

# Technology Entrepreneurship : A Panacea in Youth Unemployment in Nigeria

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**Abstract – Technology entrepreneurship is gradually being recognized to impact significantly on socio-economic activities of the nation. This paper examines the impact of viewing technology entrepreneurship as a dais towards industrial development and reduction in youth unemployment in Nigeria. It also examines Policy Requirements for Technological Entrepreneurship Development in Nigeria. It concludes by proposing some strategies that promote effective entrepreneurship.**

**Keywords – Entrepreneurship, Panacea, Youth, Unemployment.**

## I. INTRODUCTION

Unemployment, both of the educated and the uneducated manpower, has become one of the most topical and thorny issues in contemporary Nigeria. The unemployment situation has changed from previous position marked by prolonged period of unemployment and misemployment, to one in which graduates of tertiary institutions have to normally wait for a long time before getting a first job – if at all (Hassan, 2013). According to Federal Ministry of Labour and Productivity Report, 2008, (reviewed by Hassan, 2013) Nigeria has one of the highest levels of youth unemployment in the world (60-65%). These are mostly young adults that have graduated from universities and polytechnics or institutions of higher learning. Available estimate shows that about 1.6 million persons, mostly young adult, graduate annually. In addition to this number, about 3.8 million others are certificate carrying youths that have no formal education, or have completed primary or secondary school, or dropped out from tertiary institutions all of which are annually poured into an already saturated labour market (Federal Ministry of Labour and Productivity Report, 2008; Hassan, 2013). Many of those youths are not productive not because they lack the qualification but because the system has not been able to impart in such individuals technical knowledge and know-how skills required to carry out entrepreneurial activities especially technologically oriented. In recent times, the concept of entrepreneurship have been made prominent by various discussions relating to industrial development. However, it

has been observed that while entrepreneurship which is the exploitation of business opportunity would bring about job creation and wealth generation, it has limitation in bringing about accelerated industrial development that will not only expand the job creation and wealth generation phenomena, but also would enable a country to compete in the frontiers of global rapid technological developments. Thus the concept of technological entrepreneurship has gained more and more attention among researchers, policy makers, government, scholars and firms alike. For instance, we have authors who have discussed the subject of technological entrepreneurship (D. C. Mowery and S. Shane, 2002; S. Shane and S. Venkataraman, 2003; P. Phan, and M. Foo, 2004; R. C. Dorf and T. H. Byers, 2007). In this body of literature, emphasis seemed to be placed on high-potential technology opportunities, technical systems, innovation, production and commercialization. Within this context, very little technological entrepreneurship can be said to exist in Nigeria, and indeed in many developing economies. Most entrepreneurial activities are concentrated in non-technological priorities which its job creation capabilities might not be enough. This is because most technologies are foreign and imported; and continuous improvements and innovation from source countries on the imported technologies render them obsolete in no time.

## II. OBJECTIVE

This paper seeks to examine the importance of technology entrepreneurship as a platform towards industrial development, reducing youth unemployment, and the promotion of socio-economic growth and development in Nigeria. Specifically, it also identifies Policy Requirements for Technological Entrepreneurship Development in Nigeria.

## III. RESEARCH METHODOLOGY

The data for this paper were originated from secondary sources: previous research and analysis of scholars, government documents, /magazines as well as journals articles that are related to the subject. This study involved

an extensive literature review which critically analyzed the present status, prospects of technology knowledge and technology entrepreneurship as part of the roadmap to wealth creation and reduction of unemployment among Nigerian youths.

#### IV. CONCEPT OF TECHNOLOGY ENTREPRENEURSHIP

Technology entrepreneurship according to Abdullah and Ahcene, (2011) is basically the merge of two words from two disciplines: technology from the innovation discipline and entrepreneurship from the business discipline. Technology entrepreneurship is referred to the capabilities of a technology entrepreneur, specifically the knowledge and skills required by the entrepreneur to carry out technology based entrepreneurial activities successfully, (Abdullah and Ahcene, 2011) Technological entrepreneurship, also referred to as technology based entrepreneurship, can also be defined as the setting up of new enterprises by individuals or corporations to exploit technological innovation, (Aderemi, et al, 2011). It can also be described as the commercialization of emerging technological discoveries or innovation. Technological entrepreneurship is defined as a style of business leadership that involves identifying high potential, technology intensive commercial opportunities, gathering resources such as talent and capital, and managing rapid growth and significant risk using principled decision making skills (R. C. Dorf and T. H. Byers, 2007; Aderemi, et al, 2011 ). It is also defined the term as the process by which entrepreneurs assemble organizational resources and technical systems, and the strategies by entrepreneurial firms to pursue opportunities (S. Shane and S. Venkataraman, 2003; Aderemi, et al, 2011). Aderemi, et al, (2008) positioned technological entrepreneurship as being needed to make full use of the knowledge of science and technology currently available in meeting market needs, thereby making the country in question more productive and more competitive internationally (Aderemi, et al, 2008). This suggests the necessary involvement of a process of industrial innovation in the country's area of strength and endowment to generate productivity and competitiveness. According to them, "Technological entrepreneurship is initiated and culminated in design, development, production, engineering and commercialization of innovative new products and processes".

