

Overview of Technology Incubation Programme in Nigeria

Chukwu Uche P., Jibrin Mohammed U. and Amony Michael C.

National Board for Technology Incubation (NBTI), Federal Ministry of Science and Technology (FMST), Abuja

Corresponding Author: mikeamonye@gmail.com

Abstract:

Background: The total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period, called Gross Domestic Product (GDP) is a broad measure of overall domestic production and functions as a comprehensive scorecard of a country's economic health. The importance of entrepreneurs to the economic development of a nation stems from their role as producers of goods and services. Recognizing this fact, individual governments across the globe foster and support Small and Medium Enterprises (SMEs) in varying degrees. Nigerian governments at both the federal and state levels have established agencies in various names and models to enable the creation and proliferation of entrepreneurial ventures as it also serves as unemployment reduction avenue. Experiences with various enterprises has evidenced the fact that technology based enterprises are better prone to innovative enhancement than other business. Hence the need for concerted attention to technology based enterprises for GDP enhancement and the overall economic development of the nation. Methods: Technology incubation is a support process targeted at small and medium scale innovative technology based enterprises. It is employed to accelerate the successful development of technology based start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the Technology Incubation Centres (TICs) and through its network of contacts. Incubation programme was introduced to Africa in 1988 by United Nations Development Programme (UNDP) as an entrepreneurship development tool generally having the economic development goals of creating jobs, building wealth by fostering the formation of new businesses, fast-tracking research to industries linkages etc. The first TIC in Nigeria was established at Agege, Lagos in 1993; and twenty six years after Nigeria has established a TIC in each state of the federation with six extensions under the National Board for Technology Incubation (NBTI). This paper explains Technology Incubation Programme (TIP) and gives overview of the programme since inception.

Conclusion: TIP has been effective in boosting industrial base of the country and commercialization of R&D results as well as upgrade and enhancement of indigenous technologies. It has thereby aided many start-ups and fledgling enterprises to become free standing enterprises and international companies.

Keywords: Technology, Incubation, Overview, Programme

Date of Submission: 25-02-2022

Date of Acceptance: 06-03-2022

I. Introduction

It is globally recognized today that entrepreneurship is the major factor of the socio-economic advancement of the western world because it is innovating and imitating. The role played by entrepreneurship in the development of western countries has made developing countries very much conscious of the importance of the small and medium enterprise for rapid economic development. Both qualitative and quantitative entrepreneurships are important for the economic development of any nation. Qualitative entrepreneurship implies the stress on innovation, while quantitative implies the stress on imitating entrepreneurship. Qualitative entrepreneurship encourages the best actions by promoting innovation and technology inclined enterprises leading ultimately to sound industrial and economic development. (Ndagi, 2018). Research suggests that there is no country that has high levels of entrepreneurship and low levels of economic growth (Vij and Jhanji, 2013). With the help of targeted business assistance, entrepreneurs are better prepared to turn business ideas into successful new ventures that have a greater-than-average chance of success through the Technology Incubation Programme (TIP).

Business incubation programs are designed to accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed or orchestrated by incubator management, and offered both in the incubator and through its network of contacts. A business incubation program's main goal is to produce successful firms that will leave the program financially viable and freestanding. Critical to the definition of an incubator is the provision of management guidance, technical

assistance, and consulting tailored to young, growing companies. Business incubation programs usually provide clients access to appropriate rental space and flexible leases, shared basic business services and equipment, technology support services, and assistance in obtaining the financing necessary for company growth. Business incubation programs may also provide business assistance services for non-tenant clients, also referred to as virtual or affiliate clients (Lewis et al., 2011).

The concept of Technology Incubation was introduced to the Nigerian Government by the United Nations Development Program (UNDP) and the United Nations Fund for Science and Technology for Development (UNFSTD) in 1988. The Federal Government then commissioned a consortium of three firms to advise on the desirability and implementation modality. Eventually, the first Technology Incubation Centre (TIC) in Nigeria was established at Agege, Lagos in 1993, followed by the ones in Kano and Aba in 1994 and 1996 respectively (Adelewo et al, 2012). The objectives of technology business incubation in Nigeria as summarized by Adelewo et al 2012 are (a): to boost the industrial base of the country, commercialization of R&D results, upgrade and enhance the application of indigenous technologies. (b): to nurture the start-up and growth of new innovative businesses engaged in value added and low, medium, and high technological related activities over a period of time, and (c): to promote functional linkage between research and industry.

