ANALYSIS OF THE EFFECT OF SHOCKS OF GOOD GOVERNANCE ON EDUCATION OUTPUT AMONG SELECTED AFRICAN COUNTRIES

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ABSTRACT
Good governance is an essential component that drives better health outcome and education output required as a catalyst that will stimulate economic growth and this constitutes a vital social objective as a result of good level of human capital development. The study evaluated the effect of shocks of good governance on education output among selected African countries using panel data from 2000 to 2020. The Panel unit root tests indicated that real gross domestic product, indicators of good governance, and foreign direct investment are stationary at level while education output, primary school enrollment, and foreign aid are stationary at first difference. The Panel Vector Autoregressive result indicates that the shocks effect of education expenditure, Indicators of good governance, Primary school enrolment, and Foreign aid to education output were found to be positive. The study recommended that African Countries should ensure that indicators of good governance such as political stability, accountability and voice, and control of corruption are moving smoothly without any interruption, by so doing economic growth of African countries will increases. African countries should increase their expenditure on education, this will bring about an increase in economic growth of the continent.

Keywords: Good governance, Education output, Economic growth, African Countries

JEL Classification O17, I20, O40, N17

1. INTRODUCTION
Good governance is an essential component that drives better health outcome and education output required as a catalyst that will stimulate economic growth, and this constitutes a vital social objective as a result of good level of human capital development due to increase in workers' skills, productivity, and quality of life that is required to bring about desired change (Hamid, 2017). According to United Nations Development Program (UNDP, 1997), Governance means the implementation of administrative, economic and political authority to control the affairs of a country at each and every level. Because all the institutions are considered responsible to perform their prescribed activities in order to fulfill the demand of common man. Furthermore, efficient governance opens the door to high productivity and human capital accumulation, both of which are key determinants of economic growth. As a result, the relationship between good governance, economic progress, and human capital accumulation via education

output and health outcome may be established (Amadi, 2019). Similarly, the topic under consideration has been a source of contention for many decades. The notion of 'governance' was first proposed and actively debated in the disciplines of public administration, political science, and economics in the 1980s (Grindle, 2010). According to The World Bank (2016a) report show that the global distribution of income is highly uneven pattern of distribution in the year 2015, the per capita GDP of North America was at least 34 times higher than the per capita GDP in South Asia and Sub-Saharan Africa. In addition to that, countries in some parts of the world have grown strongly over time while countries in other regions have not. The average nominal GDP in East Asia and the Pacific countries in 2015 increased by 3711 times in comparison with the figures in 1968. But in the same period, the countries in Sub-Saharan Africa grew only 868 times (The World Bank, 2016b). Samarasingle (2018) demonstrated the peculiar importance of government policies and social infrastructure as a cornerstone for economic growth. The basic concept of good governance and its importance to economic growth came to its central stage in the early 1990s. The term governance has been viewed as a broader perspective by different scholars. Grindle, (2010), conceptualized the term governance based on understanding of scholars on the political right and left. For political right, it is perceived as the rule of law and institutional conditions for invisible hand to flourish and political left refers to as equity, protection for vulnerable people, including children, women and the state's rules that guides it operations. Similarly, Kaufmann et al, (2010) define governance as a basic set of traditions and institutions that can be used to exercise the power of authority to bring transformation in a social system. According to Kaufmann, et al (2010), x-ray six basic fundamental dimensions of governance which includes corruption control, government effectiveness, political stability, absence of violence or terrorism, regulatory quality, rule of law and voice accountability.

