locally, to transform their societies technologically. Subsequently, they keep on experiencing economic underdevelopment [20]. This isn't to recommend that innovation and the capacity to adjust its advances to nearby requirements are foreordained or inborn in any general public. Without fitting institutional systems, it is hard to plan approaches for the homegrown advancement of innovation or the powerful exchange of such information from abroad [13]. New opportunities for technology entrepreneurs to develop mobile and web solutions for these devices have been brought about by the increase of accessible internet subscriptions and mobile phones, resulting in the formation of new technology ventures. The introduction of reasonably priced mobile phones and internet connections in sub-Saharan Africa is credited for accelerating the adoption of technical breakthroughs [11].

Contrary to the argument of [20], through investments and the transfer of technology, Africa is not watching from the sidelines but rather taking part in this global phenomenon. Africa is renowned for being at the forefront of mobile banking, a cutting-edge method of banking. Aside from being recipients of technology transfer, nations like Nigeria, Kenya, and South Africa are also producers and exporters of cutting-

edge technology [26]. A report produced by the African Development Bank (AfDB) and the World Bank, further emphasises that support from the African Union, suggests that "Information Technologies (ITs) have the potential to transform business and government in Africa, driving entrepreneurship, innovation and economic growth" [34].

2. The current landscape of technological entrepreneurship in Nigeria

A common misconception is that Africa's incapacity to innovate and progress is due to its unfavourable terrain, weak institutions, and general lack of resources. However, there are a variety of techno-entrepreneurs that have performed, despite the harsh economic environment in Africa: some have regressed, some have advanced, and some have stagnated [32]. Agriculture which served as the backbone of the Nigerian economy at the time of independence in 1960 and for a large portion of that decade, producing the majority of the country's tax revenue and foreign exchange profits while also feeding and employing the majority of its citizens and providing the raw materials for the developing industrial sector, rapidly declined in fortunes with the discovery of oil, its exploration, and its exporting in commercial amounts, while crude petroleum eventually took its position as the main source of income and export revenues. This is despite Nigeria's efforts to promote technological entrepreneurship development, which began in the early 1960s with the creation of the first National Development Plan for the years 1962–1968. The economic structure of Nigeria is typical of a developing nation [12].

However, in recent years, the pace of technological innovation has steadily increased. The ability of African countries to grow and prosper economically depends on their ability to harness the innovation and technological entrepreneurship that permeate our lives and influence nearly every decision we make. Technological entrepreneurship in Nigeria has been on the rise in recent years. Techno-entrepreneurship in particular has started to be seen as a powerful driver of local innovation, and thereby of structural economic transformation and development. The country has seen a surge in the number of tech startups, incubators, and accelerators. The government has also been supportive of the tech industry, creating policies and initiatives to encourage growth. However, challenges such as inadequate infrastructure, lack of funding, and limited access to skilled talent remain obstacles to the sector's growth [17]. Nigeria is inherently rich in entrepreneurial opportunities. However, realizing the full potential of these opportunities has been hampered by inadequate industrialization policies introduced at various times. Some policy interventions aimed at stimulating the development of entrepreneurship by promoting SMEs based on technology transfer strategies have fallen short of their intended goals as they have resulted in most domestic entrepreneurs becoming distributors of imported products instead of building domestic entrepreneurial capacity in manufacturing, mechanized agriculture and professional services [3].

Nigeria's innovation landscape has been rapidly evolving, with a surge in tech startups, hubs, and incubators across the

country. These vibrant ecosystems are fueling the growth of sectors such as fintech, e-commerce, agritech, and healthtech. Additionally, Nigeria has seen an increase in patent activities and research publications, indicating a growing interest in scientific and technological advancements. However, there is still a need to build a stronger innovation infrastructure, ensure intellectual property protection, and create a supportive ecosystem for startups to thrive.

Nigeria has witnessed the rise of numerous technological startups that have made significant contributions to the country's innovation ecosystem. One such success story is Paystack, a fintech company that simplifies online payments for businesses. Paystack's user-friendly platform has revolutionized e-commerce in Nigeria, enabling businesses to easily accept payments from customers. This startup has not only helped businesses grow but has also spurred economic growth by increasing the accessibility and efficiency of transactions [22]; [23].

