

# Entrepreneurship, Employment and Sustainable Development in Nigeria

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## Abstract

This paper investigated the potency of entrepreneurship to generate employment, thus, underscoring the quintessence, significance and relevance of this sub-sector in the sustainable development of any given economy. The objective of the paper is to examine entrepreneurship, employment and sustainable development nexus in Nigeria. Data sourced from Central Bank statistical Bulletin, National Bureau of statistics, World Development Indicators and CIA Fact Sheet and other institutional publications to provide empirical basis for the study spanned from 1980-2013. The methodology adopted in this research is the use of co integration and Vector Error Correction Mechanism (VECM) which established the long-run and short-run estimates of the parameters. On the long-run estimates, employment (LEMPL) and average capacity utilization (LCAP) are found to be statistically significant implying that employment and capacity utilization can be generated through entrepreneurship for sustainable development. Industrial Production index (LINPI) on the other hand is wrongly signed implying that it does not contribute to LHD (sustainable development) for the period under review. The short-run estimates also show the significance of the parameters in respect to LEMPL and LINPI. The error correction mechanism (ECM) is rightly signed and significant. It shows that the speed of adjustment of the model from short-run distortions to long-run equilibrium is about 12.7%. The diagnostic tests of unit root showed that the variables are integrated of order one,  $I(1)$ . This means that though individually the variables are non-stationary, a linear combination of the variables was stationary, hence they are co-integrated. Based on the findings the study recommends that if the Nigerian government must revitalize its economy, reduce unemployment progressively, and generate more employment opportunities for sustainable development, a paradigm shift in policy that is critical to effective entrepreneurship development becomes imperative. This can be done through building more capacity utilization and creation of enabling environment for industries to thrive.

**Keywords:** Employment, Sustainable, Development

### **Introduction**

Many scholars have written widely on entrepreneurship and its potency to generate employment, thus, underscoring the quintessence, significance and relevance of this sub-sector in the development of any given economy. The experiences of developed economies in relation to the roles played by entrepreneurship buttresses the fact that the importance of entrepreneurship cannot be overemphasized especially among the developing countries. In order to highlight its significance in relation to the growth and development of a given economy, entrepreneurship has been variously referred to as a “source of employment generation”. This is because entrepreneurial activities have been found to be capable of making positive impacts on the economy of a nation and the quality of life of the people (Adejumo, 2000). Studies have established its positive relationship with stimulation of economic growth; employment generation; and empowerment of the disadvantaged segment of the population, which include women and the poor (Oluremi and Gbenga, 2011; Mueller and Thomas, 2000; Reynolds, 1987).

Nigeria as a country has numerous business and investment potentials due to the abundant, vibrant and dynamic human and natural resources it possesses. Tapping these resources require the ability to identify potentially useful and economically viable fields of endeavours. Nigerians have made their marks in diverse fields such as science, technology, academics, business and entertainment. Thus, entrepreneurship activities and innovative ingenuity in Nigeria have developed enterprises in the following areas. Agricultural/agro-allied activities where there are foodstuffs, restaurants, fast food vending etc. In the area of solid minerals, there are quarrying, germ stone cutting/polishing and crushing engineering. In the area of information and telecom business, there are manufacturing and repairs of GSM accessories and the printing and selling of Recharge cards. In hospitality and tourism business, there are hotels, accommodation, resorts centres, film and home video production; in oil and gas business, there are construction and maintenance of pipelines, drilling, refining by products. In the area of environmental and waste management business, there is refuse collection/disposal, recycling, and drainage/sewage construction job. In the area of financial banking services, there are banking, insurance and stock trading. In engineering and fabrication work, there are machines and tools fabrications. There is also the building and construction, where there are plan and design services and material sourcing (Agbeze, 2012). These human and natural resources notwithstanding, Nigeria is still one of the poorest countries in the world and has one of the highest rates of youth unemployment in sub-Saharan Africa, and despite its alleged strong economic growth Salami (2011) notes that youth's full-time unemployment rate for 2006-2008 was 55.9 percent, 4 times higher. Many other countries have been able to energize and transform entrepreneurship sub-sector to such a vibrant one that they have been able to reduce to the barest minimum their unemployment and poverty level because of the immense contribution of the sub-sector to their economic growth and development, but such cannot be said of Nigeria. In respect of the above sad and deplorable situation, the government has done little to reduce the misery and frustrations of the citizenry. This has foisted a state of hopelessness on majority of young people who have resorted to any means including crime to succeed in life. They resort to vices because they are not gainfully engaged. In other words, they are unemployed; unemployed, not because they lack the qualification but because the system has been crippled politically, economically, socio-culturally and even religiously. People especially youths and graduates became

displaced economically (Kuratko, 2009), a situation that clearly negates the Millennium Development Goals for 2015, I and II: to halve the proportion of people living in extreme poverty and to halve the proportion of people suffering from hunger respectively.

