

Technological Innovation: An Imperative Tool for Entrepreneurship Development in Nigeria

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ABSTRACT

Sustainable economic development does not occur without entrepreneurship and entrepreneurship is the practice of starting new organizations or revitalizing mature organizations. This study therefore is done to analyse the impact of innovation, technology and on the entrepreneurial development activities in Nigeria. Simple random sampling technique was used to select a total of 12 entrepreneurs from Lagos State that constituted our sample size. The primary data consists of a number of items in well- structured questionnaire that was administered to and completed by the respondents. Regression analysis was used to analyse the data. The results showed that there is significant relationship between technological innovation and entrepreneurship development in Nigeria. It is therefore recommended that government should create a friendly or an enabling environment for entrepreneurship and consumer goods to boost the Nigeria economy.

Keywords: *Entrepreneurship, Innovation, Technological Change and Nigeria*

INTRODUCTION

Entrepreneurship is the art or science of innovation and risk-taking for profit in business, the quality of being an entrepreneur. New and unique combinations are the result of Entrepreneurship (Schumpeter, 1934). Successful and right futures are forecast by Entrepreneurship (knights, 1921). Sustainable economic development does not occur without entrepreneurship and entrepreneurship is the practice of starting new organizations or revitalizing mature organizations (Wikipedia, 2008). There is no doubt that increases in GDP, societal wealth and quality of life all follow increased entrepreneurship (Khalil, 2000; Morris, 2001; Sharma, 2006). Wikipedia (2008) presented the work of economist Joseph Schumpeter and the Austrian economists such as Ludwig von Mises and von Hayek, defined entrepreneur as —a person who is willing and able to convert a new idea or invention into a successful innovation”. The readiness and willingness to innovate must be the hallmark of an entrepreneur in order to foster growth in business. In such a dynamic environment, innovation is regarded to be a prime strategic factor for the manufacturing SMEs’ competitiveness. But technological innovation has been shown to take many paths that reflect the multiple sources of knowledge upon which it is based (Belotti and Tunälv, 1999). One of the key insights of modern innovation theory is that firms rarely innovate on the basis of internal resources only, but they draw on knowledge, skills, technical solutions, methods and equipment from outside the firm itself (Sandven, 1996). Most innovating firms have complex webs of relationships with customers, suppliers, research institutes, industry associations and so on, which are used to solve the many technical, organisational and financial problems which are presented by any attempt to innovate. These processes of interdependence have led to a wide set of models of innovation based on interactive learning ‘between firms and their wider environment (Sandven, 1996). Consequently, the innovation process, as noted by Dosi (1988), is a complex one that requires the mobilisation of many kinds of scientific and technological knowledge as well as their contextual adaptation to the specific situation of the company’s activity and business. This demands the development of technical, research and development (R and D), organisational, and strategic competences and learning capability (Carlson and Eliasson, 1991). Due to the above factors, the innovation process may not be easy for majority of the SMEs due to scarce financial and personnel resources at their disposal. It can then be presumed that external knowledge acquisition is especially important for innovation in these small and medium firms. Calestus Juma (2005), therefore argued, and state that: to seek new growth opportunities, recognition of the new opportunities and the ways to exploit them is of paramount importance (Juma, 2005). Clark and Juma (1992), in Juma (2005), reiterated that modern theory of economic growth coupled with empirical evidence provides strong support for the notion that long-term economic growth requires not only capital but also an