It is clear that there have been no comprehensive studies on the influence of good governance on health outcomes, education output, and economic progress in Africa and other nations throughout the globe. It will be a valuable addition to the body of knowledge if this study looks at how democracy in the domain of good governance correlates with health outcomes, education outcomes, and economic progress in chosen African nations. According to World Governance Indicators Index (WGI, 2021), chosen African nations will be examined for good governance indicators such as government effectiveness, political stability and rule of law as well as voice and accountability and control of corruption. For example, in Sub-Saharan Africa, Mădălina (2015) used just the corruption perception index as an indication of governance; in Europe and Malawi, Doucouliagos, Hennessy & Mallick, (2019) utilized only the corruption perception index as an indicator of governance. The International Monetary Fund (IMF) has a long history of influencing overall government spending allocations in Africa. According to the International Monetary Fund's (IMF) fiscal policy recommendations to its members, changing the public expenditure mix favors more productive and social spending. IMF programs in a nation are likely to favor education budget allocations because of this emphasis on human capital investment. The main objective of this paper is to evaluate the effect of shocks of good governance on education output among selected African countries using panel data from 2000 to 2020. The rest of the paper is organised as follows: literature review which is the second part of the paper, methodology in which the objectives of the paper could be achieved and is the third part of the paper, part four of the paper is presentation and analysis of the empirical findings and the final section concludes the paper.

2 LITERATURE REVIEW

2.1 Concept of Governance

The term "governance" has been defined several times by various academics. Despite the many meanings, it appears that the term "governance" refers to the political sphere and political action as the essential role of every national government, regardless of which definition one uses. There is a difference between good governance and government, which we want to underline from the beginning. Because government and good governance aren't the same, despite their shared purposes. Good governance, on the other hand, refers to the conception, execution, and implementation of activities supported by shared aims of people and organizations, regardless of whether such organizations or individuals have official authority or policing capacity (Rosenau 1992 and Bingham et al. 2005). Furthermore, when it comes to government, it's all about bureaucracy, law and financial regulation, as well as coercion. Non-regulatory policy instruments, on the other hand, are increasingly being used as a means of promoting good governance. Through the employment of this policy tool, non-state actors in collaboration with governments can be encouraged to propose, create, and implement cooperative projects (Jordan et al. 2003). Overall, excellent governance is becoming more commonplace in our society. A substantial and ever-expanding body of research exists on the topic of government (Aminuzzaman 2010). When used historically, such as in the fourteenth century, the term "good governance" denoted a technique, activity, or function of government (Halfani et al. 1994). A nation's system of politics, as well as its administration and regulation of state activities, constitutes good governance for Landell et al. (1991), according to this definition.

2.2 Theoretical Literature

Human Capital Development Theory Paul Romer's Human Capital hypothesis (1986) highlights the importance of education in developing the cognitive abilities of employees. Schultz (1961) used the term "human capital" to describe the value of education. Education, health, and nutrition are just few of the examples of expenditures that may be made in this area. Investing in the future at the sacrifice of today's consumption increases future productivity. For human capital to grow, there must be a rise in investment and utilization over time, as well as a decrease in depreciation. Human capital theory advocates regard education as a productive investment in human beings, an investment that they believe is as valuable as or even more valuable than the investment in physical capital. Human capital investment in the United States is three times more than in physical capital, according to current understanding in the country. Human capital theorists have demonstrated that people in low-skilled jobs benefit from having a minimum level of reading. They go on to say that workers in high-skilled professions are more productive when given teaching that necessitates logical or analytical thinking or gives technical and specialized knowledge. According to research, increased educational opportunities lead to higher levels of human capital, which in turn boosts national productivity and economic growth. People in the job market have varying degrees of education, training, experience, and expectations, all of which are taken into account when assigning tasks. In comparison to someone with less education and training, "a more educated, better-trained person can give a greater amount of meaningful productive work." As a result of the widespread acceptance of human capital theory, a business relies heavily on the skills, knowledge, and abilities of its people as a major idea of value generation. Theodore W. Schultz (1961 in the American Economic Review) used the term "investment in human capital" in 1961 to describe the increase in human potential that is critical to production in the 18th century. As a result of Gary

