



EFFECT OF ENTREPRENEURSHIP EDUCATION ON SUSTAINABLE DEVELOPMENT IN EMERGING ECONOMIES

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ABSTRACT

The study investigated the effect of entrepreneurial education on sustainable development in emerging economies of Nigeria, Brazil and Malaysia between 1989 and 2013. The variables of the study are entrepreneurial education (EDU) proxied by the number of start-up procedures to register a business as the dependent variable and Gross Domestic Product (GDP), Assess to Fund (FUND), Foreign Direct Investment (FDI) Self Employment (SE) and Inflation rate (INFLR). The cointegration results showed that long run relationship are found among the variables of entrepreneurial education and sustainable development in emerging economies. However, OLS result indicated that entrepreneurship education has positive and significant effect on sustainable development in Brazil and Malaysia, but has negative effect in Nigeria. The study thus conclude that entrepreneurs with high entrepreneurial ability could contribute positively to sustainable economic development by triggering investment in modern sector once they perceive profit opportunities while entrepreneurs with low entrepreneurial ability undermine sustainable economic growth.

KEYWORDS: Entrepreneurship education, sustainability, emerging economies, economic development, entrepreneurial ability.

1.1 Background to the Study:-

The theory of economic development revealed that the human society had on the whole lived in traditional or Malthusian era, managed or entrepreneurial economy and strived to transform itself to modern sector. The change had been dramatic over the last half century. From 1970s onwards, the role of entrepreneurship in the economy changed dramatically. This transition is characterized by rapid change in technology based on physical and human capital accumulation that requires specialization which in turn translates to sustained development.

As the global financial crisis of 2008 hit many of the world economies, most advanced economies

contracted while some hitherto developing economies emerged with vitality and strength. The world is undergoing a rapid economic shift as business organizations in long dominant economies are increasingly being challenged by firms from emerging economies (Galar & Moar, 2001; Hansen & Prescott, 2002; Audretsch & Thurik, 2004). With the global poverty confronting the world, policy-makers have realized that the future competitiveness of industry, success in accelerating growth and increasing employment depend upon the capacity of firms to innovate in response to changing external conditions. There is a historic bond between entrepreneurship and economic development as

entrepreneurship is believed to play transformative role in any economy (Gerlach, 2003). As agents of change, entrepreneurial firms provide an essential source of new ideas and experimentation that otherwise would remain untapped in the economy (Acs & Audretsch 2005).

Acs and Storey (2004) highlighted several key contributions of entrepreneurs to the economy as; creating new ventures, tackling uncertainties by pursuing competing strategies and responding flexibly to changing competition to established firms, acting as economy's guinea-pigs, turning inventions into innovations and creating new horizons. Entrepreneurs take a concept and convert it into a reality.

Mellor (2009) and Alvarez (2005) opine that promoting entrepreneurship is a growing strategy that gives birth to new creations, production processes and goods, thereby boosting human progress, rendering old obsolete leading to the establishment of whole branches of new creations and innovations. Entrepreneurship creates positive externalities through bringing new goods to the market in the process of how new technology is applied. Entrepreneurs provide information on the profitability of new activities and in this sense fulfill a "cost-discovery function". Entrepreneurs trigger investments in economy; provide information which in the context of developing countries is lacking and this leads to risk averseness. (Hausmen and Rodrick 2003). Disagreeing, Mehlum, Moene and Torvik (2003) and Cogne and Leeson (2004) argued that entrepreneurs with low entrepreneurial ability can undermine sustainable economic development through perverse allocation towards activities that may be personally profitable but socially destructive or unproductive which may culminate to negative externalities.

Entrepreneurs are not only searching and exploiting business opportunities on earth, but have embarked and assumed the risk on general commercial use of the space. "Entrepreneurs have begun designing and deploying competitive space systems to the national-monopoly governmental system of the early decades of the space age". Successes to date include flying suborbital spacelanes, launching orbit rockets and flying a couple of orbital expandable test modules among others (Szondy, 2012).

Chen and Salman (2000) reveal that the 'entrepreneurial' economy' is a learning machine with active actions of entrepreneurs providing crucial source of new and valuable knowledge. Knowledge as a key resource for economic and social development, is an instrument for balanced, equitable and sustainable

development. Entrepreneurship in this study is based on knowledge-based-development and not entrepreneurship based on native intelligence only.

The prosperity of a country is closely related to its overall development and the development is dependent upon the number of production units that are prevailing in that economy (Brouwer, 2002). An economy is known to as emerging economy or emerging market when it is seen through entrepreneurial nature of the economy. As developing countries are significant part of the world's economic output, many leading economists have predicted such economies as emerging economies and the global competitive advantage is also shifting from developed to emerging economies and awareness in entrepreneurship is needed (Audretsch & Feldman, 1996).

Investing in emerging economies has become popular as a result of globalization of markets and competition. Since after the economic downturn of 2008, from the third-quarter of 2009, half of the world's economic growth has come from transitional or emerging economies. This trend is evident by the rise of the BRIC countries (Brazil, Russia, India and China), all of which are presently ranked among the top ten economies in the world (Arve & Ulrickke, 2011).

Ishak and Mohd (2003) revealed that the Asian sub-region maintains a close cooperation, as economic groupings and economic integration have led to a higher rate of economic growth, greater expert competitiveness and more balanced regional development which have facilitated the free flow of people, goods and services and sharing common infrastructure and natural resources. The authors indicated that human resource development (HRD), education and training contribute significantly to the economic leverage of countries like Malaysia, Indonesia, among others.