Giwa (2019) further analyzed the state of technology entrepreneurship in Nigeria, stated that Nigeria has one of the most vibrant technology entrepreneurship activities in sub-Saharan Africa. This is because of the existence of a multitude of growing successful technology ventures, which is why Nigeria is sometimes regarded as the 'silicon valley' of Africa. Some examples of these are Iroko TV, Jobberman, Andela and Hotels.ng. IrokoTV, dubbed the 'Netflix of Africa' closed several funding rounds of investment above US\$30m [18]. Jobberman has grown into one of sub-Saharan Africa's most popular job search engines with more than 1.5million visitors monthly and one of the companies in Nigeria's technology space enjoying venture capital backing. It was 100% acquired by One Africa Media, valued at \$ 167 million [5]. Andela, another Nigerian technology venture has raised \$40 million so far in seed funding. It is backed by investors including DBL Partners, Chan Zuckerberg Initiative, GV, Spark Capital Amplo, Salesforce Ventures, and Africa-focused TLcom Capital. Hotels.ng which started in 2012 has now grown into the biggest online hotel booking agency in Nigeria, using seed investment of \$225,000 from SPARK in 2013. It became another beacon of success in Lagos technology space when it announced its first funding round of \$ 1.2 million from EchoVC Pan- Africa Fund, a seed-stage technology fund, and Omidyar Network [19]. Andela is a notable case of a tech talent accelerator that trains and connects African software developers with international companies. Founded in Lagos, Andela has helped bridge the skills gap and created employment opportunities for aspiring developers. By harnessing the potential of Africa's tech talent, Andela has shown that innovative startups can have a global impact.

Innovation and technological entrepreneurship have also brought about transformative initiatives in key industries in Nigeria. For instance, the agricultural sector has seen the emergence of Farmcrowdy, a digital platform that connects farmers with investors. Through Farmcrowdy, individuals can invest in farming projects and receive returns on their investments. This innovative approach has not only empowered farmers but has also attracted investment into

agriculture, making it a more prosperous and sustainable industry [6]. Similarly, in the energy sector, Lumos Nigeria has introduced solar power solutions that provide affordable and reliable electricity to households and small businesses. By leveraging renewable energy technology, Lumos has tackled the challenge of unreliable power supply in Nigeria, improving the quality of life for many and driving economic productivity [16]; [29].

However, Nigeria's technological entrepreneurial scene is still very much in its infancy. According to a 2015 report by VC4Africa, the largest online network of African investors and entrepreneurs, Nigeria is one of several nations serving as Africa's hubs for technology ventures. Nigeria was identified as the top investment destination in the study, which followed 104 investments in start-ups across Africa. This indicates that there would be an increase in technological entrepreneurship in Nigeria over the next years [17]. The type of technology enterprises is another crucial feature of technology entrepreneurship in Nigeria. The organization, technology utilization, and functions of technology companies vary. The majority of businesses in Nigeria are technology-based because they primarily rely on already-developed technologies. In more developed nations, the technology sector is dominated by internet, biotech, and high-tech industrial firms, this is in contrast with a study carried out by Aderemi et al., (2008). The authors included the following food, beverage, water processing and packaging, mining and quarrying, building and construction, woodwork and furniture making, garment making, metal fabrication, and ironworks as part of technological industries they analyzed. On the other hand, Nigeria now has so-called 'New Technology Platform Firms' (NTBFs) that use innovations and leverage inventions, with IT being the main driver. These companies operate in oil and gas, financial services, healthcare, education, and any other sector that employs technology solutions, and feature mid- to low-tech, low-tech, and knowledge-intensive service groups. While this classification system helps to understand the characteristics of Nigerian new technology companies, it is now outdated as it does not take into account the rapidly growing Internet sector and its impact on other industries (Daramola, 2012).