Backer's novel prize-winning "human capital theory," the idea that different levels of education and training lead to different levels of wages and salaries was widely adopted. The greater one's level of education and training and, consequently, the greater one's chances of landing a better job (Blair, 2012). A tangible tool of production, human capital is defined by Gary Backer (1964). Education, training, and health care are all forms of human capital investment made by businesses. later in 1999, Thomas Davenport (1998) argued that "ability, knowledge and skill were the components of human capital," and that the knowledge encompassed IQ and intellect as well as particular and broad understanding of job. In the workplace, skill refers to a person's ability to perform a task, as well as his or her ability to perform it well. A person's talent is an intrinsic quality that may be honed through practice. The term "behavior" refers to a wide range of concepts, including expression, standard, ethics, and personal conviction. A person's potential to succeed depends on their willingness to put up the effort necessary to make use of their innate or personal resources, such as talent, experience, knowledge, and the capacity to work hard. Various kinds of education, training, migration, and health can contribute to human capital development, according to Becker (1964). As a result, employees are able to acquire new information, skills, and talents in a variety of methods. In order to reap the benefits of their investment in human capital, companies consider persons as an asset and hope that the money they put into them will be repaid in the future. Another way of saying this is that someone invests in their education or training with the hope that their newfound expertise will help them progress in their current position. As Ulrich (1998) observed, historically workers' and businesses' human resources have been considered as an expense that must be kept to a minimum. Human capital, on the other hand, is today considered a source of value rather than just a resource. According to Phillips (2005), the traditional conception of human capital has undergone a significant paradigm change. Moving from an activity-based to a result-based approach to human resource management makes it easier to link human capital development to overall corporate goals and better utilizes it in strategic decision-making. Human capital is considered as an asset and should be developed and integrated with multi-dimensional technology, according to Vejchayanon (2005). A shift in human capital management paradigm from an activity-based to a result-based (which emphasizes results and total performance, such as impact on business, cost-benefit analysis, output focus, and performance effectiveness) paradigm affects human capital policy and practice by putting more emphasis on bottom-up management than on top-down management, but this shift is not without its own drawbacks (Phillip, 2005).

Participatory Democracy Theory

Participatory democracy theory does not only conceptualize at odds with common set of values and democratic elitism but also its historical opponent. According to Jane Mansbridge the term ‘participatory democracy’ was conceived by Arnold Kaufman in 1960, Mansbridge 1995). This was informed at the eve of the student power movements in the US, for better governance of the people. The aims of this was document down to ensure equal participation by all citizens. It is interested to note that the ‘Port Huron Statement,’ prepared by some radical students at the University of Michigan (Kaufman, 1960). Kaufman was their adviser and these served as a reference point for students across the country and beyond. These students were unanimously demanding equal participation in university and other sites of good governance and criticizing the anti-participatory views of their professors, among whom the neo-Schumpeterians were prominent (Teodori 1969: 163–72, Kaufman 1969 (1960).

