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IMPACT OF HUMAN CAPITAL DEVELOPMENT ON UNEMPLOYMENT IN NIGERIA

BY

[1]Aigbedion I. Marvelous, [2]Ogwuchi David, [3]Zubair A. Zulaihatu

[1,2]Department of Economics, Bingham University, Karu
[3]Federal Ministry of Education

ABSTRACT

The study focuses on the impact of human capital development on Unemployment rate in Nigeria. Time series data were used and the sourced from Central bank of Nigeria's statistical bulletins and Annual Report of National Bureau of Statistics of Nigeria. The Autoregressive Distributed Lagged (ARDL) and Error Correction Model (ECM) was used to establish the short-run and long run causal relations between unemployment rate and Human Capital Development in Nigeria. The result shown that there is strong relationship between Unemployment Rate and human capital development in Nigeria. The Autoregressive Distributed Lagged (ARDL) - Bounds test shows that there is co-integration among the economics variables under review. The Autoregressive Distributed Lagged (ARDL) and the Error Correction Models show that human capital development has a negative impact on unemployment rate in Nigeria. Therefore, the study recommends that government should adopt mechanism to make sure financial and other resources in those sectors are properly utilized to increase the efficiency of the sectors and thereby reducing the level of unemployment and control population rate in Nigeria through efficient primary health care and family planning in order reduce the level of unemployment in Nigeria. Finally, Government should adopt efficient and effective monitoring in the civil service commission in Nigeria in order to reduce unemployment in Nigeria.

Keywords: Human Capital, Unemployment, Health, Education

Introduction

It has been stressed globally that the differences in the level of socio-economic development (employment, standard of living, education and health care delivery) across nations is attributed not so much to natural resources, endowments and the stock of physical capital but to the quality and quantity of human resources which is the offshoot of human capital development (Marimuthu, Arokiasamy & Ismail, 2009). Capital and natural resources

arepassive factors of production that are capable of reducing the effect of poverty and unemployment in the economy; human beings are the active agents who accumulate capital, exploit naturalresources, build social, economic, and political organizations, and carry forward national development (Sarah, Adam, Ben & Yelwa, 2015).

Clearly, a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economic development will be unable to develop anything else or improve the quality and quantity of human resources (Erhurua, 2007). Also, if this happened the economy will not be able to reduce the level unemployment which is a product of job creation and economic growth. Therefore, investment in human capital development plays an important role in increasing competitiveness, improving quality of life of the population and in generating employment opportunity for sustainable economic growth.

Furthermore, Ogujiuba & Adeniyi, 2004 stressed that investment in human capital development has positive effect on economic growth and that increase in the human capital development will leads to reduction inefficiency of individuals, increase productivity of citizens in the production process therefore, reducing the level of unemployment in the country. They concluded that human capital development is one of the best instruments for reducing unemployment in a labor-intensive economy like Nigeria.

Thus, public spending on social service such as education and health care that are critical to human capital development is generally needed in developing countries like Nigeria. However, in Nigeria though the country's budgetary allocation to education is still lower than the United Nation Education, Scientific and Cultural Organization (UNESCO) recommendation of 26% of the national budget which is to be spent on education by member countries, over the last three decades various governments in Nigeria has engaged in deliberate policies to increase the investment of human capital development that is, in the area of education and health care services in order to improve the quality of manpower available for the achievement of the macroeconomic goals especially in the reduction of poverty and unemployment in Nigeria.

Despite, government effort to increase the investment of human capital development for the achievement of the sustainable reduction in unemployment level in Nigeria, unemployment level in Nigeria has remain high given the average of unemployment rate in Nigeria as 12 percent between 2006 and 2016 by the National Bureau of Statistics. Therefore, the main objective of this study is to empirically examine the impact of human capital development on unemployment in Nigeria from 1986 to 2016.

