Academic Scholars Publishing League (ASPL)

ISSN: 2360-9944 | Volume 7 Issues 3 & 4 | June 2019 - January 2021

www.arcnjournals.org

International Journal of Management Sciences

Special Edition

International Journal of Management Sciences

ASPL Journal Series

ISSN: 2360-9944. Volume 7, Issues 3 & 4, June 2019 - January 2020

Published by: International Academic Journal for Global Research (iajgr), 995 E Memorial Boulevard Lakeland Florida, U.S.A. and printed by Africa Research Corps Printers, 172 Jose Marti Crescent, Abuja, Nigeria

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 3 | June, 2019 | Pages 01 – 13
asplpapersubmit@gmail.com

Human Capital Investment and Economic Growth in Nigeria: an Empirical Approach

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Abstract: *This research is set out to examine the relationship that exists between human capital investment and economic growth for the period 1980 to 2018. The selected macroeconomic variables are Primary School Enrolment (PSE), Public Expenditure on Education (PEE), and Public Expenditure on Health (PEH). The study is an attempt to evaluate how these key macroeconomic variables explain economic growth in Nigeria. The scientific method adopted for this investigation is multiple regression analysis using vector error correction model to estimate both the short run and long run relationship between the regressor and the regressand. The result obtained indicate that the selected macroeconomic variables have a positive but poor effect and contribution on economic growth. The granger causality test established a unidirectional causality running from primary school enrolment to economic growth in Nigeria. Based on the findings, the researcher made the following recommendations: The educational and health sectors should be looked into, and urgent attention should be accorded to these sectors. Efforts should be geared towards improving the standard of education in Nigeria. Substantial amount of government budgetary allocation should be directed towards the educational sector. There should also be establishments of special agencies with the responsibility of improving the skills and capabilities of human capital.*

Keywords: *Economic Growth, Primary School Enrolment, Public Expenditure on Education, Public Expenditure on Health, Vector Error Correction Model*

INTRODUCTION

No country has achieved sustained economic development without substantial investment in human capital. The role and importance of human capital in propelling the pace of economic growth cannot be overemphasized. The development of human capital has been recognized by economists to be a key prerequisite for a country's socioeconomic and political transformation. Therefore, human capital is considered as the most valuable asset and needs to be mobilized, developed and empowered to participate fully in all socio-economic activities.

Human capital becomes a tool for competitive advantage since it involves the process of training, knowledge acquisition (education), initiatives and so on, all these are geared towards skill acquisition. Human capital development is human centered because its major concern is on human empowerment which would lead to active participation. According to OECD (2001), human capital is concerned with knowledge, skills competitiveness and attributes embedded in an individual that facilitates the creation of personal, social and economic wellbeing. In order to achieve positive economic growth in Nigeria, human capital development should be considered

as an integral and important factor for economic growth. A major challenge facing the global community and Nigeria at large is how to achieve sustainable development. The three pillars of sustainable development cannot be achieved if human capital development doesn't come to play as an integral part. In Nigeria, the annual federal government budget to educational sector (in percentages) is nothing to talk about, statistics show that the percentages over the years are not in line with the United Nations Educational Scientific and Cultural Organization's (UNESCO) recommendation of 26.0% . It was discovered that from 2013-2015, the percentage was 10.3%, 11.8%, 12.7% respectively. A poor country is a country, which never invested sufficiently in its human capital development and the citizens who are supposed to be at the centre of the economic growth would be poverty stricken.

The effects of human capital variables (namely, health and education) imply that the investment rate tends to increase as levels of education and socioeconomic status of health rise. Longer life expectancy encourages larger investments in human capital, which in turn accelerates the per capita income. The provision of public resources for better health in a developing country can assist the poor to release resources for other investments, such as in education, as a means to escape poverty. Therefore, the development and proper utilization of human capital, plays a very paramount role in every nation's economic growth. That is, human capital is an important factor for the wealth of a nation due to its influence on the overall production of the country. Hence, the development of Nigeria's human capital is therefore of great importance if Nigeria wants to be competitive in the future (Bloom 2016).

Investment in human capital is also required to raise the general living standards of the people in LDCs. This is possible when education and training make fuller and rational utilization of surplus manpower by providing larger and better jobs opportunities in both rural and urban areas. These in turn, raise incomes and living standards of the people. Therefore, economists are of the view that it is the lack of investment in human capital that has been responsible for the slow growth of less developed countries (LDCs) such as Nigeria.

Statement of the Problem

A nation cannot experience economic growth without human capital. And for human capital to actually have any impact on economic growth some investments have to be made. Investment in human capital consists of; investment in education, training, health and other social services that will help in enhancing the productive capacity of labour.

Nigeria as a country is immensely endowed with both natural and human resources. In spite of all these abundant resources, economic growth in Nigeria has not grown to the expected standard. This is simply because, Nigeria has failed to realize her full development potential especially in education and health, with the top most priority, currently given to sustainable human capital development or people oriented development by many countries and multilateral organizations like UNDP. That is, the Human Development Index (HDI) provides a measure of human capital development in three dimensions: income, health, and education. But the values of HDI show that Nigeria is ranked 156 with the value of 0.459 among 187 countries (World Bank, 2015). This value places Nigeria in the bottom, meaning that Nigeria is considered to have low level of human development.

UNICEF in its state of the world's children report for 2017, pointed out that about 13.2 million Nigerian children have no access to basic education, and that majority of those that are lucky to enter schools are given sub-standard education (Ubec, 2017). Recently, there are about *58,242* primary schools with *31,796,078* students in public schools and *42,965,517* in private schools in Nigeria. In addition, Nigeria has *7,104* secondary schools with 8*,748,981* students (Dumaka, 2016). Funding has been in response to conditionalties imposed by international financial institutions (IFIs). Statistics show that federal government expenditure on education between 2010 and 2015 has been below 15% of overall expenditure. The national expenditure on education is difficult to compute, because, various states expenditures on education cannot be determined, in relation to the UNESCO recommendation of 26% of national budgets (Dumaka, 2016).

The Federal Government reformed agenda is anchored on the National Economic Empowerment Development Strategy 2002 (NEEDS) document. It was indicated that adult literacy rate of at least 65% by 2020 would be attained. The NEEDS recognize the centrality of human capital development towards achieving economic growth. It was described as a vital transformational tool. Going by the UNESCO report 2015, clearly, Nigeria is still very far from meeting the global economic development target.

Therefore, having observed the above problem, the need to empirically investigate the relationship existing between human capital development and economic growth in Nigeria is felt.

Research Questions

This study is aimed at finding answers to the following research questions

1. Does primary school enrolment predict economic growth in Nigeria?
2. To what extent has public expenditure on education impacted on economic growth in Nigeria?
3. Is there any significant impact between public expenditure on health and economic growth in Nigeria?
4. Is there any significant long run relationship between the identified independent variables and economic growth in Nigeria?

Objectives of the Study

The broad objective of the study is to determine the relationship between human capital investment and economic growth in Nigeria. Specifically, the study will:-

1. Evaluate if primary school enrolment significantly predicts economic growth in Nigeria
2. Determine if public expenditure on education impact on economic growth in Nigeria.
3. Examine to what extent public expenditure on health have explained economic growth in Nigeria
4. Establish the existence or not if any significant causal relationship exist between the identified independent variables and economic growth in Nigeria.

Research Hypotheses

For the proper analysis of this research work, the following hypotheses have been posited

1. **Ho_1:** Primary school enrolment does not significantly predict economic growth in Nigeria.
2. **Ho_2:** Public expenditure on education does not significantly impact on economic growth in Nigeria
3. **Ho_3:** Public expenditure on health does not significantly explain economic growth in Nigeria
4. **Ho_4:** Causality does not significantly run from the identified independent variables to economic growth in Nigeria.

REVIEW OF RELATED LITERATURE

Theories of Human Capital Development and Economic Growth

Contemporary discussions on human capital development and economic growth have been dominated by three theories as discussed below:

Human Capital Theory

The human capital theory emphasized that human capital development relates to schooling and training as an investment in skills and competences (Schultz, 1992). This theory bases its argument on national expectation of return on investment, as individuals make decisions based on the education and training they have received as a way of augmenting their productivity. As the global economy shifts towards more knowledge based sectors (such as the manufacture of ICT based services), skills and human capital development becomes a central issue for policy makers and practitioners engaged in economic development, both at the national and regional levels (Adelakun & Joseph, 2011).

According to this theory, a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. That is, this theory shows how education leads to increase in productivity and efficiency of workers by increasing the level of their cognitive skills. To proponents of this theory, people invest in education so as to increase their stock of human capabilities which can be formed by combining innate abilities with investment in human beings (Adelakun & Joseph, 2011). Examples of such investments include expenditure on education, on- the- job training, health, and nutrition.

The Modernization Theory:

This theory focuses on how education transforms an individual's value, belief and behavior. Exposure to modernization institutions such as schools, factories, and mass media inculcate modern values and attitudes. The attitude include openness to new idea, independences from traditional authorities, willingness to plan and calculate further exigencies and growing sense of personal and social efficacy. According to the modernization theorists, these normative and attitudinal changes continue throughout the life cycle, permanently altering the individual's relationship with the social structure. The greater the number of people exposed to modernization institutions, the greater the level of individual modernity attained by the society. Once a critical segment of a population changes in this way, the pace of society's modernization and economic development quickens. Thus, educational expansion through its effects on

individual values and benefits sets in motion the necessary building blocks for a more productive workforce and a more sustained economic growth (Adelakun & Joseph, 2011).

The dependence theory:

This theory arose from Marxist conceptualizations based on the dynamic world system that structures conditions for economic transformation in both the core and periphery of the world economy. Certain features of the world polity such as state fiscal strength, degrees and regime centralization and external political integration may contribute to economic growth in the developing world (Adelakun & Joseph, 2011).

Generally, economic development theorists agree that the quality of human resources has significant impact on economic growth. This body of thinking is of the opinion that the quality and quantity of labour determine production by virtue of it being a factor of production. The wealth and vitality of nations rest ultimately upon the development of people and the effective commitment of their energies and talents. Capital and natural resources are passive agents. The active agents of modernization are human beings, for them alone can accumulate capital, exploit natural resources and build political and social organizations.

The importance of human capital accumulation as an engine of economic growth and development has been widely recognized in theoretical and empirical studies. No country has achieved sustained economic development without substantial investment in human capital.

Empirical Literature Review

A review of some of the empirical literature is provided below;

Sankay, Ismail and Shaari (2010), investigated the impact of human capital development on economic growth in Nigeria during the period 1970 to 2008. Johansen cointegration technique and vector error correction analysis were used to ascertain this relationship. The basic macroeconomic variables of concern derived from the literature review are: Real gross domestic product (RGDP), real capital expenditure (RCE) on education, real recurrent expenditure (RRE) on education, real capital stock (RCS), total school (SCHE) enrolments and labour force (LF) are used to proxy human capital development. The result indicated that human capital development has a significant impact on Nigeria's economic growth.

Amassoma and Nwosa (2011), studied the causal nexus between human capital Investment and economic growth in Nigeria for sustainable development in Africa at large between 1970 and 2009 using a Vector Error Correction (VEC) and Pairwise granger causality methodologies. The findings of the VAR model and pairwise estimate reveal no causality between human capital development and economic growth. The study recommends the need to increase budgetary allocation to the education and health sector and the establishment of sound and well-functioning vocational institute needed to bring about the needed growth in human capital that can stimulate economic growth..

Johnson (2011), evaluated human capital development and economic growth in Nigeria by adopting conceptual analytical framework that employs the theoretical and ordinary least square (OLS) to analyze the relationship using the GDP as proxy for economic growth; total government expenditure on education and health, and the enrolment pattern of tertiary,

secondary and primary schools as proxy for human capital. The analysis confirms that there is strong positive relationship between human capital development and economic growth. Following the findings, it was recommended that stakeholders need to evolve a more pragmatic means of developing the human capabilities, since it is seen as an important tool for economic growth in Nigeria.

Oluwatobi and Ogunrinola (2011), examined the relationship between human capital development efforts of the Government and economic growth in Nigeria. It seeks to find out the impact of government recurrent and capital expenditures on education and health in Nigeria and their effect on economic growth. The data used for the study are from secondary sources while the augmented Solow model was also adopted. The dependent variable in the model is the level of real output while the explanatory variables are government capital and recurrent expenditures on education and health, gross fixed capital formation and the labour force. The result shows that there exists a positive relationship between government recurrent expenditure on human capital development and the level of real output, while capital expenditure is negatively related to the level of real output. The study recommends appropriate channeling of the nation's capital expenditure on education and health to promote economic growth.

Adawo (2011), used an econometric model to examine the contributions of primary education, secondary education and tertiary education to economic growth of Nigeria. These variables were proxied by school enrolments at various levels. Other variables included physical capital formation, health measured through total expenditure on health. In all primary school input, physical capital formation and health were found to contribute to growth. Secondary school input and tertiary institutions were found to dampen growth. Among others, this paper recommends that there should be adjustment in admission process in favour of core science.

Dauda (2010), using the human capital model of endogenous growth developed by Mankiw, Romer and Weil (1992), examined empirically the role of human capital in Nigeria's economic development. The paper employed a variety of analytical tools, including unit root tests, cointegration tests and error correction mechanism (ECM). Empirical results indicated that there is, indeed a long-run relationship among labour force, physical capital investment proxied by real gross domestic capital formation, human capital formation, proxied by enrollment in educational institutions and economic growth in Nigeria. Findings show that there is a feedback mechanism between human capital formation and economic growth in Nigeria. Thus, the policy implication of the findings is that government should place a high priority on human capital development. Efforts should be intensified to increase investment in human capital to achieve the growth which would engender economic development. Most importantly, education should be given prominence in Nigeria's developmental efforts. This would propel the economy to higher levels of productivity.

Pritchett (2001), using time series data to study the effectiveness of human capital growth, found no association between increase in human capital attributable to the rising educational attainments of the labour force and the rate of growth of output per worker. Specifically, he reported that the estimates of the impact of growth in education capital on growth per workers are insignificant.

METHODOLOGY

Research Design

This study adopted Ex-post-facto research design. This design type is relevant in explaining a consequence based on antecedent conditions, as well as determining the influence of one variable on another variable. Besides, Ex-post-facto research design is described as empirical inquiry in which the scientist does not have direct control of variables. Inferences about relationships among variables are made from any determined variations between the studied variables, Kerlinger (1973). His reason is that Ex post facto research studies facts that had already occurred and applied the same logic of inquiry adopted in experimental research design.

Model Specification

The principal instrument adopted for this study was vector error correction model (VECM). Thus**,** the model specification was developed from the theoretical framework (Modernization Theory Model) presented in the literature review and was modified and adopted to suit Nigeria case. Subsequently, the following modified Modernization Theory Model in a VECM equations as presented below are specified and tested:

Model Specification

The VECM model adopted for the study is specified below:

$$GDP_t = \beta_0 + \beta_1 PSE_t + \beta_2 PEE_t + \beta_3 PEH_t + \varepsilon_{1t}$$

Where;

GDP_t = Value of Gross Domestic Product at time t

PSE_t = Primary School Enrolment at time t

PEE_t = Public Expenditure on Education at time t

PEH_t = Public Expenditure on Health at time t

$\beta_0 - \beta_3$ refers to the parameters to be estimated

ε_t = omitted variable

A priori expectation: ($\beta_1 - \beta_3 > 0$)

PRESENTATION OF RESULTS

The augmented Dickey-Fuller unit root tests are applied to determine whether the series are stationary. Table 1 below summarizes the results for all the variables.

The results show that all the variables are non-stationary at levels since the calculated tau values are less in absolute terms than the critical values. The variables are found to be stationary only when tested at first difference. Thus, they are integrated of order one I(1). Each of these variables becomes stationary if it is differenced once.

Table 1: Result of the Unit Roots for Stationarity

Variables	***Level/first difference***	***Calculated tau***	***ADF critical (5%)***	***Stationarity***
GDP	*Level*	-2.657543	*-3.024581*	*Non-stationary*
	First difference	*-4.896541*	*-3.112654*	*Stationary*
PSE	Level	*-2.125490*	*-3.024581*	*Non-stationary*
	First difference	*-5.389012*	*-3.112654*	*Stationary*
PEE	Level	*-2.568904*	*-3.024581*	*Non-stationary*
	First difference	*-5.256908*	*-3.112654*	*Stationary*
PEH	Level	*-2.456752*	*-3.024581*	*Non-stationary*
	First difference	*-4.367907*	*-3.112654*	*Stationary*

Source: Author`s computation using Eview 9.5 computer software

The stationarities of all the series in the same order was thus a motivation to run for co-integration tests. This is aimed at finding the presence or absent of any long run relationship among the series.

In view of the above therefore, since the variables are stationary at difference orders, there was the need for a test for co- integration test using the Johansen (1991) co- integration technique. The result is presented in table 2 as shown below:

TABLE 2: Johansen Cointegration Test

Date: 03/06/19 Time: 11:44
Sample (adjusted): 1982 2018
Included observations: 37 after adjustments
Trend assumption: Linear deterministic trend
Series: GDP PEE PEH PSE
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.559888	59.84167	47.85613	0.0025
At most 1	0.476859	29.47479	29.79707	0.0544
At most 2	0.136978	5.502323	15.49471	0.7534
At most 3	0.001395	0.051647	3.841466	0.8202

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**

None *	0.559888	30.36688	27.58434	0.0214
At most 1 *	0.476859	23.97247	21.13162	0.0194
At most 2	0.136978	5.450676	14.26460	0.6842
At most 3	0.001395	0.051647	3.841466	0.8202

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author`s computation using Eview 9.5 computer software

Table 2 above indicated the presence of (1) co-integrating equation for trace statistics and 2 cointegrating equation for maximum Eigen value at 1% and 5% level of significance. Co-integration exists at those ranks where the value of the trace statistic exceeds the 1% and 5% critical value. Again, the eigenvalues all lie below 1, indicating the presence of co-integration.