2.3 Empirical Literature

Ojike, Ikpe, Uwajumogu, Odionye and Okwor (2023) Investigates the impact of government education spending on human capital development in Nigeria for the period 2003q1 to 2021q4. The cointegration test shows the presence of a long-run relationship between government education spending and human capital development. Government education spending has a positive and significant effect on human capital development in both the short and long run. Based on the findings, the study recommends increased government spending on education to increase human capital development to a level that will adequately enhance the growth and development of the Nigerian economy. Afolabi (2019) examined the impact of governance on sustainable development in West Africa from 2002-2016. The results of the study show that voice and accountability, political stability, government effectiveness and rule of law are positively related to development, with government effectiveness shown to have that largest impact, while regulatory quality and control of corruption are shown to be indirectly related to development in the short-run. However, in the long-run, all governance indicators are directly related to development in West African countries, with political stability and regulatory quality having the largest impact. Elbargathi and Al-Assaf (2019) investigated the impact of political instability on the economic growth for the period of 1996-2016. The study examined the existence of the long-run relationship between different five political indicators and the growth of the economy. The Vector Error Correction Model (VECM), show the impact of different political instability indicators on economic growth. Moreover, the results show that there is a strong long-run relationship between the several political indicators upon the economic growth. The results also indicate that the control of the corruption and the rule of law indicators have the highest impact on the economic growth, while the regulatory quality has the lowest. Alomaisi et al. (2016) analysed of the impact of governance on growth in Yemen, using multiple regression models found rule of law and political instability as the most important indicators of economic growth in Yemen, while other variables were declared no so significant. Habyarimana and Dushimayezu (2018) who studied good governance, economic growth, and development in Rwanda, adopting similar method of investigation found the existence of pro-cyclical relationship between governance and economic development. The study emphasize that the level of economic growth and development not only depend on fixed capital formation and labour force, but also on good governance. Han, Khan and Zhuang (2014) examined whether countries with below average governance grow slower than countries with above average governance. The results of the study indicate that government effectiveness, political stability, control of corruption, and regulatory quality are more significantly positively correlated with economic growth than rule of law and voice and accountability. The results also indicate that the studied Asian countries above average governance grow faster than those with below average governance. Emara and Jhonsa (2014) examined the interrelationship between the improvement in the quality of governance and the increase in per capita income. The findings of the study indicate there is a strongly positive and statistically significant causation from the quality of governance to per capita income. The results also prove a positive causation in the opposite direction. The study used their results to interpret the relationship between the studied variables for 22 MENA countries. They contend that one of their surprising results is that even though most of the studied MENA countries had low performance on all six indicators of governance, these MENA countries' income per capita is relatively higher than the rest of the countries in the sample. Yerrabati and Hawkes (2015) investigated the governance and economic growth in south and East Asia and pacific region, using meta-synthesized technics based on 29 studies with 554 estimators. The findings in the study showed that most governance indicators, other than government effectiveness and regulation have no important effect on growth. They also

concluded that empirical research on governance and growth has failed to provide evidence of true effect of governance on growth. Bayar (2016) investigated public governance and economic growth in the transnational economies of the European Union between 2002 and 2103, using static panel analysis. The study revealed that all governance indicators except regulatory quality had a statistically positive impact on growth, and control of corruption and rule of law had the largest impact, while political stability had the lowest impact. In the same vein, Tarek and Ahmed (2013), adopted the same methodology to investigate governance and economic performance in developing countries reported similar result, claiming that the institutional failure that characterize developing countries lead inevitably to destabilize their long-term economic growth and an improvement in governance would contribute greatly to their economic growth. In Another study by Aisen and Veiga (2013) determine the impact of political instability on the growth. The study used the system-GMM estimator for linear dynamic panel data models on a sample covering 1 69 countries for the period of 1 960-2004. The results show that political instability and lower GDP per capita are strongly associated. Political instability has negative effects on economic growth by reducing the rates of productivity growth, and lowering capital and human accumulation. Materu (2007) examined the issues surrounding equality in African higher education institutions and found that the dichotomy between political pressure on the government to expand access and institutions' goals to raise educational standards has resulted in a positive educational quality culture in African higher education institutions. Quality education includes, among other things, the ability to retain and develop human capital, as well as the ability to hold educational institutions more accountable for their quality assurance efforts. As a result, the author emphasized the need of excellent administration in the continent's higher education system. As Henard and Mitterle (2010) have shown, excellent governance is essential to the advancement and sustainability of quality education at higher educational institutions in Africa. Political influence and regulation provide a significant obstacle to higher education, particularly in the context of Africa's economically deprived and politically active context. These thoughts are in line with those of Bloom et al. (2005), who drew attention to the underlying contradiction of African education law. By restricting universities' autonomy and politicizing them, policies that are overly centralized destabilize the learning process in response to political goals, the author claims. The numerous explanations have been put up in the academic literature as to why public funds are channeled toward education. The extent to which a country's government is corrupt is at the top of the list. There are less potential for corruption in the educational sector, according to Mauro (1998), which might impact the flow of financing to this area. As a result, a correlation between education investment and corruption might be predicted. Education expenditures include regular expenditures that plainly do not draw any large rent, but investment in educational structures such as schools and universities with value-intensive labs may generate possibilities for corruption that Mauro (1998) ignores. As a result, we make no assumptions about the impact of corruption on educational spending in this study. Similarly, the political climate of a nation has an effect on education budget allocations, as shown by human and political rights and openness in government spending. Many scholars have argued that governments would spend more on public goods such as education in an atmosphere where human rights and democracy are upheld, including Habibi (1992), Stasavage (2005), and Delavallade (2006). As a result, better education is likely to be linked to a greater appreciation of liberal values like individual liberties and representative government. Budget allocation to sectors crucial to stabilization will be triggered by political instability, of course. A country that is constantly threatened by instability tends to prioritize those functional categories that are most likely to restore stability; obviously, education investment is not one of them. This, in turn, argues

