Urbanization, Human Capital Accumulation And Economic Growth In Nigeria

SOPHIA MAIMUNA JOHN
Department of Economics, Faculty of Social Sciences
Isaac Jasper Boro College of Education,YenagoaBayelsa State, Nigeria
jsophiamaimuna@gmail.com

Abstract
This study investigates the relationship between urbanization, human capital accumulation and economic growth in Nigeria spanning from 1980 to 2020. Data for the study were obtained from Central Bank of Nigeria Statistical bulletin, UN Division World Populations Prospects, 2019 Revision, U.N. Urbanization Prospects and Federal Ministries of Education and Health. The formulated model was subjected to unit root test using the Augmented Dickey Fuller unit root approach. The ADF result revealed that the variables have mixed order of integration. Some of the variables were stationary at levels 1(0) while others became stationary after first difference 1(1). Based on this, the study adopted the Auto-regressive distributive lag (ARDL) to ascertain the long-run relationship as well as the behaviour of the variables. Thus, the result revealed that educational attainment (EDUCATT) is negative and insignificantly influences the real gross domestic product (RGDP) while health care (HLT) showed a significant relationship with real gross domestic product. However, total population (POP) and urbanization (URBAN) are all significant with real gross domestic product (RGDP). It was recommended amongst others that in order to improve the growth of the Nigerian economy, government allocation to the education and health sectors be increased. This will enhance the productive capacity of the human capital. It therefore implies that once the health outcome of the population is improved upon, their productive output will increase. This will contribute positively to the economic growth of the country.

Keywords: Educational Attainment, Health Care, Population, Urbanization, Real Gross Domestic Product.

1.0 Introduction.
Human capital accumulation and urbanization play a prominent role in the analysis of growth and development of nations. Stylized facts have revealed a positive association between human capital accumulation, urbanization and growth but Africa's urbanization is in contrast with most regions even though it has the fastest increasing human capital accumulation and urbanization growth, and is expected to surpass India and China by 2040. (UN-HABITAT, 2010).For instance, Ravallon, et al. (2007) find that urbanization helps poverty reduction in other regions, but not in Africa.

The United Nations member states and other international organizations agreed to pursue seventeen (17) Sustainable Development Goals (SDG). Among the top priorities are good health and wellbeing (SDG) and quality education (SDG). In addition, the World Bank is also committed to promoting sustainable cities and towns that would fulfill the promise of development for their inhabitants. Historical analyses confirm that the transition from economic stagnation to growth is first preceded and then accompanied by enormous increases in literacy and average level of schooling (Cipolla, 1969; Maddison, 1995). Bertinelli and Zou (2008) also argued that urbanization plays a non-negligible role in speeding human capital accumulation because it provides opportunities for education, employment and health services. Education capital determines the ability of a nation to develop new technologies and adopt existing technologies (Aghion, &Howitt, 2009).Expanding education systems in urban areas is easier and costs less than expanding it in rural areas because returns to education are generally found to be higher in urban than rural areas. The effect of urbanization on education is generally positive. Urban

populations have more chance to access health care and sanitation. Health capital can influence economic activity directly through its impact on labor productivity. Health care systems are also more developed, which may lead to better health performance than those in rural areas. Moreover, urban workers have better access to transport and to other facilities such as water, the Internet and electricity. Firms and workers may have higher productivity in urban than rural areas.

Lucas (1988) discussed the principal effects cities and urban development has on national economic growth. The agglomeration of people and firms cause a reduction in production costs. It permits external scale and scope economies, reduces transactions costs, and allows specialization among firms leading to low costs of production (Krugman, 1991; Kumar &Kober, 2012). Rosenthal & Strange (2004) report that doubling the size of cities can lead to an increase in productivity of some 3–8%. Actually, urban areas generate 85% of GDP in high-income countries. Therefore, no country has ever grown without a significant population shift into cities. Development process involves transforming economies with low human capital into economies with high human capital. Hence, urbanization, increase in human capital and productivity, and development all go together.

There are spillover effects or positive externalities of urban development on rural areas. (Barioch, 1990; Allen, 2009 .Williamson, 1990). Through migration, remittances and interactive activities between urban and rural areas, urbanization can have positive effects on both finance and human capital. Also, the transfer of information, production skills and technology can all be improved in migrant-sending areas (McKenzie&Sasin, 2007). In recent times rapid urbanization and investment in human capital seems to be modifying the pattern of economic growth in Africa, even though there are no academic studies confirming this observation in Africa (Mijinyawa, 2013) particularly in Nigeria. Nevertheless it has been confirmed that throughout history, urbanization has been a key force in human and economic development (Bairoch, 1988). Hence, urbanization will be an important challenge for Africa particularly Nigeria, in the next few decades.