TABLE 3: Result of Vector Error Correction Model Analysis

Vector Error Correction Estimates
Date: 03/06/19 Time: 12:21
Sample (adjusted): 1983 2018
Included observations: 36 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
GDP(-1)	1.000000
PSE(-1)	0.143081 (0.04327) [3.30654]
PEE(-1)	0.092796 (0.33101) [0.28344]
PEH(-1)	0.039439 (0.18259) [0.21599]
C	18.03888

Error Correction:	D(GDP)	D(PSE)	D(PEE)	D(PEH)
CointEq1	-0.292523 (0.45310) [-0.64560]	1.502467 (0.84277) [1.78278]	-0.331847 (0.18936) [-1.75251]	-0.037120 (0.23254) [-0.15963]
D(GDP(-1))	0.258826 (0.33587)	-1.466920 (0.62472)	0.124090 (0.14036)	0.030446 (0.17237)

	[0.77062]	[-2.34812]	[0.88406]	[0.17663]
D(GDP(-2))	0.052891	-0.143815	0.089757	0.107274
	(0.16140)	(0.30021)	(0.06745)	(0.08283)
	[0.32770]	[-0.47905]	[1.33069]	[1.29505]
D(PSE(-1))	-0.333983	0.052457	0.014989	-0.011983
	(0.13936)	(0.25922)	(0.05824)	(0.07152)
	[-2.39650]	[0.20237]	[0.25736]	[-0.16754]
D(PSE(-2))	0.166428	0.099139	0.104517	0.077535
	(0.21260)	(0.39545)	(0.08885)	(0.10911)
	[0.78281]	[0.25070]	[1.17633]	[0.71060]
D(PEE(-1))	1.213629	0.465726	0.729111	-0.346488
	(0.89669)	(1.66786)	(0.37474)	(0.46020)
	[1.35346]	[0.27924]	[1.94565]	[-0.75291]
D(PEE(-2))	0.250567	-3.364625	-0.125548	-0.152934
	(0.94133)	(1.75089)	(0.39340)	(0.48311)
	[0.26618]	[-1.92166]	[-0.31914]	[-0.31656]
D(PEH(-1))	0.251548	-0.637582	0.127396	-0.522760
	(0.39842)	(0.74107)	(0.16651)	(0.20448)
	[0.63136]	[-0.86035]	[0.76511]	[-2.55658]
D(PEH(-2))	-0.146869	0.295737	-0.075815	-0.124853
	(0.38587)	(0.71772)	(0.16126)	(0.19803)
	[-0.38062]	[0.41205]	[-0.47014]	[-0.63046]
C	2.576083	7.341353	-0.556862	1.545011
	(3.16740)	(5.89142)	(1.32370)	(1.62557)
	[0.81331]	[1.24611]	[-0.42069]	[0.95045]
R-squared	0.679975	0.252298	0.324941	0.342212
Adj. R-squared	0.569197	-0.006522	0.091267	0.114516
Sum sq. resids	6223.928	21532.68	1087.021	1639.332
S.E. equation	15.47197	28.77812	6.465950	7.940482
F-statistic	6.138189	0.974801	1.390572	1.502935
Log likelihood	-143.8293	-166.1703	-112.4200	-119.8152
Akaike AIC	8.546070	9.787241	6.801110	7.211958
Schwarz SC	8.985936	10.22711	7.240976	7.651824
Mean dependent	0.402486	7.500737	0.354434	1.438261
S.D. dependent	23.57254	28.68473	6.782879	8.438331

Determinant resid covariance (dof adj.)	1.60E+08
Determinant resid covariance	43603887
Log likelihood	-520.9590
Akaike information criterion	31.38661
Schwarz criterion	33.32202

Source: Author`s computation using Eview 9.5 computer software

As shown in the upper region of the vector error correction model (VECM) above as well as the normalized cointegrating coefficients for three cointegrating equations given by the long run relationship as shown below:

Normalized cointegrating coefficients (standard error in parentheses)

GDP	PSE	PEE	PEH
1.000000	0.143081	0.092796	0.039439
	(0.04327)	(0.33101)	(0.18259)

From the above result the coefficient showed by the constant is positive, proving that there are other factors outside this model which contributes positively to the economy growth. In other words, a unit change in the intercept will result to 18.03888 unit changes in the long-run on the Nigeria economy. The coefficient of primary school enrolment has a positive but poor effect and contribution on economic growth. It simply implies that a unit increase in primary school enrolment will increase GDP by 0.143081 units. The result also shows that PSE is statistically significant based on the t-value

It is also seen that the public education expenditure coefficient is positive, which is in line with the a priori expectation. Though a positive but also a poor effect and contribution on economic growth. Thus, the coefficient value of this variable is 0.092796, we can deduce that a unit increase in the public education expenditure, on contrary, impacts positively to economic growth. In other words, public education expenditure has not effectively impacted significantly to economic growth. The coefficient is statistically significant based on the t-value. The positive coefficient of the Public expenditure on health also showed positive but poor effect and contribution on economic growth, so a unit increase in the public expenditure on health will lead to 0.039439 units increase in the gross domestic product variable, thus public expenditure on health is statistically significant judging from the t-value.

TABLE 4: GRANGER CAUSALITY TEST RESULT

Pairwise Granger Causality Tests
Date: 03/07/19 Time: 10:16
Sample: 1980 2018
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
PEE does not Granger Cause GDP	37	4.89148	0.0140
GDP does not Granger Cause PEE		0.54808	0.5834
PEH does not Granger Cause GDP	37	3.39694	0.0459
GDP does not Granger Cause PEH		1.11322	0.3409
PSE does not Granger Cause GDP	37	3.78258	0.0335
GDP does not Granger Cause PSE		1.75238	0.1896
PEH does not Granger Cause PEE	37	0.13858	0.8711
PEE does not Granger Cause PEH		1.85405	0.1730
PSE does not Granger Cause PEE	37	1.48205	0.2424

PEE does not Granger Cause PSE		1.07194	0.3543
PSE does not Granger Cause PEH	37	2.00010	0.1519
PEH does not Granger Cause PSE		1.64898	0.2082

Source: Author`s computation using Eview 9.5 computer software

Table 4 above, depicts the result of the relationship among the variables. The result suggests that Primary School Enrolment (PEE), Public Expenditure on health (PEH) and Public Expenditure on Education(PSE) causes Economic Growth (GDP), hence the null hypothesis that PEE, PEH and PSE does not granger causes GDP cannot be rejected. The result also indicates that a unidirectional causality runs PEE to GDP, PEH to GDP, PSE to GDP

CONCLUSION AND RECOMMENDATION

From the result of this study, it has being proven beyond reasonable doubt that human capital development is crucial for sustainable economic development, that is there is actually a positive relationship between the human capital development and economic growth. Though the relationship has a positive but poor effect and contribution on economic growth. Our findings show that the key to the nation's economic development lies on the human capital development. It is important to note that although the primary school enrolments, total government expenditure on health and on education was significantly related to economic growth in Nigeria, yet our economic growth is not stable and sure so the educational and health sectors should be looked into, and urgent attention should be accorded to these sectors. Efforts should be geared towards improving the standard of education in Nigeria. Substantial amount of government budgetary allocation should be directed towards the educational sector. There should also be establishments of special agencies with the responsibility of improving the skills and capabilities of human capital.

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 3 | July, 2019 | Pages 14 – 28
asplpapersubmit@gmail.com

Application of Integrated Sustainable Solid Waste Management (ISSWM) Approach in Waste Management for Economic Transformation of Port Harcourt

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Abstract: *Waste disposal remains a major problem for many low income countries. The application of integrated sustainable waste management for waste management has been accepted by decision-makers to address waste management. It refers to a waste management system that best suits the society, economy and environment in a given location, a city in most cases. This study aims to demonstrate the need to encourage the adoption of Integrated Sustainable Solid Waste Management in management of urban waste. After reviewing relevant literatures, a face to face interview was conducted with stakeholders including waste contractors, NGO's, and academia using snowball and purposive sampling technique. The study examines the concept of Integrated Sustainable Waste Management (ISWM), and assesses waste management practices in the city of Port Harcourt within the three dimensions of sustainability of ISWM. Findings reveal that there are no NGOs or any international or national donor agency involvement, non-recognition of waste minimization, re-use and recycling, gross inadequacy of facilities for waste separation system, including waste containers and waste collection points in waste management in Port Harcourt. This study recommends that an integrated approach to waste management which calls for a multi stakeholder involvement in every stage of the waste stream be adopted.*

Keywords: *Waste Management, Sustainability, Stakeholders participation, Economic Transformation*

1.0 Introduction

Solid waste management is considered to be one of the most serious environmental issues confronting urban areas in developing countries (UN-HABITAT ,2010).The generation of Solid Waste (SW) is inevitable. It was not important in ancient times but became an issue as soon as people started to settle in communities. Manoharochary & Jayarama, (2009) documented that billions of tons of waste are generated globally and cities in developed countries produce more solid waste per capita than those in developing countries. For example, a typical American generates an average of 2kg of solid waste each day, whereas an Indian generates one-fourth

of it. The daily waste generation in urban areas of Asia was about 0.7 million tonnes in 1999 and it is expected to reach about 1.8 million tonnes per day by 2025 (World Bank, 1999). In developing countries, Nigeria inclusive, municipal solid waste management has emerged as one of the greatest challenges facing environmental protection agencies. In Port Harcourt of Nigeria, it is found that an average of 900 to 1350 metric tons of waste is generated on daily basis (Rivers State Environmental Agency, RSESA, 2005). According to Wokekoro and Uruesheyi (2014), open and indiscriminate dumping of waste which includes human waste, animal waste and other waste components have become one of the main problems and an intractable nuisance in the city of Port Harcourt. To address these issues, many cities in developing countries focus on establishing an integrated solid waste management system based on the Reduce, Recycle and Reuse (3Rs) and trying to reduce the amount of waste generation at source rather than later at the end-of-pipe. However, these efforts are still very limited with a mix of results and relatively few efforts have been made to regulate organic materials that usually comprise over 50% of the total waste generation in the cities (Dulac ,2001). There is current thinking that land fill and incinerations have significant environmental impacts, and not adequate to deal with the large volumes of solid waste generated in the cities. Due to these issues and the emergence of the sustainable development concept, it has resulted to the idea of sustainable solid waste management.

In the city of Port Harcourt, solid waste collection is inadequate and poor, leaving waste uncollected in streets, dumped in vacant lands, drains and surface water, posing threats to public health. The waste management practices are costly services, partly due to inefficiencies. The legitimate question arises how we can deal with solid wastes in an efficient, effective and sustainable manner.

Waste management is sustainable only if the relation between reutilised substances and amount of waste generated is significantly increasing, over a period of time. The concept of Integrated Sustainable Solid Sustainable Waste Management (ISWM) means the selection and application of suitable techniques, technologies, and management programmes to achieve specific waste management objectives and goals. Integrated Sustainable Waste management looks at the physical component (collection, disposal and recycling) and the governance aspects (inclusivity of users and service providers: financial sustainability; coherent and sound institutions underpinned by proactive polices).

The concept of Integrated Sustainable Waste Management (ISWM) is an approach to be adopted to attain sustainable solutions to solid waste problems, especially in Port Harcourt. This paper explains the ISWM concept and its impacts as an assessment tool to trigger economic transformation. It also examines solid waste management practices in Port Harcourt especially within the three dimensions of ISWM and creates awareness on the need to assimilate integrated sustainable waste management approach for economic benefits.

2.0 Literature Review

2.1 The Concept of Integrated Sustainable Solid Waste Management

Integrated Sustainable Waste Management refers to a waste management system that best suits the society, economy and environment in a given location, a city in most cases. The

concept of ISWM not only takes technical or financial-economic sustainability into account as in conventionally done, but it also includes socio-cultural, environmental, institutional and political aspects that influence overall sustainability of waste management(Van De Kluendert,1999). ISWM also stands for a strategic and long-term approach. Waste management is seen in the ISWM approach as an equity and public health issue, which means that everybody has a right to a regular waste collection and proper sanitation.

Sustainability aims at providing the best outcomes for the human and natural environments both now and in the future. It is a concept relating to the continuity of economic, social, institutional and environmental aspects of human society. The word "Sustainability" and "sustainable development" are often used interchangeably in the literature. The Brundtland Report of 1987defines sustainable development as development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs." One of the important milestones of the development of the concept of sustainability is the 1992 Rio Conference, informally known as the "Earth Summit". In 2002, the World Summit on Sustainable Development expanded this definition by identifying the "three overarching objectives of sustainable development" to be (1) eradicating poverty, (2) protecting natural resources, and (3) changing unsustainable production and consumption patterns.

The Earth Summit produced the Agenda 21 which stated that environmentally sound waste management should prioritise the recovery of waste and waste treatment and finally waste disposal (UNEP, 2009). This is referred thereafter to the hierarchy principle. It further stated that a preventive waste management approach focused on lifestyle changes, and ones in production and consumption patterns, offered the best chance for reversing current trends. Though, Agenda 21 is not legally binding, its implementation has been left more to the different countries for action. According to UNEP (2009), only few countries have been consistent in their Agenda 21-related policies so far.

ISSWM differs from conventional approaches towards solid waste management by seeking stakeholder participation, by including waste prevention and resource recovery explicitly, by encouraging the analysis of interactions with other urban systems and by promoting an integration of different habitat scales (city, neighbourhood, household) (Klunder and Anschütz, 2000). In this context "Integrated" means that the system uses a range of interrelated collection and treatment options, at different habitat scales (household, neighbourhood, and city). In addition, it involves all stakeholders, be they governmental or nongovernmental, formal or informal, profit- or non-profit oriented. Finally, "Integrated" takes into account interactions between the waste management system and other urban systems. For more than ten years, the ISSWM concept has also evolved and is slowly becoming accepted by decision-makers. Although this process is successful in most industrial countries, it is rather slow in developing countries like Nigeria.

2.2 Waste Generation and Solid Waste Management Practice in Port Harcourt

In Port Harcourt, average daily waste generation is between 900 to 1350 metric tons (RSESA, 2005). Composition of wastes generated includes, garbage 41%, paper and plastics 35%, scrap metal and glass 15%, construction waste 4%, sludge 3%, and expired chemical waste and drugs

2% (RSESA, 2005). Indeed, indiscriminate refuse dumping has become a common feature of most African town and cities since the recent past.

Waste management in Port Harcourt is still at the rudimentary level like so many other cities in the developing world, thus, the city is faced with the dilemma of eradicating mounting heaps of solid waste from its environment as it is being overtaken by the unsightly views of overflowing dumps, unattended heaps of solid wastes emanating from domestic or commercial sources (Agwu, 2012). The RSESA now RIWAMA charged with the responsibility of waste generation in Port Harcourt created refuse collection centres/points within the city and evacuated it to designated approved dump sites. Studies by Tamunobereton-ari, Omubo-Pepple, & Igbani, (2012) cited in Visigah and Kakulu, (2015) revealed that about 75% of the storage facilities for waste in the city are substandard and insanitary; and there is an absence of colour coded containers for different waste types, therefore resulting in a situation where all types of waste are lumped together, making sorting and treatment of waste extremely difficult. The results also revealed the fact that collection of solid waste at open space transfer stations account for about 70%, thereby exposing the soil at these locations and surrounding surface and ground water retainers to contamination by leachate and runoff during precipitation. According to the World Health Organisation (WHO) (1992), over 10% of preventable illness is due partly to inadequate SWM. The latter also poses a serious threat to the national economy in general and in particular to the tourism-driven economy.

2.3 Need for Integrated Sustainable Waste Management (ISWM)

Cities are facing an increasing growth in population, and shares in GDP growth, resulting in – among other things – increasing quantities of waste being generated and due to changing lifestyles and consumption patterns, the quantity of waste generated has increased with quality and composition of waste becoming more varied and changing. Also, industrialization and economic growth has produced more amounts of waste, including hazardous and toxic wastes. According to the World Bank (1999) an approximate of 590 to 880 million tons of methane (CH4) are released into the atmosphere every year. About 90 % of the gases generated are due to the decomposition of biomass as a result of indiscriminate waste management, among other causes and that between one third and two-third of the solid waste generated goes uncollected, piling up on streets and in drains, contributing to flooding and spread of disease.

There is a growing realization of the negative impacts that wastes have had on the local environment (air, water, land, human health etc.). Complexity, costs and coordination of waste management has necessitated multi stakeholder involvement in every stage of the waste stream. This calls for an integrated approach to waste management.

Today, Local communities are now looking at waste as a *business opportunity*, (a) to extract valuable resources contained within it that can still be used and (b) to safely process and dispose wastes with a minimum impact on the environment Indiscriminate solid waste management leads not only to the destruction of the ecosystem, but also to lower economic productivity, and thus to poverty (Louigueur, 2007). In order to achieve sustainable development, policy makers in developing Countries have to cope with the above-mentioned issues.

2.4 Case Studies where Locally Appropriate Solutions Work

Research has showed that where there is strong political commitment and leadership, and where the local community is actively involved, solutions that are locally appropriate and affordable can be found. The case studies shown here were clearly documented by Wilson, Velis and Rodic (2013).

Moshi is a small municipality at the foot of Kilimanjaro in north east Tanzania with a clear focus on the cleanliness of the city, driven by concerns over public health. Stakeholder platform on solid waste has been active since 1999, making strategic and action plans that are subsequently implemented. Pilot projects have been used to test new models of service delivery, involving both the local private sector and community-based organisations (CBOs) that provide primary collection in unplanned settlements. These joint efforts by multiple stakeholders, has made Moshi won the official title of the cleanest city in Tanzania for several years in a row. This is a result of a broader commitment of the council and citizens to urban infrastructure and governance issues, as demonstrated by their active participation in various countrywide initiatives such as the Sustainable Cities Programme and the Urban Sector Rehabilitation Programme (Ishengoma, 2010).

Ghorahi is a small and relatively remote city in south western Nepal. The city has very limited financial resources but, due to a clear vision, strong commitment by the authorities and active participation of key stakeholders, it managed to develop a well-managed state-of-the-art waste processing and disposal facility (one of only three in the country) without any form of foreign involvement. The facility includes waste sorting and recycling, sanitary landfilling, leachate collection and treatment, and a buffer zone with forests, gardens and a bee farm that shields the site from the surrounding area. A small initial investment from the municipality budget was used to commission geological studies from the national Department of Mines and Geology and identify a very suitable site that was accepted by the general public. In turn, this convinced the Ministry of Local Development to mobilise national financial support for the construction. The site was brought into operation within 5 years, in 2005. A strong landfill management committee involving local people and key stakeholders ensures that the site is properly managed and monitored, and also giving a sense of ownership – and even pride – regarding the landfill (Tuladhar, 2010). Activities are ongoing to expand waste collection and strengthen recycling in the municipality.