that nations with a more stable political climate will invest more in education. Tabellini and Alesina (1990) debt accumulation plays an important role in determining how public funds should be allocated. Public debt, for example, tends to increase expenditures on economic services, health, and education, because monies created by external and internal loans are often directed to these sectors. An important factor in determining how public funds are allocated is the average annual household income. Wagner's rule predicted that government expenditure would rise as the economy became more complicated and the demand for public goods and social programs increased; hence, the government's role would grow as the economy grew more complex. As a country progresses from a lower level of development, changes in the structure of the public budget are probable. There is a positive correlation between education investment and GDP per capita, (Sheldon 2007; Stasavage 2005; Delavallade 2006; Nyamongo 2007; and Mauro 1998). Sheldon (2007), Delavallade (2006), and Stasavage (2005), for example, indicate that education spending is positively connected with the fraction of the population under 15 years old. Due to the enormous number of students in this age range, the majority of educational expenses are devoted to elementary and secondary education. An important indication is the rate of urbanization; in particular, the rural-to-urban population ratio is a crucial predictor of education spending. Education takes up a larger percentage of the budget in highly populated areas than in less densely populated ones. According to the scale of the economy, it is also vital to consider the structure of the budget in relation to the size of the government Size of government relative to economy absorbs more cyclical elements, such as changes in tax base and non-tax government income, according to Mahdavi (2004) More so, the size of government has been linked to a number of variables that might have an effect on the composition of overall spending. These characteristics include the extent of corruption, vulnerability to external risks such as trade shocks, and exposure to internal risks such as political instability and social disputes inside the country itself.

2.4 Literature Gap and Value addition

The countries were selected based their income (GNI). This will allow us to select many countries and categorize them into low-income, lower-middle income, upper-middle income and high income countries based on World Bank classification. Finally, there exist a gap in methodological literature concerning the impact of good governance, health outcome and education output on economic growth among selected African countries. Most of the studies relied on traditional fixed and random effect approaches in examining the relationship, while few studies used heterogeneous models like panel cointergration, VECM and ARDL. Hence, with presence of endogeneity of key explanatory variables, these models could not exhaustively explain the relationship. In this study a panel VAR techniques will be suitable since it will enable us to address the problem of innovations/shocks among selected African countries. The African countries under study are 54 but due to the availability of data, the study will only focused 45 African countries that have availability of data used at Department of Economic and Social Affairs of the United Nation, (2020) and World population Division, categorised the Africa continent into five regions namely:

i. **North Africa**: This countries comprise of six (6) countries which are: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia.
ii. **East Africa**: This regions comprise of nineteen (19) which are: Burundi, Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Réunion, Rwanda, Seychelles, Somalia, Eswatini, Tanzania, Uganda, Zambia, and Zimbabwe.
iii. **Central Africa**: This countries comprise of eight (8) which are: Brazzaville, Chad, Cameroon, Central Africa, Congo Rep, São Tomé and Principe, Equatorial Guinea, Gabon,

DR Congo**.**

iv. **West Africa**: This countries comprise of seventeen (17) which are: Cote d. voire, Togo, Sierra-Leone, Burkina Faso, Guinea, Guinea-Bissau, Mali, Benin Republic, Ghana, Gambia, Cape Verde, Senegal, Nigeria, Niger, Mauritania, Liberia and Ivory Cost.

v. **South Africa**: This countries comprise of five (5) which are: Botswana, Swaziland, Lesotho, Namibia, South Africa. The total African population size stood at about 1,325,663 billion (World Bank, 2021).