Business Incubators have been particularly receiving an increasing interest as a tool to promote new business formation, prevent business failures and establish a vibrant entrepreneurship sector not only in developed countries but also developing and less-developed countries in recent years. Thus, the number of Business Incubators has been rising rapidly around the world as an evidence of the importance attributed to the Business Incubators. Many governments has been devoting considerable amount of resources to establish and operate business incubators (Ozdemu and Shitoglu, 2013). New Knowledge, Technology, Innovation, Entrepreneurship and Commercialization become twined, purposely channeled and interwoven precipitating productive free standing enterprises and companies through the mechanism of Technology Incubation Programme (TIP). Successful TIP execution is evidenced by continuous production of novel goods and services of huge economic worth, the gains from which lead ultimately to economic development and enhancement of the lives of the citizenry. Technology incubation and entrepreneurship are closely linked, in that the process of incubation aid in entrepreneurship development. Most policies of technology incubation are aimed at fast-tracking entrepreneurship development as government and institution provides incubates with the necessary supports that stimulate their interest and nurture their ideas into big entrepreneurs (Ndagi, 2018). Essentially TIP involves the Academia and Research Institutions as new knowledge producers and Technology practitioners alongside the Industry (big and small) as innovative entrepreneurs and the conduit and beneficiaries of the programme whose advancement and success it is designed to achieve. It also encompasses the Government who dictates economic development direction through policies that would ensure requisite environment for the TIP and its entrepreneurs.

II. Technology Incubation Programme

The National Business Incubation Association (NBIA, defines Business incubation as a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding (NBIA, 2009). Technology Incubation (TI) is a popular economic development tool which is been used by both the developed and developing economies to fast track local and regional economic development. TIP is an integrated support programme provided by governments, academic institutions and private sector, either individually or in partnership, with the intention of creating and nurturing of knowledge-based start-up business.

Nigeria practices a variant of the more traditional business incubation schemes called Technology Incubation Programme (TIP), which targets assistance to mainly technology-oriented entrepreneurs in the start-up and early development stage of their firms by providing workspace (on preferential and flexible terms), shared facilities and a range of business support services. The programme commenced in 1993 with the registration of the National Technology Business Incubation Foundation (NTBIF). The Federal Government fully took over operations of the NBTIF vide the National Technology Business Incubation Foundation (Take-Over) Decree No.5 of 1995

TICs are requisite interface between a business idea and the real time market. It acts as a facilitator for aspiring entrepreneurs by providing them with easy availability of capital, infrastructure and expertise. The aim of TIC is to promote creation of enterprises and inculcate entrepreneurship by utilizing the ability and creativity of the incubatee. They are now recognized in both developed and developing countries as important instruments for promoting entrepreneurship development and technological innovation at the small and medium enterprise level. TICs provide services to the entrepreneurs on a 'one stop' basis and enable them to reduce their costs by

sharing the facilities. Technology incubation is especially important for fostering young firms through the most vulnerable start-up phase (Vij and Jhanji, 2013).

The goal of TIP is to assist small scale budding entrepreneurs to overcome the initial hurdles of carrying viable R&D results as well as innovative efforts into profitable enterprises (FMST, 2005). And the mandates are:

- i. Provide a platform for speedy commercialization of technologies by effectively linking talents, technology, capital and knowledge.
- ii. Create, nurture and develop value-added technology-based enterprises.
- iii. Promote the establishment of and management of viable science and technology parks, technology incubators and technology-based enterprises.
- iv. Enhance linkage of tenant/technology know-how and capital in order to develop techno-entrepreneurship culture based on continuous value addition.
- v. Promote and facilitate the application of indigenous technologies and knowledge.
- vi. Set standards for and regulate the establishment and management of Science and Technology parks and Incubators