Giwa (2019), observed two main factors concerning the majority of most Nigerian technological-based companies. First, most of these technological companies operate from their headquarters in Lagos. Second, ninety per cent (90%) of Nigerian firms were founded within his 2000 years, and many more in the last five years. The growing techno-entrepreneurial activity in the region has therefore attracted the attention of foreign investors, This observation was further confirmed by Adeyeye et al., (2013) that "Since 2000, the sector has witnessed increasingly steady growth due largely to wholesale and retail telecommunication". As a result, Nigeria has seen an increase in venture capital. However, little is known about the methodology that can be adopted for the growth of technological entrepreneurship in other regions of Nigeria.

For Nigeria, leveraging innovation and technological entrepreneurship is crucial in achieving sustainable economic growth. With a large and youthful population, the country has immense potential for innovative solutions that can address local challenges and create opportunities for economic advancement. By fostering a culture of innovation and supporting technological entrepreneurship, Nigeria can tap into its human capital and natural resources to drive economic diversification, reduce dependence on oil revenue, and create an inclusive and resilient economy.

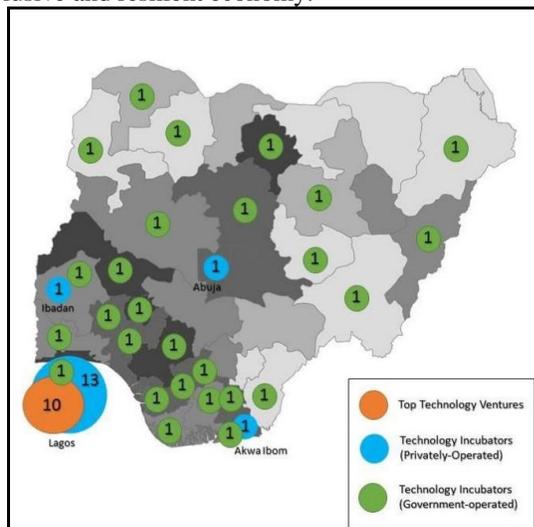


Figure 1: A Map of Nigeria showing Top Technology Ventures and Technology Incubators (After, Giwa, 2019)

3. Challenges and Barriers hindering Techno-Entrepreneurship growth in Nigeria

Technological entrepreneurship in Nigeria is gaining momentum, with a rising number of innovative startups and entrepreneurs. However, many challenges persist, including limited access to funding, inadequate mentorship and support networks, and a lack of collaboration between academia and industry. To fully realize its potential, Nigeria needs to create an enabling environment that fosters technological entrepreneurship. This includes addressing regulatory barriers, improving access to financing, and providing mentorship and capacity-building programs. Nigeria faces several challenges that impede its economic growth. This section, therefore, addresses the challenges and barriers faced by technological entrepreneurs in Nigeria. Common issues like regulatory hurdles, limited access to capital, infrastructure deficits, and a risk-averse culture may hinder the growth of technological entrepreneurship.

3.1 Limited Access to Finance:

Access to finance is a significant challenge for technological entrepreneurs in Nigeria. Potential technological entrepreneurs face a lot of hurdles when trying to access credit for startups businesses. Although many different financial organizations offer business loans, they frequently have high-interest rates that discourage would-be business owners. For instance, recently major banks have set their loan rates at up to

18.750%, thus scaring prospective startups and technological entrepreneurs who are typically low-income workers.

Likewise, severe collateral set by banks and other lending institutions are other obstacles faced by most technological entrepreneurs' startups.

3.2 Inadequate Infrastructure:

The lack of reliable infrastructure, including power supply, internet connectivity, and transportation, poses a significant hurdle to economic growth in Nigeria because it limits the ability of businesses to operate efficiently. Without a reliable power supply, businesses are forced to rely on expensive generators, which increase their operating costs. Poor internet connectivity makes it difficult for businesses to communicate with customers and suppliers, hindering their ability to expand their reach. Finally, inadequate transportation infrastructure makes it difficult to move goods and people efficiently, which can increase the cost of doing business. All of these factors contribute to a challenging business environment that makes it difficult for companies to grow and thrive.

3.3 Unemployment and Skills Mismatch:

Nigeria faces high unemployment rates, particularly among the youth. Unemployment and skills mismatch are two interconnected issues that contribute to Nigeria's high unemployment rates, especially among the youth. Unemployment refers to the situation where individuals who are able and willing to work are unable to find suitable employment opportunities. In Nigeria, the unemployment rate has been on the rise in recent years, with the youth being the most affected.