LITERATURE REVIEW

Conceptual Issues

The concept of human capital formation refers to a conscious and continuous process of acquiring requisite knowledge, education, skills and experiences that are crucial for the rapid economic growth of a country (Aigbedion, 2015). Aigbedion, Anyanwu & Wafure(2016)defined human capital investment in economic terms as the accumulation of human capital and its effective investment in the development of an economy. According to Oyinlola & Adeyemi (2014) human capital development refers to the acquired and useful abilities of all the inhabitants or members of the society. Audu, Igwe & Onoh (2013) asserted that human capital development consists of conscious efforts to amplify human knowledge, improve skills, productivity and inspire resourcefulness of individuals. Paul, Wada, Audu & Omisore (2013) believes that human capital development is the process that relates to training, education and other professional initiatives/interventions in order to increase the levels of knowledge, skills, abilities, values, and social assets of an employee which will lead to the employee's satisfaction and better performance, and eventually improved economic growth. The defining projection of the human capital can portrays in different scenario, but the most projected scenario of the human capital can be said that, the abilities and skill of the masses are called human capital (Lawanson &Marimathu, 2009).

On the other hand Muhammed (2011), described unemployment as the state of wordlessness experienced by persons who are members of the labour force who perceived themselves and are perceived by others as capable of work and it is also defined as number of people willing to work but they are not able to find any(Jaiyeoba, 2015). Unemployed people can be categorized into those who have never worked after graduation from the university and those who and those who have lost their jobs thereby seeking re-entry into labour market. From the

above views of scholars government spending, public spending and government expenditure mean the same and government expenditure is a macroeconomic tool used by the government to achieve macroeconomic goals in the economy while unemployment is one of the macroeconomic problems in the economy and this unemployment rate is the degree or the total number of willing and capable labour which are not engaged in any productivity process in the economic.

Theoretical Framework

The theoretical framework of this study is the real business cycle theory on unemployment. It is argued in this theory (Chatterjee, 1999) that the growth of productivity of input (labour and capital) which revolutionizes technology is the main source of employment and unemployment. If the growth of output increases more than the growth of inputs, then total factor productivity or the residual, has increased. If total factor productivity is not growing, then firms and the economy become inefficient. It follows that reallocation of labor (human capital) and capital cannot be achieved and labor and capital will be used in less profitable opportunities.

There are various causes for the slowdown in total factor productivity. Technology is not improving in the production of goods and services and workers' skills (Human Capital Development) are not being enhanced. New products are not invented and when the prices of imported materials are increasing. Once total factor productivity is stagnating, the co-movements in other important variables will slowdown. For example, consumption expenditures will not increase above the trend, nor will investment spending. Therefore, the theory argued that increase in human capital development will enhance productivity and thereby increase the output that will in turn improve the employment generation and on the other hand if output from the labour is low the level of unemployment will increase. Functionally, Unemployment (Unem) is a function of human capital development indicators.

$$Unem = f(Education, Health\ and\ other\ Human\ Capital\ Indicators)$$

Empirical Review

Several studies have been carried out to estimate the effect of human capital development in determining employment and unemployment. Massingham & Leona Tam (2015) examined

the relationship between human capital, creation and employee reward in Australia. It was discovered that employee capability and employee satisfaction had a direct positive relationship with the importance of work activity. It was also discovered that the ability to create value at work had a direct positive relationship with employees reward. However, Employee's commitment had a direct negative relationship with the importance of work activity. In a similar but different context, Doppelt (2012) in a theoretical macroeconomic model examined how temporary job losses lead to life-long earning losses. He noted that Workers must effectively compensate their employers for the skills that they gain because skills are more valuable during economic booms. Besides, allowing workers to build up general human capital affects the wage determination.

He also noted that workers accumulate specific human capital on the job, while suffering human capital depreciation during unemployment. Using the nexus between human capital and unemployment, Samiullah (2014) investigated the Impact of determinants of Human capital such as health, education, population and life expectancy on unemployment in case of Pakistan over the period 1981-2010. Using. The Johansen co-integration and Vector Error Correction Modelling (VECM) approach, the results showed that human capital variables had strong impact in determining the employment status in Pakistan long run. Similarly, Bashir, Farooq, Nawaz, Bagum, Sandila, & Arshad (2012) also examined the Pakistan economy by using the data for the period from between 1972 and 2010. Using the Co-integration test and VECM respectively. It was discovered that educational expenditure, health expenditure and gross fixed capital formation are significant features in magnifying employment level in Pakistan.