3 METHODOLOGY

3.1 Theoretical framework

Following Kaufmann and Kraay (2002), our regression model is presented below:

$pgdp_i = \alpha + \beta^{*} gov_i + e_i$ ……(3.1)

Where pgdp is the log per capita income, gov is the governance index, e represents all the other factors not included in this parsimonious equation, and finally the subscripts i represents the country. The estimate of β will provide information on the marginal contribution of improving governance to the per capita gdp growth in the long run.

3.2 Model specification

The model of the study is specified as

$\text{EDUOUTP}_{it} = IGG_{it} + EDUEXP_{it} + GDP_{it} + FDI_{it} + PSE_{it} + FIAD_{it} + U_{it}$……(3.2)

3.3 Panel VAR

In order to analyses the effect of shocks of good governance on education output among selected African countries using panel data from 2000 to 2020, the current study relies on Brownbridge et, al (2017) panel VAR technique. The justification for the adoption of the technique is that, macroeconomic events in one variable can spill over to another variables, the need for models which accommodate such inter-linkages has grown. Impulse response charts was also employed to observe how the shocks transmit from one variable to another and how these shocks influence other variables and also to check how long such impact would last. The Impulse Response Functions (IRF) traces out the intense response of a variable created by the shocks of another variable and also to check how period such response would last. Synchronously, to confirm the efficacy and the fact that the Panel VAR model estimated is consistent, Eigen-Value stability test was conducted. In selecting the lag length, Schwarz Information Criterion (SIC), Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) was used. The selection was based on their lowest value as reported by the criterion (Dimitrious and Stephen, 2007). Panel VAR are particularly suited to analyzing the transmission of idiosyncratic shocks across units and time. The two cardinal issues of panel analysis are the issue of homogeneity or heterogeneity among the cross-sectional units and the issue of interdependency among the cross-sectional units. Panel VAR have also been frequently used to construct average effects and to characterize unit specific differences relative to the average. Furthermore, Panel VAR can be used in analyzing the importance of interdependencies, and in checking whether feedbacks are generalized or only involve certain pairs of units (Canova and Ciccarelli 2013). Finally, Panel VARs can also be used to examine the extent of dynamic heterogeneity. For example, Canova (2012) have studied how shocks to U.S interest rates are propagated to ten European economies, seven in the Euro area and three outside of it, and how German shocks, defined as shocks which simultaneously increase

domestic output, employment, consumption and investment, are transmitted to the remaining economies. The two modeling approaches in any form of panel study are static modeling and dynamic modeling approach. Furthermore, when conducting a panel analysis, another important issue to determine is the homogeneity or heterogeneity among the cross-sectional units. If i = 1 = n, the cross sections are considered homogenous, but if the $i \neq 1 \neq n$, then the cross-sectional units are considered to be heterogeneous. Also, the issues of dynamic interdependencies among the cross-sectional units are equally very important in most panel studies. It should be noted that unrestricted PVAR is very general and that lagged variables from any unit can influence any other unit (e.g. lagged values of unit 1 can impact on current unit 2 variables) and the magnitude of such impacts are completely unrestricted (e.g. events in unit 1 can have a different impact on unit two and a different one on unit three). In the same vein, contemporaneous relationships, modeled through the error covariance matrices are unrestricted so that for example shocks in unit 1 can be strongly correlated with shocks in unit two and weakly correlated with shocks in unit 3. Finally, the impulse responses shall be generated from the error term which obviously has no lag thereby signifying a static modeling approach which has to be conducted to examine the impact of shocks on oil prices to all other variables used in the study.