On the other hand, skills mismatch refers to a situation where job seekers do not possess the skills required by employers, or where employers cannot find individuals with the necessary skills to fill job vacancies. This can be due to a variety of reasons, including inadequate education and training, lack of access to information on available job opportunities, and a mismatch between the skills demanded by employers and those provided by educational institutions.

3.4 Inefficient Processes and Corruption:

Inefficient processes refer to bureaucratic procedures that are slow, complex, and often require multiple approvals, which can cause delays and increase the cost of doing business. This can discourage local and foreign investors from investing in Nigeria, as it makes it difficult to start and run a business efficiently.

Corruption is also a significant challenge in Nigeria, as it can increase the cost of doing business, reduce the quality of services provided, and undermine the rule of law. Corruption can take many forms, including bribery, embezzlement, and nepotism, and can occur at various levels of government and in the private sector.

Addressing these issues requires a concerted effort by the government, private sector, civil society, and other stakeholders. This includes implementing reforms that simplify bureaucratic processes, promote transparency and

accountability, strengthen anti-corruption measures, and improve the business environment. By addressing these challenges, Nigeria can create a more conducive environment for doing business, attract more investment, and promote economic growth and development.

3.5 Limited Market Access:

Accessing domestic and international markets is indeed crucial for economic growth. However, limited market access can be a significant challenge for businesses in Nigeria.

Domestically, limited market access can be due to a range of factors, including inadequate infrastructure, limited purchasing power, and a lack of access to finance. These factors can make it difficult for businesses to reach customers in different regions of the country or to expand their customer base.

Internationally, limited market access can be due to trade barriers, including tariffs, quotas, and non-tariff barriers such as technical regulations and standards. These barriers can make it difficult for Nigerian businesses to compete in global markets and can limit their ability to export their products and services.

Addressing these challenges requires a multi-faceted approach that involves improving infrastructure, promoting access to finance, and implementing trade policies that facilitate market access. This includes negotiating trade agreements that reduce trade barriers, promote export-oriented industries, and improve the competitiveness of Nigerian businesses. By addressing these challenges, Nigeria can create more opportunities for businesses to access domestic and international markets, promote technological entrepreneurship growth, and reduce poverty.

3.6 Limited Innovation, Research and Development (R&D) Investments:

Insufficient investments in innovation and research and development (R&D) are indeed a significant hindrance to technological entrepreneurship growth in Nigeria.

Innovation and R&D are critical drivers of technological entrepreneur growth and development as they enable businesses to develop new products, processes, and services that can improve productivity, create jobs, and enhance competitiveness. However, in Nigeria, there is a lack of investment in innovation and R&D, which limits the ability of businesses to innovate and compete in global markets.

This lack of investment can be due to a range of factors, including limited access to finance, inadequate infrastructure, and a lack of skilled personnel. Additionally, there is often a lack of collaboration between the private sector, academia, and government agencies, which hinders the development of new technologies and innovations.

Addressing these challenges requires a multi-faceted approach that involves promoting public-private partnerships, improving access to finance for innovative businesses, and investing in infrastructure and human capital development.

This includes creating incentives for businesses to invest in R&D, promoting technology transfer and commercialization, and supporting the development of innovation hubs and incubators. By addressing these challenges, Nigeria can create a more conducive environment for innovation and entrepreneurship, promote economic growth and development, and enhance its competitiveness in global markets.

Other challenges and barriers include the following: Failure to adapt to the changing business environment, security issues, where there is no guarantee of security of lives and properties; difficulty in running a successful startups. Technological entrepreneurship activity in Nigeria is primarily based on necessity, poor planning and technological entrepreneurs are discouraged from commercializing their ideas and inventions in Nigeria due to the lack of enforcement of the country's patent laws.