Economic development in Nigeria is not easy to measure but it is said to be highly dynamic and significant. Presently, Nigeria, Brazil, Mexico and Indonesia have been labeled emerging economies but each of these countries continues to struggle with poverty, violence, corruption, impunity, discrimination, insurgencies, inequality and absence of the rule of law: Example, Nigeria a mono-economy, has unstable foreign reserve, 100 million Nigerians live in destitution and insecurity (Chu, Kara, Benzing, 2010; CBN Governor, 2013; Ezekwesili, 2013).

Disagreeing, Buchanan (2014) argues that though emerging economies can be volatile, such countries offer a plethora of opportunities and entrepreneurs need a little of strategic-thinking to identify these opportunities. Nigeria is on track to becoming one of the twenty largest

economies in the world by 2020. The fastest growing economies in 2015 would be China, Qatar, Nigeria, Iraq and Bangladesh. Various governments of the emerging economies have put in place, institutional framework, liberalized trade, mounted entrepreneurial education, infrastructural development and encouraged technological take-off in a bid to achieve sustainable development. Sustainability enables an economy to meet the needs of the present without compromising the ability of future generation to meet their own needs. Sustainability repositions an ailing or stagnated economy and makes for development (Richard, 2015; Lenzner, 2010).

The previous studies on entrepreneurship and economic development were based on advanced economies. The gap this study aimed to fill was how entrepreneurship could help emerging economies achieve sustainable economic development.

1.2 Statement of the Problem:-

There is renewed attention on the role of entrepreneurship in the economy after the dramatic change of post-world war II era. The interest is reflected on the number of research studies in the field of entrepreneurship studies based on advanced economies. Much of the existing studies on entrepreneurship focused on employment generation, character threats of successful entrepreneurs and psychology of owner-managers. Such studies revealed that wealthy economies transformed to their present status through the mechanism of entrepreneurship.

It is alleged that entrepreneurship development in emerging economies is not sustainable due to lack of functional entrepreneurship education, inefficient and ineffective knowledge-based development, infrastructure decay/deficit and poor technological know-how with their attendant consequences. There had been a loud cry and lamentation from the citizenry of emerging economies on the hardships in their various countries.

Some emerging economies are struggling to leverage economic development in order to reduce abject poverty, unemployment, violent crimes, drug addiction and conflicts in order to raise the standard of living of their citizens and achieve sustainable economic development, but it is worrisome that researches in emerging economies on entrepreneurship development for sustainable economic development is neglected and the least studied. The Problem of the study, therefore, is how entrepreneurship can help to improve the development indicators for sustainable development in emerging economies. The research question is however, "To what extent will entrepreneurship education lead to positive

development in emerging economies?" The hypothesis will be tested at 0.05 level of significance on: Entrepreneurship education has significant positive effect on economic development in emerging economies.

REVIEW OF RELATED LITERATURE

Concept of Education: Implication for Entrepreneurship:-

Education has a theoretically ambiguous effect on start-ups as education can influence entrepreneurial ability and wage rate. Education can also impart skills needed to be an entrepreneur (Gianetti & Simonov, 2004: 273). The level of education achieved by the potential entrepreneur has long been seen as a crucial factor in determining both the actual entry into self-employment and thereafter, the long-term success of the venture (Curran & Burrows, 1989: 376-85).

Education matters, practical skills, and a general or broad-based education (jack-of-all-trades) is better for entrepreneurs rather than academic qualifications with narrow specialization (Bourke, 2005). Disagreeing, Nafziger and Terrel (1996) argue that broader, practical skills, often the kind obtained through experience may be important. Geodhuys and Sleuwaegen (2004:141) noted that age, experience and background can compensate for lack of education in start-up rates and the success of the firm. However, formal education improves "learning capabilities of individuals" which improves their entrepreneurial ability.

Stam, Audretsch and Meijgaard (2007) opine that educational status of a person will have a positive effect on the entrepreneurial start-up rate as the more highly educated will be able to move easily, find employment if the start-up is unsuccessful. The potential positive role of education on start-ups through entrepreneurial ability is constant with the theoretical and empirical suggestions that the likelihood of someone starting a new firm has an inverse U-shaped relationship with age. It implies that a person gains more experience, the human capital and entrepreneurial ability of the individual improves. After a period with higher age, learning becomes more difficult and entrepreneurial ability might decline (Bonte, Falck & Heblich, 2007).

Carter and Jones-Evans (2000) observe that there have been a number of attempts to analyse effects of educational variables on entrepreneurship but the results of the studies have thrown up an interesting inconsistency. Self-employed men are less qualified than women in wage employment. Men in self-employment with employees are less well qualified than their male counterparts, those in

self-employment with employees are less well qualified than their male counterparts whilst those without employers are better qualified than their male counterparts and women wage employee. Self-employed appear to have a lower level of educational attainment than wage-earners but there is an overlap between the two groups.

Meager (1991) state that there is clearly a complex relationship between educational qualifications and participation rates for the self-employed. The relationship depends critically upon the definitions used in defining the data sets and also upon which the survey is used to compile that data. There are inflows into and out of self-employment and overall increase in the qualifications of the sector over time. The number of people with a degree or equivalent shows a larger inflow than outflow and the proportion within this inflow is higher than that in the group of self-employed. A similar pattern was observed for those entering the sector with O'Levels or equivalent. This swing towards more highly qualified entrants is due to the fact that women in self-employment are in general more qualified than men and so a higher level of education should result. In addition, with passage of time, more young people enter the sector, the average level of qualifications will rise because the educational standards of the younger, newly available workforce are higher than those already self-employed. Another factor may be limited to the increase in the number of schemes that have promoted and accorded recognition to self-employment in recent years. The ability of young entrepreneurs to start their own businesses either by assessing of credit conditions or by direct policy intervention, has motivated a large number of higher education graduates and other highly qualified people being attracted into self-employment (entrepreneurship).

