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EFFECT OF PUBLIC INFRASTRUCTURAL SUPPORT ON BUSINESS GROWTH: EVIDENCE FROM TECHNOLOGICAL ENTERPRISES IN NIGERIA

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Abstract

Technological enterprises are considered as a catalyst for economic development, nevertheless, they often run into the problem of sourcing for infrastructural facilities to enhance their business growth. The main objective of this study is to examine the effect of Public Infrastructural support on business growth: evidence from technological enterprises in Nigeria. The sample comprises startup SME sub-manufacturer in Metal fabrication, Renewable energy (solar), and Electrical/Electronic whose businesses are within six years of graduation. The sample size is 240 respondents. A multistage sampling technique was employed to select the respondent for the study. The instrument used was validated and pilot tested to ascertain the internal consistency using Cronbach Alpha. The reliability coefficient of the questionnaire was 0.734. The data obtained were analyzed using the partial least square (PLS)-a structural equation model (SEM) tool. The study hypothesis which states that there is no significant relationship between infrastructural support and business growth shows that the null hypothesis is rejected. Hence, the alternate hypothesis is accepted. This implies that infrastructure such as transport systems, power, and incubation services have a significant relationship with business growth. The study recommended that public infrastructure support for technological enterprises should be intensified since it has a positive impact on the growth of that enterprise.

Keywords: Entrepreneur, Enterprise growth, Infrastructure, SME.

Introduction

Technological entrepreneurship is a strategy that pushes the economy of most countries. It emphasized the identification and utilization of technological changes that necessitate technology, as well as decision-making competencies. Hence, technological entrepreneurship calls for a certain level of technical capabilities and running of a risky venture. Technological entrepreneurship promises job and wealth creations as well as economic revenues from varied activities. Growing the productive activities of young individuals through technology innovation is vital to a country's growth as well as development. The promotion of technological entrepreneurial and innovative skills as birthplaces of job creation, empowerment, and economic vitality in a speedily growing economy has therefore progressively attracted scholar and policy considerations. Technological entrepreneurship pertains to the operations of enterprises through scientists and engineers, recognizing applications or difficulties with technologies, using technological opportunities to setting-up new ventures encompassing technical besides scientific knowledge as well as a partnership for technical modifications. According to Ayodele, Oga, Bundot, and Ogbari (2016) technological enterprises remain ventures with sales income generated via the implementation of 51 percent or more of technology-centered processes, and such enterprises consist of internet, electronics, automobile, fabrication, clean energy, bio-medical, communications, telephone, mechanical, fax companies.

The practice of technological entrepreneurship contains creating, taking advantage of opportunities, and pulling together resources around a technological solution, notwithstanding the organizational context. Quick changes in technology ought to be reacted to by enterprises to create alternative techniques to sustain their competitive benefit by using new techniques of assembly which brings about the capability to apply new technology invention every day to the operations of various businesses nowadays. Moreover, a developing line of research centers on the support services that add to the acceleration of technological entrepreneurship since various forms of support services is essential to foster its growth and improvement in economies. Several of these support services take account of; Infrastructure, Finance, Training as well as Academic/industry linkages. However considerable study has been carried out on the effect of infrastructural support on business growth, but very few on technological enterprises among young graduates in North Central States of Nigeria (Obokoh & Goldman, 2016).

Generally, the significance's of technological entrepreneurship to viable development is well recognized among policymakers, researchers, and practitioners on entrepreneurship that a key basis of problems experienced in Nigeria as well as other developing countries is the shortage of technological entrepreneurship, even when technological enterprises have turned out to be an essential measure of the development of the international and regional economy. These enterprises are frequently suffering from insufficient technical and marketing savvy, little management skill, inadequate infrastructural amenities, failure to discover initial funding, and enormous overheads. Hence the study examines the effect of public infrastructural support on business growth with evidence from technological enterprises especially among young graduates in Kwara, Niger, and Kogi states. These young graduates ventured into several technological enterprises between one and six years post-graduation.

Literature Review

Technological entrepreneurship is fundamentally the consolidation of two words from dualistic disciplines: innovation from innovation discipline just as entrepreneurship from the business discipline. Technology-based business is thus perceived as the blend of technological in addition to entrepreneurial section. Ajagbe, Olujob, Uduimoh, Okoye, and Oke (2016) view technological entrepreneurship as a type of business headship established on the act of distinguishing extraordinary potential, innovation requesting business openings, gathering assets like ability and cash, and dealing with quick development by utilization of principled, at this very moment dynamic abilities.