Therefore, it was suggested that there should be more spending on education to support enrolment at primary and expert levels by offering scholarships to students. In some other studies, Chaudhary (2010) examined the wages and employment level for females by taking health and education as independent variables important determinants of human capital. Using primary data collected through different field surveys; OLS method is applied to estimate coefficients. The results suggested that education and health have positive and significant impact on employment level and determination of wages for female workers. In

another study, Laplagne, Glover & Shomos, (2007) carried out a panel analysis by estimating the change in labour force participation rate due to change in human capital variables such as health and education. Logit model is used to estimate the coefficient of the explanatory variables.

It was discovered that greater labour force participation was achieved by better health and education. Similarly, Kennedy and Vance (2009) using time series data to measure the impact of increase in educational attainment on labour force participation rate and found the results that as the level of schooling and education increased, the prospects for labour force participation for such a person also increased. Also, Mete and Schultz (2002) examined the labour force participation rate due to change in health quality. Using the Ordinary Least Squares (OLS) approach, a bi-directional relationship was discovered between health and labour force participation. Thus, an Improvement in health sector was seen as a possibility for reducing the unemployment rate and vice versa. Similarly, Pandey (2009) examined the change in labour force participation rate given a change in health structure of the people in India. Using unemployment as a dependent variable and health expenditures and number of hospitals are used as independent variables, the two stage least squares (2SLS) technique of estimation revealed that negative and significant relationship between unemployment and health expenditures.

Evans & Koch (2007) estimate the effect of human capital on the unemployment problem using the standard time dependent model makes the individual unemployment rate. They conclude that effect of education on becoming employed is positive levels of education actually tend to increase the average employment duration. They find that the level of human capital has a negative effect on unemployment. Christelle, Kornelia & Arjona(2010) examines the relationship between long-term unemployment and education been run using both a binary logit model and a binary scobit model for time period 2004-2006 to investigate the impact of education on unemployment.

The outcome suggests that the chances of a person to be remain in long-term unemployment decreases with increases in her/his educational level. Study also told that younger workers

(20-30) are more beneficial than older workers (50-65) and there is a decline in returns of education after the age of 40. Conclusion of the all literature is that all the past study investigate the impact of human capital on employment rate by keeping health and education as factors of human capital but this study also consider the impact of health and education, Enrolment and Number of schools and life expectancy as factor of human capital to measure the unemployment variations due to human capital development in Nigeria.

METHODOLOGY

This study used secondary data. The data on education and health expenditures were sourced from Central bank of Nigeria's statistical bulletins, data on unemployment rate were sourced from National Bureau of Statistics Annual reports while data on life expectancy and Per Capita Income were sourced from World Bank Databank. Autoregressive Distributed Lagged (ARDL) - Bounds test procedure was used to examine the co-integration relationship between human capital development and unemployment in Nigeria. This procedure was developed by Pesaran and Shin (1999) which was later expanded by Pesaran, Shin and Smith (2001) and the procedure allow researcher to use variables which are not integrated in the same order. Also, the Error Correction Model (ECM) was used to establish the short-run and long run causal relations between Human Capital Development and unemployment in Nigeria.

In order to assess the role of human capital on the unemployment situation in Nigeria, the study used the theoretical functional relationship between human capital development and unemployment that was established by Chatterjee, 1999. Specifically, using non- stationary variables, unemployment (UNEMPR) is regressed against human capital development indicators. These include Education Expenditure in Nigeria (EEXP), Health Expenditure in Nigeria (HEXP) as well as some other control variables like Population Growth Rate in Nigeria (PGR), and Life Expectancy in Nigeria (LEN).