3.0 Research Methodology

This research involves an element of investigation into solid waste management in Port Harcourt within the three dimensions of sustainability of ISWM namely stakeholders, system elements, and aspects as shown in the diagram. Hence, there would be need to use literature and semi-structured interview to illicit information.Qualitative research uses various techniques to explore and interpret the way in which a social actor experience or perceive the .world and make meaning of the experience. Saunders *et al* (2007) note that “the adoption of a semi-structured interview will be helpful in finding out what is happening in order to seek out new insight in an exploratory study (like this)”. The researcher therefore tries to investigate the subjective reality of the stakeholders (of waste management in Port Harcourt) in order to be

able to make sense of and understand their motive and actions in the way that is meaningful (Sunder, *et al* 2009). To ensure credibility of the research, the snowball and Purposive sampling was the main technique used to identify participants for the structured and non-structured interview Babbie,.(2013). Snowball sampling was used to select 12 respondents each from stakeholders, including waste contractors, and NGO's. In an attempt to get stakeholders, the researcher tried to get one stakeholder who led the researcher to get the next for interview. These trends continued uniformly for the rest of the respondent stakeholders, while the purposive sampling was used to select 12 academia. In all a total of 36 respondents were selected purposively and interviewed. Direct quotation from the Interviewers and Simple percentages were used to assess the issues canvassed within the three dimensions of ISWM. The ISWM concept consists of three dimensions of sustainability, which needs to be integrated:

A. Stakeholders
B. System elements
C. Aspects

These three dimensions are worked out in more detail in Figure 1 below. The ISWM, as shown in Figure 1 , is a framework that was first developed by WASTE, a Dutch non-governmental organisation (NGO), and its partners in developing countries in the 1980s, and further developed by the Collaborative Working Group on Solid Waste Management in Low and Middle Income Countries (CWG) in the mid 1990s (Van de Klundert, Anschütz,& Scheinberg, 2001). Since then, it has become popular as an approach to reach better, more sustainable solutions to municipal waste management in developing countries (Van de Klundert, Anschütz, & Scheinberg, 2001).

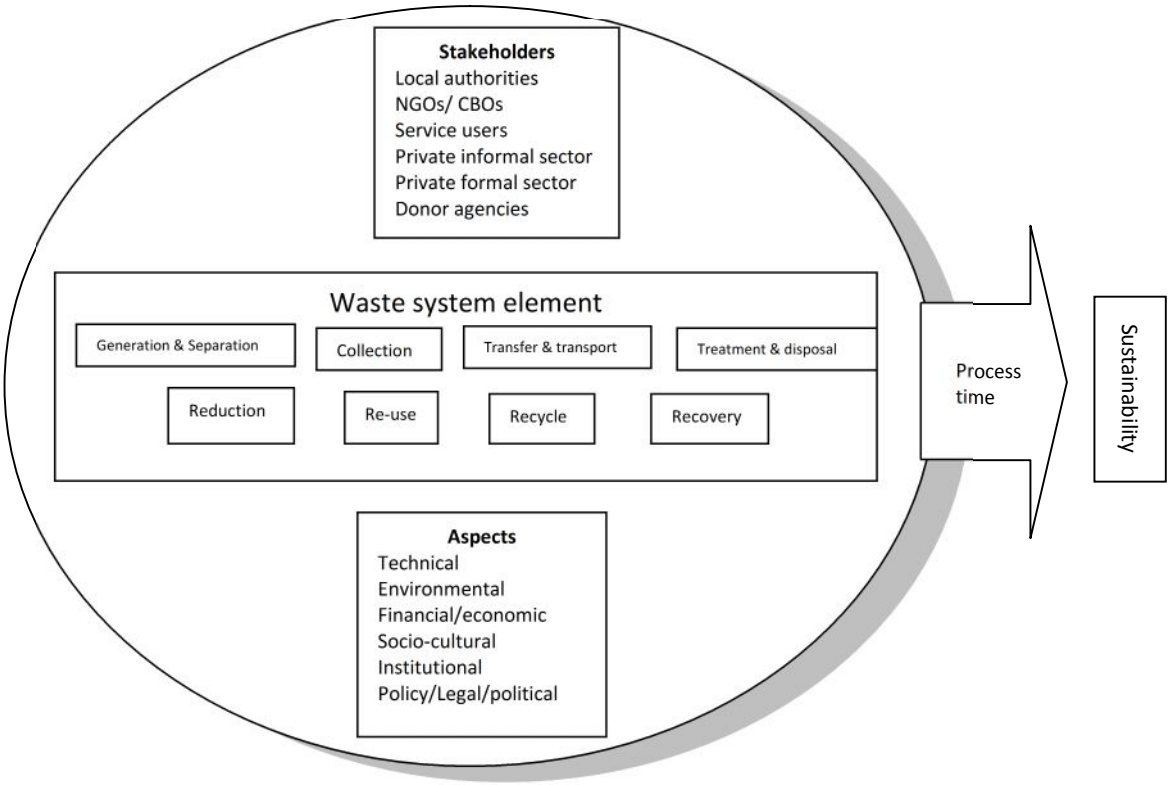

Figure 1: Integrated sustainable waste management (ISWM) framework (Van de Klundert, 1999)

4.0 Results and Discussions

The results for this study are presented below using tables, charts and direct quotation from the Interviewers to supplement quantitative data.

4.1 Characteristics of Respondents

Table 1: Categories of Respondents

Options	Frequency	Percentage %
Categories of Respondents		
Academia	12	33.3
Waste contractors	12	33.3
NGO'S	12	33.3
Age Distribution		
20-30years	3	08.3
31-40 years	11	30.6
41-50 years	12	33.3
Above 50 years	10	27.3
Educational **Qualification**		
SSCE	4	11.1
NCE/ND	10	27.8
B.Sc/B.Tect/HND	8	22.2
M.Sc/Ph.D	12	33.3
TOTAL	**36**	**100.0**

Source: Field Survey, 2018

Table 1 above shows the background information gathered on respondents. Majority of the respondents are mature and educated. This may have implication on the overall research findings. The age distribution of majority (33.3%) of respondents' ranged from 41 to 50years, 30.6% falling between 31 and 40 years, 27.3% are more than 50 years old, while the remaining 8.3% of the respondents are between the age of 20 and 30years. It is also observed that 33.3% of the respondent stakeholders had M.Sc/PhD, 27.8% had NCE/ND, while 22.2% had B.Sc/ B.Tech/HND, and 11.1% have below SSCE. This shows that an average respondent's stakeholder is educated and the information provided by them is reliable and dependable.

4.2 Stakeholders, the First ISWM Dimension

ISWM utmost concern is the participation of stakeholders. A stakeholder is a person or organisation that has a stake, an interest in - in this case- waste management. A number of key stakeholders are listed in Figure 1. The municipality, with its general responsibility for urban cleanliness and the citizens or households who use the system, are always stakeholders in waste management. Stakeholders by definition have different roles and interests in relation to waste management; the challenge of the ISWM process is to get them to agree to co-operate for a common purpose, that of improving the waste system.

In an effort to find out the involvement of stakeholders, 30 of the respondent stakeholders representing 83.3% indicated that they were not consulted nor involved in any role pertaining to waste management in Port Harcourt; only 6 representing 16.7% said they have participated. The results are shown in the figure 2 below:

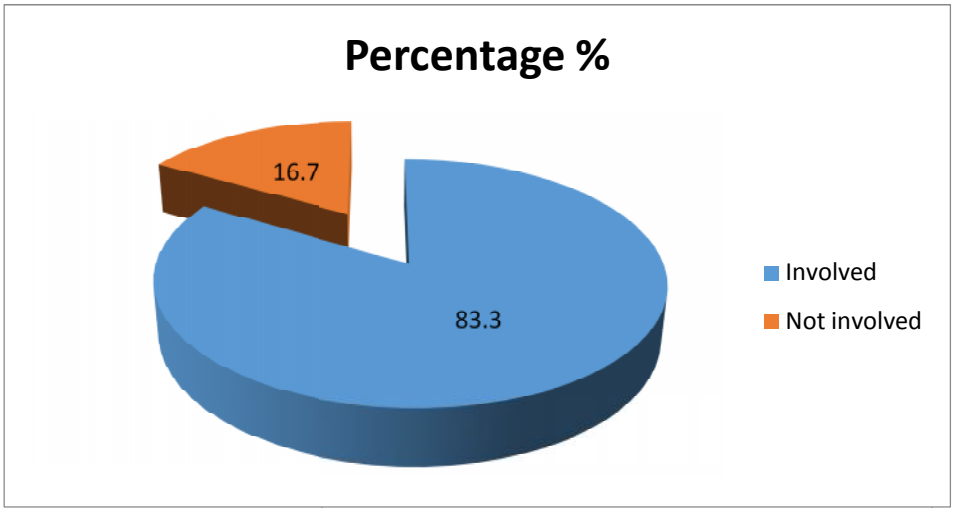

Figure 2 :Involvement of Stakeholders
Source : Field Survey, 2018.

The result of the interview conducted above implies that there are no NGOs or any international or national donor agency involvement in waste management in Port Harcourt. As stated by an interviewee NGO corroborated this when he said:

" *I have made several proposals to RIWAMA on the need to reposition waste management approach in the state but all to no avail. I have not seen any reply to my proposal. I have not been invited for any meeting*"
Another interviewee also said:
"I have not participated in the design of waste services, recruitment of workers and setting of rates for user charges"

When the respondents were asked whether waste contractors are regulated, 8 of the respondent waste contractors interviewed representing 66.7% said they are not, 3 of them representing 25.0% said they are not sure, only 1 respondent representing 8.3% said they are regulated. This results of the interview with waste contractor's shows that private waste contractors are not regulated. The reason was attributed to the fact there are no articulated SWM policy in the state (Field Survey, 2018).

On the incorporation of scavengers' operators into the system, waste contractors were contacted and interviewed. All the respondents (100%) said scavengers were not incorporated into the system. Rather, they operate on their own.

4.3 Waste System Elements, the second ISWM dimension

Waste system elements refer to how solid waste is handled and where it ends up. Particularly this second dimension has important environmental implications and for this reason a number of national environmental ministries have taken the idea of a waste management hierarchy as an operational policy guideline. The hierarchy is also a basis of the ISWM approach and gives priority to waste prevention, minimisation, recycling and other forms of recovery of materials. Only when this is not possible is 'pure' disposal allowed. Unfortunately, this idea is not always put into practice.

When the respondents were asked questions on the level of practice of waste prevention, minimisation, recycling and other forms of recovery of material, about 78.5% of the respondents indicated they were not satisfied with the level of practice while 21.5% claimed to be satisfied with the level of practice. The results are shown in figure 3 below

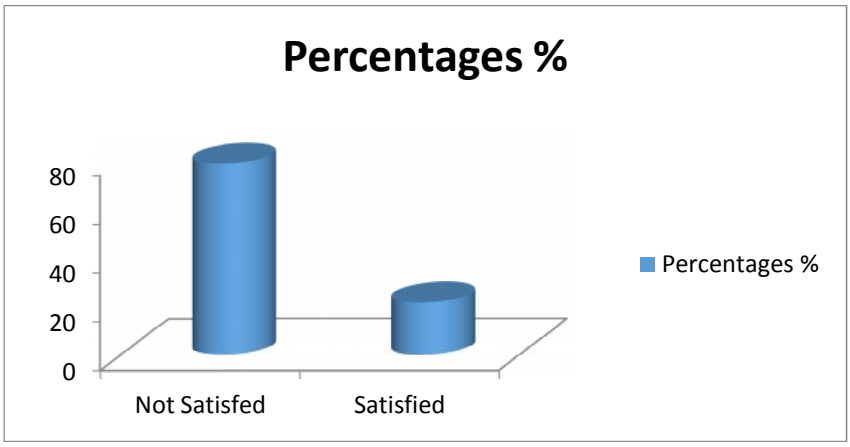

Figure 3: Respondents Satisfaction with the Level of Practice of Waste
Source : Field Survey, 2018.

This shows that Waste minimization; waste re-use and recycling are not recognized, no motivated or practiced in Port Harcourt. This was confirmed by an interviewee when he said:
"Waste minimization, re-use and recycling were only practiced at individual level and there were no policy or any public enlightenment to show government commitment".

In an attempt to answer question on same issue, another interviewee stated:
"*The Rivers State government built a recycling plant but this plant is as good as none existing*".
The findings and the literature reviewed indicated that

4.4 The Third Dimension: ISWM Aspects

Within ISWM the third dimension consists of six sustainability aspects, or lenses, through which the existing waste system can be assessed and with which a new or expanded system can be planned. The sustainability aspects, ranging from political-legal, to social-cultural, institutional-organisational, technical performance, environmental-health and financial-economic, cover the range of factors influencing solid waste activities and, taken together, predict or influence the

sustainability of the entire system.

On the adequacy of the facilities for waste separation system, including waste containers and waste collection points all the 36 respondent stakeholders representing 100% said they are grossly inadequate. Furthermore, opinions of the 36 respondent stakeholders interviewed were sought on the need to encourage the design and fabrication of waste treatment facilities using available local materials as envisaged by ISSWM. Out of the total number interviewed, 34 respondents representing 94.4% of them said Yes, while 2 of them representing 5.6% said No. The results are shown in figure 4 below:

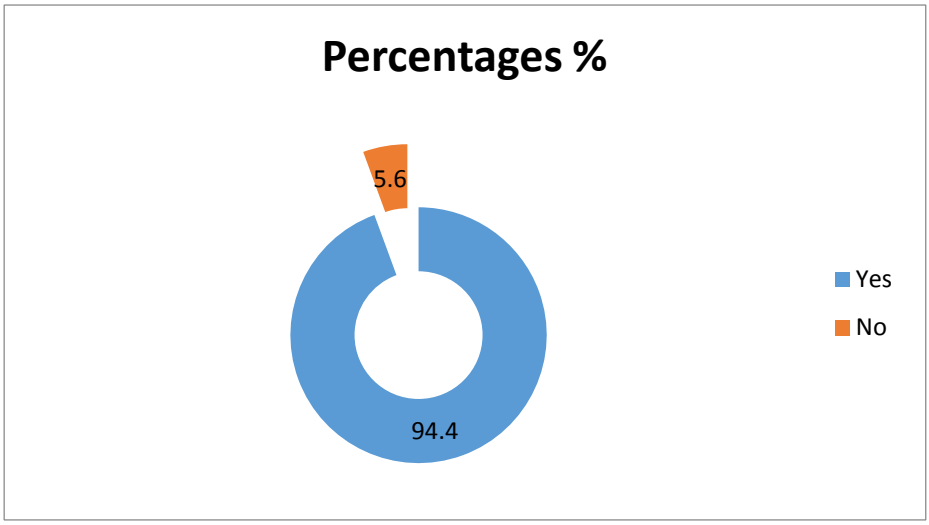

Figure 4: Opinion on Design and Fabrication of Waste Treatment Facilities using available Local Materials
Source: Field Survey, 2018.

The reason for their objection according to one of the respondents is that adequate funds are not allocated to waste collection and there is no plan for cost recovery (Field Survey, 2018). Thus an interviewee respondent stakeholder said:
"There is the absence of the political will to implement an environmental health assessment and monitoring system on a longer term."
The search further indicated that 85% of the respondents from the stakeholders recommended the Adoption of ISWM to ensure the sustainable aspect of waste. A number of ideas were sought on how to advance waste management practice in the city. On this an interviewee respondent said:
"government should encourage a *transparent procedures for competitive bidding and contracting out of waste management services to ensure sustainability*".
Similarly another respondent interviewee particularly said:
"if Institutions in charge of waste management should prepare and disseminate Technical guidelines for waste reduction and prevention, sustainability will be achieved ".

5.0 Waste Management and the Millennium Development Goal

In line with the world's governments commitment to achieving the Millennium Development Goals (MDG) , solid waste services are widely acknowledged as the principal means through which these goals can be achieved. The MDG emphasise poverty alleviation and access to sanitation and health services for all. The MDG have been adopted to ensure environmental sustainability. Within that goal, targets 9 and 11 of the MDG are "to integrate the principles of sustainable development into a country's policies and programmes and reverse the loss of environmental resources." Although there are no direct references to solid waste in the specific targets, the MDG call for appropriate environmental considerations as well as social awareness of the problems of waste pickers and other poor people in cities. Moreover, the issue of urban poverty is inextricably linked to waste management in Low and Medium Income Countries (LMIC). In India, for instance, nearly 1 million people find livelihood opportunities by engaging in waste collection and recycling through well-organised but informal systems. If the MDG of poverty alleviation and access to adequate solid waste services are to be achieved in Nigeria, waste management must become one of the chief focus areas, particularly in haphazardly growing urban and metropolitan areas like Port Harcourt where it remains a low priority for municipalities but high on the agenda of the citizens

6.0 ISSWM and Economic Transformation

An examination of the content of Integrated sustainable solid waste management (ISSWM) framework has shown that it is a meaningful tool for solid waste management because it involves carefully evaluating local needs and conditions to determine the most suitable options for all aspects of waste management, including generation, segregation, collection, transportation, sorting, recovery, treatment, and disposal. Because it is based on local needs and conditions, ISWM can be an effective policy tool in all cities, regardless of their level of development and existing waste management practices (UNEP,2004).Cities are the drivers of economic growth. As countries develop, more national income is produced in urban areas, accounting for 55% of Gross National Product (GNP) in low income countries, 73% in middle-income countries and 85% in those of high income (World Bank 1999).

Visigah and Kakulu (2015) in their study assessed cases where the ISWM approach has been successfully established as a policy tool for guiding the management of solid waste in medium income countries, with the view of imbibing practices that would be achievable, considering the available technology and financing options argued that ISWM can serve as a meaningful planning policy tool for solid waste management and environmental protection and concludes that ISWM can be used as a tool to trigger job creation, source raw materials for industry and generate energy to support the current unsustainable energy generation sector.