Entrepreneurship constitutes a vital engine for economic, social, practical and all round development of any country. Entrepreneurship has been identified by many both globally and nationally as a tool for a sustainable, virile and stable economy. This is why successive governments in Nigeria attempted to strengthen relevant agencies in order to achieve this position. The government of today perhaps looks more serious than ever in sustaining a few of the agencies such as National Poverty Eradication Programme (NAPEP), National Directorate of Employment (NDE) and National Economic Empowerment and Development Strategy (NEEDS). Buttressing this fact, Akpomi (2009) opined that no country can as a matter of truth, move forward technologically, industrially and economically without developing strong private partner initiate in the creation of wealth, poverty reduction and employment generation, with required skills. These skills include managerial, comparative, communication, technical, human and special skills to cope with the challenges of the future. In spite of the fact that entrepreneurship development has been regarded as the bulwark for employment generation and sustainable development in Nigeria, the sector nevertheless has had its own fair share of neglect with concomitant unpleasant impacts on the economy. Against this backdrop, entrepreneurship when and if gallantly developed in Nigeria will take its pride of place in quelling unemployment and thus generating employment among Nigerian youths especially the graduates and once again, place the economy on a proper footing for sustainable development.

In spite of the numerous empirical studies on the roles of entrepreneurship and employment generation in Nigeria, no empirical study known to the authors of this research has examined the link between entrepreneurship, employment and sustainable development in Nigeria using Human Development Index which is based on three basic variables - longevity, knowledge and income. Longevity is measured by life expectancy at birth (Eo), knowledge is measured in terms of literacy (lit). The third variable is per capita income. This study is therefore a pioneer empirical attempt to fill this gap in the literature and provide the foundation for evidence-based policies for tackling the twin economic challenges of unemployment and entrepreneurship for sustainable development in a developing country like Nigeria. The questions therefore are: What is the link between entrepreneurship, employment and sustainable development in Nigeria? What are the challenges of entrepreneurship in generating employment and sustainable development in Nigeria? The major objective of the paper is to examine the major link between entrepreneurship, employment and sustainable development in Nigeria. The paper is divided into five sections: Following the introduction in section I is the literature review which occupies section II. Section III examines the methodology and data analysis. Section IV takes interpretation and discussion of major findings while section V concludes the paper with recommendations.

## **Conceptual and Theoretical Considerations**

### **The concept of Entrepreneurship**

Entrepreneurship is more than simply "starting a business." It is a process through which individuals identify opportunities, allocate resources, and create value. This creation of value is often through the identification of unmet needs or through the identification of opportunities for change. It is the act of being an entrepreneur which is seen as "one who undertakes innovations with finance and business acumen in an effort to transform

innovations into economic goods hence Entrepreneurs see “problems” as “opportunities,” and then take action to identify the solutions to those problems and the customers who will pay to have those problems solved. Entrepreneurial success is simply a function of the ability of an entrepreneur to see opportunities in the marketplace, initiate change (or take advantage of change) and creates value through solutions. Entrepreneurship is known as the capacity and attitude of a person or group of persons to undertake ventures with the probability of success or failures. It demands that the individual should be prepared to assume a reasonable degree of risks, be a good leader in addition to being highly innovative. In business management, Entrepreneurship is regarded as the “prime mover” of a successful enterprise just as a leader in any organization must be the environmental change agents. Binks and Vale (1990) defined entrepreneurship as ‘an unrehearsed combination of economic resources instigated by the uncertain prospect of temporary monopoly profit’. Hence Kanothi (2009) defined Entrepreneur as the ‘instigator of entrepreneurial events for so long as they occur’. Tijani-Alawiye (2004) defines entrepreneurship as the process of increasing the supply of entrepreneurs or adding to the stock of existing small, medium and big enterprises available to a country by creating and promoting many capable entrepreneurs, who can successfully run innovative enterprises, nurture them to growth and sustain them, with a view to achieving broad socio-economic developmental goals. One of these goals is sustaining employment.

Furthermore, Acs and Szerb (2007) noted that entrepreneurship revolves around the realization of existence of opportunities in combination with decision to commercialize them by starting a new firm. This reasoning is what Thornton (1999) called demand and supply perspectives of entrepreneurship discourse. However, Shepherd and Douglas (1997) observed that the essence of entrepreneurship development is the ability to envision and chart a course for a new business venture by combining information from the functional disciplines and from the external environment in the context of the extraordinary uncertainty and ambiguity which faces a new business venture. It then manifests itself in creative strategies, innovative tactics, uncanny perception of trends and market mood changes and courageous leadership. To the duo, ‘entrepreneurship’, when treated as ‘enterprise-creation’ helps develop new skills and experiences that can be applied to many other challenging areas in life. More importantly, Schnurr and Newing (1997) justified the need for promoting entrepreneurship culture on the ground that youth in all societies have sterling qualities such as resourcefulness, initiative, drive, imagination, enthusiasm, zest, dash, ambition, energy, boldness, audacity and courage which are all valuable traits for entrepreneurship development. Supporting this assertion, Bennell (2000) maintained that governments, NGOs and international bodies seeking to improve youth livelihoods could best pursue their empowerment objective by tapping into the dynamism of young people and build on their strong spirit of risk-taking through entrepreneurship development.

Shane (2003) described entrepreneurship as the act of being an entrepreneur. The word entrepreneur which is a French word means “one who undertakes innovations, finance and business acumen in an effort to transform innovations in economic goods”. He continued that the result of entrepreneurship may be a new organization or a part of revitalizing mature organization in response to a perceived opportunity. The most obvious form of entrepreneurship to him is that of starting a new business. However, in recent years the term has been extended to cover such areas as socio-cultural, political, and educational forms of entrepreneurial activity. As a result when large companies venture into entrepreneurial activities within the organization, it is described as “intrapreneurship” or “corporate spin-off”.