4. Various Government initiatives towards Technological Entrepreneurship in Nigeria

Having discussed the state and challenges of technology entrepreneurship in Nigeria, it is important to take a look at various initiatives that the government has put in place for the development of technology entrepreneurship. Osuagwu (2006), observed that various Nigerian governments have established some agencies and policies for the effective implementation of government programs towards entrepreneurship and small business enterprises, including: the National Employment Directorate (NDE); Center for Industrial Development (IDC); Rebuilding the National Economy (NERFUND); Nigeria Export Promotion Council (NEPC); Nigeria Agricultural Cooperatives and Rural Development Bank (NACRDB) was established in 2000 with was merged with People's Bank of Nigeria (PBN), the Family Economic Development Program (FEAP), the Nigerian Agricultural Cooperative Bank (NACB), National Poverty Reduction Program (NAPEP), and Research Institutes among others. Unfortunately, just as Obaji et al. (2014) stated "the number of policies that have been employed by several administrations failed to stand the test of time as a result of policy-related issues including the implementation, inconsistent funding as well as government bureaucracy."

5. Global best practices and case studies of Technological Entrepreneurship

Technological entrepreneurship involves the creation, development, and management of innovative technology-based ventures. Best practices and case studies from around the world can provide valuable insights into successful strategies and approaches. Here are some global best practices and case studies of technological entrepreneurship:

5.1 Best Practices:

- a. **Lean Startup Methodology:** The lean startup approach, popularized by Eric Ries, emphasizes building a minimum viable product (MVP) to test assumptions and gather feedback from customers early on. This iterative process helps entrepreneurs

refine their ideas and avoid wasting resources on unproven concepts.

- b. Agile Development:** Agile development methodologies, such as Scrum, are widely used in the tech industry to promote collaboration, adaptability, and responsiveness to changing market needs during the product development phase.
- c. Customer-Centric Approach:** Successful tech entrepreneurs focus on understanding customer pain points and needs to develop solutions that address real problems. They prioritize user feedback and continuously iterate to enhance the user experience.
- d. Open Innovation:** Embracing open innovation allows entrepreneurs to collaborate with external partners, such as universities, research institutions, and startups, to access diverse expertise and resources.
- e. Global Talent Acquisition:** Technological entrepreneurs often seek talent globally, hiring the best individuals regardless of location. Remote work and cross-border collaboration have become more common due to advances in communication technology.
- f. Scalable Business Models:** Entrepreneurs aim to build scalable business models that can grow rapidly and accommodate an increasing number of customers without proportional increases in resources.
- g. Intellectual Property Protection:** Protecting intellectual property through patents, trademarks, and copyrights is essential to safeguard innovations and gain a competitive advantage.

5.2 Case Studies:

- a. Silicon Valley, USA:** Silicon Valley is perhaps the most famous hub for technological entrepreneurship. It has given rise to numerous successful startups and tech giants like Apple, Google, and Facebook. The area's ecosystem fosters innovation through a mix of venture capital, top-tier universities, and a culture that encourages risk-taking and learning from failure.
- b. Israel's "Startup Nation":** Israel has earned the nickname "Startup Nation" due to its impressive track record of technological entrepreneurship. Despite its small size, Israel has produced a high number of startups and successful exits. The country's success can be attributed to factors like a strong military tech background, government support, and a culture that values entrepreneurship.
- c. Estonia's E-Government:** Estonia has become a global leader in e-government solutions. The country's government embraced technology to streamline bureaucracy, enable digital signatures, and provide various public services online. This approach

has improved efficiency and convenience for citizens while reducing administrative costs.

- d. Alibaba, China:** Alibaba is a prime example of successful technological entrepreneurship in China. Founded by Jack Ma, Alibaba started as an online marketplace and has since expanded its operations into various technology-related sectors, including e-commerce, fintech, cloud computing, and artificial intelligence.
- e. Spotify, Sweden:** Spotify revolutionized the music industry by offering a legal streaming service that provided users access to a vast library of music. The company successfully combined technology, music licensing, and user experience to disrupt the traditional music distribution model.
- f. Paytm, India:** Paytm is an Indian fintech company that started as a mobile payments and digital wallet platform. It later expanded into other financial services, such as digital banking and e-commerce. Paytm's success is attributed to its ability to capitalize on India's growing digital market and the government's demonetization efforts.

These best practices and case studies highlight the importance of innovation, adaptability, and a customer-centric approach in technological entrepreneurship. While the contexts and industries may differ, the underlying principles can serve as valuable lessons for aspiring entrepreneurs worldwide.