Within the framework of ISWM, the first dimensions of ISWM as had shown in Figure 1 shows the range of stakeholders. An ideal ISWM takes into account all relevant stakeholders within a waste stream, and allows for sustainable principles to be implemented throughout. Involvement of stakeholders can take several forms. For example the involvement of local communities in planning and implementation does not mean that residents are used as cheap

labour. They can play a range of roles, such as those identified by Moreno, Rios & Lardinois, (1999). They are:

I. residents - placing waste outside for collection, separating it at source
II. community managers - participating in the design of a waste service, recruitment of workers, setting rates for user charges
III. citizens - pressuring municipal authorities so that services are being offered
IV. community members - participating in clean-ups
V. clients - paying for waste management services
VI. watchdogs - monitoring and supervising the operation of services

Lardinois, (1996), asserts that Stakeholder involvement is imperative, because it can lead to more responsible conduct, increased environmental responsiveness, and a higher willingness to pay among users of a waste management system. It can also lead to empowerment of groups of stakeholders that have had limited access to decision-making power and resources, for example local residents or informal micro-enterprises involved in collection and recycling of waste. According to Lardinois, (1996), the participation of communities and micro- and small-scale enterprises can generate income and employment in low-income urban areas and thus contribute to the alleviation of urban poverty.

7.0 Conclusion

This paper has shown that Waste minimization; waste re-use and recycling are not recognized, not motivated or practiced in Port Harcourt as advocated in the ISWM framework. The paper has established that the way forward for a successful solid waste management is to consider all of the three aspects of ISWM. The success of the ISWM system based on the 3Rs depends on the partnerships among all stakeholders. The ISWM framework recognizes the importance of evaluating local conditions and needs and creating place-appropriate solutions (Nachalida, Beverley & Kirstin,2018). This paper concludes that a clear vision with political commitment by government and adoption of a multi stakeholder involvement in every stage of the waste stream based on ISWM approach to waste management can help reduce costly inefficiencies, encourage the development of new markets, and lead to job creation in Port Harcourt.

8.0 Recommendations

This study recommends that the following ISWM measures be adopted to make waste management more sustainable and integrated.

I. A training programme to promote the concepts of ISWM be encouraged and taught at all level of education
II. A transparent system of rewards and penalties should be installed.
III. Transparent procedures for competitive bidding and contracting out of waste management services should be established.
IV. Social privatisation and community participation, expectedly resulting in efficiency gains and cost savings should be encouraged.

V. Institutions in charge of waste management should prepare and disseminate Technical guidelines for waste reduction and prevention.
VI. Waste separation at source through education and economic incentives should be encouraged.
VII. Waste management bodies should assess technical performance of treatment facilities (energy recovery, incineration), if any
VIII. Linkages and trust between different groups of actors involved in waste management (local government, formal and informal private sector, NGOs, CBOs) through joint management committees, co-ordinating platforms, etc.be developed.
IX. Stakeholders and their interests in waste management (stakeholder analysis) be identified and encouraged.
X. Design and fabrication of waste treatment facilities using available local materials be encouraged.

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 3 | August, 2019 | Pages 29 – 37
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Current Education Issues in Nigeria: Implication to the Economy

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Abstract: *The paper discussed current education issues in Nigeria: implication to the economy. Education in Nigeria is overseen by the ministry of Education Local authorities take responsibility for implementing policy for state controlled public education as state schools at a regional level. The education system is divided into kindergarten, primary education, secondary education, and tertiary education. Recently government began to will education budget yearly and increasing other sectors budget more than that of educational sector. The implication of this to the economy to any nation is dangerous. the paper disused education system of Nigeria, current educational budget in Nigeria , threat of insurgency to education system in Nigeria, knowledge economy, unemployment of graduates, and business education in Nigeria as a portal way to gain financial independence.*

Keywords: *Current Education, Economy, Budget, Unemployment and Insurgency*

Introduction

Education is the bane of progress in all country of the world. It is the greatest thing that man has benefited. Before the era of education in Nigeria, the country was in the dark struggling to survive through many jobs that could not move the country forward. Education is the transition of knowledge from teacher to students or learners. It is the greatest gift that parents can bequeath a child. It is more valuable than any other thing in the world. In this 21st century, man has realised that natural resources as a source of survival of any nation is falling. The era of oil, gold, diamond and any natural resources and failing with the result that many countries are becoming impoverished which Nigeria has become a victim.

Nigeria used to thrive as an oil producer country thereby neglecting all other facets'. Today, American who are the greatest petrons of Nigeria oil discovered oil in their country through research and it is affecting Nigerian economy seriously. The Nigerian education system has come a long way but a lot is till crying for attention. Previous government tried to improve the standard of education by making laws and introducing several education sets that they felt world enhance education. Education in Nigeria is overseen by the Ministry of Education. Local authorities take responsibilities by implementing policy for state controlled public education and state schools at a regional level. The Education system is divided into kindergarten, primary Education, secondary Education, and tertiary education. Recently, government began to cut education budgets yearly and increasing other sector budget more than that of the education sector. The implication of this to the economy is dangerous. The paper discussed educational

system of Nigeria, current educational budget in Nigeria, threat of insurgency to education system in Nigeria, knowledge economy, unemployment of graduates, and business Education in Nigeria as a portal way to gain financial independents. The system of Education in Nigeria has come a long way but a lot still have to be done to awake the hidden potentcials. Balogun (2010) opened that education is the light, without the the hole world would be in darkness.

Knowledge Economy

In this 21st century, it cannot be overemphasized that knowledge is the greatest aspect to possess. Knowledge is power as well as money the traditional sources of wealth like oil, Gold, Diamond, and others have ready given way to thoughts and ideals. Mr. Bill grate the richest man on earth today, was enriched by knowledge and ideals about information and communications technology and not by Oil, Gold or Diamond. An increasing numbers of countries such as Japan, Indian or Malaysia and making millions of US dollars by by exporting computer software rather than cassava, oil, gold or diamond. In this century of knowledge, no country can survive take less of thrive (Durosaro).

In contemporary society, country aims at achieving thieving economy through the education of its citizens. It is only literacy societies that can acheive economy emancipation. Education is seen as the process of acquiring knowledge, skills, attitudes, literates, abilities competence, and the cultural normal of society by people to transmit this life to the coming generations so as to enhance perpetual development of the society. Berden (1969) Lawal (2013) observed that distinguished economist's has confirmed long held by educators that poor countries would become rich only if they invested heavily in education. This is because education was believed to nature social, emotional, congritude, and physical development of a nation. Without education, young people were more vulnerable to abuse and exploitation and less able and fulfil the many roles they were to play to ensure their own and other survival.

Unemployment of graduates

The high rate of graduate of unemployment in Nigeria is both alarming an worrisome. The main reason for this is lake of employable skills by this graduate. The non- availability and inadequacy of new technologies in schools and entrepreneurship skills result to high rate of graduate unemployment. Our graduates lack 21st century skill required for unemployment in the global words such as communication skills, and collaboration technology literacy skills, thinking skill, entrepreneurship skills, creativity and innovation skills, problem solving skills, and leadership skill. Many lecturers lack the abilities to use modern ICT tools in teaching and learning thereby producing incompetent graduates.

Education in Nigeria is faced by a lot of challenged such as inadequate provisions of funds, materials and employments, embezzlement, lack of maintenance culture, and lack of skills etc. The poor state of state of education in Nigeria with the national literacy rate of fifty-seven percent is a problem. About forty-nine percent of the teaching force was unqualified. Gradates of the educational system were often decided, and describing as lacking in quality, low in perception and unfits in skills. Employer's that school graduates were poorly prepared for work. In many cases, employers compensated for insufficient academic preparation by

organizing.

Remedial training censuses for new employers. Some countries have been subjecting graduates of our schools to fresh training and examination in an attempt to ensure fitness into their system. These problems lead to Nigerians dwindling economy and their increasing in social vices by the youths. An idiel mind is a devils workshop. Other problems that leads to graduates unemployment include but not limited to strikes and back outs, brain drain in the teaching profession, in adequacy of study materials, in constituent national education policies, quota system policy or government on admission and appointments, corruption in the schools, crisis management in schools, role of parents, funding and emergence of private schools.

Business Education in Nigeria as a Portal way to Gain Financial Independence

Education is a means of cultural transmission. It was determed as the means of develop the knowledge, skills, or character of a students. Webster dictionary deters education as the process of educating or teaching. Education is also a formal process by society to deli

NIGERIA EDUCATIONAL SYSTEM

The Nigerian policy on education has gone through many stages. Aladekomo (5) lamented that the lack of policy coherence was a matter of great concern. In 1981, Nigeria launched the National Policy on Education (6). Its main focus was on self-realization, individual, and national efficiency, national unity with the objective of achieving social, culture, economic, political, scientific, and technological development. It was structured into three stages as follows:

- Stages one was 6 years of primary school education
- Stages two was 5 to 7 years of post primary school education for secondary, teacher training College and sixth form
- Stages three was 4 to 6 yrs of tertiary education in college of education or polytechnic or university. Fafunwa (7) described the policy as elitist and irresponsive to the need and aspiration of the Nigerian society.

In response to the various criticisms, the objectives of policy were broadened in 1985, to include free primary education among others (1). The 6-3-3-4 system which broken the period of education into four stages emerged. It comprised; the first 6 years of primary school education for children of ages 6 to 11 years, the second stage of 3 years of junior secondary school, the third stages of 3 years of senior secondary school education and the fourth stage of a minimum of 4 years of tertiary education. Uwaifo and Uddin (1) described it as a system of education which was job-oriented as it placed premium on manual activities, technical proficiency, and respect for dignity of labour and economic efficiency.

In 2004, Nigerian education policy was redefined to adopt education as an instrument par excellence for effecting national development. Education goals were then defined in terms of its relevance to the need of the individual as well as in terms of the kind of society desired in relation to the environment, realities of the modern world and rapid social changes (8). Emphasis was on skill acquisition. The policy on education proposed a priority of place for religion and moral instruction for the moral and spiritual well being of individual but directed

that no child should be forced to accept any religious instruction which was contrary to the wishes of the parent.

The Nigeria's education reform of 2006 shifted focus to entrepreneurship and skill training and realignment of curricula to meet emerging need of a global economy and knowledge society (9). The reform introduced the 9-3-4 system of education which was referred to as the Universal Basic Education (UBE). The four stages were compressed to three, with the first two stages of the former policy merged to one during which education was made compulsory. The first 9 years was referred to as basic and compulsory education (primary and junior secondary), the next 3 years was for the senior secondary school, and the last was the four years in the tertiary institutions. Its curricula were drawn up to address Education for all (EFA) programmes of the Millennium Development Goals (MDGs). The scheme targeted total eradication of illiteracy by the year 2010 and increase in `adult literacy rate from 57% to 70% by 2003 (10).

There had been the debate on educational standards in Nigeria. Fafunwa (11) argued that the standards in education have not declined. Whereas Ukeje (12) on his part held the view that the standard had indeed declined significantly. Deterioration in the standard of education and lack of specific training in the areas of relevance to the development of the economy was identified as some of the factors responsible for urban violence. It was also argued that, deterioration in the standard of education had caused the breakdown of social values in the traditional structures which had in the past kept Nigerians together. Afolabi (13) argued that, the quality of education determines the quality of the product of its education system and by extension the quality and quantity, pace and level of its development.

Historical Development of Teacher Education in Nigeria

The idea of teacher training took its root from the need to train people to lead the missionary crusade of propagating the gospel during the early Christian missionary era (Ajayi and Ayodele 2002). The first teacher training college was founded by the Christian Missionary Society in Abeokuta in 1859. It was known as the "Training Institution." There were some hostilities in Abeokuta in 1867 that led to the expulsion of the missionaries from the town and that made the training institution to be moved to Lagos to become an arm of a Grammar School. However, the establishment of St. Andrew's College. Oyo in 1896 signalled a very landmark in the training of teachers in the country.

The pioneering efforts of the C.M.S were strengthened later by other missionary societies. For example, the Baptist Mission founded the Baptist Training College at Ogbomosho in 1897. The Wesleyan Methodist Missionary Society opened an institution to train catechists and teachers in Ibadan in 1905 with four pupils (Ajayi and Ayodele 2002). Obviously, the business of teacher education started mainly as an exclusive missionary business.

Durosaro (2006) posited that before independence, there were few secondary schools in the country with the bulk of their teacher expatriates and missionaries, most of whom had no teacher education. However, shortly after independence, there was a sporadic increase in enrolment in teacher training college owing to greater competitions in schools establishment of more schools then, made the demand for teacher increase drastically. By and large, the teacher

education curriculum then was geared toward the primary school teacher education only. A major event in development of teacher education in Nigeria was the publication and implementation of the Ashby Commission report.

The Ashby commission reported that there was an inadequate supply of training teachers in the nation's secondary schools even while there was an increase in the demand for more secondary schools. The Ashby commission, among other things, recommended the training of more teachers for the nation's secondary schools, the establishment of more universities, and establishment of the institution of Bachelor's Degree in Education, where qualified teachers could be produced.

B.A., B.Sc. (Education) degrees with fifty students were first introduced by the University of Nigeria Nsukka, in 1961. University of Ibadan followed suit in 1963; Ahmadu Bello University, Zaria 1964; University of Lagos in 1965 and Obafemi Awolowo University Ile-Ife in 1967. Today almost all the University in the country have faculties of Education where qualified teachers are produced.

There is no doubt that teacher education is a veritable tool towards educational development. This fact was given credence to by the National Policy on Education when it stated that the teacher educational planning, because no education system can rise above the quality of its teachers, The policy emphasized that all teachers in the nation's educational institutions from pre-primary to University, would be professionally trained. The policy also stated that the purpose of teacher education should be:

a. To produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system.
b. To encourage further, the spirit of enquiry and creativity in teachers;
c. to help teachers to fit into the social life of the community and society at large and to enhance their commitment to national objectives;
d. to provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation, not only in the life of their country, but in the wider world; and
e. To enhance teachers commitment to the teaching profession (FRN, 2004).

Present Position of Teacher Education in Nigeria

Durosaro (2006) remarked that the teacher education in Nigeria today, is much improved than it was before 1970. The author claimed that the type of teacher education needed in Nigeria have become clearly defined in the national Policy on Education implementation committee blueprint. It was prescribed that types and qualification of teachers required should be as follows:

a) Pre-primary education: Grade II teacher with NCE teachers as head.
b) Primary education: NCE teachers with graduate as heads
c) Junior Secondary Schools: NCE and University graduates.

d) Senior Secondary School: NCE and University graduates with professional qualifications.
e) Technical Colleges, Polytechnics and Colleges of Education: University graduates with post-graduates qualification in their disciplines together with professional qualifications, practical industrial exposure and experience.
f) University: University graduates with post-graduate qualifications together with professional qualifications and experience.

According to the Federal Republic of Nigeria (2005), the statistics of teaches in Nigeria by qualification within (1999-2003) reflects that an average of 45.1% of primary school teachers were qualified. The bulk of the teachers within the period NCE and Teacher Grade Two Certificate holders. Besides, an average of 58.7% of secondary school teachers within the period was also qualified. A considerable large number of graduate teachers were without teaching qualifications (average 38.9) at the secondary school level. The situation was, however, considerably redressed in 2003 with 77.9% qualified teachers.

The government had taken some steps to ensure the implementation of the prescription which stipulates NCE as the minimum qualification for teaching in primary schools in the country. The steps are that; all existing Grade II Teachers' Colleges are being phased out and serving Grade ii Teachers are being retrained to obtain NCE before the deadline to disengage them. In furtherance of this, the national Teachers' institute (NTI) was established with the mandate of mounting in-service training programmes through Distance Learning System for serving teachers.

Business education in Nigeria as a portal way to gain financial independence

Okwuanaso and Nwazor (2000 opined that business education as a fundamental part of education costs across every other course as a process of instructing a person what happens during a business transaction in offices, banks, markets, and anywhere money changes hands. Business education is a type of education that helps someone to learn the facts, acquire the skills, develop abilities, solve problems and be able to have business-like attitudes useful for success in business situations.

One thing that is peculiar about business education is that it is for everybody, literates and illiterates. It is a kind of education that makes it's recipients to be job creators instead of job seekers. It is only through business education, because of its nature that Nigeria can achieve financial independence. Business education is an aspect of vocational education which involves skill acquisition. The rate of unemployment in Nigeria is very high, moreover, no government can employ all its employable citizens, therefore business education is highly needed because it helps youths to be self-employed, self-independent and self reliant.

Acquisition of skills helps to reduce dependency on government as well as promoting economic growth. For Nigeria to use business education to achieve economic independence, government has great role to play and it is centred on provision of adequate funds to update and upgrade business education. For business education to thrive there must be proper planning, efficient administration and adequate financing.

Akinyemi (2001) identified poor teacher quality ICT, inadequate facilities and

infrastructures, lack of motivation and incentives to business education teachers as a result of under-funding as factors that hinder the progress education.

Business education is generally perceived to be one of those major occupational areas of technical and vocational education. Infoplease (2006) observed that business education is for general knowledge of business practices; it is also training in specific skills useful in business. Sutherland and Banick (2005) saw business education as the acquisition of and application of the unique set of knowledge and skills used in commercial and industrial organizations.

Business education is, therefore, education for and about business. It typically prepares students/recipients for an occupation in business or a business-related field, or a teaching career in academia. It involves teaching students the fundamentals, theories and processes of business. To this extent, it is more than business teacher education. As Olian (2004) observed, "business education is about proactive and in-depth analytical skills in the business disciplines." The Author (a Dean of a College of Business Administration), opines that the term 'administration' is less apt today, given the complexity of business practices and the competitiveness of business markets.

Essentially, business education is:

a) an integral part of general education;
b) a means of preparing for occupational fields and for effective participation in the world of work in business environments;
c) an aspect of life-long learning and a preparation for responsible citizenship;
d) an instrument for promoting environmentally sound sustainable development: and
e) a programme for poverty reduction.

The mission of business education is to provide businesses, organizations and individuals with high quality programmes necessary for meeting the challenges and opportunities of today's business environment. To this extent, it prepares students to be productive workers and successful entrepreneurs. In pursuance of its objectives, subjects such as financial accounting, economics, ICT. auditing, taxation, operations management, finance, public sector economics, business communications, business statistics, management, business mathematics, keyboarding, shorthand, secretarial duties, labour economics, entrepreneurship, cost and management accounting and marketing are offered, taught and learnt. Those students pursuing a career in teaching also take' education' courses including teaching practice.