### **Concept of Unemployment/Employment**

Every economy is characterized by both active and inactive populations. The economically active ones are referred to as the population willing and able to work, and include those actively engaged in the production of goods and services and those who are unemployed. The International Labour Organization (ILO) defines the unemployed as numbers of the economically active population who are without work but available seeking work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 2008). According to Fajana (2000), unemployment refers to a situation where people who are willing and capable of working are unable to find suitable paid employment. It is one of the macro-economic problems which every responsible government is expected to monitor and regulate. The higher the unemployment rate in an economy the higher would be the poverty level and associated welfare challenges.

### **Concept of Sustainable Development**

The United Nations World Commission on Environment and Development (WCED) in its 1987 report *Our Common Future* defines sustainable development: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987) Under the principles of the United Nations Charter the Millennium Declaration identified principles and treaties on sustainable development, including economic development, social development and environmental protection. Broadly defined, sustainable development is a systems approach to growth and development and to manage natural, produced, and social capital for the welfare of their own and future generations.

The concepts of sustainable development and sustainability derive from the older forestry term "sustained yield", which, in turn, is a translation of the German term "nachhaltiger Ertrag" dating from 1713 (Ulrich, 2007). Sustainability science is the study of the concepts of sustainable development and environmental science. There is an additional focus on the present generations' responsibility to regenerate, maintain and improve planetary resources for use by future generations.

The theoretical foundation of this paper is based on the psychological theories of the Refugee and Schumpeter effects." These theories posit that the ability to make good judgment about the future leads an individual to become a successful entrepreneur. The need for achievement psychological approach of McClelland was particularly dominant in driving people for entrepreneurship. According to McClelland (1987), Arch motives seem to influence the individual to select entrepreneurial career. He opines that "the presumed mechanism by which achievement level translate itself into economic growth is the entrepreneurial class. If the need for achievement is high, there will be more people who behave like entrepreneurs" (Islam, 1989, Raimi, 2010). The second theory is Richard Cantillon and John Stuart Mill's psychological theory of entrepreneurship, otherwise called risk taking theory (RTT). The theory considers entrepreneurship as a mentality to take chance or calculated risk, because people taking a very big risk also have a great responsibility (Alam and Hossan, 2003, Sexton and Bowntown, 1983). This fact can be observed in the avalanche of misplaced risky undertakings of unemployed Nigerian youth in order to engage themselves the forms of hostage taking, kidnapping, and pipeline vandalism, and economic sabotage, internet frauds. The traits of creativity, risk-loving, innovation, strategic thinking and constructive engagement against the government by discontented Nigerians could as well be directed to entrepreneurship development (Raimi, 2010).

**The Schumpeter Effect**

The process of entrepreneurship activity reducing unemployment situation in the economy is termed “Schumpeter effect”. Garofoli (1994) and Audretsch and Fritsch (1994) in their separate studies found that unemployment is negatively related to new-firm startups, that is, as new businesses are established employability is stimulated and unemployment reduces substantially. In the same vein, Lucas (1978) and Jovanovic (1982) note that high unemployment in the society is associated with a low degree of entrepreneurial activities, that is, where propensity to set up enterprises is low; the rate of unemployment would be very high. The implication of the above assertions is that those who are unemployed tend to remain so because they possess lower endowments of human capital and entrepreneurial talents required to start and sustain new firms to keep them going. A low rate of entrepreneurship culture and skills in any society may be a consequence of the low economic growth, which also reflects higher levels of unemployment (Audretsch, 1995).

**The Refugee Effect**

This process of unemployment fast-tracking entrepreneurship activity has been termed a “refugee effect”. This remarkable view dates back at least to Oxenfeldt (1943), who pointed out that individuals confronted with unemployment and low prospects for wage employment often turn to self-employment as a viable alternative. This observation was also an extension of Knight’s view that individuals make a decision among three states – unemployment, self employment and employment. The simple theory of income choice lends credence to refugee effect by suggesting that increased unemployment will lead to an increase in startup business activity on the grounds that the opportunity cost of not starting a firm has decreased. Similarly, Picot, Manser and Zhengxi (1998) and Pfeiffer and Reize (2000) observe that new firms hire the needed employees to work for them, thus helping to reduce the level of unemployment in the society.

**Some Empirical Evidences on the Link between Unemployment and Entrepreneurship**

That unemployment is linked to entrepreneurship dates back at least to Oxenfeldt (1943), who pointed out that individuals confronted with unemployment and low prospects for wage employment turn to self-employment as a viable alternative. This was an extension of Knight’s view that individuals make a decision among three states – unemployment, self-employment and employment. The actual decision is shaped by the relative prices of these three activities but there was a clear prediction that entrepreneurship would be positively related to unemployment. However, as Storey (1991) documents, the empirical evidence linking unemployment and entrepreneurship is fraught with ambiguities. While some studies find that greater unemployment serves as a catalysts for start-up activity (Reynolds, Miller and Makai, 1995; Reynolds, Storey and Westhead, 1994; Hamilton, 1989; Highfield and Smiley, 1987, and Yamawaki, 1990; Evans and Leighton, 1989 and 1990), still others have found that unemployment reduces the amount of entrepreneurial activity (Audretsch and Fritsch, 1994; Audretsch, 1995).