#### V. DIMENSIONS OF TECHNOLOGY ENTREPRENEURSHIP

Eight key technology entrepreneurship activities are identified based on the four constituencies of technology entrepreneurship as highlighted by Shane and Venkataraman (2003), in their special issue on technology entrepreneurship, and reviewed by Abdullah. S

and Ahcene .L, (2011), which includes industry, firm, technology and entrepreneur.

The 8 key dimensions of technology entrepreneurship are: awareness, search, strategy, core competency, technology paradigm, linkages, learning, and leadership. "Awareness" is referred to the ability to recognize pertinent environmental changes, and the need to improve; "Search" is the ability to explore for opportunities and threat; "Strategy" is the plan of action to achieve the envisioned goals that are significant for the economic growth of the firm; "Core Competency" is the economic strength of the firm that needs to be identified and built upon; "Technology Paradigm" is the ability to understand the existing platform of technology; "Linkages" is any form of collaborative effort established by the firm; "Learning" is the firm's effort to encourage acquisition of codified and tacit knowledge on continuous basis; and finally "Leadership" is the ability of the entrepreneur to lead his firm to achieve competitive advantage and sustain it.

#### VI. FEATURES OF TECHNOLOGY ENTREPRENEURSHIP

There are certain attributes that characterize technological entrepreneurship. These attributes by (Aderemi, *et al*, 2011) are elaborated below:

##### 6.1. High Potential Opportunity

A new technology-based venture is described as having a high potential opportunity if it is capable of creating new value for its customers, it has a significant level of technology understanding which is difficult to replicate and can often be protected (patented), it has a significant first mover advantage, it has a level of scalability, it creates a barrier to entry, and it also has a high level of initial risk which can be translated into high levels of return.

##### 6.2. Technology-Intensive Opportunity

Technological entrepreneurship is described as a technology-intensive opportunity involving a process of problem solving, raising and safeguarding the quality of life, needing technical skills and applications, identifying potential market, improvement in quality of products in order to improve competitiveness of the firm with expectation of saving in process cost. Furthermore, the sufficient reason for embarking on technological entrepreneurship is borne out of the need to commercialize significant innovations that are expected to guarantee suppliers of materials, long-term stability of firms and increase output.

#### VII. UNIQUE TECHNOLOGY CAPABLE OF DRIVING A NEW BUSINESS

As firms can be viewed as bidding and competing for customers' purchases, and markets can be evaluated based on the extent to which the profitability of a firm hinges on meeting consumers demands if possible, better than its rivals. Consequently, aside from having more share of the

market through aesthetic changes, price reduction, better performance and so on, technological entrepreneurship has the characteristic of being able to advance new technologies that can institutionalize new ventures that adequately meet consumers' need.

### **VIII. HIGH RISK OF FAILURE**

One of the true measures of success for technological entrepreneurs is the extent to which they are able to develop and bring to market radically innovative new products. Developing new products is especially a risky business endeavor, because a technically feasible innovation might not be economically profitable, and the product may not survive the commercialization process. Literature reported that success rates for new inventions ranged from 1% to 85% (C. Cooper, 1978; C. M. Crawford, 1997; M. O. Ilori, 2006) From their observations, less than 2% of potential technology-based venture ideas (technology innovations) end up being registered as patent or intellectual property. Also less than 1% of business plans received by venture capitals get funded. In fact, many innovations that should have been commercialized into a technology-based venture end up in shelves. For instance, it was found that there is lack of faith in the Nigerian Patent Law, which in turn provided little protection for local innovations (Adjebeng-Asem, 1995). Innovators consider this a major problem in the commercialization of their products and processes; 89% had not explored the use of the patent law, even though the law had been enforced since 1970 and 6644 patents have been registered with only 177 owned by Nigerians.