Available related literature identified both positive and negative impacts of improved social security measures on entrepreneurship. Social security can lower the risk involved in starting a new venture and thus raise the rate of entrepreneurship from amongst risk-averse individuals. By raising the opportunity costs, it may lower rate of entrepreneurship. The proportion of entrepreneurs in age-bracket of 50 to 80 years differ significantly across European Union countries and, that it is much higher in countries with more limited pension benefits (Fonseca, Michaud & Sopraseuth, 2007).

Most governments of emerging economies, example; governments of Nigeria have initiated several policy intervention programmes in order to increase the education and acquisition of the necessary skills for

entrepreneurship development; reduce poverty among other objectives. National Economic Empowerment Development Strategy (NEEDS) was mounted at the Federal government and the state equivalent was State Economic empowerment Development Strategy (SEEDS). A long-term economic development programme was the United Nations Millenium Goals for Nigeria which covered from 2000-2015. The aim of the intervention was for poverty reduction, gender equality, health and environment and international development cooperation (Transparency International, 2007; The World Bank, 2013).

Literature and previous research studies available revealed that Human Resource Development (HRD) in particular education and training contributed significantly to economic development in terms of increased worker productivity and income. Malaysian economy becomes more productive, innovative and competitive through existence of more skilled human capacity. It follows that the quality of human resource will determine the success or failure of any development effort especially with regards to industrialization, adopting technical change and global market resource. The Global Entrepreneurship Monitor (2004) reveal a construct that measures entrepreneurship based on two different levels of entrepreneurial activity: the first level includes start-up activities. These start-up activities are supposed to happen during the period that precedes creation of an enterprise. The measure of these activities are labeled nascent entrepreneurship prevalence rate. The proportion of the adult population (18-64 years) who carry out such activities is also measured and called nascent entrepreneurship.

The actual process is creating and operating an identifiable new businesses. The Global Entrepreneurship Monitor (GEM) measures creating and operating identifiable business for a period of 42 months. This measure is then labeled "the new firms prevalence rate". GEM also measures the proportion of the adult population (18-64 years) which is currently active in operating these new or baby ventures. At this level, other activities to measure include: the revival or restructuring of an existing or established business. This area has to do with **innovation and growth** of such enterprises. The combination of nascent and new firm entrepreneurship gives another measure called Total Entrepreneurial Activity rate (TEA). It has to be borne in mind that the TEA index is not always equal to the exact sum of the two measures as some individuals may be both nascent and new entrepreneurs.

Wong (2004) citing Global Entrepreneurship monitor states that TEA measurement, a start-up should meet at least four requirements which are: (1) plans to employ at least 20 workers within 5 years, (2) has a positive market creation effect, (3) at least 25 percent of its customer are abroad and (4) employs technology that were not available a year previously. Generally, Entrepreneurship can be measured in terms of (1) rate of business ownership, (2) self-employment, or rate of business ownership and self-employment. The above variables could be viewed from the perspectives of static entrepreneurship and Dynamic self-employment or business ownership rate is an important static indicator of the level of entrepreneurial activity. Self-employment is a term that refers to people who provide employment for themselves as business owners, rather than hunt for wage employment. The dynamic perspective of entrepreneurship focuses on what is referred to as nascent and start-up activity, as well as on the next-entry-rate and the turbulence rate, that is, total entry and exit.

Concept of Entrepreneurship: Implication for Sustainable development:-

Sustainable development is the process in which “the exploitation of natural resources, the allocation investments and the process of technological development and organizational change are in harmony with each other for both current and future cited in Gerlach (2003).

As agents of change, entrepreneurial firms provide an essential source of new ideas and experimentation that otherwise would remain untapped in the economy and that anyone capable of generating results in any area of human activity may be termed as an entrepreneur; and people having the power to make things happen are entrepreneurs (Acs & Audretsch, 2005).

The authors defined sustainability as a way of living that which is capable of guaranteeing a continuity of life for all. It is a search for the common good; a way of living in its totality that makes possible the best conditions of life for everyone, without exception or any type of exclusion at all times. It means living a balanced life today, a healthy way of living in which no one lives in the expense of anyone else; and a way of life lived by the whole society that considers the needs of the future generations.

Gerlach (2003) define sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It is the process in which ‘the exploitation of natural resources, the allocation of investments and the process of technological development

and organizational change are in harmony with each other for both current and future generations.

A narrow interpretation of sustainable entrepreneurship is to equate this to creation and marketing of environmental friendly products and services by entrepreneurs thereby adding value. Weber (2007) views this as providing environmental solutions or ecological innovations and products either by a start-up company or an established business. This emphasizes joint economic and ecological value creation, and can therefore be defined as “eco-entrepreneurship or eco-preneurship. Essentially, the terms eco-preneurship, eco-entrepreneurship or environmental entrepreneurship are used synonymously meaning “innovative behavior of single actors or organizations operating in the private business sector which see environmental aspects as a core objective and competitive advantage (Chen & Sahlman, 2000; Mellor, 2009).

Kalam and Singh (2011) defined sustainable entrepreneurship as the “continuing commitment of business to behave in an ethical way and contribute toward economic development while improving the quality of life of the workforce, their families, and the local and global community as well as future generations:. From a perspective of sustainable entrepreneurship, entrepreneurs have a responsibility to their investors and shareholders as well as to nature, society and future generations. World Council for Economic Development (WCED 1987) requires firms to adhere to principles of sustainable development, to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability implies the ability to keep a development project going even when external assistance has ceased.