On the other hand, why should an increased amount of entrepreneurial activity impact unemployment? One approach to address this question can be inferred from the literature on Gibrat’s Law. Gibrat’s Law asserts that firm growth is independent of size. Sutton (1997) interprets “Gibrat’s Legacy”, as “The probability that the next opportunity taken up by any particular active firm is proportional to the current size of the firm.” An important implication of Gibrat’s Law is that shifting employment from large to small enterprises should have no

impact on total employment, since the expected growth rates of both types of firms are identical. Thus, a restructuring of the economy away from large enterprises and towards small ones should have no impact on the unemployment rate.

However, there is strong and systematic empirical evidence suggesting that, in fact, Gibrat's Law does not hold across a broad spectrum of firm sizes. Two comprehensive and exhaustive compilations (Sutton, 1997; and Caves, 1998) of studies relating firm size to growth have produced what Geroski (1995) terms as a stylized fact that smaller firms have higher growth rates than their larger counterparts. Beginning with the pioneering studies by Evans (1987a and 1987b) and Hall (1987), along with Dunne, Roberts, and Samuelson (1988 and 1989), a central finding of this literature is that firm growth is negatively related to firm size and age. These findings have been confirmed in virtually every subsequent study undertaken, despite differences in country, time period, industry, and methodology used.

Evans and Leighton (1990) found that unemployment is positively associated with greater propensity to start a new firm. Many other studies establish that greater unemployment serves as a catalyst for startup activity (Reynolds, Miller and Makai, 1995; Reynolds, Storey and Westhead, 1994). Anyadike, Emeh and Ukah (2012), researched on entrepreneurship development and employment generation in Nigeria: problems and prospects, they found out that the major problems of entrepreneurship in generating employment in Nigeria include inadequate working capital, low standard of education and inadequate training among others. In a similar research by Oladele, Akeke and Oladunjiye (2011) on entrepreneurship development; a panacea for unemployment reduction in Nigeria, using the Ordinary Least Squares econometrics technique. The empirical result shows that variations in industrial production are caused by unemployment rate.

### Methodology

In this section, appropriate econometric model which theoretically established the relationship between variables of interest, is specified and used to practically demonstrate the relationship between entrepreneurship, employment generation and sustainable development in Nigeria. The study employ secondary annual time series data from 1990 to 2013 sourced from the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics and World Bank Data (World Development Indicators). The Vector Error Correction Mechanism is employed to establish the long run as well the short run dynamics of the model. In line with the work of Oladele, Akeke and Oladunjiye (2011), the modified functional relationship is:

$$HDIt = f(EMPLt, INPIt, CAPt) \dots \dots \dots (1)$$

Equation (12) is specified in a functional form, where:

HDIt = Human Development Index

EMPLt = Index of Employment

INPIt = Index of Industrial Production

CAPt = Average Manufacturing Capacity Utilization

Ui = Error or disturbance term.

In a more explicit form, the equation can be written as;

$$HDIt = \beta_0 + \beta_1 EMPLt + \beta_2 INPIt + \beta_3 CAPt + U_i \dots \dots \dots (2)$$

To linearize equation (13), we apply logarithm to the equation which gives

$$LHDIt = \beta_0 + \beta_1 LEMPLt + \beta_2 LINPIt + \beta_3 LCAPt + \epsilon_i \dots \dots \dots (3)$$

For the purpose of estimation and in line with the objective of the study, finding the change in the Human Development Index model is very useful. As a result the Human Development Index model to be estimated in this study is:

$$\Delta \text{HDI}_t = \beta_0 + \beta_1 \Delta \text{EMPL}_t + \beta_2 \Delta \text{LIND}_t + \beta_3 \text{LCAP}_t + \epsilon_t \dots \dots \dots (4)$$

Based on economic theory, the expected signs of the coefficients are  $\beta_1, \beta_2$  and  $\beta_3 > 0$  while  $\beta_0$  can be  $>$  or  $< 0$ .

The choice of the log-linear model was because of the following reasons:

Firstly, to find the percentage change in the dependent variable resulting from percentage changes in the independent variable. Thus, the study sought to find the responsiveness of a change in HDI to changes in employment, industrial production index and average manufacturing capacity utilization (that is, elasticities of the variables), hence the need to use the log-linear model.

Secondly, while the values for some of the variables were small such as human development index others such as industrial production were large. There was therefore, the need to use the log form to bring the values for all the variables to the same unit or level. In other words, the use of logarithm in the models is to bring the variables to the same base, since the variables are measured in different bases. Lastly, the use of log transformation is necessary because it reduces the scale of the variables from a tenfold to a twofold, thus reducing the possibility of heteroscedasticity in the model (Gujarati and Sangeetha, 2007).

### Time Series Preliminary Tests

One major problem often associated with empirical analysis is non-stationarity of time series data. When variables being used for analysis are non-stationary, it usually leads to spurious regression results. In this case, the t-statistic, DW statistic as well as the  $R^2$  values are not accurate.