### **IX. LONGER TIME TO MARKET**

This refers to the uncertainty surrounding the commercial success of an innovation because it is difficult to predict the time lag between the launching of a product in the market and the growth of sales due to unforeseen circumstances that could influence the demand for the product.

### **X. DEMAND OF INFRASTRUCTURE, FACILITIES AND RESOURCES**

Technological entrepreneurs are faced with several challenges to development. Literature opined that the challenge that innovative entrepreneurs face are attributable to inadequate resources, expensive patents and unavailability of equity (P. Z. Nwafor, 2007). To this list we add the non-availability of venture capital within the Nigerian environment.

## **XI. THE ROLE OF TECHNOLOGICAL ENTREPRENEURSHIP IN SOCIAL AND ECONOMIC DEVELOPMENT**

A vast body of research exists on the importance and varied contributions of technological entrepreneurship to job creation, economic and social development, and growth. It was specifically stated as follows (S. A. Zahra and J. C. Hayton, 2007; Aderemiet *at*, 2011):

*Technological entrepreneurship is a key source of economic and social progress. It refers to the creation of new firms by independent entrepreneurs and corporations to exploit technological discoveries. These new firms create jobs, contribute to the well-being of their communities and generate wealth for their owners. These firms are also the change makers in their respective industries as they bring in new technological paradigms that alter the dynamics of competition and rules of rivalry.*

Basically, both incremental and radical innovations are important not only for the positive economic impact they typically create, but also because they fundamentally change the behavior of consumers, often in ways that improve their lives. More specifically, as stated by Aderemiet *al*, 2011, the following are the roles of technological entrepreneurship in socio- economic development:

- Technological entrepreneurship is needed to propel technological innovation efforts into the market. Whenever there is a breakthrough in research and development. It is the place of technological entrepreneurship to commercialize the achievements of technological efforts otherwise, it remains in the laboratory without making any impact. One of the reasons why many research breakthroughs never leave the laboratory is due to short fall of technological entrepreneurs. And unless technological innovation or the output of research and development efforts reaches the market or are commercialized, industrialization would be elusive.
- Technological entrepreneurship has the potential of improving state of technological capability in a country. This is because as technological efforts are being made, learning takes place. This occurs either by doing or observation, thus improving technological capability in the efforts in question.
- Because technological entrepreneurship would necessarily involve the commercialization of a research output, more patents are generated and patents are a well-known indicator and measure of technological development and industrialization in countries all over the world.
- Technological entrepreneurship is the platform that accelerates the diffusion of successful technological innovation in an economy. For instance in Nigeria, and in most African countries, the rate of diffusion of Information Communication Technology (ICT) is on the increase. This is made possible by the private firms that saw an opportunity and decided to market ICT products and services thereby increasing the pace



of diffusion. The diffusion in turn has greatly enhanced the quality of life of the citizenries.

- For a technological entrepreneur to be relevant, he must of necessity meet market needs and be a problem solver. In a bid to meet market need, research and development as well as science and technology efforts must be well coordinated. Science and technology as well as industrialization policies are tailored towards meeting the needs of the market. This, we believe, will invariably bring about socio-economic development.

## XII. BRIEF EXAMINATION OF YOUTH UNEMPLOYMENT IN NIGERIA

Youth unemployment across the world has reached a new high level and is likely to climb further. The youth population in Sub-Sahara Africa was estimated at 138 million people in 2002-2003, with 28.9 million, or 21 percent of them unemployed (ILO, 2004b; Salami, 2011). According to Salami (2011), there are notable differences in youth unemployment with regard to gender. The unemployment rate for young women in Sub-Sahara Africa is 18.4 percent – lower than the unemployment rate for young men (23.1 percent) even as young women’s labour force participation rate is lower. Youth unemployment in Africa also has a geographical dimension: it is generally higher in the urban areas than in rural ones. Several factors account for higher youth unemployment rate in Africa, most notably low economic growth, low economic activity and low investment. These related factors contribute to low job creation and because of sustained (increased in some cases) population growth the small labour market is unable to absorb the resulting army of job seekers. Youth unemployment has been increasing because most graduates lack relevant marketable skills. The federal government recently acknowledged that about 80 percent of Nigeria’s youth are unemployed and 10 percent underemployed (Daily Trust, 2008; salami, 2011). According to DepoOyedokun (2010) Chair of the House Committee on Youth and Social Development, of the over 40 million unemployed youths in the country, 23 million are unemployable and therefore susceptible to crime, hence the need to articulate what could be done to salvage the situation. He therefore, suggests creating the enabling legislative framework that would ensure the total emancipation of the Nigerian youths. A national survey jointly sponsored by NUC and the Education Trust Fund (ETF) in 2004 as reviewed by salami, (2011), sought to determine the labour market needs. The study revealed that 44 percent of the 20 organizations rated Nigerian science graduates as average in competence, 56 percent rated them as average in innovation, 50 percent rated them average in rational judgment, 63 percent as average in leadership skills and 44 percent as average in creativity. On needed skills like literacy, oral communication, information technology, entrepreneurship, analytical, problem-solving and decision making, 60 percent rated them as poor. By any standard,