Onimole (2018) opined that technological entrepreneurship encompasses the control of innovative skills for the design of new products, processes, markets, and new systems of business. Based on this, technological entrepreneurship is well-defined as a thoughtful business that necessitates extensive knowledge contribution, machine, skill, and specialized equipment. However, Bailetti (2012) concluded that technological entrepreneurship is an investment in a task that brings together and sets out professionals and diverse resources that are well associated with advances in scientific as well aa s technological understanding to generate and seize value for a firm. Furthermore, Technological entrepreneurship is a technique of business administration that includes recognition of high-potential technology-based money-making opportunities, managing resources related to capital, managerial skills that boost fast growth, and significant risk using specific decision-making skills (Dorf & Byers, 2007).

Technological enterprises can be perceived to imply that the fundamental exercises of the business depend significantly on the utilization of high innovation (Ajagbe, Long, Aslan, and Ismail, 2012). In the same way, Maula (2001); Maula, Keil, and Zahra (2013) characterized technological enterprises as those private firms that have existed for under six years and work in science and engineering regions that incorporates; clinical and wellbeing science, interchanges, PC programming and administrations, biotechnological, PC equipment or semiconductor businesses. This recommends that technological enterprises are firms that study technologically inclined products and services.

Easterly (2003), sees infrastructure facilities as the basic structures, physical and organizational, which offer support to enhance the growth of an organization or economy. This provides linkage connecting a firm to its markets, it has a potential impact on the organization's revenue and general efficiency (Price, Stoica & Boncella, 2013). This support includes; storage and warehousing, transport and delivery, business incubators, telecommunications, courier, money transfer, internet access, computer services, secretarial services, and information through; print, radio, Television. An enterprise is progressing nicely in case it is growing. Growth has different implications. It very well may be portrayed as far as development, value addition, income generated, on and as far as the limit of the business. It can likewise be estimated as subjective components like market position, nature e of the item, and altruism of the clients (Kruger, 2004). As seen by Penrose (2006) growth is the aftereffect of an inside cycle in the advancement of an enterprise and an increment in quality and additionally extension. Likewise, growth is characterized as an adjustment of size during a recommended time frame (Dobbs and Hamilton, 2007). In any case, Achtenhagen, Naldi, and Melin (2010) explored entrepreneurs' thoughts on growth and recorded the accompanying: expansion in sales, expansion in the number of employees, expansion in profit, expansion in resources, expansion in the firm's worth, and inward turn of events.

Empirical Review

Akinyele, Akinyele, and Ajagunna (2016) investigated the impacts which some infrastructures have on SME's performance, this was achieved by taking into consideration some infrastructural facilities such as electricity,

transportation, and technology. The study adopted a quantitative research design, the sampling techniques use whereas Multi-Stage which included stratified and simple random sampling techniques. The results showed that there is a substantial positive relationship between infrastructures and SME performance, this indicates that infrastructures carry out a vast role in guaranteeing the effective set-up of SMEs. The recommendation was made to the government that, adequate basic infrastructures should be made available to SMEs.

Akinlemi (2018) examined the effect of infrastructures on the performance of SMEs in Nigeria. The research method employed was the quantitative method, using a survey research design plus a judgmental and convenience sampling technique to obtain data from the respondents selected from four major SMEs clusters in Lagos using questionnaires. The study used percentages and chi-square to analyze the data collected. The results gotten reveals that many SME operators in Nigeria make available the basic infrastructural facilities themselves and that many of these operators are put out of business as a result of the high cost of the infrastructures needed, such as power and water. The study concluded that SMEs infrastructures are a necessity for enterprise growth.

Ayogu (2007) carried out a study of infrastructure and economic expansion in Africa with a deduction that, infrastructure is significant in various contexts and the level of its significance has not been fully appreciated by developing countries governments, in the sense that significant resources have been expended on the provision of infrastructure with marginal success because of a lack of responsibility and corruption. However, Chowdhury, Islam, and Alam (2013) researched the components that impact the development and improvement of small and medium-sized enterprises (SMEs) in Bangladesh and the ramifications these elements have for strategy. This exploration uses the varimax orthogonal rotation technique. The outcome shows that variables identified with finance, infrastructure, market, innovation experience, and political impact are profoundly seen as growth inhibitors.

Mbugua, Mbugua, Wangoi, Ogada, and Kariuki (2013) examined the factors affecting the growth of micro and small enterprises: a case of tailoring and dressmaking enterprises in Eldoret. Questionnaires with structured and unstructured questions were employed and reinforced by interviews and observations, data collected were analyzed using chi-square and regression analysis. The study showed that most of the tailoring and dressmaking enterprises were in the disconnection stage either not growing or having a slim growth. Insufficiency of finances, poor business management skills, poor marketing, and entrepreneurial attribute of the owner-managers were found to be statistically significant in determining the growth of these enterprises.

