Improvements activity of innovation: experience, challenges and opportunities in Nigeria

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Abstract. Technology and innovation are important concepts in improving efficiency, productivity and competitiveness in companies. The effective management of knowledge, science, technology and innovation is a determinant of competitiveness for companies, business and countries. In other side R+D is a very important activity for the economic development in the age of the digital economy and Industry 4.0. R&D and technology innovations have been proved to positively correlate with profitability in developed countries. This article assessed the actual status of these activities on the enterprises in Nigerian; experiences, challenges, strategies and opportunities to improve them in innovative sector. Data were collected from the textbooks and the internet. The research showed that the governments do it some efforts to improve the innovation. Some strategies point to management of knowledge and creativity, increase the finance of the projects, and protection of intellectual right property. The experts, institutions, banks and government need to create some strategies to do it more available and to support innovation activities. This is the most important challenge.

1 Introduction

The effective management of science, technology and innovation has now been widely regarded as the determinant of competitiveness both for corporate entities, regions and countries. By this way, effective innovation management ensures better results for sustainable development and to enter into the world market with more competitive products and services. In third world countries, improving these innovation management processes and strategies is a great challenge. Innovations, fast-tracked by ICT are now the engine of new jobs, productivity and competitiveness. This has been the key factor in driving the rising significance of service sectors globally. Skilled human resources, a new approach to R&D, a well-developed ICT infra-structure, collaboration among business partners and customers and facilitation of business creation are critical factors to enable innovation in services and to enhance competitiveness. In the management side, it has the
aim of adapting these systems to new environmental conditions and improving the way in which people are manage and work organized. Innovation can be perceive as a critical aspect of technological catch-up even though it does not depend on inventions, which are new to the world. It also occurs when a firm introduces a product or process to a country for the first time. It could be when other companies imitate pioneering firm. Likewise, when an initial or follower companies make minor improvements and adaptations to improve a product or production process, leading to productivity improvements [1]. This article assessed the efforts of Nigeria’s government in setting the pace for development through vigorous initiatives to manage her innovation by improving a framework of innovation. The article show analysis of data sourced from literature and the review of government initiatives. Also show the challenges and suggest new strategies to do around the process of innovation management in the country.

![Nigeria - World index of innovation](image1.png)

**Fig. 1.** Nigeria world ranking and index of innovation in 2018 [7].

![Nigeria - World index of innovation](image2.png)

**Fig. 2.** Nigeria world ranking and index [7].

The Global Innovation Index (GII) indicators are grouped into innovation inputs and outputs. Lower-middle-income countries Nigeria scores below the average of the
lower-middle-income group in all of the 7 GII areas. Nigeria is ranked 27th among the 30 lower-middle-income countries in the GII 2018. Sub-Saharan Africa region in comparison with other countries in the Sub-Saharan Africa region, Nigeria performs above-average in 2 of the 7 GII areas - Market Sophistication and Creative Outputs. Nigeria is ranked 17th among the 24 countries in Sub-Saharan Africa in the GII 2018.

Table 1. Nigeria is ranking over time [10].

<table>
<thead>
<tr>
<th>Year</th>
<th>GII</th>
<th>Input</th>
<th>Output</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>118</td>
<td>116</td>
<td>115</td>
<td>96</td>
</tr>
<tr>
<td>2017</td>
<td>119</td>
<td>118</td>
<td>119</td>
<td>102</td>
</tr>
<tr>
<td>2016</td>
<td>114</td>
<td>122</td>
<td>107</td>
<td>60</td>
</tr>
</tbody>
</table>

Fig. 3. Ranking of Nigeria in the GII 2018 and the 7 GII areas [10].

1.1 Some institutions related with the innovation process in Nigeria

The National Centre for Technology Management (NACETEM) is an institution that plays a role in the creation of specialized knowledge for the effective management of science, technology and innovation, and actively engage in the policy research, design, evaluation and review [2,3].

Central Bank of Nigeria (CBN) is a leader of financial organization and banks in Nigeria, although 27 banks operate in that country with legal licenses.

Co-Creation Hub (CcHub) is an innovation centre to accelerating the application of social capital and technology for economic prosperity. [8].
2 Experiences: innovative projects by sectors

2.1 Financial sector

The new age consumers of financial services in Nigeria demand convenient, fast, affordable, responsive and reliable products from financial services providers. In responding to these demands, the financial and banking sector in the region have begun to innovate, embark on technology transformation and change internal processes to adapt to the needs of their consumers and compete in acquiring new customers. The Department of Development Finance in Central Bank of Nigeria (CBN) implement three development finance initiatives:

- Establishment of National Collateral Registry (NCR) for movable assets
- Shared Agent Network Expansion Facility
- Establishment of a National Microfinance Bank (NMFB)

His tasks involves the formulation and implementation of various policies, innovation of appropriate products and creation of enabling environment for financial institutions to deliver services in an effective, efficient and sustainable manner.