Thus,

$$UNEMPR = f(EEXP, HEXP, PGR, LEN) \quad (3.1)$$

Taking the natural logs of these variables and introducing the expected coefficients (and intercept equation (4) is re-written as:

$$UNEMPR = \alpha + \beta_1 EEXP + \beta_2 HEXP + \beta_3 PGR + \beta_4 LEN + \mu \quad (3.2)$$

With the exception of Population Growth Rate in Nigeria (PGR), an inverse relationship is specified between all the variables and UNEMPR. For instance an increase in Education Expenditure in Nigeria (EEXP) and Health Expenditure in Nigeria (HEXP) are expected to reduce unemployment; hence the specified interrelationship.

The Autoregressive Distributed Lagged (ARDL) model was used in this study because the variables were integrated in order I(0) and I(1) which was established by Pesaran, Shin and Smith (2001). And the model is specified as follows:

$$\Delta UNEMPR_t = \alpha_0 + \sum_{g=1}^{m} \alpha_{1i}\, \Delta UNEMPR_{t-i} + \sum_{h=1}^{n} \alpha_{2i}\, \Delta EEXP_{t-i} + \sum_{i=1}^{o} \alpha_{3i}\, \Delta HEXP_{t-i} + \sum_{j=0}^{p} \alpha_{4i}\, \Delta PGR_{t-j} + \sum_{k=0}^{q} \alpha_{5i}\, \Delta LEN_{t-k} + \alpha_6 UNEMPR_{t-i} + \alpha_7 EEXP_{t-i} + \alpha_8 HEXP_{t-i} + \alpha_9 PGR_{t-i} + \alpha_{10} LEN_{t-i} + \varepsilon_t (1)$$

Where: UNEMPR = Unemployment Rate in Nigeria; EEXP = Education Expenditure in Nigeria; HEXP= Health Expenditure in Nigeria; PGR= Population Growth Rate and LEN= life Expectancy in Nigeria. Equation (1) will be used to examine the short-run and long-run relationship between Human Capital Development and Unemployment in Nigeria.
While the Error Correction Model (ECM) that will be used in this study is specified as follows:

$$\Delta UNEMPR_t = \beta_0 + \sum_{g=1}^{m} \beta_{1i}\, UNEMPR_{t-i} + \sum_{h=1}^{n} \beta_{2i}\, \Delta EEXP_{t-i} + \sum_{i=1}^{o} \beta_{3i}\, \Delta HEXP_{t-i} + \sum_{j=0}^{p} \beta_{4i}\, \Delta PGR_{t-j} + \sum_{k=0}^{q} \beta_{5i}\, \Delta LEN_{t-k} + \beta ECM_{t-1} + \varepsilon_t (2)$$

The model above is used to adjust the estimation until the ECM turned negative. The negative sign of coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value. The

apriori expectation of the independent variables on the dependent variable is given as: b1 < 0, this would mean that there is a positive relationship between the variables. An increase or decrease in the independent variables will lead to an increase or decrease in the dependent variable.

DATA PRESENTATION AND ANALYSIS

Data Presentation

The data for regression for the study are presented in table 4.1 in appendix I, where UNEMPR is the unemployment rate in Nigeria, EEXP is the education expenditure in Nigeria, HEXP is the health expenditure in Nigeria, PGR is the population growth in Nigeria and LEN is the life expectancy in Nigeria.

Descriptive Analysis of Variables

Table 4.2: Descriptive Analysis of Variables

	UNEMPR	EEXP	HEXP	PGR	LEN
Mean	6.478387	105647.8	60427.60	2.612581	48.32903
Median	4.500000	57956.64	24522.20	2.620000	46.90000
Maximum	13.20000	390420.0	231800.0	2.710000	52.80000
Minimum	1.800000	225.0100	225.0100	2.520000	46.10000
Std. Dev.	3.923851	130598.5	74236.70	0.071413	2.554759
Skewness	0.582149	1.167084	1.114201	-0.026330	0.665771
Kurtosis	1.721581	2.887224	2.758420	1.418906	1.792953
Jarque-Bera	3.862011	7.053872	6.489508	3.232567	4.172041
Probability	0.145002	0.029395	0.038978	0.198636	0.124180
Sum	200.8300	3275083.	1873256.	80.99000	1498.200
Sum Sq. Dev.	461.8982	5.120000	1.650000	0.152994	195.8039
Observations	31	31	31	31	31