Methodology

The study made use of the primary method of data collection. Banister, Bunn, Burman and Daniels (2011) recommended ta that survey is the most common method by which researchers collect primary data. This method allows the exploration of phenomena that cannot be directly observed by the researcher (Sekaran & Bougie, 2010). To make certain data validity and enhanced analytical reasons, self-administered questionnaires were used. To examine the effect of Infrastructural support on business growth: evidence from technological enterprises in Nigeria, first-hand sources were employed, making adequate use of the data derived from the respondents in the survey.

The study adopted multistage which included stratified random sampling and simple random sampling techniques. The stratified sampling technique is a probability sampling method, which ensures that different groups within the population are adequately represented while a Simple random sampling technique was used to administer questionnaires to the respondents and the respondents are the owners of technological enterprises in Kwara, Kogi, and the Niger States. The reason for using random sampling was that it offered the respondents an equal chance of being selected in the exercise. The instrument used to collect data was a questionnaire. The study employed partial least squares (PLS) approach analyzes the data collected. Barclay, Higgins, and Thompson (1995) submit that the PLS is a structural equation modeling tool (SEM) that allows the study to simultaneously analyze numerous variables and predictor constructs and analyze unobservable theoretical variables.

Structural Equation Model is a multivariate addition of the multiple linear regression model with one dependent (Y) variable:

$y = i + Xb + e$

Where y = a vector comprising observed scores on the dependent variable, i is a vector of 1's denoting the *y-intercept*, X is a matrix of continuously distributed or categorical (dummy- coded) independent variables, b is the vector of regression weights, and e denotes the vector of remaining or error or leftover scoring that which cannot be explained by the model.

Results

This section details the analysis and interpretation of collected field data obtained from the survey questionnaire.

Demographic Characteristics of Respondents

The frequency distribution of the respondents' demographic characteristics revealed that out of the 240 respondents, 185 (77.1%) are male, while 55 (22.9%) are female. Although the findings recorded a higher number of male respondents of the selected enterprises than their female counterparts, by implication, it can be deduced that few females venture into engineering and science-related studies, which indicated that females are yet to be adequately involved in the manufacturing business.

Goodness of Fit: Assessment of PLS-SEM Path Model Results

The current study adopted a two-step process to evaluate and report the results of the PLS-SEM path, as suggested by earlier studies (Henseler, Ringle & Sinkovics, 2009). The goodness of fit criteria such as goodness of fit index (GFI), comparative fit index (CFI), normed fit index (NFI), Non-Normed fit Index (NNFI), Root mean square error of approximation (RMSEA), incremental fit index (IFI) and relative fit index (RFI), result value >0.90 means the resulted model is good fit. So does one more rule of root mean square residual (RMR) resulting value about 0.1 which implies that the resulting model is good fitted? Due to all criteria infer the model is good of fit, testing the hypothetic theory can be possible. This represents that resulting questionnaire data can answer the built theory for the study.

Table 1 Goodness of Fit

Goodness of fit	Cut-off-value	Result	Annotation
RMR	0.05 and 0.1	0.047	Good fit
RMSEA	≥0.08	0.078	Good fit
GFI	≤0.90	0.97	Good fit
NFI	≤0.90	0.93	Good fit
CFI	≤0.90	0.91	Good fit
NNFI	≤0.90	0.94	Good fit
IFI	≤0.90	0.91	Good fit
RFI	≤0.90	0.92	Good fit

Source: Field Survey, 2021

Hypothesis: Effect of Infrastructure on Enterprise Growth

H_O: there is no significant relationship between infrastructural support and business growth among technological enterprises in Nigeria. This predicts the effect of infrastructure on enterprise growth. The result of the hypothesis is as follows:

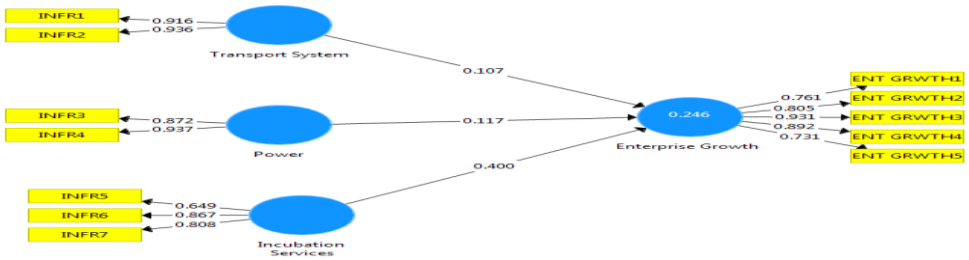

Figure 1 Enterprise growth *Measurement Model (Algorithm testing)*
Source: Field Survey, 2021