the above statistics reflect a poor assessment of Nigerian university graduates and further buttress the argument that Nigerian university graduates are unemployable.

As should be expected, the lack of employment potential make crime a more attractive option for some Nigerian university graduates. Salami stated that it is common to find some graduates still roaming the streets, five years after graduating in search of jobs that either are not there or for which they are not qualified. It is therefore no coincidence that crimes such as kidnapping which is now a new and attractive industry is thriving especially in the South-Eastern part of Nigeria. Other crimes include armed robbery, car snatching, pipeline vandalization, oil bunkering, prostitution and so on.

He stated furthermore, high competition for economic resources and services, over-dependence on a single natural resource (oil) and the neglect of other crucial sectors of the economy also contribute to youth unemployment in Nigeria. It was argued earlier that technology entrepreneurship is capable of providing the platform towards efforts aimed at reducing unemployment as well as promoting economic growth and development.

## XIII. POLICY REQUIREMENTS FOR TECHNOLOGICAL ENTREPRENEURSHIP DEVELOPMENT IN NIGERIA

Many policies covering different sectors of the Nigerian economy have been put in place to guide the development of entrepreneurship in Nigeria; but without a concise and effective Science and Technology (S & T) policy, the industrial and other related policies will only promote commerce (M. O. Ilori, 2006; Aderemiet *al*, 2011 ). As noted, the Nigerian S & T policy, together with most other related ones is defective in either formation or execution (S. A. Sanni, et al, 2002; Aderemiet *al*, 2011). For instance, the National Economic Empowerment and Development Strategy (NEEDS) emphasized the development of an Industrial sector that will be internationally competitive but in the NEEDS document, there was no mention of the role of S & T. The realization of this deficiency led to the development of NEEDS-II which was still in its infancy when the government of the day handed over to the present one. Today, despite the extent of advocacy and intellectual support in favor of the role of S & T in realizing the administration’s 7-point Agenda, Vision 20-2020 and the current transformation agenda, government commitment to S & T is still demonstrably low.

It is important to note also, that entrepreneurial interest among Nigerian students is quite high but the expression of this interest in practice is rather low. The main factors found to be responsible for this are poor funding and inadequate preparation through training. A particularly key institutional weaknesses identified was expressed in the inadequacy of government support to young and aspiring entrepreneurs. In fact, until recently when the NUC directed all universities in the country to establish entrepreneurship centers, youth entrepreneurship has been

left in the domain of agencies and non-governmental organizations.

Much has been said about entrepreneurial education and its importance in stimulating and sustaining entrepreneurship, especially among students. In implementing this, however, it is important to note that a uniform curriculum might not yield optimal results across different disciplines or levels. The design of these curricula should, therefore, consider the peculiarities of each discipline when issues and resource persons are being selected. As a necessity, entrepreneurial training initiatives should include a standardized monitoring and evaluation structure which ensures strict conformance with quality.

Besides the strictly formal training, entrepreneurial advocacy is also very beneficial. Institutions, of their own conscious will should seek to organize seminars, workshops, symposia and other similar forums where students could be brought in contact with state-of-the-art knowledge in the practice of entrepreneurship. These forums also hold the benefit of encouraging the students by bringing them in contact with excelling nascent entrepreneurs.

In implementing all of the foregoing recommendations, the place of a stable political atmosphere, strong institutions and sustainable funding cannot be over-emphasized. Few, if any, policies and programmes would ever work in situations of chaos and scarcity of resources. It then rests on the government of the day to work sedulously at creating a crime-free and peaceful environment without which entrepreneurship, which is the vehicle of innovation, cannot succeed.