The authors identified six dimensions of sustainability as economical, technological, social, environmental, value and learning sustainability. Economic sustainability means that the financial model of the development tool is sound and robust, and the development tools are geared to the core competency of the environment. Technological sustainability involves that technology will be the propelling force behind the development tool employed. Social sustainability showcases the belief that people are not necessarily customers and that an enterprise should be a partner in the lives of the people, should work closely with the local community and facilitate building capacity and living standards. Environmental sustainability, the relatively well known concept, encompasses in itself, issue of reducing emission, reducing water and soil pollution, protecting

biodiversity, preserving natural resource, water re-cycling, awareness of ecology in the community and accountability on environment. However, Value sustainability refers to the availability of infrastructure, opportunity and incentive for continuous learning from each other, facilitating innovations.

Entrepreneurship can contribute in several ways to achieve sustainable economic growth and development: Innovation, an important tool in entrepreneurship could be deployed both in the firm technological or product innovation as well as procedure or organizational innovation in finding ways to economize on resource, increase recycling and minimizing waste. An entrepreneurial vision could be formulated that includes in its objectives producing environmental friendly products/activities, rather than solely focusing on profit maximization as an objective. Environmental needs should be translated into market opportunities and since entrepreneurs are often the first to exploit new opportunities, they could not only profit from them personally, but by pioneering their use, they may also shift under parts of a given market towards a more sustainable path (Rennings, 2000; Schaltegger, 2002).

Perverse allocation of entrepreneurial talent

Entrepreneurship has earlier been seen as a ubiquitous in society but with different impacts on economic development which depend on whether entrepreneurial ability is allocated towards productive, or non-productive, destructive or evasive ends. Perverse allocation or misallocation of entrepreneurial ability may hinder economic development (Moenek & Torvik, 1991; Coyne & Leeson, 2004; Acemoglu, 1995).

Absence of good institutional framework and slow economic growth in itself may cause wrong allocation of ability and entrepreneurship. Example, when economic development is low and employment opportunities in the formal sector are scarce, self-employment will rise, and this rise will include a large proportion of people with low levels of entrepreneurial ability. During periods of low economic growth the incentives for innovation as in bringing new goods to market will be low, since the demand for new goods tends to have an income elasticity of greater than one. Entrepreneurs of high ability will therefore engage in rent-seeking activities rather than productive entrepreneurship and this allocation of entrepreneurial talent will be greater in countries with higher levels of wealth or natural resources from which rents may be extracted in the way. The quality of the entrepreneurial pool in a country worsens from both the inflow of low-

ability entrepreneurs as well as the outflow of high ability entrepreneurs. Thus will lead to further restructures from the side of credit inlets, in the form of higher interest and/or collateral requirements which may further push out talented entrepreneurs. The consequence is that poor countries may be caught in a self-reinforcing "entrepreneurial" development trap (Moenek & Torvik, 1991).

Mehlum, Moene and Torvik, (2003:276) presented a model to show how a poor country can become trapped in low development as a result of the misallocation of entrepreneurial talent towards what the authors termed 'predator or 'prey' (that is a producer). Predator activities include; theft, extortion, bribery and fraud. At low level of development, predation is more attractive than at higher levels as a result of insecure property rights.

Economic development and the inflow of new entrepreneurs is in this model an escape from this trap, as economic development increases the incentives/profits from productive activities as well as increasing ability of government to improve law enforcement. Such a new inflow of entrepreneurs have been argued to undermine vested interests and even 'crowd-out' rents by providing new and substitute opportunities. This is also an important reason why new entrepreneurial ventures are often repressed in many poor countries (Baland & François 2000:528).

In addition, (Naudi, 2007) held the view that entrepreneurs play a great role during and after conflict. The activities of entrepreneurs during conflict especially 'destructive' entrepreneurs, who benefit from conflict, make post conflict transition difficult to achieve. Hence, entrepreneurs with low ability might hinder economic development the impact of entrepreneurial ability on the productivity of employed workers vis-à-vis recruiting less productive workers who will earn lower wages. By reducing wage costs, these entrepreneurs in effect lower the opportunity costs of entrepreneurship or self-employment and facilitate the ending of more low-ability entrepreneurs (Ghatak, Morelli & Sjoström, 2007:2). This transformation can also be consistent with an inverse-U relationship between per capita income and income inequality (Rada, 2007:713, Kuznets, 1955).

Empirical Studies:-

Daly (1991) and Meager (1991) examined the relationship between education and self-employment for economic development in England and Wales in 2011. With the help of a survey method, the study employed experience, formal education, vocational education and wage employment as the explanatory variables of education

while the dependent variables in the study was entrepreneurship. The findings revealed that there is complex relationship between formal education and self-employment (nascent entrepreneurship).

Wennekers, Vanstel, Thurick and Reynolds (2005) investigated the relationship between entrepreneurship development and economic development in 37 advanced economies. The variables of the study are Total Entrepreneurship Activity (TEA), GDP, FDI and Self-employment. The Country specific data and analyses revealed that there is U-shape (positive) relationship between entrepreneurship and the tested variable.

Audretsch (2003) and Brouwe, (2002) carried out an empirical analysis of entrepreneurship and economic development countries of OCEC. The Cross-country panel research used variables of Education, knowledge, start-ups, GDP, FDI, inflation in the study and found that there is Positive relationship between entrepreneurship and economic development.

The review has shown that available related literature on the effect of Entrepreneurship on sustainable economic development is sparse and fragmented and has not been adequately researched in the context of emerging economies. The existing literature on entrepreneurship and economic development are based on affluent/wealthy economies (Ciccone & Matsuyama, 1996; Pereira, 2007). This study aimed to bridge the gap and extend the frontiers of knowledge by studying entrepreneurship for sustainable economic development in emerging economies using quantitative tools to investigate country-specifics of economic variables in Nigeria, Malaysia and Brazil.