The future of the financial industry in Nigeria need to consider the technological and digital infrastructure like the advent of automation, Artificial Intelligence (AI) and Big Data, also must to consider the availability of mobile infrastructure because with AI and Big Data, customer insights can now be readily available to address specific needs in specific ways [4,5].

2.2 Electric sector

Energy is main resource for economic development and for boosting basic social services, such as health care and education. Nigeria is known for its vulnerabilities to widespread network and unstable power outages. With a population close to 175 million, the alarming reality of dependence on the mass generator or the absolute lack of access to the grid means that tens of millions are far from being a clean and stable source of energy. The communities that depend on diesel generators to power to schools and medical clinics affected by limited hours for the opportunities of education and health, the high costs of fuel and emissions of greenhouse gases. Lives can be lost when fuel shortages are the only source of energy. When this happens, hospitals may stop working for a few hours.

African Energy brought to local partners highly qualified in Nigeria to lead this project with the Committee on Electricity of the State of Lagos (LSEB) in many places. The project was implemented in collaboration with Microsoft and Schneider Electric. Solar and battery-based inverter systems and chargers with online monitoring were installed connection insight was selected as the most reliable technology for this initiative.

By 2020, approximately 190,000 students will benefit from better access to educational tools and 4.7 million patients will receive better health care [9].

2.3 Environmental sector

Hygiene, health and recycling are three concepts unified in a project, Wecyclers, which has managed to turn into a source of wealth the garbage accumulated in the streets of Lagos with a formula that combines recycling, sustainability and citizen participation.
2.4 IT Sector with social impact

- GoVote.ng: platform that raised awareness of the importance of participation in the past Nigerian elections and was finally adopted by the country's authorities.
- Yaba Manifesto: Nigerian technology cluster (ecosystem of innovation).
- GC Fund: innovation fund aimed at creating an unprecedented path to scale for outliers driving social change in Nigeria. The fund supports high potential, early-stage businesses building our next generation infrastructure using technology. Participating investors bring their experience, resources and networks together to work for investees to catalyze their path to growth.
- i-HQ project is supporting to build an ‘innovation city’ – a hotspot for creative ventures where all key stakeholders (academics, industry and government) find adequate infrastructure, resources and an enabling environment to strive while collaborating. From a vision, a virtual tour was launched to communicate the vision and engage the larger tech community and key stakeholders [8].

2.5 Telecoms sector

As a result of competition in Nigeria’s telecommunications sector, the operators had to be more innovative in order to keep the existing customers as well as attract new customers. This led to operators coming out with a variety of innovative packages meant to add value for money [6]. There are some ones of the more important innovations and advantages in the Telecoms sector:

- VIRA game
- Fast mail
- MTN family and friends expanded
- Special micro SIM cards
- DSTV mobile TV service
- MTN eye
- MTN who called and notify me
- Conference call
- Vehicle tracking
- Glo mobile office
- Glo power box
- Glo quick teller
- The Glo UK top up card
- Glo wonderful offer
- Etisalat you and me
- Etisalat dotme
- Etisalat easylife
- Airtel club 10
- Airtel easy recharge (ERC))
- Airtel mobile office
- Airtel corporate package (ACP)
- Airtel football community service

2.6 Services innovations
The service sector is the second highest contribution to GDP in Nigeria after agriculture and the fastest growing sector:

Airport runway space: Landing planes is a classic service that is intangible and jointly produced by air traffic control and the service users. Despite runways having been ‘full’ for many years, year after year major airports continue to increase capacity. This has been achieved by ongoing innovations including improved efficiency in ground operations, greater coordination between relevant actors and developments in technology that have facilitated safer spacing of landing times. Much of this has been achieved without additional runways being built.

Financial services: Many banks now offer a whole range of services online, facilitated by ICT, and recently there have been developments such as open

plan – which is a process/business model innovation, that enables customers to access and link all their financial holdings through one portal. Open plan customers can use both traditional methods of communication such as branches and automated teller machines, and more recent channels such as telephone call centre, internet and digital television.

Air flights: While the core offer of airlines remains transport between destinations there has been considerable innovation in this area, for example: Low-fare carriers (Ryanair, EasyJet) have transformed the airline industry and the travel industry in general.