The urban growth rate for Africa as a whole currently is around 4.4 percent. East Africa is growing at 5.6 percent per annum and West Africa at 5.1 percent, with individual countries growing at even higher rates. InNigeria, the percentage of population living in urban areas has significantly increased from 22.7 percent in 1970 to 42.5 percent in the year 2000 and more than half of Nigerian population are projected to be in the urban areas as from 2020 (UNFPA, 2007). It is therefore imperative for policy makers to develop consistent policy actions in urban planning and governance in Nigeria in the next decades, as the cities are expected to become home of more than half of the population by 2030. Therefore, a good understanding of the links between urbanization, human capital and economic growth can help build more efficient urbanization policies in Nigeria.

Empirical literature was evaluated to ascertain the extent of work done by various scholars and it was observed that the effects of urbanization on economic growth of both developed and developing countries have generated intense debate in literature.This implies that there isabsence of unanimity among numerousresearchers who have carried out researcheson the subject matter. Several studies in literature claimed that the process of urbanization is directly linked to economic growth (Mills et al (1986), Sarker et al. (2016)), per capita economic growth in India and South Africa (Sethy&Sahoo, (2015). Others showed negative relationship (Jalil&Iqbal (2010), Banerjee (2012) claimed that in Australia and China, there exist negative relationship between the per capita income and population. Such type of the contradictory finding in literature shows that there exist no uniform conclusions related to the urbanization and economic growth and hence a gap needs to be covered here to support or contradict with the existing findings.

This study seeks to empirically investigate the relationship between urbanization and human capital accumulation on economic growth in Nigeria between 1980 and 2020 since empirical investigation on this is scarce. The only empirical work done on this subject was by Njoh, (2003) on "Urbanization and development in sub-Saharan Africa" which does not portray a true picture of the subject matter as far as Nigeria is concerned. This study again contributes to literature by making use of country specific data to provide more clarity. It also employs the ARDL bounds testing approach to co-integration which accommodates mixture of integration order I(0)and I(1).

To achieve this, the study is organized into five sections. Following this introduction, the rest of the paper is designed as follows: section two provides the literature

section three is the methodology of the work, section four shows analysis of the study and discussion of findings, while section five concluded the study with relevant policy recommendation from the findings.

2.0 Literature review.

Urbanization:

Urbanization is defined as "the demographic process whereby an increasing share of the national population lives within urban settlements."(Potts, 2012). Settlements are also defined as urban only if most of their residents derive the majority of their livelihoods from non-farm occupations. Throughout history, urbanization has been a key force in human and economic development Bairoch (1988).

Human capital

Human capital refers to the knowledge, skills, and strength accumulated by an individual to enhance his or her productivity.

Economic growth

Economic growth refers to increase in a country's potential Gross Domestic Product (GDP), although this differs depending on how national product has been measured. It can also be defined as the steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income (Todaro and Smith, 2005). According to Ogundipe and Oluwatobi (2010), economic growth must be sustained for a developing economy to break the circle of poverty.

Economic growth is also defined as the increase in the market value of the goods and services produced by an economy over time. It is conventionally measured as a percent rate of increase in real gross domestic product (GDP). (IMF, 2012).This conceptualization by IMF is adopted as the working definition for this paper because real GDP will be used to proxy economic growth.

Theoretical Literature

Economic Dependency and World System Theory

The economic dependency and world-system theory was initiated by Bradshaw (1985). The theory state that direct relationship exists between foreign investment and urbanization through the expansion of the service and informal sectors. This however retards economic growth directly (Bradshaw, 1985). This is so because, foreign investment in large-scale agricultural production encourages rural-urban migration by expanding the potential pool of urban workers while at the same time displacing the peasant farmers. Alongside this theory is the 'bright lights' theory of urbanization which speculates that people in the rural areas are drawn to the excitement and supposed opportunity offered by the city e.g. the inflow of foreign direct investment 'pushes' peasants to the city where they are unable to find high-paying employment opportunities. Furthermore, the dependency and world-system theory opined that countries that have a high concentration of agricultural exports should also experience urbanization since their farmers are vulnerable to low international prices for agricultural produce and unfavorable climatic conditions.