In conducting the Dickey Fuller test, it is assumed that the error term  $\epsilon_t$  is uncorrelated. But in case the  $\epsilon_t$  is correlated, Dickey and Fuller have developed a test known as Augmented Dickey-Fuller (ADF) test. This test is conducted by augmenting the equation by adding the lagged values of the dependent variable  $\Delta \text{HDI}_{t-i}$ . Suppose, the equation for HDI in our model, the ADF here consists of estimating the following:

$$\Delta \text{HDI}_t = \beta_0 + \beta_1 + \delta \Delta \text{HDI}_t - 1 + \sum_{i=1}^m \lambda_i \Delta \text{HDI}_{t-i} + \epsilon_t \dots \dots \dots (5)$$

Where  $\epsilon_t$  is a white noise error term and  $\Delta \text{HDI}_{t-1} = (\Delta \text{HDI}_{t-1} - \Delta \text{HDI}_{t-2})$  etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term in (5) is serially uncorrelated. In ADF we test whether  $\delta = 0$  and the ADF follows the asymptotic distributions and some critical values can be used.

For this reason, the Augmented Dickey-Fuller (ADF) test was used to test the stationary status of the variables used in the growth equation. The presence of unit root in the series indicates that the variable is non-stationary, hence the degree or order of integration is one or higher. The absence of unit root however, implies that the variables are stationary and the order of integration is zero.

To investigate the presence of random walk in the time-series data, a unit-root test is carried out. This is to ascertain the stationary nature of the data to avoid a spurious regression model.

### Granger Causality Test

Although regression analysis deals with the dependence of one variable on the other variables, it does not necessarily imply causation. In other words, the existence of a



relationship between variables does not prove causality or this direction of influence. But in regression involving time series data, the situation may be somewhat different because, one author puts it,

“... time does not run backward. That is, if event A happens before event B, then it is possible that A is causing B. however, it is not possible that B is causing A. in other words, events in the past can cause events happen today...”. Further events cannot (Gujarati and Sangeetha, 2007). This is roughly the idea behind the so-called granger causality test.

To explain the granger causality test, consider the LHDIt equation a function of LEMPLt. This question is often asked in macroeconomics. Is it LEMPLt that “causes” the LHDIt (LEMPLt→LHDIt) or is it LHDIt that causes LEMPLt (LHDIt→LEMPLt), where the arrow points to the direction of causality. The granger causality test assumes that the information relevant to the prediction of the respective variables, LHDIt and LEMPLt, is contained solely in the time series data in these variables. The test involves estimating the following pair of regressors:

$$LHDI_t = \sum_{i=1}^n \alpha_i LEMPL_{t-i} + \sum_{j=1}^n \beta_j LHDI_{t-j} + \mu_{1t} \dots \dots \dots (6)$$

$$LEMPL_t = \sum_{i=1}^n \lambda_i LEMPL_{t-i} + \sum_{j=1}^n \delta_j LHDI_{t-j} + \mu_{2t} \dots \dots \dots (7)$$

Where it is assumed that the disturbances  $\mu_{1t}$  and  $\mu_{2t}$  are uncorrelated. In passing, note that since we have two variables, we are dealing with bilateral causality. However, since we are dealing with bilateral causality, we can apply the technique of vector auto regression (VAR). Equation (6) postulates that current LHDIt is related to past values of itself as well as that of LEMPLt, and (7) postulates similar behavior for LEMPLt. We now distinguish four cases:

- (1) Unidirectional causality from LEMPLt to LHDIt is indicated if the estimated coefficients on the lagged LHDIt in (6) are statistically different from zero as a group (i.e.,  $\sum \alpha_i \neq 0$ ) and the set of estimated coefficients on the lagged LEMPLt in (7) is not statistically different from zero (i.e.,  $\sum \delta_j = 0$ ).
- (2) Conversely, unidirectional causality from LHDIt to LEMPLt exists if the set of lagged LEMPLt coefficients in (6) is not statistically different from zero (i.e.,  $\sum \alpha_i = 0$ ) and the set of the lagged LHDIt coefficients in (7) is statistically different from zero (i.e.,  $\sum \delta_j \neq 0$ ).
- (3) Feedback, or bilateral causality, is suggested when the sets of LEMPLt and LHDIt coefficients are statistically significantly different from zero in both regressions.
- (4) Finally, independence is suggested when the sets of LEMPL and LHDIt coefficients are not statistically significant in both the regression.

### Johansen Co integration Test and Long Run Dynamics

According to Johansen (1991), co integration can be used to establish whether there exists a linear long-term economic relationship among variables. In this regard, Johansen (1991) asserts that co integration allows us to specify a process of dynamic adjustment among the co integrated variables and in disequibrated markets. Given that the series are I(1), the co integration of the series is a necessary condition for the existence of a long run relationship. The co integration results of both the trace and Maximum-Eigen value statistic of the Johansen co integration test are presented and displayed in table 4 and 5.