Retail: There have been many innovations in retail services, but perhaps one of the most pervasive has been through use of bar codes. The introduction of bar code scanners linked to information and communication technology has transformed retail. It required retailers to undertake several non-technological changes to take full advantage of the new technology [6].

2.7 Nigerian innovative e-company

Sterio.me: For taking the infrastructure out of education. Sterio.me engages learners outside the classroom, to reinforce in-classroom learning. Is a pre-recorded interactive audio lesson, delivered via an sms-triggered inbound voice call to the learner, in order to reinforce content. No internet or smartphone is required to access the content, and teachers get instant feedback.

Konga: e-commerce company. It offers a third-party online marketplace, as well as first-party direct retail spanning various categories including consumer electronics, fashion, home appliances, books, children's items, health care and personal care products.

PrepClass: is an online portal for students preparing for standardized tests in Nigeria.

2.8 The challenges

According some research of Mckinsey Global Institute(MGI) that combine disciplines of economics and management, the government of Nigeria have many challenges in the present to ensure a grow of development and GDP.

Nigeria also faces enormous challenges. As in other parts of Africa, conflict holds back development in a number of regions. Corruption and weak governance are also drags on the economy and all of his activities and the innovation is not outside of them.

Economic, technological and industrial policies in Nigeria have not materialized with the fact that innovation is the engine of economic growth and development. Changing the mindset of the policy planners who for years has focused on the accumulation of capital and the development of human resources without political goals, deliberate on how to ensure that the capital and labor interact efficiently with other critical factors that determine the
ability to generate and disseminate innovation. Indeed, the approach to generating technological innovation focused almost exclusively on the supply side and adopted the linear model of government investment in basic and applied research that leads to inventions that are expected to be commercialized by a public or private sector agency allegedly interested.

2.9 The strategies

A good strategy to stimulate the innovation is through The Youth Enterprise with Innovation in Nigeria (YouWiN!) The program is a large-scale national business plan competition for young entrepreneurs in Nigeria. The program is a collaboration between Nigeria's Ministry of Finance, the Ministry of Communication Technology, and the Ministry of Youth Development with support from Department for International Development (DFID) and the World Bank. The objective of this program is to encourage innovation and job creation through the establishment of new businesses and expansion of existing businesses.

![Contribution to GDP per sector in 2018](https://example.com/fig4.png)

**Fig. 4.** Contribution to GDP per sector in 2018 [12].

Nigeria celebrate every year the Nigeria Innovation Summit. An annual event focuses on the need for the country, organizations and entrepreneurs to become more innovative and thus use innovation to foster sustainable development. It also support to the innovation and to move in the direction of the digital transformation through the use of new technologies and trends, the research, development, marketing, entrepreneurship and investment as the main drivers of an innovation ecosystem. This platform creates culture and awareness of the need for innovation, and challenges harnessing innovation to become more competitive in the global economy [11].
Creation of a new plan to improve the framework of NIS. Creation of a new strategies between government, banks and investors to create investment funds for emerging companies, innovative projects, centres of excellence, innovative ecosystems is a good strategy that can be implemented in the future.

A solid technological infra-structure is fundamental to development and innovation plays an important role in this regard. Stimulating innovation processes in the companies and small business, and in the sectors with more contribution to the grow of GDP (fig 12). More integration between business models and innovation, and improving this relation to decrease the risk, also to manage the tension between the need to creativity and the need for stability. To generate a favorable innovative environment to collaboration. New task in the development of management innovation.

3 Conclusion

Innovation plays a central role in providing comparative and absolute advantages. A management structure and corporate innovation strategies or processes are a need in the present of Nigeria. The process of managing technological innovation contributes to the technological development of a country as it allows to accelerate the stages of the innovation cycle, in addition to that through the implementation and use of a good system of innovation management stages of technological development of products and processes, which impacts directly in the reduction of the time for the placement of these in the final market; the constant and systematic monitoring of the indicators of the process technological innovation management enables the necessary adjustments to be made in role of changes in the environment in achieving the objectives set for scientific and technological development. The importance of monitoring these indicators, within the framework of Technology Innovation Management supports the strategic decision-making, in a timely manner, within the framework of planning technology in the country, depending on changes in the environment, which represents a strategic tool of high added value. New financing strategies, improvements to the innovation framework, stimulation of innovative activity, knowledge management, and the responsibility of government and institutions in the organization of a joint project for a developed technological future, are some of the main actions to be developed in Nigeria.

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References