Source: Authors Computation from E-views, (2018)

Table 4.2 shows the descriptive analysis of the variables used in the study. From the table the highest value for unemployment rate during the period of study is 13.2 percent this occurred in 2015 as shown in the table of data presentation. Also, peak value for Education Expenditure in Nigeria **(EEXP),** Health Expenditure in Nigeria (HEXP), Population Growth Rate in Nigeria (PGR) and Life Expectancy (LEN) in Nigeria are 2.71 percent, 52 percent and 3203 dollar respectively. However, the lowest value for unemployment rate during the period of study is 1.8 percent. While, the lowest value for Population Rate (PGR), Life Expectancy (LEX) and Per Capita Income (PCY) are 2.52 percent, 46 percent and 153 dollar respectively. On the average the values of the

Unemployment rate is 6.28 percent. Population Rate (PGR), Life Expectancy (LEX) and Per Capita Income (PCY) also have average value of 2.61 percent, 48.3 percent and 968 dollar respectively as indicated by their mean values.

Stationarity Test

Table 4.3: Summary of Unit Root Test

Variables	5% level	Critical ADF	Order of Integration
UNEMPR	-2.9677	-5.531672	I (1)
EEXP	-2.9558	-5.460092	I (0)
HEXP	-2.9762	-3.048811	I (1)
PGR	-2.9677	0.544510	I (0)
LEN	-2.9677	-5.956088	I (1)

***Source:** Author Computation, (2018)*

Table 4.3 shows the stationarity test of the variables used in the study and from the table Augmented Dickey-Fuller test results revealed that the Unemployment Rate in Nigeria, Health Expenditure in Nigeria (HEXP) and Life Expectancy (LEN) in Nigeria are stationary at first difference at 5 percent level of significance. While the Education Expenditure in Nigeria **(EEXP) and** Population Growth Rate in Nigeria (PGR) are stationary at level at 5 percent level of significance.

Causality Test

Table 4.4: The Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMPR does not Granger Cause EEXP		3.43621	0.0487
HEXP does not Granger Cause UNEMPR	29	4.50051	0.0219
UNEMPR does not Granger Cause HEXP		3.69859	0.0398
HEXP does not Granger Cause EEXP	29	7.18899	0.0036
LEN does not Granger Cause EEXP	29	5.55658	0.0104
LEN does not Granger Cause HEXP	29	8.94781	0.0012
PGR does not Granger Cause LEN		3.40564	0.0499

***Source:** Author Computation (2018)*

Table 4.4 above shows Pairwise Granger Causality tests. From the results, all the listed pair of variables have causal relationships among them. That is, there is a causal relationship among the variables given the probability values of the variables at 5 percent level of significance. Therefore, the null hypotheses which stated that there are no causal relationships among variables are rejected.

Co-integration Test Results

Table 4.5:ARDL Bounds Test of Co-integration

Test Statistic	Value	K
F-statistic	17.84698	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: *Author's E-views 9.0 Computation (2018)*

The Co-integration test was done using the ARDL Bound test equation in table 4.5 because all the variable were not integrated at order 1(0). Therefore,Pesaran, Shin and Smith (2001) suggested that Bound test can be used to establish the co-integration among the variables. This became necessary to avoid a spurious regression result. Using the ARDL Bound test with critical value from Narayan (2005), the variables were co-integrated at 1 per cent level of significance since the Wald F- statistics is greater than the critical lower and upper bound.