**Result and Discussion Of Findinds****Result of Unit Root Test**

Before applying the estimation technique, unit root test was conducted in order to investigate the stationarity properties of the variables. All the variables were examined by first inspecting their trends graphically (Appendix A). From the graphs in Appendix A, it can be seen that, all the variables appear to be non-stationary. However the plots of all the variables in their first differences exhibit some stationary behaviour as presented in Appendix B. Furthermore, the Augmented Dickey-Fuller and the Phillips Perron (PP) tests were applied to all variables in levels and in first difference in order to formally establish their order of integration. The Schwartz-Bayesian Criterion (SBC) and Akaike Information Criterion (AC) were used to determined the optimal number of lags included in the test. The results of both tests for unit root for all the variables at their levels with intercept and trend and their first difference are presented in table 1 and 2.

Table 1

*ADF Unit Root Test Result*

Variable	ADF AT		LEVEL		1 <sup>st</sup> DIFF		Include
	t-statistic	Probability	IO Lag	t-statistic	Probability	IO Lag	
LHDIt	-2.493266	0.3278	I(0) [0]	-7.088705	0.0000***	I(1) [0]	Tre/Con
LEMPLt	0.321874	0.9974	I(0) [1]	-13.33692	0.0000***	I(1) [0]	Tre/Con
LINPIt	-2.397238	0.3215	I(0) [1]	-5.048385	0.0041***	I(1) [0]	Tre/Con
LCAPt	-2.767660	0.2241	I(0) [1]	-5.394566	0.0022***	I(1) [0]	Tre/Con

**Source:** Author's Computation using Eviews 7.0

**Note:** IO indicates order of integration. \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively. Tre/Con indicates trend and constant included in the test.

From the results of unit root test in table 1, the null hypothesis of unit root for all the variables cannot be rejected at levels. This means that all the variables are not stationary at levels since their p-values for both ADF and PP tests are not significant at all conventional levels of significant.

Table 2

*PP Unit Root Test Result*

Variable	PP AT		LEVEL		1 <sup>st</sup> DIFF		Include
	t-statistic	Probability	IO Lag	t-statistic	Probability	IO Lag	
LHDIt	-2.303623	0.4157	I(0) [3]	-7.088705	0.0000***	I(1) [0]	Tre/Con
LEMPLt	-3.270538	0.0962	I(0) [3]	-10.39739	0.0000***	I(1) [2]	Tre/Con
LINPIt	-1.158597	0.2170	I(0) [21]	-14.82098	0.0000***	I(1) [10]	None
LCAPt	-1.869458	0.6321	I(0) [1]	-11.77608	0.0000***	I(1) [17]	Tre/Con

**Source:** Author's Computation using Eviews 7.0

**Note:** IO indicates order of integration. \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% level respectively.

Table 1 and 2 however show that at first difference all the variables are stationary and we reject the null hypothesis of the existence of unit root. We reject the null hypothesis of the existence of unit root in D(LHDIt), D(LEMPLt), D(LINPIt) and D(LCAPt) at the 1% level of significance. From the above analysis, one can therefore conclude that all variables are integrated of order one I(1) and in order to avoid spurious regression, the first difference of all the variables must be employed in the estimation of the short run equation.

### Granger Causality Result

To find the direction of causality between LHDIt and the selected variables, the study conducts a pair wise granger causality test using lag 1 and the results are presented in table 3.

Table 3

#### *Granger Causality Test Results*

Null Hypothesis	F-statistic	Probability	Decision	Direction
LEMPLt does not granger cause LHDIt	3.58383	0.0729	Reject	LHDIt → LEMPLt
LHDIt does not granger cause LEMPLt	10.8579	0.0036	Accept	
LINPIt does not granger cause LHDIt	0.05319	0.8043	Accept	Independence
LHDIt does not granger cause LINPIt	1.35260	0.2592	Accept	
LCAPt does not granger cause LHDIt	0.06303	0.8048	Accept	
LHDIt does not granger cause LCAPt	5.46750	0.0319	Reject	LHDIt → LCAPt

**Source:** Author's Computation using Eviews 7.0

Table 3 above shows that LHDIt uni-directionally granger cause both LEMPLt and LCAPt. This is shown by the significance of their respective F-statistic values and probability values. This falls under the second category of granger causality test outcomes. Whereas LINPIt and LHDIt suggest independence, i.e. neither uni-directional nor bi-directional causation is established. This falls under the fourth category of granger causality test outcomes.

### Estimation Techniques

The research made use of Vector Error Correction Model to estimate both the short and long run parameters. However, the Johansen co integration test of long run relationship is conducted to check the steady equilibrium nature of the variables.

Table 4

*Johansen Co integration (Trace) Test Result*

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical Value	Prob.**
None*	0.789670	67.06494	47.85613	0.0003
At most 1*	0.720312	37.44164	29.70707	0.0178
At most 2	0.386065	13.23408	15.49471	0.2644
At most 3	0.188332	3.964614	3.841466	0.0465

**Source:** Author's Computation using E-views Econometric Software

Trace test indicates 2 co integrating equation at 5 percent level of significance.

Note : \* denotes rejection of hypothesis at 5 percent significant level

Table 5

*Johansen Co integration (Maximum Eigen Values) Test Result*

Hypothesized No. of CE(s)	Eigen Value	Max-Eigen Value Statistic	5% Value	Critical	Probability Value
None*	0.789670	29.62330	27.58434		0.0270
At most 1*	0.720312	24.20756	21.13162		0.0178
At most 2	0.386065	9.269470	14.26460		0.2644
At most 3*	0.188332	3.964614	3.841466		0.0465

**Source:** Author's Computation using E-views Econometric Software

Maximum Eigen Value test indicates 2 co integrating equation at 5 percent level of significance.