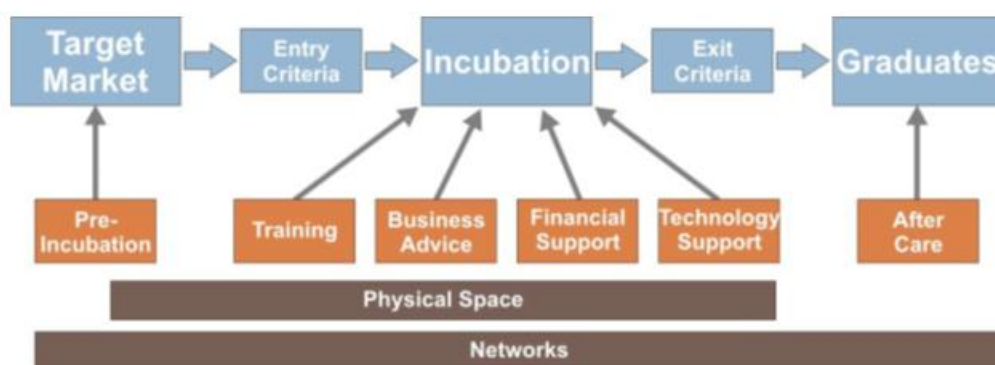
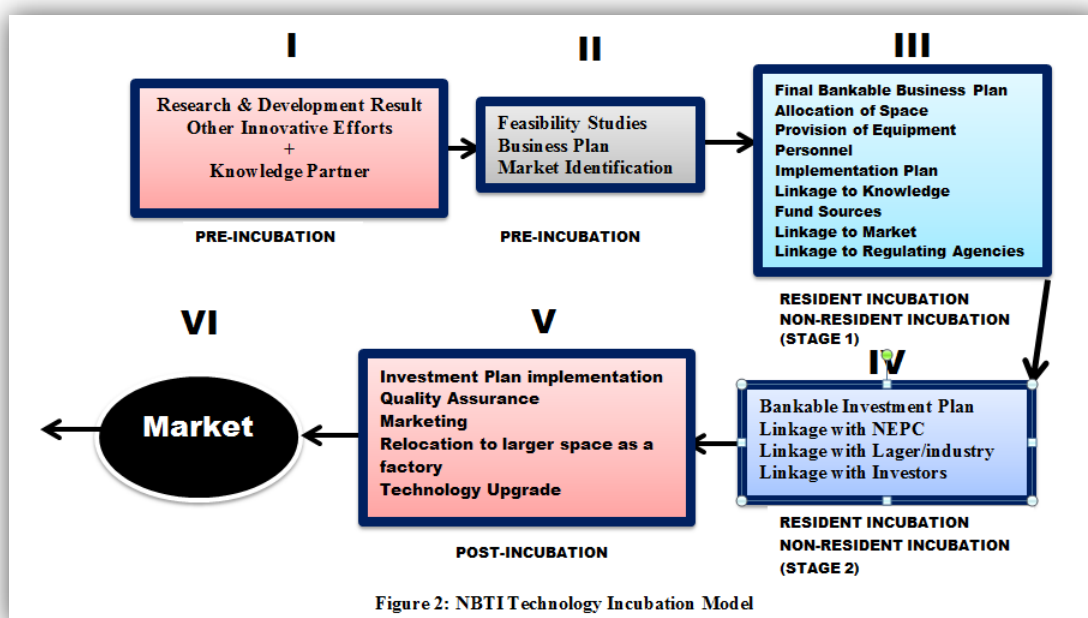


Figure 1: A typical business incubation process (InfoDev., 2010).

Figure 1 above, depicts the general incubation process. The prospective incubatee after meeting the entry criteria is admitted and during incubation is supported with training, business advice, funds and technology knowledge. On graduating from the TIC, the graduated entrepreneur is still eligible to access some advice as “After Care Services” (referred to as Post incubation in the TIP scheme) till he becomes financially viable and freestanding. Business incubation practice, all over the world is structured in this pattern, but the objectives may differ from country to country. For instance the Jewish State of Israel in 1991 launched Nationwide TIP to utilize the S&T potentials of immigrants from the Soviet Union. The programme is a tremendous success. When the United States recognized the existence of critical mass of scientists, technical infrastructure, ethnically diverse and world-class universities in the system they launched the “Silicon Valley Incubator” which generated 7,000 electronics and software companies, 300,000 top scientists (1/3 born abroad) with many new firms and new millionaires made almost every month. (Adelewo et al, 2012).

Nigerian Technology Incubation model is depicted in figure 2. The model requires that a prospective entrepreneur will join himself to a knowledge partner to present an idea in the form of Research and Development Result, catchy innovative effort or knowledge spill over from practice. Following further research and feasibility studies, the prospecting entrepreneur will then put his proposal in writing together with the technical and business plans for consideration by the management of the TIC and if it is analyzed and found to be proactive, then he will be admitted. (Jibrin, 2013). Visitation and issuance of Admission Certificate for Non-Resident incubatee and allocation of space at the TIC for a Resident Incubatee; permits the Incubatee to bring in requisite equipment and personnel for takeoff. He is then assisted to do a Final Bankable Business Plan enabling him access to funding sources. He will also prepare a detailed Production Plan which will guide his daily work. Other services he can get at this stage are Linkage to Knowledge, Linkage to Market and Linkage to Regulating Agencies. The foregoing explains Stage 1 of the incubation process which covers blocks I to III in figure 2. Attainment of Stage 1 implies that the technologies are defined, appraised and being utilized and that the market has been identified and being utilized. All pertinent registrations and regulatory requirements have been met at this stage.