Presentation and Interpretation of Regression Results

Table 4.6: Long run regression results

Variable	Coefficient	Std. Error	t-Statistics	Prob.
EEXP	-0.000062	0.000039	-1.598236	0.2083
HEXP	-0.000005	0.000084	-0.059362	0.9564
PGR	-9.056938	13.448220	-0.673467	0.5489
LEN	3.917058	0.482090	8.125158	0.0039
C	-154.055834	50.327584	-3.061062	0.0549

Source: *Author's E-views 9.0 Computation (2018)*

From the long-run regression results obtained in Table 4.6 the following interpretation can be inferred; a yearly increase in Life Expectancy Rate in Nigeria (LEN) on the average holding other independent variables constant will lead to 3.92 percent increase in unemployment rate in Nigeria. A yearly increase in the Education Expenditure in Nigeria (EEXP), Health Expenditure in Nigeria (HEXP) and Population Growth in Nigeria on the average holding other independent variables constant will lead to 0.000062, 0.00005 and 9.056938 percent decrease in unemployment rate in Nigeria. This result agreed to the work of Bashir et al (2012) which empirically established that Education Expenditure and Health Expenditure have the impact to reduce unemployment. Finally, based on the probability value, the Life Expectancy Rate in Nigeria (LEN) was statistically significant in explaining the variation in Unemployment rate in Nigeria while the Education Expenditure in Nigeria (EEXP), Health Expenditure in Nigeria (HEXP) and Population Growth in Nigeria were statistically insignificant in explaining the variation in Unemployment rate in Nigeria.

Table 4.7: The Error Correction Model Results

Selected Model: ARDL(1, 2, 2, 1, 2)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(EEXP)	-0.000036	0.000050	-0.712080	0.0078
D(EEXP(-2))	-0.000016	0.000023	-0.702932	0.0027
D(HEXP)	-0.000018	0.000072	-0.247448	0.0205
D(HEXP(-3))	-0.000212	0.000099	-2.149223	0.0208
D(PGR(-1))	-5.626073	114.020616	-0.049343	0.0937
D(LEN)	0.712304	6.095630	0.116855	0.0144
D(LEN(-1))	-10.683475	2.932817	-3.642734	0.0357
ECM(-1)	-3.605332	0.460419	-7.830545	0.0043

Source: *Output from E-views 9.0 (2018)*

From the short-run regression results obtained in Table 4.7 the following interpretation can be inferred; Since the variables were found to be cointegrated implying that they have longrun equilibrium relationship, it is necessary to test for shortrun relationship. From table 4.7, the ECM parameter is negative (-) and significant which is -3.605, this shows that 3.6 percent disequilibrium in the previous period is being corrected to restore equilibrium in the current period.It has been established that the variables are cointegrated and also have short run relationship established from the ECM. All the independent variables were negatively related Unemployment rate in Nigeria except Life Expectancy Rate in Nigeria (LEN) at present period. Finally, all the independent variables were statistically significant in explaining the variation in Unemployment rate in Nigeria while the Population growth rate at lag period was statistically insignificant in explaining the variation in Unemployment rate in Nigeria.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the short run result shows that all the independent variables were negatively related Unemployment rate in Nigeria except Life Expectancy Rate in Nigeria (LEN) at present period and also, all the independent variables were statistically significant in explaining the variation in Unemployment rate in Nigeria while the Population growth rate at lag period was statistically insignificant in explaining the variation in Unemployment rate in Nigeria. This implies that at the short run Education Expenditure in Nigeria (EEXP), Health Expenditure in Nigeria (HEXP) and Population Growth in Nigeria have great impact in reducing unemployment rate in Nigeria while Life Expectancy Rate in Nigeria (LEN) can increase the level of unemployment in Nigeria.

Based on the findings and research conclusion, the following policies were recommended by study which are:

i. Since Education Expenditure in Nigeria (EEXP) and Health Expenditure in Nigeria (HEXP) can reduce unemployment rate in Nigeria, government should therefore, adopt mechanism to make sure financial and other resources in those sectors are properly utilized to increase the efficiency of the sectors and thereby reducing the level of unemployment in Nigeria.

ii. Government should control population rate in Nigeria through efficient primary health care and family planning in order reduce the level of unemployment in Nigeria.

iii. Government should adopt efficient and effective monitoring in the civil service commission in Nigeria in order to reduce unemployment in Nigeria.

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