3.0 METHODOLOGY

Nature and Sources of Data Collection:-

This study employed the secondary data sources from the World Development Indicators (WDI, 2013). The data covered macroeconomic variables for Nigeria, Brazil and Malaysia covering 25 years (1989 – 2013). This period was used because the data on the selected variables are available for all the countries from 1989 till 2013. The series are expressed in US dollar currency.

The variables employed included entrepreneurship education (as the dependent variable) and the variables of sustainable development (gross domestic product, funding, foreign direct investment, self-employment, and infrastructure) as the explanatory (independent) variables.

Model Specification:-

The model of this study was adapted from the work of (Daly, 1991, Meger, 1991) who investigated

entrepreneurship development and education in England and Wales). Based on the concepts developed in Lewis theory of stagnation to sustainable development, the functional representation of the relationship or operationalization of independent and dependent variable are thus:

$$EDU = f(GDP_{1-t}, FUND, FDI, SE, INFLR) \quad (1)$$

Where EDU is the dependent variable and GDP_{1-t} , FUND, FDI, SE, INFLR are the explanatory (independent) variables of sustainable development. The equation of the model is thus:

$$V EDU_i = a_0 + a_1 GDP_{1-t} + a_2 FUND_i + a_3 FDI_i + a_4 SE_i + a_5 INFLR_i + \mu_i \quad (2)$$

Where:

EDU = entrepreneurial education measured with start-up procedures to register a business (number).

GDP = Gross Domestic Product as proxy for economic development and is measured as the annual percentage growth rate of GDP at market prices based on constant local currency.

FUND = Assess to Fund proxied by credit to private sector as a ratio of GDP.

FDI = Foreign Direct Investment proxied by foreign direct investment net outflows as % of GDP.

SE = Self Employment measured as percentage of total employed.

INFLR = Inflation rate proxied by annual percentage rise in consumer prices.

The (i) in each coefficient represents the individual countries included in the study, viz, Nigeria, Brazil and Malaysia. μ is the error term.

The coefficients are represented with $a_0, a_1, a_2, a_3, a_4,$ and a_5 which capture the relationships that exist between the dependent and the independent variables. a_0 is the constant.

The appriori expectation of the model is that entrepreneurship should have positive relationship with sustainable development.

Techniques for Data Analysis:-

The analytical tools used were co-integration technique and ordinary least square regression technique. The analyses involved country-specific study. The study employed country by country analyses for comparison of the country situations.

DATA PRESENTATION AND ANALYSIS

Statistical Properties:-

Table 4.1 described the statistical properties of the variables for Nigeria, Brazil and Malaysia respectively.

The table provides analyses of the mean, median, standard deviation, maximum and minimum as well as the Jarque-Bera statistics of each variable, for each country. The means and standard deviation of the variables are interpreted to explain the characteristics of the variables for analyses. The mean and standard deviation of EDU from the data are 8.53 and 0.86 for Nigeria, 14.92 and 1.62 for Brazil; and 7.48 and 2.69 for Malaysia respectively. The mean of the EDU are lower than the standard deviations for the three countries. This indicates that growths of entrepreneurial education in these countries are encouraging. The results further indicate that Brazil experience higher growth in entrepreneurship education. This implies that if EDU has positive effect on sustainable development, Brazil will tend to have more sustainable economy than Nigeria and Malaysia. The mean values of all the variables employed are not too different from their respective median values. This is an indication of absence of excessive outliers and stability of the variables employed, which are essential for the analyses carried out in this study.

The GDP of the countries under study have the following mean and standard deviations: Nigeria (mean = 3.07, SD = 6.49), Brazil (mean = 2.69, SD = 2.57) and Malaysia (mean = 6.09, SD = 3.97). Nigerian GDP has

higher spread as shown by the SD above the GDP. Malaysian GDP has higher mean. The result indicates that Nigeria has higher volatile growth rate in her economic development which implies lack of economic stability. The mean FUND for Nigeria is 14.70, Brazil is 51.74 and Malaysia is 114.47 with standard deviations of 7.18, 28.09 and 20.31 respectively. The result showed that Malaysian entrepreneurs have better access to fund than Brazil and Nigeria. The median confirms the results.

The mean FDI indicate that Malaysia (4.33) has a higher FDI than Nigeria (3.75) and Brazil (2.25). The result of the mean SE showed that Brazil (37.54) has higher self-employment level and Nigeria (30.93) and Malaysia (26.36). The statistical properties also indicate that Brazil highly inflationary with mean INFLR of 398.22 and standard deviation of 813.84. For Nigeria, the mean INFLR is 20.98 with standard deviation of 19.21. Malaysia has more stable inflation at mean of 2.79 and standard deviation of 1.29.

The probability values of the Jarque-Bera Statistics as presented in the table show probability less than 5% level which indicate that they are normally distributed. This suggests that the variables employed in this study are normally distributed. All the employed variables have 25 data point observations which means that the paper is a long term study.