understanding of innovation. It is imperative to note that innovation and technology are needed to transform countries from reliance on the exploitation of natural resources to technological innovation as the basis for development (Sharma, 2006). Internet technology has been reported to have brought change in the way we communicate and has improved business globally. Lambing and Kueli (2003) reported that in the 1990s, internet economy generated more than \$300 billion in revenue and added more than one million jobs worldwide. The internet infrastructure contributed a substantial amount of this revenue, while e-commerce produced many of the jobs. More than 33% of the total real economic growth during this period was reported to come from information technology producing industries. If during these early years of internet explosion the world business could generate such huge revenue; then we can say that the internet technology will generate more now and in the future. Especially for companies that sell products and/ or services to other businesses, internet sales will continue to grow. It will continue to provide greater amount of information on products and services, health care, employment, and educational research. It is also just beginning to revolutionize the way goods and services are delivered (Lambing and Kueli, 2003). It was observed that enterprise use the internet for four major purposes: research, web presence, emails and intranets. (Lambing and Kueli, 2003). In this work therefore, we hope to learn from the economies that have been transformed by the virtue of Integrating Internet with business with a view to model such for our continent Africa and Nigeria as a country. Policies for a successful integration of Internet and business within the country will also be advanced.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Entrepreneurship is an effort to recognize business opportunity, create the business with innovative ideas by assuming all associated risks and bring it to reality for a reward (profit). Anyone who acts in this regard is referred to as an entrepreneur. An entrepreneur is an innovator, risk-taker and combinator of all production factors to the advantages of the society. An entrepreneur is very important to the economic development of a nation. Hence, Anderson (1977), in *Economics of West Africa* quoted by Adeyemi (1998:330), alleged that lack of industrialization of West African sub-region was due to non-availability of entrepreneurship. Entrepreneurship researchers have identified various environmental factors, which some have tagged external factors.

Principal among the factors identified are influences of firms, influences of markets (Thorntorn, 1999); public policies (Dobbin and Dowd, (1997); regulations and policies (Baumol, 1990) and physical infrastructure (Agboli & Ukaegbu, 2006). Some scholars have gone ahead to particularize or associate environmental needs to the level of economic development. For example, Agboli & Ukaegbu (2006) emphasize the imperatives of physical infrastructure of other external factors in their study of Nigerian entrepreneurs. These studies are linked with the role of entrepreneurs in innovations, new business venture businesses are most frequently under the attention and the strategic behaviour and industry structure of these international ventures compared with domestically new start ups. Specific factors of industry and firm were presented as the significant magnitude to give details and make a distinction of firm's behaviour. There was no theoretical and experimental role given to individual entrepreneurs who have compel the firms into an international field. This is not surprising because global entrepreneurship was still considered as a "yet newer power of research motion" in international business research (Wright and Ricks, 1994:699). Pakistan's main problem is less entrepreneurial activity that deserves attention. I strongly believe that the way out for Pakistanis is to have more entrepreneurs than "employees" (Aziz khan, 2009). Pakistan's main problem is less entrepreneurial activity that deserves attention. I strongly believe that the way out for Pakistanis is to have more entrepreneurs than "employees" (Aziz khan, 2009). Young entrepreneurs often attempt to get new ideas those are based on new business models and emerging technologies (Salman A. Sheikh, 2009). Entrepreneurship is broader concept that plays a central role in market economy. Economic growth, modern technology and innovation are the three independent variables relates to an entrepreneurship.

CONCEPTS OF ENTREPRENEURSHIP DEVELOPMENT

Entrepreneurship is based on propulsive risk bearing actions (Olokesusi 2002). Olokesusi has associated the resultant effect to personal discretionary approach to different circumstances and situations. In this line, Prince-Abbi (2002), highlighted that at the beginning of industrial Revolution era in the 18th century the prevailing view of enterprises was based on —Newtonian known as —mechanic view where employees were regarded as machine parts and whichever was faulty was removed and replaced. Later, by the end of First World War, the biologic view evolved. The biologic view saw the business as an organism. This brings about such term as corporation, derived from Latin word corpus, meaning the organization whole parts (employees) were necessary and important which might not be dispensed with. They have become essential to the health and growth of the organization because of the education and skills they acquired. However, the parts (the Management and the skilled workforce) were seen as opponents. This was followed by sociologic view in practice up till today. The social system of business conceptualizes business enterprise as a system whose parts were of equal importance

in ensuring viability of the system operating in a larger environment which must be respected. Ogundele (2007) viewed entrepreneurship as a multidimensional phenomenon. It was found that the processes of emergence, behaviour and performance of indigenous entrepreneurs were separately and in combinations affected not by a single but multiple factors, in ranging degrees. These factors included economic, socio-cultural, ecological, managerial, educational developmental, experiential, technological, structural, ethical and innovative issues. He concluded that any policy designed to change entrepreneurship scenario in Nigeria will require multiple and simultaneous approaches in the development of necessary changes in the behaviour of indigenous entrepreneurs. Akeredolu-Ale (1975) examined the origin and performance of indigenous entrepreneurs. He identified 2 broad categories of factors that affected entrepreneurs. These were the environmental factors and the personal level factors. His conclusion was that the problems that were confronting the indigenous entrepreneurs in Nigeria could only be partly explained by the economic factors.