Urban Bias Theory

Theurban bias theory was propounded by Lipton, (1984). The theory holds that many underdeveloped nations implement investment, tax, pricing and other macroeconomic policies which favour urban areas at the expense of the rural areas because of the pressure that is mounted on the government by various urban-based groups e.g. industrialists, urban workers (labour union) and small-scale capitalists or entrepreneurs. Therefore, since the state is not controlled by a single group, but by competing interests of various powerful urban-based groups that are interested in urban development, government policy will always tilt in favor of some type of urban project over an agricultural project which would aid peasant farmers. Consequently, this will create a disparity between urban and rural areas with respect to consumption, wages, productivity and standard of living.

This theory further postulates that, urbanization enhances economic inefficiency and therefore impedes long-term economic development in developing countries. Therefore, contrary to modernization theory, the urban bias thesis asserts that rural dwellers should remain in agricultural activities instead of migrating to urban areas, where they will join the informal labour market or turn to crime, begging, or prostitution, making urbanization to be a sign of economic illness rather than development (Bradshaw, 1987).

Another pertinent variant of the urban bias theory which is related to the traditional debate on the nexus between urbanization and economic development in developing countries focused on whether urbanization was too high, thus subscribing to the over-urbanization hypothesis. This hypothesis argues that developing countries' rates of urbanization are higher than that of today's developed nations compared to when the latter were at the same stage of development in the 19th century and hence are above their optimum level

3.0 Empirical literature.

Bertinelli and Strobl (2003) investigates how urban and urbanization affect economic growth in developing countries. The study used semi-parametric estimation technique on a cross-country panel of 39 countries for the years 1960 – 1990. It discovered that a U-shaped relationship exists for urban concentration. This refers to the presence of an urban-concentration trap where marginal increases in urban concentration would reduce growth for about a third of the collected sample. The study concludes that there appears to be no systematic relationship between urbanization and economic growth.

Cali (2008) using the data from the 1961 to 2001 decadal census on urbanization finds that the growth of the urban population has a negative impact on the growth of GDP in the Indian states. However, another study Cali and Menon, (2009) used data from a sample of Indian districts from 1981 to 1999 and using the instrumental variable estimation (two stage least squares) method, they found a positive impact of urbanization on poverty reduction through the income spillover process.

Dorush et al (2012) examines the impact of accelerated urbanization in Africa on economic growth, poverty and migration. They compared the effectiveness of public investment in rural and urban areas by utilizing empirical data from two agriculture-based countries (Ethiopia and Uganda) where urban development is central to policy debates. They concluded that, over the short term, investing in major cities does little to address national poverty in Africa.

Ahmed et al. (2013) investigates the female education impact in internal migration for Pakistan for the time period 2010-2011. The logistic regression method was used. Their result shows that education has significant and positive effect on migration for both male and female.

Anett and Guanghua (2013) analyzed the key determinants of urbanization using instrumental variable approach. The results show that GDP impacted largely and positive on urbanization. Also, the results indicate a unilateral causality between urbanization and growth with economic growth causing urbanization. Other factors that significantly and positively impact on urbanization are industrialization and education.

Isioma (2013) examines the effect of urbanization and unemployment on the Nigerian economy using OLS regression method. The research was motivated by the high rate of rural-urban migration and unemployment in the country. The empirical result shows that urbanization has a significant impact on economic growth. The work recommended that the Nigerian government provide more access to higher education, scholarship and agricultural facilities to the rural populace.

Luc et al. (2013) examines the role of rural diversification and secondary towns in poverty reduction using panel technique tracking 3,300 individuals from households in rural Kagera, Tanzania. The result shows that about one in two individuals/households exited poverty by transitioning from agriculture to the rural non-farm economy or secondary towns. Only one in seven exited poverty by migrating to a large city and they have faster consumption growth. Also, an analysis of cross-country panel of 51 developing countries confirmed that rural diversification and secondary towns' development leads to more inclusive growth pattern than metropolitization. The paper recommends that efforts should focus on how best to urbanize and develop rural non-farm economy and secondary towns.

Lin et al. (2013) analyzed the relation between urbanization and economic growth in China by using the data from 1978 to 2008 and Ordinary Least Squares and they observed that there are no obvious characteristics of urbanization as the direct power source of China's economic growth and urbanization is more of a result of economic development.

Ceyhum and Cem (2014) investigate the relationship between the level of urbanization and the size of the informal economy using cross-country datasets. The empirical results indicate that there is an inverted-U relationship between informality and the level of urbanization, implying that the share of the informal sector grows in the early phases of urbanization but declines in the latter phases. Other factors identified to have affected the size of the informal sector are taxes, trade openness and institutional quality.

Abdullahi and Sani (2015) analyzed the relationship between urbanization and economic growth in the republic of China for the period 1986-2013 using OLS method. The empirical results showed a significant positive relationship between urbanization and economic growth over the period. Furthermore, the granger causality results indicated that a bidirectional causality exist between urbanization and economic growth. The paper recommended for policy

development on the economy based on favourable migration and tertiary service sector growth to enhance marginal efficiency of labour.