Current Educational Budget in Nigeria

Education in Nigeria has never been given the type of attention it requires. The level of education of a country determines the progress of that country. An educated nation is a progressive nation. No nation can survive without having a strong educational system. Agumuo and Etong (2013) opined that the school financing policies of any country are a reflection of its value, choices, and order of its priorities in the allocation of its resources and political philosophy.

Education in Nigeria is overseen by the ministry of education. Local authorities take

responsibility for implementing policy for state controlled public education and state schools at a regional level. The educational system is divided into kindergarten, primary education, secondary education and tertiary education. Over the past few years, the educational sector in spite of its relevance has been grossly neglected and relegated to the background and even teachers were irregularly and poorly paid making the matter worse. Education is capital intensive. The four levels of education in Nigeria are in dire need of funds to be effective and efficient. The cut in educational budget is affecting the system adversely. To make matters worse, corruption and embezzlement of educational funds has added to the problem.

Many schools in Nigeria lack vital things that could help education to be progressive. These are lack of infrastructure equipment, materials lack of maintenance culture, inadequate supply of essential materials and power supply. Twigg (2014) stressed the importance and need for new infrastructure to serve the changing definition of teaching and learning.

Education is the key for development, growth and survival of any nation and must not be toyed with. The last twenty years has witnessed a tremendous twist in teaching and learning as a result of the increased used of information and communication technologies. Educational budget should be increased so that all these important gadgets could be acquired. The education system at different levels in Nigeria is inadequately funded and a higher percentage of the problem is from the government. Soludo (2004) states that the biggest challenge facing the government is inadequate public spending on education. In this era of globalization, Etonyedau (2009) stated that business education contributed greatly in the economic development of any nation and has become an indispensible tool for development. The vital aspect of business education now is to respond and adapt to the 21st century model which demands a lot of financial and skill commitment.

Threat of Insurgency to Education in Nigeria

Education in Nigeria is characterized by a lot of vices and insecurity which hampers the smooth running of educational activities. Such vice include but not limited to Boko Haram, poverty, insecurity, social unrest, school dropout, societal school indiscipline, destruction and vandalization of public and private properties. Economic wastage and acute reduction in the nation's gross domestic product (GDP), crimes, robbery, arson, murder, cultism, hostage taking, human and drug trafficking, kidnapping among others. Nigeria has been witnessing insecurity in all aspects of life by different insurgent groups/mililia arising from misappropriation of the central economy and negligence of the youth through unemployment and general widespread poverty in cities and villages.

Education is very important in the training and development of human resources in any country through the importation of appropriate skills, capabilities, values, knowledge and attitudes which is necessary for changing individuals, communities, nations, and the world at large. Business education can be used for wealth creation poverty, education, ensuring socio-economic empowerment, sustained self and national development. The planning, management and administration of education should refocus on deliberate process of using formal and informal education to make it relevant, life-long and functional by embracing business

education to address the challenges of unemployment and under-employment with its challenges.

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 3 | September, 2019 | Pages 38 – 47
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An Empirical Assessment of Loanable Funds Market in Nigeria (2001 – 2015)

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Abstract: *This paper investigates the impact of loanable funds market on economic growth in Nigeria. Data from 2001 – 2015 were used. This was obtained from CBN bulletin and Bureau of Statistics. The analysis was done using multiple regressions. The growth in line with a priori expectation. The study also affirms a positive relationship between interest rate and economic growth. The coefficient of determination R2 is 95.7% while the Durbin Watson statistic of 2.25 shows minimal level of autocorrelation. It was recommended that government should occasionally supply funds to meet up the high demand which cannot be met by DMB in order to step down the high demand which cannot be met by ground loan facilities desirable for rural dwellers.*

Key words: *Loanable funds, money market, demand and supply*

1. Introduction

The availability of credit facility to the investors has a reaching impact to the economic development of any nation. Availability literature suggests that an access to credit facility leads to positive economic growth and consequently influence the distribution of income positively. For the nation to achieve the above target, it has to mobilize adequate financial resources to aid such development, the government should make conscious efforts to ensure that adequate funds are available to attain such development. The mobilization of such financial resources will culminate into capital formation and it is through capital formation that real investment can be achieved (Aruomoagbe & Olgbega, 2014). It is also required of government to create a conducive economic environment and most importantly, a well-developed financial market that can give birth to better economic growth.

It was on the strength of the above that the Nigerian government in 1980s on a usual way of enhancing her financial sector determined interest rates, both for savings and lending. For the purpose of directing the allocation of credit to areas of proper economic development to enhance efficient performance of the money market. Unfortunately, the interest pegging resulted to economic repression. Government did not stop at that moment, introduced other policy measures designed to transform the financial system within an appropriate regulatory framework that will give room for promotion of competition and resource allocation (Wazabaca, 2000). This economic restructuring programme was embarked upon in 1986 with much emphasis on market forces and this reduced distortion in investment decisions and evolves a sound and more efficient financial system. The reforms which focused on structural

changes, monetary policy, interest rate administration and foreign exchange management, encompassed both financial market liberalization and institutional building in the financial sector.

Bearing the state of economy, the Federal Government introduced again some various economic and structural reforms in 2003 under the platform of the blue print 'the National Economic Empowerment and Development Strategy'. The fact remains that with the persistent introduction of reforms which geared towards:

- Removal of controls on interest rates to increase the level of savings and improve allocation efficiently.
- Adoption of indirect monetary management in place of the imposition of credit ceiling.
- Strengthening the money and capital markets through policy changes and distress resolution measures (CBN, 2010).

The level of economic development seems not been felt if so what degree has the reforms affected the quality of resource allocation and output maximization? What has been the impact of laonable funds or total credit granted by the money market on the Nigerian economy? It is on the basis of these that this study seeks to address:

1. To determine if there is any relationship between amount of loan granted.
2. To determine if there is any relationship between amount of loan granted and gross domestic product (GDP).
3. To determine if there is any relationship between interest rate and GDP.

In the light of the foregoing, the researcher seeks to address the following questions:

1. To what extent is the relationship between interest rate and the amount of loan granted.
2. What is the relationship between the amount of loan granted and gross domestic product (GDP).
3. Is there any relationship between interest rate and GDP?

The hypotheses for the study are as follows:

H_{01}: The amount of loan granted does not contribute significantly to the growth of GDP.

H_{02}: The interest rate does not significantly affect the growth of GDP.

2. Literature Review and Theoretical Framework

The loanable funds are most crucial concept that vividly explains the determination of interest in terms of demand and supply of loanable as money available for lending to individuals and institutions in the financial markets. It comprises of the current savings of private individuals and firms, dishoarding, and any increase in money supply made available by the actions of depository institutions, government and monetary authorities in the financial markets. It is the flow of money into the financial markets for purpose of loans of whatever

kind. According to the Macmillian Dictionary of motion Economic (1992), loanable funds or credit is strictly the term used for funds that are available for lending in the money and capital markets, and is usually considered within the context of the theory of interest rate.

The neo-classical or the loanable funds theory which states that the rate of interest is the price of credit which determined by the demand and supply for loanable funds. It is the price which equates the supply of credit or savings plus the net increase in the amount of money in a given period, to the demand for credit, or investment plus net hoarding in the period (Jhingan, 2004). The loanable funds theory is one of the popular theories which argue that the risk-free interest rate is determined by the interplay of two forces: the demand for and supplpy of credit demands from domestic businesses, consumers, and governments, and also borrowing in the domestic market by foreigners. The supply of loanable funds stems from domestic savings, dishoarding of money balances, money creation by the banking system, and lending in the domestic market by foreign individuals and institutions. McConell, Brue, and Flynn, (2009) explained loanable funds theory of interest rate not in terms of the total supply of and demand for money but, in terms of the supply of and demand for funds available for lending and borrowing.

The loanable funds theory according to Adekange (1084) believed in the time preference explanation of how interest arises. The neo-classical theory states that interest is the price paid for the use of loanable funds. Like the classical and Keynesians theories, it asserts that, the rate of interest is determined by the equilibrium between demand and supply of loanable funds comes from savings while the demand for loanable funds comes investment. Both of these come from the real sector of the economy, so the interest rate is considered as real variable not a monetary variable. That the prevailing rates of interest at any one time represent an equilibrium price at which the demand for credit from those who prefer to have the good now, will equal the supply of loanable funds from who are to have interest.

The rate that equilibrates the financial market is that which equates the supply of credit, through savings from present income plus net increase in money supply in a given period; the demand for credit arises from the investment demand for real capital expenditure, plus net hoarding during the period. The above statement can be illustrated as follows:

S + DM + 1 + DH

S + M = 1 + H - - - - - (1)

Where:

S = current savings; DM = net increase in money supply.

I = investment demand; and DH = net hoarding.

The loanable funds model explains that the demand for, and supply of credit determines the interest rate in the financial markets, it is the forces of demand for and supply of loanable funds that determine the interest rate in the financial sector.

$r = f(Lf_d\ Lf_s)$ - - - - - (2)

where

r = rate of interest

Lf_d = demand for loanable funds

Lf_s = supply of loanable funds

The loanable funds model also explains how the deficit unit needs funds for purpose of investment, hoarding and consumption. The deficit intends to borrow more of a lower rate of interest than at a higher rate of interest.

$Sr < 0$ - - - - - - (3)

Slf_d

The surplus unit prefers to supply more at a higher rate interest than at lower rate of interest.

$Sr > 0$ - - - - - - (4)

Slf_s (CBN, 2003)

The demand for the supply of loanable funds, many scholars reveals that it has been influenced by several reasons, according to CBN (2003) they involve: public sector deficit, regulatory and monetary, policies, inflationary expectations and the structure of the financial system.

Government borrows to finance shortfall between its revenue and expenditure. It may be from the banking sector or from private sector through issuance of securities. The supply of funds to the public sector by the banking sector constitutes part of the total supply of loanable funds from household savings increases, but at a rate less than the increase in government demand and this leads to the crowding out of other borrowers.

The regulatory actions of the monetary authorities affect the availability of credit in the economy. Since the monetary policy stance impacts on the reserves of deposit money banks comes their portfolio management in response to policy actions affect the flow of credit. The lending capacity of DNMs is constrained when part of the deposit mobilized is sterilized by the central bank, through reserve requirements, partly for prudential reasons and partly for monetary control purposes. This implies that less money is available to DMBs for lending operations. The implicit taxation is passed on to borrowers in the form of higher interest rates, which affect the demand for and supply of loanable funds.

The structure of the financial system can influence the level of credit. A repressed and shallow market may lead to weak intermediation and low funds mobilization, while a highly deepened market offers the reverse. Moreover, the size and structure of the informal sector

may promote or hinder the availability of loanable funds: the larger the size of the informal market, the less the availability of loanable funds in the banking sector, and vice versa.

The total demand for loanable funds is the function of domestic consumer, business, and government credit demands plus foreign credit demands i.e. $D_{Lf} = f (D_{consumer} + D_{business} + D_{government} + D_{foreign})$.

It provides a demand curve that is downward and to the right with respect to the interest rate. Which explains that the higher rate of interest leads to some businesses, consumers, and governments to curtail their borrowing plans? But at a lower rate of interest ginger more credit demand. But the demand for loanable funds does not in any way determine the rate of interest by itself. It is the combination of supply of loanable funds that make th e story complete.

The total supply of loanable funds is made up of domestic savings, foreign lending, dishoarding of money, and new credit created by the domestic banking system. It offers a curve rising with higher rates of interest, which shows that a greater supply of loanable funds will flow into money and capital markets if the returns from lending increase. It is obviously that these two forces of supply and demand for loanable funds which determine not only the volume of lending and borrowing going on in the economy but also the rate tends toward the equilibrium point at which the total supply of loanable funds equals the total demand for loanable funds. It peradventure the interest rate is temporarily above equilibrium, the quantity of loanable funds supplied by domestic savers and foreign lenders, by the banking system and from the dishoarding of money exceeds the total demand for loanable funds, and the rate of interest will be bid down. On the other hand, if the interest rate is temporarily below equilibrium, loanable funds demand will exceed supply. The interest rate will be bid up by borrowers until it settles at equilibrium once again.

An excess supply of money would result to excess demand for goods and services which eventually cause inflation and at the same time deteriorate balance of payment position of the nation. On the other hand, inadequate supply of money would induce stagnation in the economy thereby retarding growth and development. The best option is to maintain an equilibrium position. For the economy to be in equilibrium, there must be planned saving which equal planned investment across the whole economic system. Supposing planned investment exceed planned saving at the equilibrium interest rate, the investment demands will push interest rate higher in the short term. But as additional investment spending occurs, incomes will rise, generating a greater volume of savings. Later, interest rates will fall. If exchange rates between currencies are not in the state of equilibrium with one another, an opportunity be created for profit among both foreign and domestic lenders it can be exploited by moving loanable funds from one country to another. The interest rate will only remain stable if and only if the money market, the economy, the loanable funds market and foreign currency are in equilibrium interest rate for a long time (Rose Marpuis, 2006).

3. Methodology

This study uses secondary data collected from central bank of Nigeria, (CBN) statistical bulletins and also, Bureau of Statistics for the period of 10 years (2001 – 2015). The loanable funds market is the explained variable. GDP is used as a proxy to represent the growth rate of the real investment, and it is considered a dependent variable. The interest rate was also used as one of the predictors, on the other side in the literature as a determinant of demand for and supply of loanable funds. The data collected were subjected to multiple regression analysis.

Model Specification

To achieve the objectives of the study a model was specified to help the analysis. The implicit form of the model is stated thus:

GDP = f (LOAN, INTEREST RATE) - - - - - - (i)

GDP = f (LOAN, INTR).

Where:

GDP = Gross Domestic Product

LOAN = Amount of loan distributed during the time in question

INTER = Interest rate

The explicit form of the model is stated as shown below:

$GDP1 = \beta_0 + \beta_1 loan_t + \beta_2 intr_t + U_t$ - - - - - - (ii)

A priori expectation $b_1 > 0$, $b_2 < 0$.

Where: U_t = Error term.

4. Regression Results and Discussion

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.123	8.067		5.443	.001
	LOAN	.358	.040	.786	8.940	.000
	INTR	1.201	.020	.328	3.738	.007

a. Dependent Variable: GDP

The data were analyzed and the estimated equation shows that:

GDP = 7.123 + 0.328 LOAN + 0.786 INTR - - - - (iii)

$S(b_i)$ [0.040] [0.020]

The result of the ordinary least square (OLS) shows that there is a positive relationship between GDP and total loan disbursed to the economy for the period and the relationship is statistically significant ($P < 0.05$). This is also in line with a priori expectation.

The estimated equation also shows a positive relationship between GDP and interest rate and the relationship is statistically significant ($P < 0.05$). It is however against a priori expectation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.978[a]	.957	.944	94.88309	2.253

a. Predictors: (Constant), INTR, LOAN
b. Dependent Variable: GDP

The coefficient of variation $R^2 = 0.957$. This shows that 95.7% of the variation in the dependent variables can be explained by the variation in the explanatory variables. The adjusted R^2 value is 94.4% which shows a little penalty of introduction of explanatory variables into the model. The Durbin-Watson statistic of 2.253 shows that there is a minimal level of autocorrelation in the model. Thus the estimation can be used for prediction.

4.1. Test of Hypotheses

In an attempt to estimate the relationship between GDP and interest rate, and also GDP and Loan, the hypotheses stated at the introduction need to be tested. In the process, recall equation (iii), i.e.

Recall equation (iii) above:

GDP = 7.123 + 0.328 LOAN + 0.786 INTR - - - - (iii)

S(bi) [0.040] [0.020]

4.2. Decision Rule for Accepting of Rejecting Hypotheses

i. Using the standard error test, we have that: if the standard error of b_i i.e. $S (b_i < {}^1/_2 b_i)$ you reject the null hypothesis and accept the alternative, that the estimate b_i is statistically significant at 5% level of significance.

ii. Of the standard error of bi (S(b) > 1/2 b_i) we accept the null hypothesis, that is, we accept that the estimate b_i is not statistically significant at 5% level of significance.

Given that:

GDP = 7.123 + 0.328 LOAN + 0.786 INTR - - - - - (iii)

S(b) [0.040] [0.020]

H_1: The amount of loan granted does not contribute significantly to the economic growth.

B_i = 0.786

S(b) = 0.040

H_0: = b_i = 0

H_a: $b_i \neq 0$

$^1/_2 b_i$ = 0.393

Using the standard error test S (b_1) < $^1/_2 b_1$, i.e. 0.040 < 0.393, thus we reject null hypothesis. That is, we accept that the estimate b_i is statistically significant at 5% level of significance. This implies that the amount of loan granted contributed significantly to the economic growth.

H_2: Interest rate does not significantly affect economic growth (GDP).

b_2 = 0.020

S (b_i) = 0.020

H_o: b_i = 0

H_a: $b_i \neq 0$

½b_i = 0.164

Using the standard error test, S (b_2) < $^1/_2 b_2$, i.e. 0.020 < 0.328; Thus, we reject the null hypothesis and accept the alternative that the estimate b_2 is statistically significant at 5% level of significance. This implies that interest rate has a significant effect on economic growth which is proxied by Gross Domestic Product. In another word, changes in interest rate affect economic growth.

5. Conclusion/Recommendation

A sound and healthy financial system is influenced by the state of the economy, to achieve such feat government in the past introduced control measures, amongst them include:

credit control, a rise in interest rates, economic restructuring programme etc. with persistent reformation there exist grumbles of discontent from the public that the reformation is not yielding any fruitful results. On the basis of the foregoing, the paper re-examine the relationship between loanable funds market and economic growth to ascertain whether such complaint are fair. Following a detailed regression analysis, though two predictors were used for the purpose of this paper. The findings reveal that both predictors i.e. the amount of loan granted or distributed and interest rate have positive impact on economic growth in Nigeria.

The paper made some observations and suggests the following recommendations:

1. There are multiple interest rates and they are not uniform. The rate depends on the need of the borrower, the amount of loan, the time for which it is required and the nature of security. Government should from time to time complement the supply of loanable funds through small and medium scale enterprises and many other available means in order to cushion the effect of high demand for loanable funds.
2. The majority of the people in undeveloped countries live in rural areas and majority of them are poor and unfortunately the underdeveloped sector is not properly connected with the developed sector of the money market in undeveloped countries. This affect the quantity or volume of loan distributed because the majority of the people in the rural setting may not enjoy such credit facilities on the account of lack of information, accuracy, security, guarantor and as such, economic development may be limited in urban centres. Government may introduce such programmes that will be designed for rural dwellers only, so that they too can be involved in the distribution of special grant/loanable funds.