Table 1: Summary Statistics Properties of the Variables Employed

	EDU	GDP ₋₁	FUND	FDI	SE	INFLR
	Nigeria					
Mean	8.53	3.07	14.70	3.75	30.93	20.98
Median	8.00	2.02	13.02	3.17	31.00	12.88
Maximum	10.00	30.34	38.34	10.83	32.40	72.84
Minimum	7.00	-3.12	8.69	1.07	28.90	5.38
Std. Dev.	0.86	6.49	7.18	2.27	1.15	19.21
Jarque-Bera	0.68	158.7	42.71	19.07	1.98	9.97
Probability	0.71	0.00	0.00	0.00	0.37	0.01
	Brazil					
Mean	14.92	2.69	51.74	2.25	37.54	398.22
Median	15.00	2.73	42.08	2.26	37.90	6.87
Maximum	17.00	7.53	133.8	5.08	44.60	2947.7
Minimum	12.20	-4.30	27.98	0.21	29.40	3.20
Std. Dev.	1.62	2.57	28.09	1.48	4.64	813.84
Jarque-Bera	2.30	1.44	20.52	1.15	1.07	23.67
Probability	0.32	0.49	0.00	0.56	0.58	0.00
	Malaysia					
Mean	7.48	6.09	114.4	4.33	26.36	2.79
M65egtedian	9.00	6.29	111.5	4.39	25.70	2.74
Maximum	10.00	10.00	154.8	8.76	31.90	5.44
Minimum	3.00	-7.36	69.41	0.06	23.30	0.58
Std. Dev.	2.69	3.97	20.31	1.99	2.41	1.29
Jarque-Bera	3.20	28.60	0.12	0.32	7.79	0.95
Probability	0.20	0.00	0.94	0.85	0.02	0.62
Observations	25	25	25	25	25	25



Unit Root/ Stationarity Test:-

The variables employed in the analysis are tested for stationarity using two unit root tests, namely, Augmented Dickey-Fuller test and Phillips-Perron test, to determine whether they are stationary or non-stationary series. The two tests are employed to reinforce one another, to ensure their robustness and boost confidence in their reliability. The tested null hypotheses for both unit root tests are the presence of a unit root. The results of the unit root tests as presented in Table 4.2. All the variables for Nigeria are stationary at 5% at level (for GDP_{-1}), first difference (EDU, FUND, FDU, SE, INFLR). For Brazil,

the variables are stationary at 5% in their levels for GDP_{-1} , first difference for EDU, FUND, FDI, SE, INFLR. For variables in Malaysia, GDP_{-1} are stationary at level; EDU, FUND, FDI, SE, INFLR, are stationary at first difference. As most of the variables are stationary at first differences, this implies that the variables do not have unit roots at least, in their first differences and at 5% level of significance. Having established that, at most, all the variables in all cases of Nigeria, Brazil and Malaysia were stationary at first difference or 1(1). We then applied the Johansson co-integration to determine presence of long run relationship in the models.

Table 2: The Unit Root Test Results for the Selected Variables

Variables		Augmented Dickey-Fuller test	Phillips-Perron test	Conclusion
Nigeria				
EDU	Level	-2.853346	-2.973292	1(1)
	First Diff	-3.708869**	-5.987063*	
GDP_{-1}	Level	-2.882699	-4.079678*	1(0)
	First Diff	-5.311104*	-8.573730*	
FUND	Level	-2.747244	-2.384595	1(1)
	First Diff	-3.521011**	-4.206016*	
FDI	Level	-2.610187	-3.502361**	1(1)
	First Diff	-4.563427*	-6.414050*	
SE	Level	-0.575381	-0.606253	1(1)
	First Diff	-16.63468*	-4.487122*	
INFLR	Level	-2.129933	-2.623410	1(1)
	First Diff	-4.042440*	-5.064713*	
Brazil				
EDU	Level	-2.055396	-2.138200	1(1)
	First Diff	-4.474752*	-5.365603*	
GDP_{-1}	Level	-3.385261**	-4.793148*	1(0)
	First Diff	-2.272668	-3.835982*	
FUND	Level	-2.272668	-3.835982*	1(1)
	First Diff	-5.609751*	-6.251961*	
FDI	Level	-1.929402	-1.654186	1(1)
	First Diff	-2.888725***	-3.766467*	
SE	Level	-1.757541	-2.222485	1(1)
	First Diff	-3.909739*	-6.228871*	
INFLR	Level	-3.774986*	-2.516853	1(1)
	First Diff	-6.751302*	-7.900621*	
Malaysia				
EDU	Level	-1.909341	-1.793859	1(1)
	First Diff	-3.467129**	-4.460923*	
GDP_{-1}	Level	-3.220902**	-4.086680*	1(0)
	First Diff	-3.029085**	-1.661495	
FUND	Level	-3.029085**	-1.661495	1(1)
	First Diff	-3.536359**	-4.373893*	
FDI	Level	-2.123168	-2.496830	1(1)
	First Diff	-5.211185*	-6.269438*	
SE	Level	-3.075164**	-2.733817	1(1)
	First Diff	-3.703295**	-6.404870*	
INFLR	Level	-2.396073	-3.986592*	1(1)
	First Diff	-5.716091*	-9.407547*	
	First Diff	-3.718617**	-6.435705*	

Notes: (1) The null Hypothesis is the presence of unit root. All unit roots analyses included a constant (no linear

trend). *, **, *** denotes significance at 1%, 5% and 10% respectively. (2) For ADF test (Lags were selected based on Modified Schwartz Information Criterion for all variables); for PP test (The Bandwith was chosen using Newey-West method with Bartlett Kernel spectral estimation.) (3) The Critical values for ADF test are -3.7497 (1%); -2.9969 (5%) and -2.6381 (10%) at level; and -3.7667 (1%); -3.0038 (5%) and -2.6417 (10%) at first differences (4) The Critical values for PP test are -3.7343 (1%); -2.9907 (5%) and -2.6348 (10%) at level; and -3.7667 (1%); -3.0038(5%) and -2.6417 (10%) at first differences (5)

Decision rule -The critical value should be larger than the test statistical value for unit root to exist

Tests for Co-Integration:-

Co-integration tests are carried out to ascertain the existence of long run relationship among the variables employed for each model. The results of the cointegration analyses were validated using the Johansen (1991, 1995) approach. The Johansen’s framework provides a number of cointegrating equations and estimates of all cointegrating vectors in the multivariate cases.