Chamhuri et al. (2016) examined the consequences of rapid urbanization and urban vulnerable group in Malaysia using data on urbanization, household income, poverty, population at rural and urban levels. The finding shows that there was downward trend in urban poverty indices. The rate ofpoverty decreased from 25.5 percent to 1 percent in 2012 in urban areas. The finding also shows that average household monthly income in urban areas is almost twice that of rural families thus indicating high level of income inequality. The study also observed that although urbanization increased to about71 percent in 2010, the high concentration of people in urban area created various problems including high cost of living, crime, environmental degradation, unemployment and poverty. The paper recommended that the poor should be located and appropriate policies and programs should be designed to tackle poverty.

Sarker et al. (2016), developed causal relationship between the economic growth and urbanization by considering Panel regression. They used country wise data on urban population and GDP from 1980 to 2014 of six Asian countries. ADF and Philips Perron test were used to check stationarity of Panel data. Moreover Pedeoni co-integration test was used to check the inter relation between the urbanization phenomena and economic growth. They concluded that a causal relationship exists among the urbanization structure and economic expansion in south Asian region.

Shahbaz et al. (2017) investigates the relationship between urbanization and energy consumption in the case of Pakistan for the period of 1972Q1-2011Q4 by employing the Stochastic Impact by Regression on Population, Affluence and Technology model. The results show that urbanization adds to energy consumption. Affluence (economic growth) increases energy demand.

Zi (2017) using time series data from 1982 to 2014 for China, and applying a Vector Auto Regressive (VAR) model, found a long-run unidirectional causality from land urbanization to economic growth. Song et al. (2018) findings also support the urbanization to economic growth causality. Using data for 2005–2010 for China using input-output analysis, they estimate that urbanization contributed to 16.40% of the total Chinese output increment during the period.

Arouri et al (2014) assessed the impact of urbanization on economic growth in Africa using the dynamic panel regression with African dataset. Estimation results reveal that the level of urbanization increased by about 73% after which high level of urbanisationis relates to the decline in per capita GDP.

Nguyen and Nguyen (2017), conducted a study on the urbanization and economic growth using data from 1993 to 2014 for ASEAN countries. Using Granger casualty, fixed effect and random effect models, a causal relationship of urbanization and economic growth is found. Their results depicts that the process of urbanization is non-linearly but positively related to economic development. However, as urbanization reaches the threshold of 69.99% for a static model and 67.94% for a dynamic model, it impedes economic growth.

Bakari et al (2018) investigates the impact of urban industrial investment on economic growth for the period of 1969-2015 using the co-integration analysis and Error Correction Model (ECM). Empirical analysis proved that industrial investment has negative impact on economic growth in the long run. They however recommended the application of strategies based on green economy.

Kaur &Preet (2020) ascertain whether there exists any association between urban populations, GDP in East Asian countries and how it affects the health of the public using panel data of six East Asian countries China, Hong Kong Korea, Japan, Macao and Mongolia. The study used World Bank indicators to fetch the data for the variables urban population and GDP for the time period 1990-2018. With the help of JFPC and VECM, the co-integration between these variables is checked. Hence, the results indicate that urban population and GDP in East Asian countries are related to each other in long run. The study could not find any short run co integration between variables of urbanization.

Bakar &Malek (2022) assessed the impact of urbanization and ruralization on the Tunisian economy using annual data from 1965-2019. The results of the estimation of the ARDL and ECM models show that urbanization has a negative effect on economic growth. Ruralization however boosts it. Accordingly, Tunisia was built without development and therefore no longer appears as a privilege place but sometimes even excluded. Sometimes the only response to the urban crises is the urban exodus.

Summary of Review

The empirical review of related literature is with respect to urbanization, human capital accumulation and economic growth in Nigeria. The reviewed literature revealed inconclusive findings. Several studies in literature claimed that the process of urbanization is directly linked to economic growth (Mills et al (1986), Sarker et al. (2016)), per capita economic growth (in India and South Africa) (Sethy&Sahoo, (2015). Others showed negative relationship (Jalil&Iqbal (2010), Banerjee (2012) claimed that in Australia and China, there exist negative relationship between the per capita income and population. Such type of the contradictory finding in literature shows that there exist no uniform conclusions related to the urbanization, human capital accumulation and economic growth in Nigeria and hence a gap needs to be covered here to support or contradict with the existing findings.