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 4 | January, 2020 | Pages 48 – 60
asplpapersubmit@gmail.com

Sensing and Organizational Resilience of Oil and Gas Companies in Nigeria

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Abstract: *The study examined the relationship between two constructs; sensing (independent variable) and organizational resilience (dependent variable), using a cross sectional survey technique. The total accessible population for the study comprised of 190 senior managers and unit heads of 36 organizations in the Nigerian oil and gas sector. Quantitative data was collected using questionnaires. The instrument's items were based on the 5 point likert scale and were validated using Principal component analysis. Instrument items were further subjected to reliability test to ascertain consistency. A combination of purposive and simple random sampling was used in the study and a sample size of 152 was drawn from the population using the Krejcie and Morgan sampling formula. A total of 124 questionnaires were retrieved from the respondents and used for the analysis. The data retrieved was analyzed using the Structural Equation Modeling (SEM) statistical tool on Amos software. The outcome of the analysis showed that organizational sensing has a positive and significant influence on organizational resilience (Measured by adaptive capacity and agility). The study concluded from the findings that oil and gas companies in Nigeria could leverage the benefits of proper environmental sensing to build resilience in the face of enterprise challenges; particularly enabling adaptation and agile response. The study has contributed to knowledge by providing empirical evidence and therefore a valuable knowledge repository that management practitioners and researchers can leverage in their efforts to better understand environmental uncertainty, specifically the principle and practices of sensing as an aspect of management discipline.*

Key words: *Sensing, adaptive capacity, agility, organizational resilience, oil and gas*

1.0 INTRODUCTION

Organizational Resilience is a diversely faceted, sociotechnical concept that explains an entity's routine and preferred response to uncertainty (Lee, Vargo & Seville, 2013). Academic inquiry into organizational resilience is currently multifaceted. However, for all available research perspectives; enabling resilience capabilities within modern day organizations is widely considered important. According to Mallak (1998) resilience transcends the overly simplistic notion of adapting organizations to their environment. Relatedly, the prevalence of globalization as a phenomenon and the deepening relevance of information technology within enterprise tasks; has caused a noticeable and fundamental deviation in the way in which business is actualized and how managers lead complex organizations (Saner, 2001). The demonstration of

adaptive capacity and agility in responding to observable dynamism is one of the paramount motivations for organizational resilience capability. In some instances, resilience efforts within firms are focused on engineering appropriate reactions to crises and disruptive incidences when they have already occurred. In other instances, the target has been "*crises readiness*" strategies, that simultaneously help organization during trouble time and in the moments when routine functions are carried out. Within the petroleum sector, a strong body of evidence has been built to advocate for greater resilience in most organizations. Firstly, oil and gas resources are now being found in tough, unconventional, difficult or conflict ridden places. In 2008, former CEO of Shell, Jeroene Van der Veer made the valid assertion that the era of "easy to find oil" was fast disappearing (Teslik, 2008). Some experts contend that oil resources – as known today – along with all other of its derivatives - are finite, substitutable and more susceptible to the adverse impacts of disruptive forces, including the possible emergence of alternative energy sources. Furthermore, sensing activities within organizations has a variety of use-scenarios within the corporate foresight construct, including in market entry & analysis (*market sensing*), competitor monitoring and in directing organizational development interests. Rohrbeck (2011) investigated corporate foresight maturity within firms, in which dimensions such as sensing, culture, network & people were used as measures of foresight Sensing may be considered a data processing capability that may help organizations perceive and manage risks better. Through the utilization of sensing tools that amplify latent manifestations of change (early enough) firms can both exhibit foresight capabilities and show resilience. As a known measure of corporate foresight practice within organizations "organizational sensing" capabilities may be able to support the strengthening of a firms' adaptive capacity and enable agile responses to change. This study aimed to investigate this potential relationship.

2.0 LITERATURE REVIEW

2.1 Sensing

Management literature on "organizational sensing capabilities" as a concept is situated within the Dynamic Capabilities theory. It's thus an organizational attribute within dynamic capabilities, consisting of "sensing", "seizing" and "reconfiguring". Sensing includes the "analytical systems used to learn and to sense, filter, shape, and calibrate opportunities" and it includes all processes that empower an organization to aggregate and deploy market originated data; learn about customers and familiarize with competitors (Wagner, Wenzel, Wagner & Koch, 2017). Sensing empowers firms to close any information gap relating to near-term and long term incidences, often with immense benefits. Lindblom, Olkkonen, Mitronen and Kajalo (2008) gave the opinion that market-sensing is a crucial aspect of future-oriented behavior. Moreover, sensing emerging strategic risks can position one to optimally avoid risks and also generate risk-powered performance; which turns risk into value (Deloitte, 2015). Cirjevskis (2009) described sensing as "identifying, and assessing new emerging opportunities". Sensing as an organizational capability has been shown through numerous conceptual and empirical studies to provide diverse benefit to a firm by enabling important inputs such as information and broader corporate awareness.

Some scholars argue that the variability in organizational awareness of environments, reflect the variation in management's willingness to carry out sensing activities, where poor sensing activities portrays reasonable vulnerability to environmental challenges. In this perspective, researchers postulate that organizational sensing is usually not a default managerial action, since managers are poised to be bound in their perception or distracted by managerial task of the moment. Jovanovic (2015) noted that manager may manifest a default tendency to mostly concentrate on their firms' ongoing strategies, therefore the proclivity to spot unrelated data and other environmental stimuli, are significantly reduced, and so they may gravitate toward "actively ignoring" data which doesn't align or rally round the strategy. It implies that the proper utilization of sensing as a foresight process is an active and thoughtful management process, typically designed to deliver specific benefits. Jovanovic further noted there may be changes happening in an organization's environment or industry, but managers may simply fail to detect these changes because their attention is on personal strategies. Knowing about the change anticipated in any dynamic environment is a precursor to crafting successful responses (Rohrbeck, 2011). This notion constitutes the premise of all management efforts at environmental sensing. While environmental changes may be sudden or gradual, proponent of sensing as an essential management tool posits that influence of changes and high dynamism in an environment can - in both cases - be ameliorated through proper sensing and responses. Klabish (2018) noted that organizations need to establish formal processes for staying in optimal touch with the space they dwell in and by doing that prepare for uncertainty; create scenario plan: and establish processes for reacting to change.

2.2 The concept of Organizational Resilience

Resilience involves the skill and ability to regain positive posture following adversity, frustration, and misfortune and it is essential for the effective organization (and effective leader too). Also, Jung (2017) suggest that understanding organizational resilience will yield the opportunity to access a diverse spectrum of "adaptive capacities" by leveraging the opportunity to rally resources and facilitate successful adaptation in unpredictable situations. According to Woodman and Musgrave (as cited in Sahebjamnia, Torabi & Mansour, 2018) organizations are increasingly embracing the unfolding truth about having proactive dispositions, including Integrated Business Continuity and Disaster Recovery Planning (IBCDRP) for protecting personal lives, preserving reputation and reducing financial losses. Present research around resilience is predominantly driven by the growing consciousness that some of the inherent capabilities that make organizations resilient overlap with the elements of organizational competitiveness. Thus the resilient organization is a competitive organization. During intense business disruption, only resilient organizations will survive the severe limitations and engineer prosperity over the long term (BSI Group, 2017). The socio-psychological roots of resilience, which informed and shaped opinion on the subject (as a management phenomenon) has numerous examples on the hallmarks of resilience for individuals/organizations and the mechanisms that deliver measurable benefits in moments of crises or severe psychological stress. In addition, Annarelli and Nonino (2016) reviewed organizational resilience literature and reported that extant literature is still far from reaching a consensus on strategies for developing organizational resilience. Given the relatively nascent state of management inquiry into the nature, practices

and influence of organizational resilience on firms; this study will be invaluable in expanding relevant knowledge.

2.2.1 Adaptive Capacity

Adaptive capacity is a system's means of orchestrating adjustment, modification, or changes in its traditional ways, for the purpose of moderating any potential damage; taking advantage of unfolding opportunities or coping with shock (Jones, Ludi & Levine, 2010). Within the dynamic capabilities theory, adaptive capacity is a recognized strategy for optimizing competitiveness. This is relevant because, when confronted by serious environmental dynamism, effective organizations should act in tandem with the requirement to re-align existing competencies in other to reflect current realities.

Brooks *et al*., (2004) noted that adaptive capacity is a systems' inherent ability to alter its characteristics or behavior and expand its coping range. To confer resilience on an organization, adaptive capacity should bring the company to reform its course or known pathway. Studies suggest that the inability to achieve a commensurate shift in paradigm when situation calls for it; will have unpleasant and even undesirable outcomes. In contemporary management thinking; that exemplifies a low or non-existent adaptive capacity. Smith and Wandel (as cited in Kolka, 2013) noted that adaptability requires firms to practice self-renewal and achieve deviations in trajectory when necessary. Using adaptive capacity to access resilience is common among management theorists and practitioners. Adaptive capacity may be *reactive*, (Adapting to present conditions and reacting to changes) or *proactive* (ability to forecast changes based on signals) (Gorley, 2012). Reactive adaptive capacity confers resilience capabilities on organization while proactive capabilities utilize foresight (sensing and seizing) to also deliver resilience for organizations. Since its common to see firms pass through notable dynamism such as shifts in consumer lifestyle, increased competition or abrupt transformation in technology; the overriding postulation of adaptive capacity is that meaningful environment shifts must be matched by a commensurate shift in routine activities, resources or response strategy.

2.2.2 Agility

Organizational agility describes the firm's tendency to sense change and achieve a swift response to unpredicted changes, by flexibly assembling resources, processes, knowledge and capabilities (Yang & Liu, 2012 as cited in Applebaum *et al*., 2017). While organizations should react to variations, it's been noted that within rapidly changing and high uncertainty environment, the *speed and rapidity* of organizational response to change will be the paramount factor of success. Sherehiy and Karwoski (2014) noted that agility is an enabler of competitive business advantage and good business performance. Agility within management discipline has originated from to the idea of "agile manufacturing" in production; an attempts to empower organizations toward meeting the expectations of a changing marketplace; achieve rapid alteration in product and factor evident flux in customer need (Zitkiene & Deksyns, 2018).

Furthermore, organizational agility emphasizes speed and flexibility as the most desirable attribute of resilience (Gunasekaram, 1999 as cited in Nafei, 2016). The 2011 study by

Bessant et al., (as cited in Nafei, 2016) defines agility as the proactive posture to change. Agility prompts practice and perfection of a timely use of the workforce, resources and "know-how" in order to achieve a response to environmental dynamism or perceived change. It suggests that organizations that are constrained by slow systems and bureaucratic decision making routines may be incapable of reacting speedily to change and may thus fail to overcome inherent challenges.

Thus organizational agility encompasses all the dispositions of a company that aids responsiveness. Sarker and Sarker (2009), viewed agility as a diverse idea demonstrating three aspects, namely: the resources, some processes and linkages. Hitt *et al*., (as cited in Nafei, 2016) reported that organizational agility is a forward-looking administrative status and strategy that targets resources stabilization and the fulfillment of customer desires in a timely manner. Agility enables the elimination of procedural and behavioral barriers to a timely reaction in every day activity. Agility also provides the right kind of structural versatility needed for thriving in dynamism.

Objectives of the study

a) To examine the relationship between sensing and adaptive capacity
b) To determine the relationship between sensing and organizational agility

Research Hypotheses

H_{01}: There is no significant relationship between sensing and adaptive capacity of oil and gas firms in Nigeria

H_{02}: There is no significant relationship between sensing and organizational agility of oil and gas firms in Nigeria.

3.0 RESEARCH METHODOLOGY

A quasi-experimental research design was used for the study. Cross sectional survey was carried out with the aim of investigating the relationship between organizational sensing and organizational resilience (resilience measured by adaptability and agility) of oil and gas companies in Nigeria. The study population consisted of 190 senior managers and unit heads of 36 oil and gas companies covering upstream, midstream and downstream companies. Sampling was done using both purposive and random sampling techniques. Out of this accessible population, a sample was drawn using the Krejcie and Morgan sampling formula which yielded a sample size of 152 respondents. Survey data was collected through questionnaire. The predictor variable sensing was adapted from the work of Rohrbeck (2011). One measure of the criterion variable adaptive capacity was adapted from the work of Lee et al., (2013), while the other measure "agility" was adapted from the work of Waribugo (2018). All variables where measured based on the 5 point liker scale. The study instrument was duly subjected to a test of reliability using the Cronbach Alpha test, with results obtained meeting or exceeding the 0.7 Cronbach Alpha value considered a threshold by Nunnally, (1978). Principal Component Analysis (PCA) was used to determine the eigenvalues of the instruments items, which was

used to ascertain the contribution of each statement. The eigenvalues were above the threshold of 1.0 (Kaiser's criteria). Inferential statistics carried out on the data collected was done with Structural Equation Modeling (SEM) and the outputs was deployed to test the hypotheses and predict the relationship between the two main constructs of sensing and organizational resilience.

4.0 RESULTS AND DISCUSSION

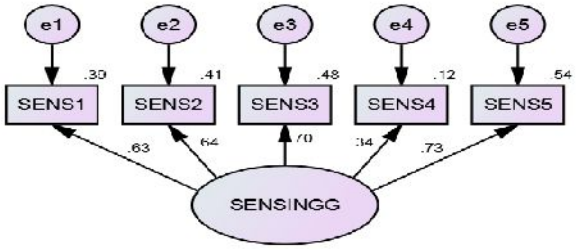

Figure 1.0: Measurement Model of Sensing

Table 1.0: Measurement Model Analysis of Sensing

Model	**Chi square significance**	**GFI**	**NFI**	**CFI**	**RMSEA**	**MODEL**	**FACTOR LOADINGS**	**SQUARED MULTIPLE CORRELATION**
SENSING CAPABILITY	(2df)=3.898 p=0.142 CMIN/DF=1.949 Acceptable Limits	1.000	.999	1.000	0.000	SENS1	.625	.391
						SENS2	.640	.409
		.90	.90	.950	.080	SENS3	.696	.485
						SENS4	.340	.115
						SENS5	.735	.540

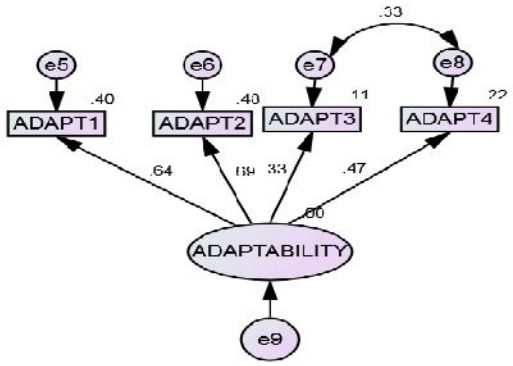

Figure 2.0: Measurement Model of Adaptive capacity

Table 2.0: Measurement Model Analysis of Adaptive Capacity

Model	**Chi square significance**	**GFI**	**NFI**	**CFI**	**RMSEA**	**VARIABLE**	**FACTOR LOADINGS**	**SQUARED MULTIPLE CORRELATION**
	(1df)=1.133	0.995	0.984	.998	0.033	ADAPT 1	.635	.404
FIRM	p=0.287					ADAPT2	.691	.477
ADAPTIVE CAPACITY	CMIN/DF=1.133							
	ACCETABLE LIMIT	0.90	0.90	0.95	0.08	ADAPT3	.333	.111
						ADAPT4	.474	.225

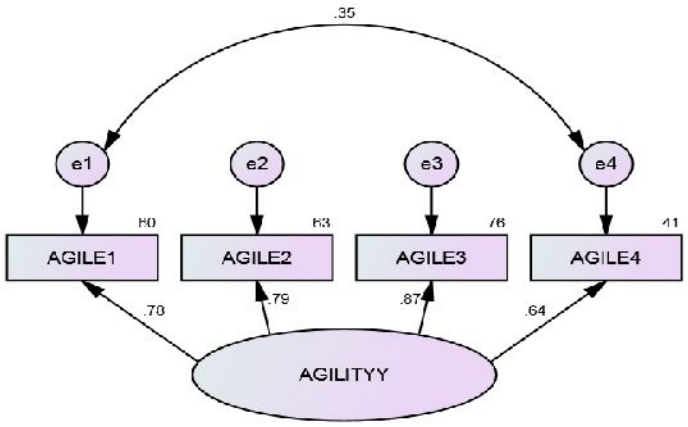

Figure 3.0: Measurement Model of Agility

Table 3.0: Measurement Model Analysis of Agility

Model	**Chi square significance**	**GFI**	**NFI**	**CFI**	**RMSEA**	**VARIABLE**	**FACTOR LOADINGS**	**SQUARED MULTIPLE CORRELATION**
AGILITY	(1df)=.607 p=0.436 CMIN/DF=.607	0.998	0.997	1.000	0.000	AGILE 1	0.775	.601
						AGILE2	0.791	.626
	ACCETABLE LIMIT>>>	0.90	0.90	0.95	0.08	AGILE3	0.871	.758
						AGILE4	0.637	.405

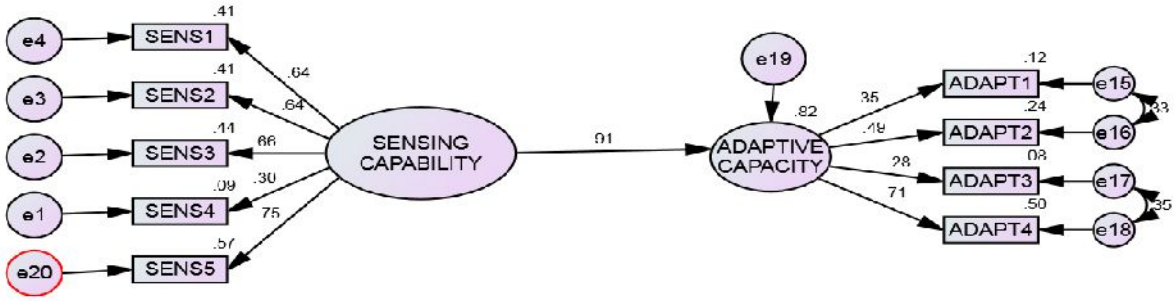

Figure 4.0: Structural Model of Sensing and Adpative Capacity

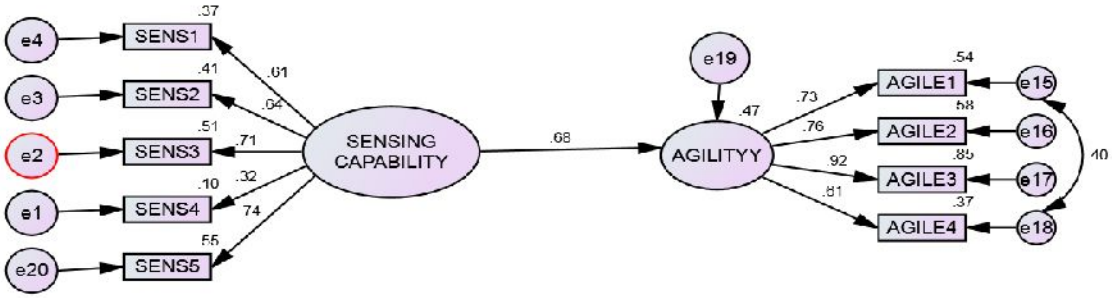

Figure 5.0: Structural Model of Sensing and Agility

Test of Hypothesis

H_{01}- There is no significant relationship between sensing and adaptive capacity

Table 4.1

Regression Weights	1.107
Standardized Regression Weight(**β**)	0.908
Squared Multiple correlation (R^2)	0.821
Critical Ration (CR)	2.322
p-value	0.020<0.05

To test this hypothesis, a structural model of scope of scanning and Adaptive capacity was created. The results of the analyses are shown in below. Model parameters: (Standardized Regression Weight (β) = 0.908; Squared Multiple correlations (R^2) =82.1%, p-value = 0.020<0.05). This means that when sensing goes up by 1 standard deviation, **Adaptive capacity**

goes up by 0.908 standard deviations. Thus an increase in corporate foresight in terms of Sensing Capability results also in an increase in organizational resilience (as indicated in firm's adaptive capability).