#### XIV. CONCLUSION

From all indications, youth unemployment is a menace in Nigeria and constitutes a real danger and a threat to social, economic, political and industrial development. This paper has placed substantial hope in the power and potential of technology entrepreneurship to transform the relationship between the educational system and the labour market. However, career guidance can only be a panacea for reducing the rate of youth unemployment in conjunction with technical and vocational education (TVE) and entrepreneurship. Moreover, the energy, skills and aspirations of young people are invaluable assets that no country can afford to waste and holding them to realise their full potential by gaining access to employment is a precondition for poverty eradication, sustainable development and lasting peace. No amount of career guidance will help if there are no employment opportunities, no entrepreneurial skills to facilitate self-employment, and no technical and vocational skills needed for gainful employment.

#### REFERENCES

[1] Hassan, Olanrewaju Makinde, African Journal of Business Management, Vol. 7(44), pp. 4429-4444, 28 November, 2013 DOI:10.5897/AJBM2013.7177 ISSN 1993-8233 © 2013 Academic Journals <http://www.academicjournals.org/AJBM>.

[2] Willie O. Siyanbola, Helen O. Aderemi, Abiodun A. Egbetokun, MarufSanni. "Framework for Technological Entrepreneurship Development: Key Issues and Policy Directions", American Journal of Industrial and Business Management, 2011, 1, 10-19 doi:10.4236/ajibm.2011.11002 Published Online October 2011 (<http://www.SciRP.org/journal/ajibm>)

[3] D. C. Mowery and S. Shane, "Introduction to the Special Issue on University Entrepreneurship and Technology Transfer," Management Science, Vol. 48, No. 1, January2002, pp. 5-9. doi:10.1287/mnsc.48.1.0.14277

[4] S. Shane and S. Venkataraman, "Guest Editors' Introduction to the Special Issue: Technology Entrepreneurship," Research Policy, Vol. 32, No. 2, 2003, pp. 181-184. doi:10.1016/S0048-7333(02)00104-X

[5] P. Phan, and M. Foo, "Technological Entrepreneurship in Emerging Regions," Journal of Business Venturing, Vol.19, No. 1, 2004, pp. 1-5. doi:10.1016/S0883-9026(02)00116-7

[6] R. C. Dorf and T. H. Byers, "Technology Ventures: From Idea to Enterprise," 2nd Edition, McGraw Hill, New York, 2007

[7] Dr. Syahida AbdullahI and Dr. LahsasnaAhcene, "The Understanding of Technology Entrepreneurship According to Shariah Principles," 2011 International Conference on Business and Economics Research IPEDR Vol.16 (2011) © (2011) IACSIT Press, Singapore

[8] H. O. Aderemi, M. O. Ilori, W. O. Siyanbola, S. A. Adegbite and I. O. Abereijo, "An Assessment of the Choice and Performance of Women Entrepreneurs in Technological and Non-Technological Enterprises in Southwestern Nigeria," African Journal of Business Management, Vol. 2, No. 10, October 2008, pp. 165-176.

[9] C. Cooper, "Science, Technology and Development: The Political Economy of Technical Advance in Un-der-developed Countries," Frank Cass & Co., Ltd., Lon-don, 1978.

[10] C. M. Crawford, "New Product Failure Rate: Facts and Fallacies," Research Management, Vol. 22, No. 5, 1997, pp. 9-13.

[11] M. O. Ilori, "From Science to Technology and Innova-tion," Inaugural Lecture Series, Vol. 191, ObafemiAwolowo University, Ile-Ife, 2006, p. 37.

[12] Adjebeng-Asem, "Translating Technical Innovation into Entrepreneurship in Nigeria: Social and Policy Implica-tions," International Development and Research Centre (IDRC), 1995.

[13] P. Z. Nwafor "Practical Approach to Entrepreneurship: Small and Medium Scale Enterprises (SMEs)," 2007.

[14] S. A. Zahra and J. C. Hayton, "Technological Entrepreneurship: Key Themes and Emerging Research Directions," Crossroads of Entrepreneurship, Springer, 2007, pp. 185-208.

[15] Salami CGE(2011) Entrepreneurial Interventionism and Challenges of Youth Unemployment in Nigeria. Global Journal of Management and Business Research Volume 11 Issue7 Version 1.0 July 2011. Global Journals Inc. (USA).

[16] S. A. Sanni, M. O. Ilori and J. S. Oke, "Management of New Product Development in Selected Food Companies in Nigeria," Technovation: The International Journal of Technological Innovation, Entrepreneurship and Technology Management, Vol. 20, 2002, pp. 333-342.