3.0 Methodology

This study used secondary source of data, and were mainly annual time series data that were obtained from Central Bank of Nigeria Statistical bulletin, UN Division World Populations Prospects, 2019 Revision, U.N. Urbanization Prospects and Federal Ministries of Education and Health from 1980 to 2020. The dependent variable of the study is real gross domestic product (RGDP) as a proxy for economic growth while the explanatory variables are, Educational attainment (EDUCATT), health care (HLT), total population (POP), and urban population (URBAN).This study adopt the Ex-post facto research design. The ex-post facto research can be defined as an empirically based investigation which does not involve the researchers' direct control over the independent variables because they have already led to effects which cannot be manipulated.

Model Specification

This study is based on the modification of Bakar and Malek (2022) who carried out a study on the impact of urbanization and ruralization on Tunisian economy (1965-2019) using the ARDL bounds testing approach of co-integration. The authors' model is stated below:

$\Delta RGDP_t=\beta_0+\Delta RGDP_{t-1}+\Sigma\beta_{1t}\Delta K_{t-1}+\Sigma\beta_{2t}\Delta URB_{t-1}+U_t$

where:

GDP= Real Gross Domestic Product per capita
K= Domestic investment per capita
URB= urbanization.
RUR=ruralization.
Ut= Error term

To achieve the objective of this study, the researcher modifies and incorporates, Educational attainment (proxied by primary school enrollment), Healthcare utilization (proxied by under 5 mortality), Total population, urban population. The new modified model of this study is specified below:

RGDP = f (EDUC. ATT, HLT, POPL, URBAN.) (3.1)

The mathematical form of the model is stated below:

$RGDP =\beta_0+\beta_1$ EDUC ATT+ β_2 HLT + β_3 POPL + β_4 URBAN (3.2)

The econometric form of the model is stated below

$RGDP = \beta_0+\beta_1$ EDUC ATT+ β_2 HLT+ β_{3+} β_4 URBAN+ μ_t (3.3)

The Autoregressive Distributed Lag (ARDL) Model is specified as follows:

$\Delta RGDP_t = \beta_0+ \Delta RGDP_{t-1} + \Sigma\beta_{1t}\Delta$ EDUCATT $_{t-1} + \Sigma\beta_{2t}\Delta$ HLT $_{t-1}$ $+ \Sigma\beta_{3t}\Delta$ POP $_{t-1} + \Sigma\beta_{4t}$ URBAN $_{t-1}+ U_t$ ..... (3.4)

Where; RGDP = Real Gross Domestic Product, EDUC ATT= Educational attainment (proxied by primary school enrollment),HLT=Healthcare utilization (proxied by under 5 mortality),POPL= Total population, URBAN= Urban population,μ = Error Term.

4.0 Empirical Data Analysis

Table 4.1: Unit Root Test on Urbanization, Human Capital Accumulation and Economic Growth

The Augmented Dickey Fuller (ADF) unit root test is use to establish the stationarity of the time series data used in the study. The results in table 4.1.1 are shown below:

	Levels			First Difference			
Variable	**ADF statistics**	**1% critical value**	**5% critical value**	**ADF statistics at First Difference**	**1% critical value**	**5% critical value**	**Order of integration**
LRGDP	3.368929	-3.605593	-2.936942				101)
EDUCATT	-2.358993	-3.615588	-2.941145	-4.182172	-3.626784	-2.945842	1(1)
HLT	-5.148161	-4.243644	-3.544284				1(0)
POP	1.812170	-3.626784	-2.945842	-20.49046	-3.626784	-2.945842	1(1)
URBAN	7.485912	-3.610453	-2.938987				1(1)

Source: ***Author Computation 2022***** Level of significance at 5%

Result from table 4.1.1 above revealed that the variables used in the analysis were subjected to Augmented Dickey Fuller (ADF) Tests, to determine whether they are stationary series or non-stationary series. The results of the stationarity test indicate that RGDP and HLT are stationary at level 1(0) while EDUCATT, POP and URBAN were stationary at first difference 1(1). From the analyses of stationarity of the variables, it was seen that the variables have mixed order of integration or stationarity of level and first differences. The Autoregressive Distributive Lag (ARDL) approach which is capable of handling both stationary at level I(0) and first difference I(1) were used for the data analysis. Thus, the most suitable tool of analyses is the ARDL test which accommodates both the short and long run trends in testing the relationship between the dependent and independent variables.