6. Conclusions

This paper highlights the current landscape of technological entrepreneurship in Nigeria that has been developed to date. It describes the government initiative as well as the key issues, difficulties, and opportunities for the growth of technological entrepreneurship, further identifies the challenges and barriers hindering its growth and proposes strategies to leverage this potential for sustainable development and nurturing a vibrant technological entrepreneurial ecosystem, leveraging technology-driven solutions, fostering digital skills development, and promoting policy reforms to create an enabling environment for technological entrepreneurship. Technological entrepreneurship presents a viable pathway to addressing the challenges and issues that hinder Nigerian economic growth. By leveraging on technology to overcome limited access to finance, inadequate infrastructure, unemployment, inefficient processes, limited market access, and insufficient innovation and R&D investments, Nigeria can foster a thriving entrepreneurial ecosystem. Innovation and technological entrepreneurship have the potential to drive economic growth in Nigeria. However, addressing the challenges and implementing supportive policies and initiatives is crucial to fully leverage this potential and create a thriving innovation ecosystem in the country. With the right strategies in place, Nigeria can position itself as a hub for innovation and technological entrepreneurship, driving sustainable economic development and improving the lives of

its citizens. This will contribute to sustainable economic development, job creation, and improved living standards for its population. By embracing techno-entrepreneurship and implementing these strategies, Nigeria can unlock its economic potential, create jobs, foster innovation, and ultimately drive the country's economic growth forward in the 21st century. To realize them, the following recommendations are made:

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7. Recommendations

1) **Fostering a Startup Ecosystem:** Nigeria should focus on creating a conducive environment for startups to thrive. This includes establishing incubators, accelerators, and co-working spaces where young entrepreneurs can access mentoring, funding, and networking opportunities. Government and private sector partnerships can also provide essential support in this regard.

2) **Investment in Digital Infrastructure:** To support the growth of techno-entrepreneurship, it is essential to invest in robust digital infrastructure, including reliable internet connectivity and widespread access to smartphones and computers. This will enable entrepreneurs to access markets, resources, and information more easily.

3) **Skills Development and Education:** Emphasizing tech education in schools and universities will ensure that Nigeria produces a skilled workforce equipped to drive technological innovations. Furthermore, offering specialized training programmes and workshops for aspiring entrepreneurs can enhance their capabilities.

4) **Access to Financing:** Access to capital remains a significant challenge for entrepreneurs. The government, in partnership with financial institutions and venture capitalists, should create funding opportunities and venture capital firms to invest in promising startups.

5) **Supporting Research and Development:** Encouraging research and development in the technology sector can lead to innovative solutions tailored to Nigeria's unique challenges. The government can offer grants and incentives to research institutions and entrepreneurs to spur innovation.

6) **Encouraging Cross-Sector Collaboration:** Techno-entrepreneurship can have a more significant impact when entrepreneurs collaborate with traditional industries. Encouraging partnerships between tech startups and sectors like agriculture, healthcare, and finance can lead to innovative solutions that address critical societal needs.

7) **Fostering a Friendly- Regulatory Environment:** Simplifying and streamlining regulatory processes can make it easier for startups to establish and grow their businesses. Flexible regulations and policies that encourage innovation will attract more entrepreneurs and investors to the country. Fostering a friendly-regulatory environment means creating a regulatory system that supports and encourages businesses to operate in compliance with regulations without unnecessary burdens.

8) **Promoting Digital Inclusion:** Bridging the digital divide and promoting digital inclusion will ensure that all segments of society can participate in the techno-entrepreneurship ecosystem. This can be achieved by providing training and resources to underserved communities.

9) **Government as an Enabler:** The government should act as an enabler rather than a barrier to techno- entrepreneurship. By creating policies that support innovation and entrepreneurship, and by procuring services from local tech startups, the government can play a vital role in nurturing the ecosystem.

10) **Market Access and Export Promotion:** Supporting startups to access local and international markets can lead to increased revenue and job creation. Export promotion programs and market linkages can help startups scale their businesses beyond Nigeria's borders.

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