Nigeria is not left out as part of the changing world economy, which yearns for a more articulate policy on the small and medium enterprises (SMEs). Most world economies are characterized by a large number of Micro/cottage, Small and Medium Scale Enterprises (MSMEs) mainly in the informal sector. In many economies, they account for a large segment of productive population. Nigeria falls within this later category of economies. The MSMEs in Nigeria account for over 95% of non-oil productive activities outside agriculture, which positions them as potentially strong agents of economic growth and sustainable development (Ubom, 2006). The federal government of Nigeria in her effort to ensure that her citizens are self-employed, established the National Directorate of Employment in 1986. It is the belief of government that this agency will reduce unemployment, which is a bane of our society. The agency's operations include re-activation of public works, promotion of direct labour, self-employment, organisation of artisans into cooperative and encouragement of culture of maintenance and repairs (Onifade, 2001).

THE CONCEPT OF INNOVATION

Innovation is the process that renews something that exist or not, the birth of something new. According to entrepreneur perspective innovation means creativity. Creation of organization (Gartner, 1988) "The successful use of an idea that adds value to the customer and commercial return for the creator" Cris Beswick (2010). In Pakistan there are many entrepreneurs which create innovative products. Recently COMSATS institute of information technology has taken a new step to support mobile innovation in Pakistan. Called Best Mobile Innovation in Pakistan (BMIP) Contest 2010 is open for any "Made in Pakistan" innovation related to mobile industries and technologies. (As the official press release June 8 2010). This developed research was in several countries and later crossed with theories of innovation resulting in new terms like "milieux innovateurs" (Aydalot, 1986; Maillat, 1998). „The role of marketing in strategic management deals with the entrepreneurial work of organization and organization growth; in short, innovation" (Kerin, 1992, p.332). However, innovation and entrepreneurship have by tradition been given little appreciation in the strategic marketing dialogue (Day and Wensley, 1983). "Innovation as a research area with in the marketing and entrepreneurship interface is a growing area of equity" (Fillis 2000a, 2000b; Fillis and McAuley 2000, Hackley and Mumby Croft 1998). Exploring innovation within the marketing and entrepreneurship presents a clear picture of SME's behavior, as well as offering practical advice for entrepreneurial marketers (Day 1998; Carson et al.1995; Fillis 2000b). The marketing and entrepreneurship interface focus on analytical skills, judgment, positive thinking, innovation and creativity (Carson 1995), Hackley and Mumby-Croft 1998:505). The Marketing and Entrepreneurship model of research serves as a stage for furthering the investigation of innovation by offering opportunities for its investigation through a variety of research methodologies (Carson and Coviello 1996). Entrepreneurial process of entrepreneurial discovery and evaluation is most useful in generating need satisfying innovation [Miles et al.(2002)]. While entrepreneurship and innovation are a key of economic growth, researchers are yet to document a strong relationship between entrepreneurial activity and economic development across nations [(Acs and Audretsch, 2005), Van Stel et al.(2005)]