Co-integration Test

Table 4.1.2: ARDL Bound Test

Test Statistics	**Value**	**K**
F-statistics	4.382586	4

Significance	**I (0)**	**1(1)**
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Source: Authors computation from E-view 10 Output

The bound test is shown in Table 4.1.2, the result compared the F-statistics with the critical bound values. The F-statistic value is 4.382586. The result showed that the F-statistic is greater than the lower bound at 2.56 and the upper bounds at 3.49 of the critical values at 0.05 level of significance. Therefore, the long-run and short-run Auto-regressive distributive lag (ARDL) result is estimated.

Table 4.1.3: ARDL Long-run-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
EDUCATT	0.000916	0.001040	0.808788	0.3894
HLT	-1214.297	533.6143	-2.275608	0.0346
POP	0.000513	0.000742	0.691232	0.4978
URBAN	-0.000857	0.001184	-0.723906	0.4779

Source: Extracts from E-view 10. * Level of significance at 5%

The Autoregressive Distributive Lag (ARDL) Long run result in table 4.1.3 shows that education attainment (EDUCATT) and total population (POP) have a weak (0.000916 & 0.000513) and insignificant (0.3894 & 0.4978) relationship with real gross domestic product (RGDP) as a proxy to economic growth. This implies that a unit increase in education attainment (EDUCATT) and total population (POP) will result to about 009% and 005% increase real gross domestic product (LRGDP). However, the p-value of 0.3894 and 0.4978 indicate that there is no significant relationship between EDUCATT, POP and RGDP.

Similarly, the coefficient of health care (HLT) reported a negative (-1214.297) relationship with real gross domestic product (RGDP). This means that a unit increase in HLT will lead to about 1214 unit decline in real gross domestic product (RGDP). The probability value of 0.0346 shows that there is a significant relationship between health care (HLT) and real gross domestic product (RGDP). Finally, coefficient of urbanization (URBAN) is negative (-0.000857 and insignificant with real gross domestic product (RGDP).

Table 4.1.4: ARDL Short-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
D(EDUCATT)	0.000181	0.000118	1.540920	0.1398
D(EDUCATT(-1)	9.30E-05	0.000156	0.594427	0.5592
D(HLT)	5.30-0460	1.810198	1.928125	0.0489
D(HLT(-1)	64.36442	384.0314	0.167602	0.8687
D(POP)	4.58E-05	7.01E-05	0.653790	0.5211
D(POP(-1)	4.32E-05	2.44E-05	1.768700	0.0930
D(URBAN)	1.87E-05	0.000301	0.061984	0.9512
D(URBAN(-1)	7.15E-05	0.000244	0.292987	0.7727
Ecm (-1)	-0.186527	0.039877	-4.677496	0.0002
Adj R^2 = 0.713133, F-statistics = 9.838896 (0.000005), DW = 2.3974860				

Source: Extracts from E-view 10. * Level of significance at 5%

Table 4.1.4 shows the short-run result of the model. It is indicated that education attainment (EDUCATT) have a negative (0.000181 & 9.30E-05) and insignificant (0.1398 & 0.5592) relationship with real gross domestic product (RGDP) at the most current year and previous year period. This implies that a unit rise in education will lead to about 001% and 9.3 unit increase in real gross domestic product (RGDP). Similarly, the coefficient of health care (HLT) showed a positive (5.30-0460 & 64.36442) and insignificant (0.0489 & 0.8687) relationship with real gross domestic product (RGDP) at the previous and current year period. This means that a unit rise in health care (HLT) will result to about 5.3 unit and 64.3 unit increase in real gross domestic product (RGD) as a proxy for economic growth in Nigeria. The p-value of 0.0489 & 0.8687 shows that HLT is insignificant to influence RGDP. Furthermore, the short-run ARDL result showed that total population (POP) is positive

(4.58E-05 & 4.32E-05) with real gross domestic product (RGDP). This means that a unit increase in POP will lead to about 4.5 unit and 4.3 unit increase in real gross domestic product (RGDP). The p-value of (0.5211 &0.0930) indicate that there is no significant relationship with real gross domestic product (RGDP).

Finally, the coefficient of urbanization (URBAN) revealed a positive (1.87E-05 & 7.15E-05) but insignificant (0.9512 & 0.7727) relationship with real gross domestic product (LRGD) both in the current and previous year period. The ECM (-1) which is the error correction term has a coefficient estimate which is negative and also significant at 0.05 level of significant. It indicates the model will adjust toward long run equilibrium at a speed of 18% annually. This implies that the previous year's error can be corrected with an adjustment speed of 18% annually.

The adjusted R-Square (R^2) value indicates that 71% of the total variation in the dependent variable (RGDP) is explained by the independent variables (EDUCATT, HLT, POP& URBAN). The F-statistics is statistically significant at 5% level of significance indicating the overall model is significant. The Durbin-Watson statistics of 2.3974860 reveals the absence of serial correlation in the model.