H_{02}- There is no significant relationship between sensing and agility

Table 4.2: Result of standardized and unstandardized regression estimate of the model

Regression Weights	1.737
Standardized Regression Weight(**β**)	0.684
Squared Multiple correlation (R^2)	0.467
Critical Ratio (CR)	2.931
p-value	0.003<0.05

This hypothesis attempted to investigate the relationship between a company's sensing capability and organizational Agility by using the above structural model. The results are shown thus: Model parameters: (Standardized Regression Weight (β) = 0.684; Squared Multiple correlations (R^2) =46.7%, p-value = 0.003<0.05). This means that When **Sensing capability** goes up by 1 standard deviation, **Agility** goes up by 0.684 standard deviations. Thus an increase in corporate foresight in terms of sensing capability results also in an increase in organizational resilience (as indicated in firms Agility).

Interpretation of results and discussion of finding

For hypothesis H_{01}: given that the model fit results shown above have confirmed that the structural model used in the analysis was fit enough in representing the relationship between the data and the hypothesized relationship, and based on the fact that model parameters: **(β =.908 , R^2=82.1%; p= 0.020<0.05);** indicates that a positive and significant relationship exists between the sensing capability of firms and organizational adaptive capacity. These empirical results do not support the Null hypothesis 01 (H_{01}) which states that There is no significant relationship between sensing capability and adaptive capacity. Rather, this study asserts that corporate foresight (measured using firms sensing capability) has a positive and significant effect on firms adaptive capacity.

For the second hypothesis (H_{02}): since the model fit results shown above have confirmed that the structural model used in the analysis was fit enough in representing the relationship between the data and the hypothesized relationship, and based on the fact that model parameters: **(β =.683, R^2=46.7%; p= 0.003<0.05);** indicated a positive and significant effect of sensing capability of firms on organizational Agility. These empirical results do not support the Null hypothesis five (H05) which states that There is no significant relationship between sensing

capability and Agility. The study concludes that corporate foresight (measured using firms sensing capability) has a positive and significant effect on firms Agility.

5.0 CONCLUSIONS

The study provides practical clues for applying organizational sensing; in building the important capabilities of adaptability and agiltty, thereby helping organizations to craft resilience. If proper sensing enables upstream, midstream and downstream companies to act resiliently, these organizations will then be capable of effectively managing and thriving in moments of crises. They can as well respond quickly in the face of challenges, by quickly assessing and deploying all necessary resources. Furthermore these organizations shall also sustain positive adaptive postures, reinvent themselves and change when required.

5.1 Recommendations

1. Nigerian Oil companies should understand the measures of resilience namely: Adaptive capacity and Agility, in order to optimize the potential benefits of any organizational sensing efforts since these variables provide evidence of resilience capability when they are acquired through sensing.
2. Furthermore, Sensing and proper management of information arising from it ought to be well developed for managing future opportunities and unseen problems.

5.2 Contribution to Knowledge

This study has provided empirical evidence and a valuable knowledge repository which management practitioners and researchers can leverage in their efforts to better understand the nature of environmental uncertainty; specifically the benefits, principles and practices of Organizational Sensing, as an aspect of management discipline. It also provides an empirical foundation for any corporate discussion and activity that targets organizational resilience.

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Academic Scholars Publishing League (ASPL)
International Journal of Management Sciences
ISSN: 2360-9944 | Volume 7, Issue 4 | January, 2020 | Pages 61 – 77
asplpapersubmit@gmail.com

Entrepreneurial Talent Management and Organizational Agility of Construction Firms in Rivers State, Nigeria

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Abstract: *The importance of talent in the organization cannot be over emphasized as it provides sustainability and enhancement to organizations' ability to succeed in nowadays dynamic, volatile and uncertain business environment, thus, the aim of this paper is to examine the relationship between entrepreneurial talent management (entrepreneurial skill and entrepreneurial knowledge were used as the dimensions) and organizational agility (the measures used include adaptability and alertness) of construction firms in Rivers State, Nigeria. We therefore adopted quasi experimental design in the form of cross-sectional research survey design and our sample size was 50 managers in 10 selected construction firms in Rivers State. The study's data was sourced using questionnaire as the research instrument which was analyzed using spearman's rank order correlation coefficient with the aid of SPSS. Our results revealed that all the dimensions of entrepreneurial talent management vis-à-vis entrepreneurial skill and entrepreneurial knowledge significantly influence adaptability and alertness respectively, thus we concluded that entrepreneurial talent management significantly influence organization agility. We therefore recommended that entrepreneurs in the construction sector should make sure they have detailed developmental programs that will enhance their skills and knowledge to achieve organizational agility.*

Key words: *Talent; Skill; Knowledge; Agility; Adaptability; Alertness*

1.1 INTRODUCTION

All organizations including the construction firms operating in today's business environment are facing more challenges than ever. Construction firms are very significant to the growth of the Nigerian economy. This because construction projects such as buildings, roads, and bridges are important measures of economic growth, thus for these firms to achieve developmental contributions they are known for, they have to become agile since they operate in more complicated environment. Today, business firms have no choice than to operate and succeed in a more volatile and complex business environment than before which that have immense effect on the performance and survival of the business firms. In this turbulent and complex business environment, agility has become an important feature that organizations must possess to make impact (Raheleh, Amin, Sheida and Somayyeh, 2015).

Organizational agility is one of the requirements business organization needs to compete in the unpredictable business environment of nowadays in order not to go into extinction. This is because it helps the organization to quickly respond and to become compatible with the environmental changes and as well assist the organization to enhance its

efficiency (Yeganegi and Azar, 2012). Nandram (2015) expressed that organizational agility is the answer to the uncertain and complex challenges that is facing today's business environment. Therefore, agility gives organizations capabilities to develop processes and approaches that will enable them to quickly meet stakeholders' needs. Organizational agility which has to do with the capability of the organization to succeed by anticipating and adapting to environmental changes in the business environment has become so significant since the environment of business has become so highly complicated.

In today's knowledge driven world, the survival of business firms is predicated on competent workforce both that of the employees and the owner which provide organizational awareness to survive (Silverstone, Tambe and Cantrell, 2015). As a result, to achieve organizational survival and attain organizational set objectives, entrepreneurs must use effectively and efficiently their talent vis-à-vis their knowledge, abilities as well skills in maneuvering the hurdles of today's' environment in order to become agile as well enhance organizational performance over time. Based on this, it is necessary to highlight that to become agile in nowadays dynamic environment, entrepreneurs in the construction sector should basically use their talent judiciously so that their activities become an important driver of organizational agility.

Successful organizations are now focusing on managing talent (both that of owner and the employees' talent) effectively and efficiently (Oracle Corporation, 2014). In a general term, talent management involves the identification, selection and the development of organization's workforce. But in this paper we are looking at the entrepreneur talent management in terms of his or her skills and knowledge, that is, the ability to judiciously use his or her talent in ensuring that the organization succeeds in its day to day activities. When entrepreneurs are able to manage their talent well, they will be able to manage effectively any situations in the organization. Such talents are important tools for firm survival and prosperity; this is because if the entrepreneur lacks the talent in form of the right skills and knowledge to meet stakeholders' needs, and maneuvers the frequent changes in the environment then the organization is likely to fail.

In today's volatile business environment, efficient and effective management of entrepreneurial talent can be very important to business success as well helping organizations in responding and adapting quickly to environmental changes. This is because entrepreneurs are significant key players in discovery and evaluating business opportunity, mobilization of factors of production in the organization and taking obligation for administration in the organization. It is the job of the entrepreneur to take advantage of opportunities and relate it in an effective way to employees; hence he must have the skills to source for information as well the abilities to make use of the information to the benefit of the organization. Therefore, an entrepreneur must have the right skills as well the knowledge to appropriately influence his or her employees to become willing participants in the fulfillment of innovative goals. More so, in turning business opportunities into a feasible business the talent of the entrepreneur is very important. For this purpose entrepreneurial leaders must have first of all have the skills and knowledge to encourage others to commit to organizational goal and gather the momentum needed to withstand the frequent and complex environmental changes.

Furthermore, studies on the concept of organizational agility in this part of the world has not looked in the direction of entrepreneurial talent management but have explored related concept such as talent retention (talent of the employees) and organizational agility (Martin, 2015; Alagah and Tende, 2017); employee talent management and organization's performance (Anwar and Reaz, 2016; Najm and Alaa, 2017). Thus, there appears to be a dearth of knowledge on the relationship between entrepreneurial talent management and organizational agility in Nigeria; hence, the purpose of this study.

1.2 Statement of the Problem

In the last decades, competition has grown increasingly aggressive and have become more frequent, thus, construction firms are now operating in more hypercompetitive environments. This hypercompetitive environment has become very complex, and dynamic due to frequent changes in customers' needs, available resources and changes in technology. This unpredictable environment is at all the time creating uncertainties as well instability for all organization inclusive of construction firms and the ones that do not have the capacity such as the needed talent to adapt to these frequent environmental changes may likely fail.

Furthermore, generally in Nigeria and Rivers State particularly, projects given to construction firms to carry out to the benefit of the public are often done with very low materials or left out rightly abandoned as well most of the projects managed to be fully executed does not even stand the test of time which has been due to lack of sufficient management inputs both quantitative and qualitative terms as a result of lack of needed talent in forms of skill and knowledge from the contractors (entrepreneurs) in carrying out projects amongst other factors.

1.3 Operational Framework

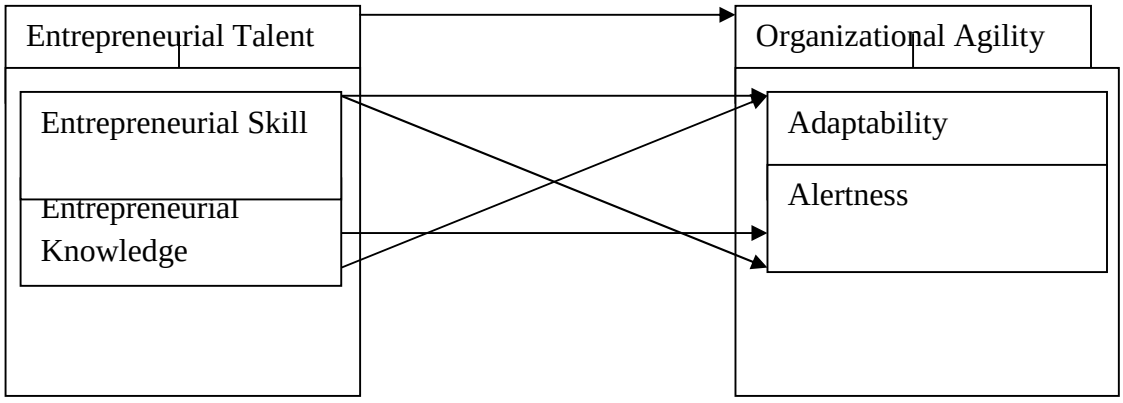

Figure 1: Operational framework of entrepreneurial talent management and organizational agility.

1.4 Aim and Objectives of the Study

The general aim of this study is to examine if there exist any relationship between entrepreneurial talent management and organizational agility and the specific objectives are:

i. Examine the relationship between entrepreneurial skill and adaptation of Construction Firms in Rivers State, Nigeria.
ii. Examine the relationship between entrepreneurial knowledge and adaptation of Construction Firms in Rivers State, Nigeria.
iii. Examine the relationship between entrepreneurial skill and alertness of Construction Firms in Rivers State, Nigeria.
iv. Examine the relationship between entrepreneurial knowledge and alertness of Construction Firms in Rivers State, Nigeria.

1.5 Research Questions

To realize the aim and the objectives of the study, the following research questions were asked:

i. What is the relationship between entrepreneurial skill and adaptation of Construction Firms in Rivers State, Nigeria?
ii. What is the relationship between entrepreneurial knowledge and adaptation of Construction Firms in Rivers State, Nigeria?
iii. What is the relationship between entrepreneurial skill and alertness of Construction Firms in Rivers State, Nigeria?
iv. What is the relationship between entrepreneurial knowledge and alertness of Construction Firms in Rivers State, Nigeria?

1.6 Research Hypotheses

The following null hypotheses were stated:

$H0_1$: There is no significant relationship between entrepreneurial skill and adaptation of Construction Firms in Rivers State, Nigeria.

$H0_2$: There is no significant relationship between entrepreneurial knowledge and adaptation of Construction Firms in Rivers State, Nigeria.

$H0_3$: There is no significant relationship between entrepreneurial skill and alertness of Construction Firms in Rivers State, Nigeria.

$H0_4$: There is no significant relationship between entrepreneurial knowledge and alertness of Construction Firms in Rivers State, Nigeria.

2. LITERATURE REVIEW

2.1 Theoretical Framework

The resource base theory will be use as the theoretical background for this work. The resource-based theory expressed that organizations are to effectively and maximally utilize the differences in resources endowment, as well as their abilities and competencies in order to have competitive advantage (Raduan, Jegak, Haslinda and Alimin, 2009). It emphasized firm-level–specific capabilities and resources that guarantee an organization's performance, competitive advantage as well as organizational agility (Mahoney and Pandian, 1992). It stresses that the firm's resources is an important predictor of the firm's survival, in this case the entrepreneur's talent.

Resource based theory refers to the organization's resources use in the day to day process of the organization to achieve set objectives and improves performance. However, these resources required to enhanced organizational performance are sometimes scarce and inadequate (Teece, 2007). Therefore, firm must use any available resources including the talent of the entrepreneur at their own advantage effectively which will bring about the ability to survive over time. Business firms can increase their success as well become agile given that better resources (entrepreneurs are skillful and knowledgeable) are at their disposals if they are well managed. Thus, organizational agility lies on the capacity of the entrepreneur to effectively and efficiently manage his or her talent and other resources at its disposal.

2.2 Entrepreneurial Talent Management

Talent has to do with the combination of skills, knowledge, abilities and experiences that an individual came with to the enterprise so as to contribute to achieving the organization's objectives (Khatri, 2010; Schiemann, 2014). That is talent has to do with the abilities, knowledge as well the skills, an individual have in a specific area of specialization that enables him or her to carry out his or her functions. Entrepreneurial talent management refers to those special steps an entrepreneur adopts to judiciously use his or her talent (skills and knowledge) to the betterment of the organization. Entrepreneurial talent management is the capability of the entrepreneur in discovering, selecting, processing, and interpreting through their skills and knowledge opportunities as well as threat in the business environment in order to take advantage of opportunities and effectively manage threat. Entrepreneurs that are talented can manage organization's employees and run the organization more effectively.

The reason behind entrepreneurial talent management is because business organizations are formed and manage by entrepreneurs. The entrepreneur creates values by combining other organizational resources in attaining the objectives of the organization. Processes, raw materials, capital and technology are very significant and valuable to the organization but human beings both employees and the entrepreneur whose decisions affect other resources is more of immense importance to the outcome of the organization. As entrepreneurial talent seems to be providing a competitive edge for organizations, it can also become a distinctive component between more and less successful organization (Glenn, 2012), thus, investing and effectively managing this talent can give the needed boost for growth and innovation that will assist the organization to respond to environmental changes effectively. Today's business organizations operate in complexity and knowledge based environment, and it is therefore required of the entrepreneurs to be knowledgeable as well skillful through modern technological application to manage this complexity in the business environment in an effective and efficient way.

2.2.1 Entrepreneurial Skill Management

According to McLarty and Dousios (2006) skill has to do with the capability to execute a given task or job in the organization. However, entrepreneurial skills mixes various skill set such as technical skill, conceptual skill, human relation skill among others to be able to carry out entrepreneurial operation. Skills can be learnt and old ones perfected through training or doing a given jobs. For an entrepreneur to be effective in the use of his or her skills according to Unger, Rauch, Frese and Rosenbusch (2011) they should be channeled to various tasks perform

by the entrepreneur. An entrepreneur requires different skills to ensuring he or she is successful such as skills to detect opportunities as well as threats, production skills which may include new ideas, new products and services skills (Fletcher, 2006).

Markman (2007) expressed that the most important skill needed by an entrepreneur is the skills to be able to detect opportunity and explore it very well. For that reason, the skills to recognize opportunity make entrepreneurial skills different from that of managerial skills. However, an entrepreneur also requires good interpersonal, conceptual and technological skills to be able to perform well. Interpersonal skills involve the ability of the entrepreneur to work effectively with people, this is because people are most valuable resource of any organization, and thus entrepreneur needs to know how to relate well with people. This skill includes motivational skill, conflict resolution skill and communication skill. The conceptual skill enables the entrepreneur to see the organization as a whole and in a way that the organization operates in an environment and to be able to envision where the organization is going. While the technical skill has to do with the capability of the entrepreneur to adopt particular methods and techniques in carrying out his functions and it is not limited to equipment or machine skills but also the skills for effective use of methods and processes.