Note : \* denotes rejection of hypothesis at 5 percent significant level

It can be seen from both table 4 and 5 that the trace statistic and the maximum Eigen value statistic indicate the presence of two co integration among the variables. This confirms the existence of a stable long-run relationship among HDI as the dependent variable, employment, industrial production index and capacity utilization as the independent variables.

Base on the indication of one co integrating vector among the variables, the estimated long-run equilibrium relationship for poverty was derived from the normalised vectors as presented in the appendix.

The first vector appears to be the one which we can normalise poverty vector from the un-normalised co integrating coefficients in the appendix. The choice of this vector is based on the sign expectations about the long-run relationships as indicated in equation below.

The long-run relationship was derived by normalising LHDIt and dividing each of the co integrating coefficients by the coefficient of LHDIt. The long run relationship is specified as:

$$\text{LHDIt} = -29.1803 + 0.5758\text{LEMPLt} - 0.0069\text{INPIt} + 0.0265\text{LCAPt} \dots \dots \dots (8)$$

The model above represents the long-run effects on LHDIt. Firstly, the constant exerts a negative effect on poverty. This implies that holding all the independent variables at zero, LHDIt level decreases by 29.1803.

Employment rate (LEMPLt) exerts positive effect on LHDIt which implies that as employment increases, HDI level also increases. The finding is in in line with the a priori expectations and

theoretical consideration that employment generation in an economy can lead to development. The coefficient of 0.5758 implies that in the long run, a 100 percent increase in employment will lead to approximately 58 percent increase in human development index. It means that employment would lead to improvement in human development index since HDI includes per capita income (permanent income) which can be obtain when one is employed. Industrial production index (LINPI<sub>t</sub>) however is found to possess the wrong sign though statistically significant. The inappropriate sign of LINPI<sub>t</sub> could be attributed to other factors such as data deficiency.

Average manufacturing capacity utilization is statistically significant in the long run and it has a positive effect on human development index in Nigeria. The coefficient of 0.0265 implies that in the long run, a 100 percent increase in capacity utilization will lead to approximately 2.7 percent increase in HDI.

In the case of employment equation the following long run estimate emerged:

$$\text{LEMPL}_t = -43.0962 + 0.0754\text{LCAP}_t + 0.0133\text{LINPI}_t \dots \dots \dots (9)$$

Equation (9) shows that both capacity utilization and industrial production index contribute positively to employment generation in Nigeria. This result is obtained by normalizing the third row vector matrix in the appendix. This further portrays the potency of entrepreneurship to generate employment for sustainable development.

**Short Run Dynamics and the Error Correction Mechanism**

Engle and granger (1991) argued that when variables are co integrated, their dynamic relationship can be specified by an error correction representation in which an error correction term (ECT) computed from the long-run equation must be incorporated in order to capture both the short run and long run relationships. The ECT is expected to be statistically significant with a negative sign. The negative sign implies that any shock that occurs in the short run will be corrected in the long run. If the ECT is greater in absolute value, the rate of convergence to equilibrium will be faster. The short run model for the study is given as:

$$\Delta\text{LHDI}_t = \gamma + \sum_{i=1}^p \beta_{1i} \Delta\text{LHDI}_{t-i} + \sum_{j=1}^q \beta_{2j} \Delta\text{LEMPL}_{t-j} + \sum_{k=1}^q \beta_{3k} \Delta\text{LINPI}_{t-k} + \sum_{k=1}^q \beta_{3k} \Delta\text{LCAP}_{t-k} + \rho\text{ECM}_{t-1} + \mu_t \dots \dots \dots (8)$$

The result is presented in table 6.

Table 6  
*Results of Short Run Estimates and Error Correction Model (VECM)*

Variable	Coefficient	Std Error	t-statistic	Probability
ECM-1	-0.1274	0.0632	4.3432	0.0000***
D(LHDI(t-1))	0.2786	0.1754	1.5883	0.1120
D(LEMPL(t-1))	0.2091	0.0422	4.9539	0.0000***
D(LINPI(t-1))	-0.0006	0.0003	-1.8503	0.0640*
D(LCAP(t-1))	0.0042	0.0043	0.9826	0.3260
C	0.0150	0.0159	0.9442	0.1170

**Source:** Author’s Computation using Eviews Econometric Software

R<sup>2</sup> = 0.71 Adj. R<sup>2</sup> = 0.60 F-stat = 6.4343 DW = 1.78 Prob = 0.1974

Note: \*\*\*, \*\* and \* indicate significance of the parameter at 1, 5 and 10 percent respectively.

From table 7, the estimated coefficient of the error correction term is -0.1274 which implies that the speed of adjustment is approximately 12.7 percent per quarter. This negative and significant coefficient is an indication that co integrating relationship exists among the variables. The size of the coefficient on the error correction term (ECM) denotes that 12.7 percent of the disequilibrium caused by previous year's shock converges back to the long run equilibrium in the current year. According to Kremer, Ericsson and Dolado (1992), a relatively more efficient way of establishing co integration is through the error correction term.