Diagnostic Test

Table 4.1.5: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results.

	F-Statistic	Prob.Value
Ramsey Reset Test	1.062134	0.3164
Breusch-Godfrey Serial Correlation LM Test	4.115005	0.0649
Breusch-Pagan-Godfrey Heteroskedasticity Test	1.069493	0.4355

Source: *Author's Computation using E-view 10*

From Table 4.1.5. above, the results of the diagnostic test shows that the linearity test using Ramsey reset test indicates that the f-statistic (1.062134) with computed p-value of 0.1064 which is greater than 5 percent (0.05) critical value, hence the study reject the null hypothesis and conclude that the model is correctly specified.

The result of the serial or autocorrelation test using Breusch-Godfrey Serial Correlation LM Test shows that the f-statistic is4.115005, with a Chi-Square probability value is 0.0649. This indicates that the probability value of about 6 percent (0.0649) is greater than 5 percent (0.05) critical value; hence the study confirms no serial correlation in the model.

The result of the heteroscedasticity test using Breusch-Pegan-Godfrey test shows that the f-statistic is 1.069493with a Chi-Square probability value of 0.4355. The result suggests that there is no evidence of heteroskedasticity in the model since the probability Chi-square value is more than 5 percent (P >0.05). So, residuals do have constant variance which is desirable in regression meaning that residuals are Homoscedastic.

5.0 Conclusion and Recommendation

Conclusion

This research discourse investigated the relationship between urbanization, human capital accumulation and economic growth in Nigeria. The dependent variables of the paper is, real gross domestic product (RGDP), while the explanatory variables are, education attainment (EDUCATT), health care (HLT) total population (POP), and urbanization (URBAN).

The study employed secondary data from and ex-post facto research design for 40 years period (1980-2020). The Augmented Dickey Fuller (ADF) and Auto-regressive Distributive Lag (ARDL) model technique was used in the study to analyses the variables. Thus, the result revealed that education attainment (EDUCATT) is negatively related to real gross domestic product (RGDP) and this can hinder the ability of the economy to develop and adopt new technologies. It is therefore very important that the government of Nigerian expand the educational sector and invest more in it as the returns to education are generally higher in the urban areas than the rural areas. Health care (especially in the areas of under –five mortality) (HLT) showed an insignificant relationship with real gross domestic product. This sector also needs to be beefed up to enhance the capacity of human capital. However, total population (POP) and urbanization (URBAN) are all significant with real gross domestic product (RGDP).

Recommendations

Based on the conclusion and findings of the study, the following recommendations are made: Government should massively increase her allocation on education and health sectors to beef up human capital development in the country. This will enhance the productive capacity and contribute positively to the economic growth of the country.

References.

Abdulahi, D. M. and Sani, I. U. (2015).An Economic Analysis of Urbanization and Economic Growth in the Republic of China. Proceedings of the International Sumposium on Emerging Trends in Social Science Research. ISBN: 978-1-941505-23-6 Chennai India

Aghion, P. and P. How itt 2009.*The Economics of Growth*, MIT Press

Allen, R. 2009. *The British Industrial Revolution in Global Perspective.* Cambridge University Press

Alonso, W 1980. Five bells shapes in development. *Papers Reg. Sci. Association*.45:5-16.

Anett, H. and Guanghua, W. 2013. Asia Development Bank (ADB) Economic Working Paper Series No. 355, July, 2013.

Arouri, M., Ben Youssef, M., Nguyen Viet Coug and Scucat, A., (2014).Effects of Urbanization on Economic Growth and Human Capital Formation in Africa.PGDA Working Paper. No. 19

Bairoch, P. 1988. *Citiesand Economic Development: From the Dawn of History to the Present*.The University ofChicago Press.

Bakari, S., Mabrouki, M., and El Makki, A., 2018. The Impact of Domestic Investment in the Industrial Sector on Economic Growth with Partial Openness: Evidence from Tunisia. *Economics Bulletin. 38*(1): 111-128.

Bakar Sayef and Malek El Wariemmi. 2022.Which is the best for Tunisian Economic Growth: Urbanization or Ruralization? Available @ Paper No.112208.

Bertinelli, L. and E. Strobl. 2003. Urbanization, Urban Concentration and Economic Growth in Developing Countries. Centre for Operations Research and Econometrics (CORE). *Discussion Paper* 2003/76, Belgium

Bertinelli, L., and Black, D. 2004. "Urbanization and Growth", *Journal of Urban Economics(56*): 80-96.

Bodo, T. 2019. Rapid urbanization: theories, causes, consequences and copingstrategies. *Annals of Geographical Studies, 2*(3), 32-45.