2.2.2 Entrepreneurial Knowledge Management

Knowledge has to do with a collection of information that is realistic which provide procedural guidance in the execution of task or job (Marrelli, Tondora and Hoge, 2005). More so, from a psychological perspective, there is declarative, procedural and meta-cognitive knowledge (Anderson and Schunn, 2000). They further explain that declarative knowledge is an information that is factual in nature that an individual knows as well account for; procedural knowledge is the knowledge that is hard to communicate while meta-cognitive knowledge has to do with ones knowledge of a given task, context, and the ability to solve problems. Entrepreneurial knowledge management has to do with the process involve in capturing the expertise as well the competence of the entrepreneur and applying them to enhance innovative behaviour through continuous learning process in the organization (Davernport, De Long and Beers, 1998).

Through, entrepreneurial knowledge management, entrepreneurs are able to create significance and meaning from their intellectual prowess (Megan and Jon, 2007). It has to do with managing efficiently the knowledge assets of the entrepreneur so as to create values and meet organization's requirements. More so, entrepreneurs must have different and various knowledge base to be able to effectively run the organization. Also, entrepreneurs need knowledge outside than the ones they possess, hence must be able to work well with others in the organization that has the required knowledge. Opportunity recognition as well its exploitation are strongly connected to the entrepreneur, thus he must be knowledgeable. The recognition and exploitation of opportunities in the business environment is strongly dependent on the capability of the entrepreneur to build up required knowledge as well the ability to process information speedily (Ulrich, 1998).

2.3 Organizational Agility

Tsourveloudis and Valavanis (2002) defined organizational agility as the capability of an organization to operate at ease in a swiftly changing business environment by offering high

quality of products to the market. It has to do with the ability of an organization to effectively and efficiently utilize the available resources in the organization to meet the ever changing needs of the business environment (Park, 2011). It therefore, assists the firm in carrying out its operations lucratively, as well be able to manage opportunities and threats coming from the environment (Ardichvile, Cardozob and Rayc, 2003).

Organizational agility is an organization's capability in looking forward to, sensing, and responding to instability in the firm's business environment so as to gain advantage competitively and enhance organizational performance. It is a specific way, firms apply to attain and enhance advantage competitively so as to be in the same pace with frequent and nonstop changes in the business environment (Nejatian and Zarei, 2013; Khoshlahn and Ardabili, 2016). Any business firm that has been able to develop agility will be able to operate successfully in exceedingly hyper competitive environments through the continuous adaptation to environmental changes. In today's knowledge economy, talent vis-à-vis skill and knowledge especially that of the entrepreneur is an important driver of organizational success. In this new business environment talent has become a significant factor in improving the performance of the organization and its capability to adapt effectively to changes in the environment.

2.3.1 Adaptability

Adaptability is the ability of an organization to respond swiftly to an opportunity as well to risks and converting those risks into advantage for the organization (Kotter, 2012). It has to do with the capability of organizations to act in response to customers' needs and make optimum use of opportunities in the business environment. It is a process of adjusting to new conditions to become better suited to the context or environment. It involves setting expectations for the individual and the organization to adjust to the environmental changes as well the mobilization of employees to surmount challenges and enhance the firm's performance (Battilana and Casciaro, 2012). Any firm that is able to adapt is firm that can predict as well respond to environmental changes effectively (Klein and Pierce, 2001). Thus, in building the necessary capability for adapting to changes in the organization, entrepreneur must be able to set up an organizational climate by forming and upholding behaviours that promote proactive and reactive activities in every day operation of the firm.

2.3.2 Alertness

Alertness is the capability of an organization to identify business opportunities when they exist in the business environment at the forefront of other competitors (Helfat and Peteraf, 2015). Baron (2006) further defined organizational alertness as an organization's ability to process prior knowledge and experiences, identify changes in an environment, and process information that will better the organization. Kaish and Gilad (1991) observed that it gives managers the ability to utilize their creative capacity to spot and interpret information in relation to the development of new opportunities. Organizational alertness has the prospective to add considerable value to the organization because it assist entrepreneur to be conscious of environmental changes, and take advantage of opportunities (Kirzner, 1999).

3. METHODOLOGY

The research adopts cross-sectional research design which is a form of quasi-experimental design and it is suitable for this study since the respondents are not under our control. The study's population consisted of ten (10) selected construction firms in Rivers State, which were also used as the sample size. The construction firms include: Airtrace Solutions Ltd, Horandez and Detroit Construction Company Ltd, Ironinnaija Ltd, Kon-X Group, Megastar Technical and Construction Company, Monier Construction Company Nigeria Ltd, Setraco Nigeria Ltd, Southern Basin Construction Ltd, Taitor Construction Services Ltd, and Handyman Construction Nigeria Ltd which were gotten from https://www.finelib.com/cities/port-harcourt/business/-construction.

More so, a five point Likert questionnaire was adopted in gathering data for the study which consist of three questions and five respond choices with point scales ranging from 1 to 5: 1-strongly disagree; 2- disagree; 3- indifference; 4- agree and; 5- strongly disagree for each of the dimensions and measures of the study variable. Never the less, for data analysis the questionnaire was given to 5 top management staff in strategic departments (human resources, finance and accounts, public relations, marketing and operation) of each of the construction companies which were purposively selected because of the roles they play in the organization, making the number of questionnaire distributed to be 50.

Entrepreneurial talent management was operationalized using entrepreneurial skill and entrepreneurial knowledge while organizational agility was operationalized using adaptation and alertness. The validity of the research instrument was further tested using face and content validity, and Cronbach's Alpha was used in testing for the research instrument reliability which show an Cronbach's Alpha greater than 0.7. Specifically the result is as follows: entrepreneurial skill– 0.873; entrepreneurial knowledge- 0.856; adaptability- 0.829 and alertness-0.839. The response rate were 47(94%) of the retrieved and correctly filled questionnaire out of the 50 distributed questionnaire. Collected data was analyzed using the Spearman's Rank Order Correlation Coefficient Statistical with the aid of Statistical Package for Social Sciences (SPSS) within a significance level of 0.05.

4. DATA ANALYSIS AND RESULT

4.1 Entrepreneurial Talent Management and Organizational Agility

Table 1: Association between Entrepreneurial Talent Management and Organizational Agility

Correlations

			Entrepreneurial Talent Management	Organizational Agility
Spearman's rho	Entrepreneurial Talent Management	Correlation Coefficient	1.000	.975**
		Sig. (2-tailed)	.	.000
		N	47	47
	Organizational Agility	Correlation Coefficient	.975**	1.000
		Sig. (2-tailed)	.000	.
		N	47	47

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Result, 2019

Table 1 above indicates that entrepreneurial talent management is statistically significant and positively correlated with organizational agility (*rho* = 0.975, P = 0.000 < 0.05). Therefore, the empirical result indicates that there is a strong positive and significant relationship between entrepreneurial talent management and organizational agility in the Construction Firms in Rivers State, Nigeria.

4.1.1 Entrepreneurial Skill and Organizational Agility vis-à-vis Adaptability and Alertness

The correlation matrix obtained for the first and second research questions is provided in the Table 2 below:

Table 2 Correlation Matrix on Entrepreneurial Skill and Organizational Agility vis-à-vis Adaptability and Alertness

Correlations

			Entrepreneurial Skill	Adaptability	Alertness
Spearman's rho	Entrepreneurial Skill	Correlation Coefficient	1.000	.945**	.908**
		Sig. (2-tailed)	.	.000	.000
		N	47	47	47
	Adaptability	Correlation Coefficient	.945**	1.000	.886**
		Sig. (2-tailed)	.000	.	.000
		N	47	47	47
	Alertness	Correlation Coefficient	.908**	.886**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	47	47	47

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Result, 2019

Table 4.2 above indicates the empirical results of Spearman Rank Order Correlation Coefficient between entrepreneurial skill and the measures of organizational agility (Adaptability and Alertness). It identified that entrepreneurial skill is statistically significant and positively correlated with adaptability (*rho* = 0.945, p = 0.000 < 0.05). Similarly, entrepreneurial skill was found to be statistically significant and positively correlated with alertness (*rho* = 0.908, p = 0.000 <0.05).

4.1.2 Relationship between Entrepreneurial Knowledge and Organizational Agility vis-à-vis Adaptability and Alertness

The correlation matrix obtained for the third and fourth research questions is provided in the Table 3 below:

Table 3: Correlation Matrix on Entrepreneurial Knowledge and Organizational Agility vis-à-vis Adaptability and Alertness

Correlations

			Entrepreneurial Knowledge	Adaptability	Alertness
Spearman's rho	Entrepreneurial Knowledge	Correlation Coefficient	1.000	.951**	.901**
		Sig. (2-tailed)	.	.000	.000
		N	47	47	47
	Adaptability	Correlation Coefficient	.951**	1.000	.886**

		Sig. (2-tailed)	.000	.	.000
		N	47	47	47
	Alertness	Correlation Coefficient	.901**	.886**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	47	47	47

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Result, 2019

Table 4.2 above indicates the empirical results of Spearman Rank Order Correlation Coefficient between entrepreneurial knowledge and the measures of organizational agility (Adaptability and Alertness). It identified that entrepreneurial knowledge is statistically significant and positively correlated with adaptability (*rho* = 0.951, P = 0.000 < 0.05). Similarly, entrepreneurial knowledge was found to be statistically significant and positively correlated with alertness (*rho* = 0.901, P = 0.000 <0.05).

4.2 Regression Analysis/ Test of Research Hypotheses

The multiple-regression as well as the P-value was used to empirically test the four stated hypotheses on whether to reject or accept the null hypotheses.

Table 4: Effect of Entrepreneurial Talent Management vis-à-vis Entrepreneurial Skill and Entrepreneurial Knowledge on Adaptability

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.974[a]	.949	.946	.33577

a. Predictors: (Constant), Entrepreneurial Knowledge, Entrepreneurial Skill

Source: SPSS Result, 2019

The above Table showed the result of regression analysis (R-value 0.974) between entrepreneurial skill and entrepreneurial knowledge and adaptability which were taken together indicating both variables has strong effect on adaptability by predicting it changes by R^2-value = 0.949 that is by 94.9% while the remaining 6.1% could be due to the influence of other variables not covered in this study.

Table 5: Multiple Regression Result of Entrepreneurial Talent Management vis-à-vis Entrepreneurship Skill and Entrepreneurship Knowledge and Adaptability

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.495	.483		1.026	.000
	Entrepreneurial Skill	.282	.074	.267	3.831	.000
	Entrepreneurial Knowledge	.677	.064	.733	10.534	.000

a. Dependent Variable: Adaptability

Source: SPSS Result, 2019

Test of Hypothesis 1

Table 2 reveals a PV =0.000< 0.05 as well Table 5 reveals a t-cal. = 3.831 greater than t-cri =1.96. Thus, the t-cal=3.831 and PV=0.000 indicates that there is a strong positive and significant relationship between entrepreneurial skill and adaptability. Thus, the alternate hypothesis is hereby accepted. Similarly entrepreneurial skill contributes (β=0.282) to the variation of adaptability.

Test of Hypothesis 2

Table 3 reveals a PV =0.000< 0.05 as well Table 5 reveals a t-cal. = 10.534 greater than t-cri =1.96. Thus, the t-cal=10.534 and PV=0.000 indicates that there is a strong positive and significant relationship between entrepreneurial knowledge and adaptability. Thus, the alternate hypothesis is hereby accepted. Similarly entrepreneurial knowledge contributes (β=0.677) to the variation in adaptability.

Table 6: Effect of Entrepreneurial Talent Management vis-à-vis Entrepreneurial Skill and Entrepreneurship Knowledge on Alertness

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871[a]	.758	.747	.62292

a. Predictors: (Constant), Entrepreneurial Knowledge, Entrepreneurial Skill

Source: SPSS Result, 2019

The above Table 6 showed the result of regression analysis (R-value 0.871) between entrepreneurial skill and entrepreneurial knowledge and alertness which were taken together indicating both variables has strong effect on adaptability by predicting its changes by R^2-value = 0.758 that is by 75.8% while the remaining 24.2% could be due to the influence of other variables not covered in this study.

Table 7: Multiple Regression Result of Entrepreneurial Talent Management vis-à-vis Entrepreneurial Skill and Entrepreneurial Knowledge and Alertness

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.862	.896		8.865	.000
	Entrepreneurial Skill	.705	.137	.778	5.158	.000
	Entrepreneurial Knowledge	.583	.119	.505	4.696	.000

a. Dependent Variable: Alertness

Source: SPSS Result, 2019

Test of Hypothesis 3

Table 2 reveals a PV =0.000< 0.05 as well Table 7 reveals a t-cal. = 5.158 greater than t-cri =1.96. Thus, the t-cal=5.158 and PV=0.000 indicates that there is a strong positive and significant

relationship between entrepreneurial skill and alertness. Thus, the alternate hypothesis is hereby accepted. Similarly entrepreneurial skills contributes (β=0.705) to the variation in alertness.

Test of Hypothesis 4

Table 3 reveals a PV =0.000< 0.05 as well Table 7 reveals a t-cal. = 4.696 greater than t-cri =1.96. Thus, the t-cal=4.696 and PV=0.000 indicates that there is a strong positive and significant relationship between entrepreneurial knowledge and alertness. Thus, the alternate hypothesis is hereby accepted. Similarly entrepreneurial knowledge contributes (β=0.705) to the variation in alertness.

5. DISCUSSIONS OF FINDINGS

From our findings it shows that entrepreneurial talent management significantly affects organizational agility. Thus, Abou-Zeid (2002) expressed that the practice of appropriate talent management is to improve quality of organization's outcome, organizational performance and the organizational workforce as well the ability to withstand changes in the business environment. Entrepreneurial talent management enables the entrepreneur to attain organizational agility and meet their operational matters by using their skills and abilities as well as knowledge which help them to identify and respond to environmental challenges that have overtime affects the ability of the firms to survive. When entrepreneur talent is effectively and efficiently managed, entrepreneurs are able to better act in response to customers' needs on time and have flexible attitude in providing a variety of services to other stakeholders and as well adapting to the complex and changing environment.

For organization to become agile in the face of today's increasing business environmental turbulence and complexity and need for enhanced productivity as well as performance at all levels require effective and efficient entrepreneurial talent management. To create a successful organization that is able to survive over time; an entrepreneur must concentrate its energies on acquiring the right skills and knowledge and invest in promoting employee with right knowledge, skills, abilities and attitude (Hondeghem, Horton, and Scheepers, 2005).

More so, on the relationship between entrepreneurial skill and adaptation, the finding of our data analysis showed that there is significant relationship. In today's dynamic and competitive environment, entrepreneurial skill such as innovation skill as well as the skill to recognize opportunity plays major role on how the organization adapt to its environment which is critical to organizational success. This is because for organization to adjust to environmental turbulence and changes, the entrepreneur must possess the right skill as well the ability to effectively apply those skills.

The relationship between entrepreneurial knowledge and adaptation also showed a positive and significant relationship. The effective application of knowledge is very important to every organization. Knowledge is a major factors that influences organizations' success and if the entrepreneur possessed the appropriate knowledge; it will help the organization to adapt to its environment appropriately as well enhance the success and the competitive advantage of

the organization (Han and Anantatmula, 2007). Also, entrepreneurial knowledge as a strategic asset assist the organization in maintaining performance in an unstable and dynamic business environment by enabling entrepreneur in innovating, collaborating as well help them in making decisions appropriately (Jantunen, 2005). More so, organization's success depends on the entrepreneur's capability to learn and applied the acquired knowledge to make better decision (Li-An, 2008) that will bring about organizational agility. Effective decisions, which are taken on the basis of quality knowledge possessed by the entrepreneur, will assist the firm effectively anticipate and react to changes in the environment.

Furthermore, on the relationship between entrepreneurial skill and alertness, the finding also showed a positive and significant relationship. Thus, Naylor (1999) observed that the effective organization situation awareness depends on the composition of its members as well as the entrepreneur to develop accurate expectations and capabilities (such as skill and knowledge) for the organization. The possession of the right skill as well the judicious use of same enable the entrepreneur in recognizing as well exploiting possible business opportunities by spotting and interpreting information in relation to same in the business environment. Any business firm that can survive and thrive in this turbulent and dynamic business environment will be based on the alertness capability of the organization through the entrepreneur to the happenings in the business environment (Cardon and Kirk, 2013).

The finding of this study also showed a positive and significant relationship between entrepreneurial knowledge and alertness. The concept of knowledge management is increasingly relevant to 21st business organization due to the business environment uncertainty; therefore, appropriate entrepreneurial knowledge management is very important as business looks forward to achieving organizational agility (Tiwana, 2002). Thus, organizations are beginning to appreciate the fact that knowledge management is a basic and essential resource to achieving competitive advantage which also is important to attaining agility. It is therefore, essential for entrepreneur to manage their knowledge as well that of their employees effectively in today's business world because the ability of an organization to recognize opportunities when they exist in the business environment ahead of others is dependent on the entrepreneur ability to utilize his or her knowledge appropriately.

6. CONCLUSION AND RECOMMENDATIONS

Based on our findings from this study, we therefore conclude that entrepreneurial talent management significantly affects the ability of organizations to be agile as well entrepreneurial skill management and entrepreneurial knowledge management significantly affects adaptability and alertness of construction firms in Rivers State, Nigeria. Environmental changes and increased competition have placed the subject of entrepreneurial talent management at the center of today's organizations, since organizations by having capable, knowledgeable and skillful entrepreneur will be better able to adapt to changes. The importance of talent in the organization cannot be over emphasized as it provides sustainability and enhancement to organization's performance; therefore entrepreneur must take the overall management of their talent as a top priority so as to enhance the ability of their organization to become agile. We further recommend that entrepreneurs in the construction sector should make sure they have

detailed developmental programs that will enhance their skills and knowledge to achieve organizational agility. More so, in order to achieve agility in the construction sector, we recommend that entrepreneurs must exhibit a high level of commitment to effectively and efficiently use their talent.

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