Stage 1 takes care of everything that is required for takeoff and establishment. Stage II marshals the growth of the company and covers Steps IV to VI in figure 2. The Incubatee is required to prepare a Bankable Investment Plan which will enable him Linkage with pertinent Lager industry, Nigerian Export Promotion Council (NEPC) and Investors willing to invest and partner with the proprietor to advance the company. Issues regarding Investment Plan implementation, Quality Assurance, Marketing Strategies, Relocation to larger space as a factory and Technology Upgrade are critical at this stage for the growth of the company. NBTI model of technology has successfully led to the listing of some incubatee Companies which started as entrepreneurs at our TICs in the Nigerian Stock Exchange; with some achieving local and international awards.

The various classes in the NBTI TIP model available at TICs in Nigeria are namely:

1. Pre-incubation (6 months) which provides for the data collection, preparation of feasibility studies and bankable business plans.
2. Resident Incubation (1-3years) this scheme which provides shared facilities such as operating, workshops, laboratories, IT and library in addition inputs in areas of publicity, products marketing and research, technology development etc are provided. Similarly the scheme further provides linkage to finance sources and business networks.
3. Non-Resident Incubation (1 – 5 years) which provides all facilities for the non-resident incubation except the operation space. The scheme has been designed to cover entrepreneurs who for one reason or the other such as distance, size or convenience cannot physically move into the TIC.
4. Post Incubation which is to ensure competitive growth of graduated entrepreneurs who graduated. Services offered include monitoring and evaluation and bench marking.
5. Community Incubation: These are low technologies designed for women and youth that are located within less privileged areas. Beneficiaries are usually taught how to create and operate value added sustainable businesses with the sole purpose of graduating them either as individual operators or co-operative groups based on the raw material resources within their domain.

The role of the National Board for Technology Incubation (NBTI), is to coordinate the Technology Incubation Programme (TIP) in Nigeria while the actual incubation process takes place at the Technology Incubation centers (TICs) spread all over the country. The functions of NBTI inter alia are policy implementation and coordination which involves development of operational guidelines. Other roles include supervision, monitoring and evaluation; Financial Management and Control; Sourcing of fund; National and International Liaison; Program Planning and Development as well as provision of legal services. (Obaji et al, 2012).

III. Results: Overview of TIP in Nigeria

The activities of TIP in Nigeria since inception in 1993 can be appraised from Figure 3 and Table 1 below. Figure 3 summarizes the enterprise by the categories of products while Table 1 renders statistical information with respect to several performance indicators.

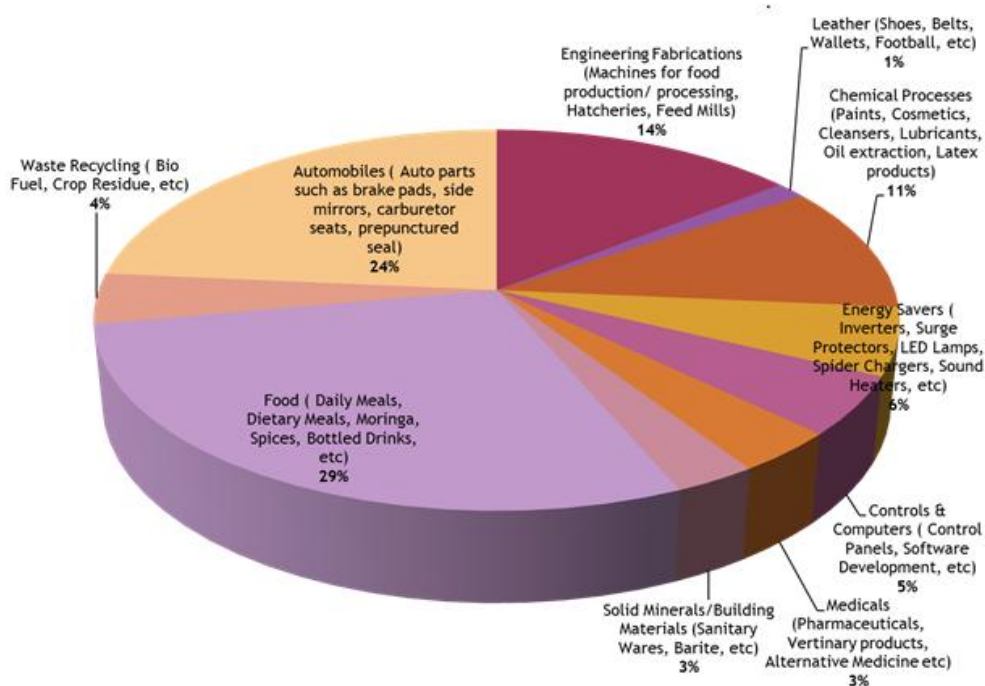


Figure 3: Summary of Enterprises by Categories of Products

More entrepreneurs are into food, dietary meals and bottle drinks while the least number are into leather products. TIP in Nigeria desires the incubation of more entrepreneurs in core technology based sectors as Waste recycling, Automobile and Auto parts, Engineering fabrications, Energy Devices, Computers, Solid Mineral Exploration and Processing as well as Medicals. These areas are more amenable to continuous innovation for industrial and economic development.