TECHNOLOGICAL CHANGE

The development of every technology involves the efforts of the variety of the participants (Braun and Macdonald, 1982; Garud and Van de Ven, 1987; Karnoe, 1993; Aldrich, 1999). Technological change occur through a combination of the inputs of a number of entrepreneurs (Usher, 1954; Latour, 1991). Technology entrepreneurship engages the creation of new opportunities through cooperative work (Hayek, 1945; Garud and Kotha, 1994; Tsoukas, 1996; Girard and Stark, 2001). Technical process automatically comes from the generation of new and creative ideas and implementation of those ideas, while other firm's follows domestically as well as internationally. New ideas includes both product and processes that may be created through basic research and development (Krugman, 1979). Small technology-based entrepreneurial firms started to challenge big companies that still had a big competition in mass technical production arena (Meredith, 1987; Carlsson, 1989). The contribution of technological innovation to national economic growth

has been well recognized in the economic journalism (Solow, 1956; Romer, 1986) as well as empirically (Mansfield, 1972; Nadiri, 1993). Recently researchers have examined the growth that is strong-minded due to technical change results in profit-maximization (Verspagen, 1992; Ruttan, 1997). In the 1980s and early 1990s, some researchers start focus on the person who had a personnel history in the entrepreneurial network. They deal with distinctive role played by personal and business set of connections in the new venture and early growth of technology-based entrepreneurial venture. (Birley, 1985; Aldrich and Zimmer, 1986; Johannisson, 1987). Additionally, spare network facilitate the search for vital assert providers (e.g. investment and technology partners and key customers), that offer the new venture for further access to financial resources and paired technology, distribution channels, etc (Chrisman et al, 1998)

TECHNOLOGY INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT IN NIGERIA

Entrepreneurship is about starting a new business based on a recognized business opportunity as well as operating and maintaining that business. The belief of some people is that entrepreneurship does not need to be taught and therefore, an entrepreneur is born to be so. It should however be noted that for one to be a successful entrepreneur, he/she needs to learn the skills (Griffin and Hammis, 2001). Entrepreneur training is designed to teach the skills and knowledge that is needed to know before embarking on a new business venture. This would enhance necessary identification and avoidance of many pitfalls awaiting the less well trained and vigilant contemporaries. The training may initially be perceived as a cost in terms of time and money but it would eventually be appreciated. The study carried out by Taiwo et al. (2002), on small scale food companies in Nigeria reported that one major sources of technological change in these companies is personnel (operators and craftsmen). The reasons adduced for these were simplicity of the innovation processes to the work force; accurate and adequate information about the system of production; and the involvement of the workforce in the initiation and implementation of any technological changes. Moreover, another research finding showed that the key information sources for manufacturing small and medium firms' production and innovation are machinery suppliers, exhibition and trade fairs, client firms, publications, repair workshops (foundries, heat treatment shops and others), staff of other firms, and social and professional associations, and consultancy firms within and outside the clusters (Oyeyinka-Oyelaran, 2001). Some researchers observe that increasing profit of organization is because of change in technology. (Verspagen, 1992; Ruttan, 1997). According to entrepreneur perspective innovations mean creativity. "Innovation is a research area within the Marketing and Entrepreneurship Interface is a growing area of enquiry" (Fillis 2000a, 2000b; Fillis and McAuley 2000, Hackley and Mumby Croft 1998). Entrepreneurship opportunity identification and need to fulfilling innovation. Entrepreneurship and innovation is a key of economic growth, and there is strong relationship between entrepreneurial activity and economic development across the border. Entrepreneurship has also play a vital role in motivation. You can motivate entrepreneurship through culture, family and friend business. Another aspect of motivation is to motivate your employees by giving incentives, bonuses and increase salaries but according to entrepreneurship motivation is a deep meaning that to motivate your family and friend in the field of entrepreneurship u can give new and innovative idea to your friend to start new business and also running your family business with new creative ideas. We cannot understand entrepreneurship until and unless we understand the single who involve in motivation (Venkataraman, 1997).

METHODOLOGY

Simple random sampling technique was used to select a total of 12 entrepreneurs from Lagos State that constituted our sample size. The primary data consists of a number of items in well- structured questionnaire that was administered to and completed by the respondents. To ensure the validity and reliability of the questionnaire, experts in the field of entrepreneurship were consulted to review the questionnaire. A pilot test which took the form of test –retest method was conducted prior to the actual study. Multiple Regression Analysis was used to analyse the data.