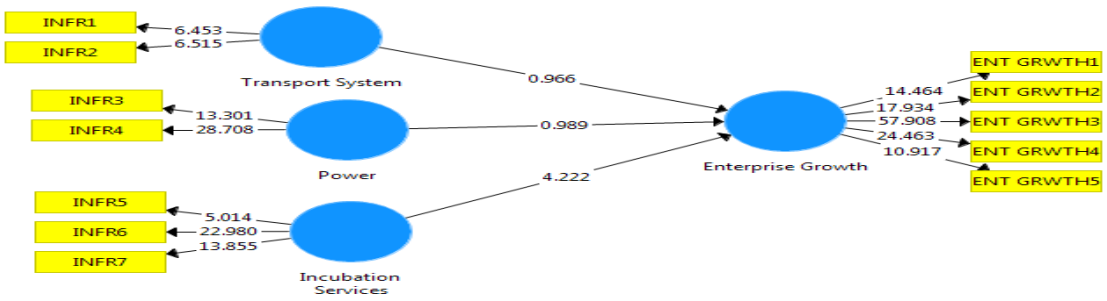

Figure 2 Enterprise growth *Measurement Model (Bootstrapping testing)*
Source: Field Survey, 2021

Table 2, Figures 1 and 2 indicated that infrastructure has a significant effect on enterprise growth with an R^2 value of 0.246. This is shown by the usage of transport systems having a significant relationship with enterprise growth. As shown in Table 2, a significant effect of the transport system on enterprise growth ($\beta = 0.107$, $t = 0.926$, $p < 0.355$) was found, indicating support for the alternate hypothesis which states that there is a significant relationship between infrastructural support and business growth. Also, the result shows that the power system has a significant effect on enterprise growth with ($\beta = 0.117$, $t = 1.001$, $p < 0.317$) was found, indicating support for the alternate hypothesis which states that infrastructure has a significant effect on enterprise growth. On the other hand, regarding the influence of infrastructure on enterprise growth, the result in Table 1, indicated that incubation services had a significant effect on enterprise growth ($\beta = 0.400$, $t = 4.363$, $p < 0.000$).

Table 2 Structural Model Result for the Enterprise Growth

	Path coefficient (β)	Sample Mean	Standard Deviation	T statistics	P values
Incubation Service-> Enterprise Growth	0.400	0.417	0.092	4.363	0.000
Power Utilisation -> Enterprise Growth	0.117	0.118	0.117	1.001	0.317
Transport System -> Enterprise Growth	0.107	0.111	0.115	0.926	0.355

Source: Field Survey, 2021

Discussion of Findings

The study hypothesis which states that infrastructure does not have a significant influence on enterprise growth revealed that the null hypothesis is rejected. Hence, the alternate hypothesis is accepted. This implies that transport systems, electrical power, and incubation services are essential in enterprise growth. This is supported by the studies of Hulten, Bennathan, and Srinivasan (2006); Calderón and Servén (2004); Ayogu (2007) also found that growth of road and electricity-generating capacity seems to have accounted for nearly half the growth of the productivity residual of India's registered manufacturing industries. Obokoh and Goldman (2016) found that deficiency in infrastructure negatively impacts the profitability and performance of SMEs, due to the high cost incurred by SMEs in the self-provision of infrastructure and distribution of finished goods. Similarly, Abioye, Adeniyi, and Mustapha (2017) employed a qualitative multiple case study by purposively contacting 56 SME operators in Matori, Lagos Industrial Centre for interview. This is also supported by Akinyele, Akinyele and Ajagunna (2016).

Conclusion

Public infrastructural support services have a great and positive impact on the growth of technological enterprises among young graduates in the North Central States, Nigeria. Thus, well packaged and adequate supply of infrastructural supports such as incubation services, power supply, and transport systems will assist the technological entrepreneur in growing their businesses.

Recommendations

Therefore, it is recommended that

1. The government of Nigeria should provide adequate transport services to transport their finished goods to the market, as well as incubation services to nurture these enterprises.
2. Electrical energy to power their machines and equipment should be adequately supplied. Government should prioritize the issue of infrastructural support to technological enterprises to inspire young graduates who venture

into the sub-manufacturing sector, in that way there will be an appreciable decrease in the level of increasing unemployment currently being experienced in the country.

3. Infrastructural support services to technological enterprises should be given priority by setting up intervention programs specifically for this segment as it is found in other sectors of the economy.

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