Cali, M. 2008. *Urbanization, Inequality and Economic Growth: Evidence from Indian States and Towns.* London: Overseas Development Institute.

Cali, M., and Menon, C. 2009.*Does Urbanization Affect Rural Poverty? Evidence from Indian Districts, SERC Discussion Paper 14*, Spatial Economics Research Centre, UK.

Ceyhum, E. and Cem, O. 2014.Lurking in the Cities: Urbanization and the Informal Economy.JELClassification No.E26, 011,017.

Chamhuri, S., Ferdoushi, A., Ahmad, B. and Shahin, M. M. 2016. Urbanization and Urban Povertyin Malaysia: Consequences and Vulnerability. *Journal of Applied Sciences* ISSN 1812-5654DOI: 10.3923/jas.2016.154.160

Fay, Marianne and Charlotte Opal. 2000. Urbanization without growth: A not-so-uncommon phenomenon. *Policy Research Working Paper*, no. 2412: The World Bank.

Glaeser, E. L., Rosenthal, S. S. and Strange, W. C. 2010. Urban economics and entrepreneurship", *Journal of Urban Economics,* (67): 1-14

Hawley, A., 1981. *Urban Society: an Ecological Approach,* Ronald, New York.

Isioma, I. 2013. The Effect of Urbanization and Unemployment on the Nigerian Economy. Research Project Submitted to the Department of Economics, Caritas University, EnuguNigeria.

Kasarda, J. D., & Crenshaw, E. M. 1991. Third world urbanization:Dimensions, theories, and determinants. *Annual Review of Sociology, 17*(1), 467-501.

Kessides, Christine 2007."The urban transition in sub-Saharan Africa: challenges and opportunities", *Environmentand Planning C – Government and Policy 24*(4) 466–485.

Krugman, P., 1991, Increasing returns and economic

geography. *Journal of Political Economy (*99):483-99.

Kumar and Kober 2012.Urbanization, human capital, and cross-country productivity differences", *Economics Letters,* (117) 1:14–17

Loughran, T., Schultz, P., 2005, "Liquidity: Urban versus rural firms," *Journal of Financial Economics* (78): 341-374.

Luc, C., Joachim, D. W. and Yasuyuki, T. 2013. Urbanization and Poverty Reduction: The Role ofRural Diversification and Secondary Towns. Policy Research Working Paper 6422, WorldBank Africa Region.

McKenzie, D. and Sasin M. 2007. Migration, remittances, poverty, and human capital: conceptual and empiricalchallenges. Policy Research Working Paper 4272.The World Bank.

Mijiyawa, A. G. 2013. "Africa's Recent Economic Growth: What Are the contributing Factors?" *African Development Review, (25):*189-302.

Nguyen, H. M., and Nguyen, L. D. 2017. The relationship between urbanization and economic growth: an empirical study on ASEAN countries. *Int. J. Soc. Econ. 4*(5): 316–339.

Ramanpreet Kaurand Tushinder Preet Kaur. 2020. How Urbanization and Economic Growth affects the Health in East Asian Countries? Evidence from the VECM approach *Indian Journal of Public Health and Development* (2): 167–174

Potts, D. 2012."Challenging the Myths of Urban Dynamics in Sub-Saharan Africa: The Evidence from Nigeria". *World Development* 40(7):1382-1393.

Ravallion, M., S. Chen and P. Sangraula, 2007.New evidence on the urbanization of global poverty, World Bank Policy Research Working Paper 4199.

Sarker, S., Khan, A., &Mannan, M. M. 2016. Urban population and economic growth: South Asia perspective*. European Journal of Government and Economics, 5*(1), 64-75.

Shahbaz, M., Chaudhary, A.R., Ozturk, I. 2017. Does urbanization cause increasing energy demand in Pakistan? Empirical evidence from STIRPAT model. *Energy,* 122, 83-93.

Smith, D.A., 1996.*Third World Cities in Global Perspective: The PoliticalEconomy of Uneven Urbanization*, West view Press, Boulder, Colorado.

UN-HABITAT 2010. The State of African cities 2010: Governance, inequalities and urban land markets. Nairobi.UN Habitat.

United Nations Population Fund (UNFPA) 2007. State of World Population 2007: Unleashing thePotential of Urban Growth. New York: UNFPA.

Williamson, J. 1990. *Coping with City Growth during the British Industrial Revolution*.Cambridge University Press.

Zi, L. Y. 2017. Urbanization and economic growth in China—an empirical research based on VAR model. *Int. J. Econ. Finance 2*(9), 210–2019.