Table 3 Test of Co-integration among EDU, GDP_{1-t}, FUND, FDI, SE, and INFLR for

Hypothesized No. of CE(s)	Likelihood Ratio			Critical Values	
	Nigeria	Brazil	Malaysia	5 Percent	1 Percent
None	164.1290**	159.9841**	130.9643**	94.15	103.18
At most 1	102.9251**	99.03066**	84.98298**	68.52	76.07
At most 2	62.87083**	50.69162*	49.09617*	47.21	54.46
At most 3	30.15719*	24.66615	20.64288	29.68	35.65
At most 4	10.39758	8.210688	7.305320	15.41	20.04
At most 5	0.528486	1.229024	2.887948	3.76	6.65

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
 For Nigeria: L.R. test indicates 4 cointegrating equation(s) at 5% significance level
 For Brazil: L.R. test indicates 3 cointegrating equation(s) at 5% significance level
 For Malaysia: L.R. test indicates 3 cointegrating equation(s) at 5% significance level*

The technique examine the long run relationship between entrepreneurial education and sustainable development using the Johansson Cointegration Technique. When a cointegration relationship is present, it means that entrepreneurial education and sustainable development variables, share a common trend and long-run equilibrium. The variables

of the model are EDU, GDP_{1-t}, FUND, FDI, SE, INFLR. Tables 4.3 show the result of the cointegration test for Nigeria, Brazil and Malaysia respectively. From the results, the Likelihood Ratio statistic indicates 4 (for Nigeria), 3 (for Brazil) and 3 (for Malaysia) cointegration at 5 percent level of significance, suggesting that there is cointegrating relationship between entrepreneurial education and sustainable development in emerging economies.

Table 4: Estimated Results of the OLS Regression for Entrepreneurial Education and Sustainable Development Model in Nigeria, Brazil and Malaysia

Variable	Coefficients		
	Nigeria	Brazil	Malaysia
GDP ₋₁	0.068140**	0.169951	0.319742
FUND	-0.034867	-0.024772	-0.068444**
FDI	0.064728	-0.803203*	-0.885631
SE	-0.029656	0.040793	0.074298
INFLR	-0.017671	0.000271	0.651904
C	9.884940	18.97691*	13.41971
R ²	0.413835	0.482601	0.442808
F-stat.	2.682822**	3.544428**	3.019909**
D-W stat.	1.514797	1.581142	1.706911

Dependent Variable: EDU

*Note: * denotes significant at 1%, ** denotes significant at 5%; *** denote significant at 10%*



The report of the Entrepreneurial Education and Sustainable Development Model, specified to capture the effect of entrepreneurial education on sustainable development in emerging economies (of Nigeria, Brazil and Malaysia) is presented in Table 4. In the model, GDP_{-1} has positive effect on entrepreneurial education in Nigeria ($0.07GDP_{-1}$), Brazil ($0.17GDP_{-1}$) and Malaysia ($0.32GDP_{-1}$). The results show that one (1) percent increase in GDP growth rate leads to 0.7%, 17% and 32% increase in Entrepreneurial Education in Nigeria, Brazil and Malaysia respectively. Of all, only $07GDP_{-1}$ in Nigeria has significant effect at 5% level.

FUND has negative effect on entrepreneurial education in Nigeria ($-0.03FUND$), Brazil ($-0.02FUND$) and Malaysia ($-0.07FUND$). The result has significant effect in Malaysia. Moreover, FDI has positive effect on entrepreneurial education in Nigeria ($0.06FDI$), and negative effect in Brazil ($-0.80FDI$) and Malaysia ($-0.89FDI$). The result indicate that a percentage increase in FDI will lead to about 0.6 improvement in Entrepreneurial Education in Nigeria; and 8% and 8.9% fall in Entrepreneurial Education in Brazil and Malaysia respectively. The effect is only significant in Brazil at 5% level.

The table further showed that SE has negative effect in Nigeria ($-0.03SE$) and positive effect in Brazil ($0.04SE$) and Malaysia ($0.07SE$). This means that a percentage increase in SE in Nigeria leads to 0.3% fall in Entrepreneurial Education and 0.4% and 0.7% increase in Entrepreneurial Education in Brazil and Malaysia respectively. The results are not significant at 5% level.

Likewise, INFLR has negative effect in Nigeria ($-0.02INFLR$) and positive effect in Brazil ($0.0003INFLR$) and Malaysia ($0.65INFLR$). This means that a percentage increase in INFLR in Nigeria leads to 0.2% fall in Entrepreneurial Education and 0.003% and 6.5% increase in Entrepreneurial Education in Brazil and Malaysia respectively. The results are not significant at 5% level.

On the overall, the R^2 coefficient is 0.41 for Nigeria, 0.48 for Brazil and 0.44 for Malaysia. The results suggests that about 40% of the total variations in the Entrepreneurial Education and Sustainable Development are explained by the variables included in the model, which are EDU , GDP_{-1} , $FUND$, FDI , SE , and $INFLR$. This suggests that Sustainable Development does not explain about 60% of changes in Entrepreneurial Education. Similarly, the F-statistic of the model that shows the overall significant of the model shows that the model is statistically significant for Nigeria, Brazil and Malaysia. This implies that entrepreneurial education has significant effect on

sustainable development. The Durbin-Waston statistics indicate absence of autocorrelation in the model for Nigeria, Brazil and Malaysia.

DISCUSSION OF FINDINGS

The result on the effect of entrepreneurial education on sustainable development in emerging economies – Nigeria, Brazil and Malaysia is encouraging. Brazil experienced higher growth in entrepreneurial education during the period under review. It implies that Brazil would tend to have more sustainable economy than Nigeria and Malaysia respectively which recorded less effect of entrepreneurial education on sustainable economic development. The variables employed in entrepreneurial education on sustainable development in emerging economies – (Nigeria, Brazil and Malaysia) were; start-up procedures including interactions to obtain necessary permits and licenses and to complete all necessary verifications to start-operations. Businesses used included those with specific characteristics of ownership, size and type of production.