Model Specifications

This study utilized a modified OLS regression model to examine the impact of technology on the entrepreneurship development. Entrepreneurship development is affected by the level of interaction between entrepreneurship development brought about by Technology innovation in the form of internet access, telephone (mainlines and mobile), access to the websites by the enterprenuers as well as growth in population

$$Y = \beta_0 + \beta \text{Fit} + \text{eit} \dots \dots \dots (1)$$

Where, Y is the dependent variable. β_0 is constant; β is the coefficient of the explanatory variable (Determinants of each dependent variables), Fit is the explanatory variable and eit is the error term (assumed to have zero mean and independent across time period).

$$\text{Emplevel} = \beta_0 + \beta_1 \text{website} + \beta_2 \text{Telephone} + \beta_3 \text{pop grow} + \beta_4 \text{Mainline} + \beta_5 \text{Mobile} + \text{eit} \dots \dots \dots (2)$$

DISCUSSION AND ANALYSIS OF DATA

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.990 ^a	.979	.954	.8558	.979	39.410	6	5	.000	2.478

a. Predictors: (Constant), MAINLINE, INTERNET, TELEPHONE, MOBILE, Pop. growth rate, WEBSITE

b. Dependent Variable: Emplevel

The values of R^2 [0.979] and the adjusted R^2 [0.954] in the above regression estimates indicate that the model adequately explain the impact of technological innovation on entrepreneurship development in Nigeria. The value of Durbin-Watson [DW] Statistic in the regression results is 2.478 which show that the variables are not serially correlated. The t-statistics confirm that the coefficients of our model are significant at 5% level of significance. The F-Statistics which is [39.410] thereby confirming that all the variables in our model sufficiently explain the impact of technological innovation on entrepreneurship development in Nigeria.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	33.864	9.312		3.636	.015
	INTERNET	.060	.032	.166	1.865	.121
	WEBSITE	-2.0E-007	.000	-.170	-.630	.556
	Pop. growth rate	-9.969	3.660	-.621	-2.724	.042
	TELEPHONE	-6.0E-006	.000	-.481	-5.308	.003
	MOBILE	2.04E-006	.000	2.056	10.263	.000
	MAINLINE	-8.6E-007	.000	-.247	-.973	.375

a. Dependent Variable: Emplevel

The variability as measured by coefficients of variation (β) is positive for INTERNET, and MOBILE. This implies that as these are increasing the level of entrepreneurship development as the whole world becomes a global village. The coefficients of variation (β) is expectedly negative for WEBSITE, population growth, TELEPHONE and MAINLINE. This implies that technology and entrepreneurship is inversely related which is logical in real sense of it since the technology has made it easy for any business to be innovated i.e being creative. The coefficient of WEBSITE too is statistically significant because the increase in the use of website in the economy increases the tendency to be innovative. The beta coefficients are used by many researchers to compare the relative strength of the various predictors within the model. Because beta coefficients are all measured in standard deviation, instead of the unit of the variables, they can be compared to one another. In order word beta coefficient is the coefficient that one would obtain if the outcome and the predictor variables were all transformed to standard scores also called z-score before running regression.

CONCLUSION AND RECOMMENDATION

Entrepreneurship is an employment strategy that can lead to economic self-sufficiency for people. It makes people to create and manage businesses in which they function as the employer or boss rather than merely being and employee. In this perspective technology is not a neutral tool, but something that at the same time supports and constraints human action, thinking and even deepest values. Each technological innovation brings with it a wave of new start-ups and new entrepreneurs, but probably the way entrepreneurship is deployed changes in any major technological revolution. Innovation is seen to be instrumental in increasing the country's competitiveness and wealth, and SMEs are at the core of the economic growth of several industrial countries. But these small and medium firms rarely engage in R and D, and the product and process improvements are of minor kinds. Therefore, the results show that there are some policy implications from this study. There is urgent need for enterprise-oriented technology transfer units to link the science and technology system with the production system. This then calls for constant re-tooling and re-engineering of the country's SMEs' development agencies to be able to design and implement an effective mechanism to strengthen information flow relationships from the national innovation system of the country to the SMEs. Finally It is recommended that government should create a friendly or an enabling environment for entrepreneurship and consumer goods to boost the economy.

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