Table 1: Performance Indicators of TIP in Nigeria (Year 2019)

SR/N	Description	Number
1	Number of Technology Incubation Centres	36 and 6 Extensions
2	Number of Incubation Units (Business Operating Spaces)	466
3	Number of Multipurpose Workshop	17
4	Number of Quality Assurance Laboratories	17
5	Number of TICs with libraries	15
7	Number of e-news letter Direct and Indirect Recipients	15,350
8	Number of Awards/Grants: YouWin, CBN and PSCII	108
9	Number of Publications	86
10	Number of TIC products in the Market	1,079
11	Number of TIC Innovative Products in the Market	308
12	Number of Resident Entrepreneurs admitted between 2013 – 2014	401
13	Number of Graduate Entrepreneurs	768
14	Number of Patent Registration	44
15	Number of pending Patent Applications	36
16	Number of Direct Jobs Created	4,456
17	Survival rate based on 2014 count (rising from 22% in 2005)	68%
18	Number of NYSC trained – on bankable business plan (2013- Date)	68
19	Number of IT post-secondary school students trained (2013-Date)	566

20	Number of Staff trained 2013 – Date	393
21	Number of Intellectual Property Technology Transfer offices (IPTTOs)	6

IV. Conclusion

It is clear that Technology incubation in Nigeria is successfully employed as a veritable tool for industrialization and economic growth. Its operations and structure as enunciated in this work shows that by promoting functional linkage between research and industry, TIP has been effective in boosting industrial base of the country and commercialization of R&D results as well as upgrade and enhancement of indigenous technologies. It has thereby aided many start-ups and fledging enterprises to become free standing enterprises and international companies. There is need for more funding to run the programme to ensure sustainability and consistent and continuous enhancement of innovative productive ventures in Nigeria leading to healthy industrial and economic development of the country.

Reference

- [1]. Adelowo C. M, Olaopa R. O and Siyanbola W. O. (2012). Technology Business Incubation as Strategy for SME Development: How Far, How Well in Nigeria? *Science and Technology* 2(6), pp. 172-181.
- [2]. FMST (2005), Policy functions structure and operational guidelines of Technology Incubation Programme in Nigeria. Federal Ministry of Science and Technology (FMST), Abuja.
- [3]. InfoDev (2010). Global Good Practice in Incubation Policy Development and Implementation. A publication of the International Bank for Reconstruction and Development/The World Bank; pp. 11.
- [4]. Jibrin M. U (2013). TICs Bridging Research, Industry Gap. *Vanguard Newspaper*, pp. 36.
- [5]. Lewis D. A., Harper-Anderson E., and A. Molnar L. A. (2011). *Incubating Success: Incubation Best Practices That Lead to Successful New Ventures*. Published by Institute for Research on Labor, Employment, and the Economy, University of Michigan; p. 5.
- [6]. NBIA (2009), "What is Business Incubation?" Available at: http://www.nbia.org/resource_library/what_is/.
- [7]. Ndagi A. (2018). Effect of Technology Incubation Programme on Entrepreneurship Development in Nigeria. Published by World Technopolis Association; pp. 2-5.
- [8]. Obaji N. O, Sinin A. A and Richards C. K (2012). Sustainable Innovative Policy in Technology Business Incubation: Key factors for Successful Entrepreneurship Development in Nigeria. A publication of Department of Management, Universiti Teknologi, Malaysia, pp. 4.
- [9]. Ozdemu O. C. and Shitoglu Y (2013). Assessing the Impacts of Technology Business Incubators: A framework for Technology Development Centers in Turkey. *Proceeding of the 2nd International Conference on Leadership, Technology and Innovation Management*; p. 284.
- [10]. Vij S. and Jhanji H. (2013). Business Incubation: A Review of Research Orientations, Impacts and Determinants of Success. *The Tenth Biennial Conference on Entrepreneurship, (EDI) Entrepreneurship Development Institute of India, Ahmadabad*; p. 2.

Chukwu Uche P, et. al. "Overview of Technology Incubation Programme in Nigeria." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 13(02), 2022, pp. 01-06.