The growth of entrepreneurial education in these emerging economies – Nigeria, Brazil and Malaysia are encouraging. Brazil experienced higher growth in entrepreneurial education during the period under review. It implies that Brazil will tend to have more sustainable economy than Nigeria and Malaysia. The mean values of all the variables employed are not too different from their perspective median values; an indication of absence of excessive and stability of the variables used. There is cointegration relationship between entrepreneurial education and sustainable development in emerging economies.

Entrepreneurship education has significant effect on sustainable development in emerging economies. The result of this study concluded that it may not primarily be through existing firms that economic transition and growth may be driven, but through the creation of new firms or start-ups. Start-ups are the enterprises most likely to grow and create new jobs. Having bottle-necks at start-up procedures would stagnate the economy and these would be no sustainable economic development. The result is in line with previous studies and this study has confirmed that entrepreneurial education has positive effect on sustainable economic development in advanced economies (McMillan & Woodruff, 2002). However, it can be deduced that entrepreneurial education is a panacea for sustainable development for all economies. The developmental efforts of any economy can be met through the inculcation of entrepreneurial education in the citizenry.

SUMMARY AND CONCLUSION

Entrepreneurship education has positive and significant effect on sustainable development in Brazil and Malaysia respectively, but has negative effect in Nigeria. There is cointegrating relationship between entrepreneurial education and sustainable development in emerging economies. Entrepreneurial education has significant effect on sustainable development. The result of this work on relationship between entrepreneurial education and sustainable development corroborated with earlier research findings which indicated that, “there is a historic bond between entrepreneurship education and economic development as entrepreneurship plays transformative role in any economy (Gerlach, 2003); entrepreneurial firms act as agents of change, provide essential sources of new ideas that could have remained untapped in the economy (Acs and Audretsch 2005 while the theories of traditional and modern economy, used various models to show that entrepreneurship is a tool for sustainable economic development in wealthy economies (Gala & Moar, 2002; Holden & Linnerud, 2006).

The study has shown that entrepreneurship has both co-integration and mixed effects on sustainable development in emerging economies. The differences with earlier empirical studies from advanced economies could be attributed to obvious differences between wealthy and emerging economies. The differences in the thesis results even among the emerging economies may be as a consequence of the weakness or strength in each of the sampled economies.

Entrepreneurship as a multi-disciplinary concept, had proved controversies and the definition obviously depends on the area of interest of the study. An entrepreneur spots a profitable opportunity and devises plans to exploit such opportunity. An entrepreneur performs economic and social roles in the economy. Entrepreneur is a change-agent, making the old obsolete through creation of new firms, products and services. Research studies in entrepreneurship is viewed not to be adequate in the context of emerging economies due to poverty as the potential losses of entrepreneurship research adventure may outweigh envisaged potential gains which the poor people cannot contain with. Education status of a person has a positive effect on the entrepreneurial ability. This corroborates the research findings of (Bonte, Falck & Heblich, 2007) which concluded that a person gains more experience, human capital and entrepreneurial ability with better education and experience that comes with age.

The result of effect of entrepreneurial education on sustainable development is not consistent across board because of country-specifics. The study has shown that entrepreneurship has both co-integration and mixed effects on sustainable development in emerging economies.

As in this study, development variables such as self-employment, gross domestic product, access to fund and inflation have inconsistencies in the sampled emerging economies. The result of effect of entrepreneurial education on sustainable development is not consistent across board because of country-specifics. Entrepreneurs with high entrepreneurial ability contribute positively to sustainable economic development by triggering investment in modern sector once they perceive profit opportunities while entrepreneurs with low entrepreneurial ability undermine sustainable economic growth.

Attraction of foreign direct investment (FDI) in emerging economies is dependent on creating a favourable environment which comes through economic stability. Global competition for Foreign Direct investments has necessitated “running faster than others to survive”. The variables of knowledge-based entrepreneurship include gross domestic product, access to fund, direct foreign investment, self-employment and inflation.

The challenge for entrepreneurship development in emerging economies is how to provide the needed enabling business environment such as security, infrastructure, keeping pace with technological advancement, stabilizing the economy and reducing cost and procedures in start-ups; that would attract foreign investors into an economy to merge with the home-based entrepreneurs for enduring economic development. Government is both regulator and economic agent but government could undermine economic growth through policy inconsistencies, inaccurate economic statistics, corruption, mis-governance and neglect of the private sector which is the hallmark of sustainable economic development.

RECOMMENDATIONS

Policy makers in both the public and private sectors need to view entrepreneurship development as a potential mechanism to leverage sustainable economic development in emerging economies thereby raising the living conditions of the citizenry, creating employment and increasing Foreign Direct Investments, GDP and reducing inflation.

Both formal and informal entrepreneurial education needs to be planned and implemented through classroom instructions, conferences, seminars and

workshops. Formal education improves learning capabilities of individuals which improves their entrepreneurial ability. It is a quality human capital that can positively influence GDP, access available funds, foreign direct investment and succeed as self-employed person.

Sustainable economic development needs to be created through initiatives and policies that would encourage small enterprises because of their innovativeness and flexibility. Computer villages/clusters should be harnessed and given incentives. There should be positive stimuli for technological transformation. The tempo of emerging economies expanding at extra ordinary rates should be sustained, through economic liberalization which would make emerging economies ultimate destinations for foreign investments. Entrepreneurship starts and accelerates economic development and this serves as springboard to sustained economic development in emerging economies.

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