Human development index at lag one is not significant in the short run where it exerts a positive effect on current HDI of 0.2786. The insignificant effect of HDI inertia on HDI implies that previous HDI rate cannot be used to increase HDI in the current period, hence the insignificant effect of HDI lag one.

Employment rate also shows significant effect on HDI of 0.2091. The positive value shows that increase in employment increases HDI. A 100 increase in employment all things being equal will lead to 20.9 percent increase in HDI. The justification for this result is that employment is both a necessary and sufficient conditions for improvement in HDI.

Also capacity utilization is statistically insignificant and posses positive (appropriate) sign. The result shows that there are capacity under utilization in Nigeria. This result is not in line with the theoretical consideration

**Evaluation of the Model**

Table 7

*Diagnostic Test for LHDIt Model*

Diagnostic	Statistic	Conclusion
Ramsey Rest Test	F–statistic = 0.076732 (0.7856) Log likelihood = 0.102048 (0.7494)	Equation is correctly specified
ARCH Test	F–statistic = 0.048872 (0.8277) Obs* R-squared = 0.054465 (0.8155)	There is no ARCH element in the residual
Breusch-Godfrey Serial correlation LM Test	F–statistic= 0.536942 (0.5961) Obs*R-squared = 1.424828 (0.4905)	No serial correlation
Multivariate Normality	Jack-Bera test = 1.5391 p-value = 0.5463	Residuals are normal

**Source: Author's Computation using Eviews 7.1 Package**

To ascertain the evaluation of the model on the basis econometric characteristics, the diagnostic test and stability test are conducted. Diagnostic test suggests that the model passes the test of serial correlation, functional form misspecification, non- normality of the errors and heteroscedasticity associated with the model. The Ramsey's RESET test also revealed that the model was correctly specified while the normality indicates that the residuals are normally distributed. Heteroscedasticity is also not a problem.

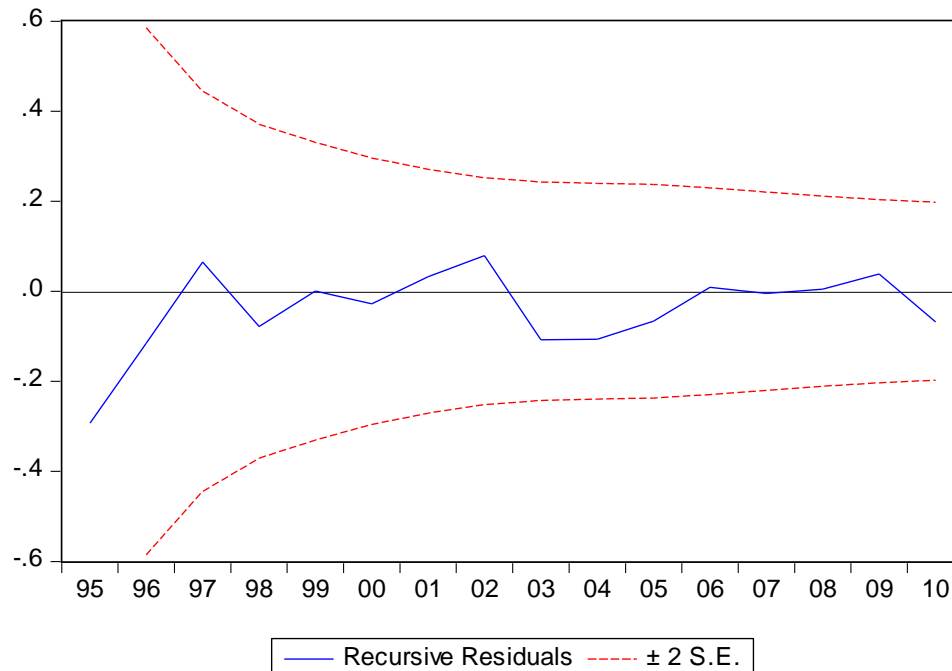
**Stability Test****Figure 1: Stability Test of Residuals**

Figure 1 above shows the stability of the model of HDI. The figure indicates that the model has been stable since no root lie outside the range of the conditions. The recursive residual test satisfies the stability test at 5% significance level.

**Conclusion and Recommendations**

As obvious as it is that entrepreneurship is the magic wand that can change the story overtime. Yet it has not been duly explored and many scholars, commentators and observers have argued that lack of capital is what drives very many people who are unemployed and wants to be self-reliant and self-employed hence inadequate access to loan schemes couple with the issue of collateral and high interest rate on loan from financial institutions, and others arguing that the problem is lack of managerial prowess and the zeal and will to take risks. Based on the empirical findings there is a positive relationship between employment, capacity utilization and human development index in the long run while industrial production index is significant in the short run. Government and stakeholders alike therefore should ensure that the extent to which an enterprise or a nation uses its installed productive capacity are fully built and utilized. In addition, enabling environment should put in place to ensure efficiency in industrial production. In this case government have key role to play to ensure that entrepreneurship as a means of quelling unemployment thus generating more employment opportunities to the unemployed youths and get them usefully engaged. If the Nigerian government must revitalize its economy, reduce unemployment progressively, and generate more employment opportunities for sustainable development, a paradigm shift in policy that is critical to effective entrepreneurship development becomes imperative such as building more capacity utilization and enabling environment for industrial production to thrive.

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