The first order panel VAR model is stated as follows;

Let $Y_t = (y'_{1t}, y'_{2t}, \ldots, y'_{Nt})$ for $t = 1, \ldots, T$ be the $NG \times 1$ vector of dependent variables where y_{it} is the $G \times 1$ vector of dependent variables of country i, $i = 1, \ldots, N$. The *i*-th equation of the Panel VAR with p lags takes the form:

$$Y_{it} = A_i^1 Y_{t-1} + \ldots + A_i^p Y_{t-p} + u_{it} \quad (3.3)$$

where A_i^j for $j = 1, \ldots, P$ are $G \times NG$ matrices PVAR coefficients for country i. Additionally, u_{it} is a $G \times 1$ vector of disturbances, uncorrelated over time, where $u_{it} \sim N(0, \Sigma_{ii})$. The errors between countries may be correlated and we define $E(u_{it}u_{jt}) = \Sigma_{ij}$ and Σ to be the entire $NG \times NG$ error covariance matrix for $u_t = (u_{1t}, \ldots, u_{Nt})'$. Let $A^j = (A_1^j, \ldots, A_N^j)$ for $j = 1, \ldots, p$ and $\alpha = (vec(A^1)', \ldots, vec(A_t^p))'$.

4 EMPIRICAL RESULTS AND DISCUSSIONS

4.1 Descriptive statistics

Table 4.1 Descriptive statistics

Statistics	RGDP	EDUOUTP	IGG	LFDI	PSE	EDUEXP	FAID
Mean	0.972364	99.43645	0.537901	0.551121	5.731624	5.437539	764.2447
Median	0.984077	103.2829	0.610000	0.552842	5.290000	4.078200	558.8300
Std. Dev.	0.748888	25.87495	0.566090	0.761139	2.155551	10.89044	7605624
Skewness	0.655883	-0.951048	0.518138	0.550933	1.869604	8.666589	1.828824
Kurtosis	4.100514	5.093957	2.974604	3.770521	9.937048	78.25408	7.875153
Jarque-Bera	61.69120	168.3885	22.60951	38.03936	1306.778	125484.4	781.6038
Probability	0.247813	0.000000	0.931512	0.923518	0.000000	0.563618	0.000000
Observations	714	714	714	714	714	714	714

Source: Researcher computation using E-views 10.

Table 4.1 indicates the result of descriptive statistics of the study, it indicates that the standard deviations of the variables employed are far away from their means except education output (25.87495). The Skewness of the distribution in the table shows positive values and less than one of real gross domestic product, indicators of good governance, and foreign direct investment while negative value of education output, this implies that these variables are normally distributed. The

Skewness also indicated values of higher than one of primary school enrollment, education expenditure and foreign aid, it means that, these variables are not normally distributed. The Kurtosis from table 4.1 shows that indicators of good governance, and foreign direct investment are normally distributed because their Kurtosis values are less than or equal to 3 while real gross domestic product, education output, primary school enrollment, education expenditure and foreign aid are not normally distributed because their Kurtosis values are greater than 3. The Jarque-Bera test for normality shows that real gross domestic product, health outcome, indicators of good governance, foreign direct investment, and education expenditure are normally distributed because their p-values are greater than 5% while education output, primary school enrollment and foreign aid are not normally distributed because their p-values are less than 5%.

4.2 Panel unit root test

4.2.1 Levin Lin and Chu and Im Pesaran and Shin unit root test

Table 4.2 Levin Lin and Chu and Im Pesaran and Shin unit root test

	Test at level		**Test at first difference**	
Variables	**LLC P-value**	**IPS P-value**	**LLC P-value**	**IPS P-value**
RGDP	0.0003*	0.0007	-	-
HOC	0.0000	0.0000	-	-
IGG	0.0000	0.0000	-	-
FDI	0.0000	0.0012	-	-
EDUEXP	0.2434	0.0624	0.0000	0.0000
PSE	0.0747	0.8570	0.0000	0.0000
FAID	0.0913	0.3099	0.0000	0.0000

Source: Researcher computation using E-views 10.

The table 4.2 present the panel unit root test of Levin Lin and Chu (LLC) and Im Pesaran and Shin (IPS) unit root test, the tests show that real gross domestic product, health outcome, indicators of good governance, and foreign direct investment are stationary at level or are integrated of order zero (0) process while education output, education expenditure, primary school enrollment and foreign aid are stationary at first difference or are integrated of order one (1) process.

4.3 Panel Cointegration

Table 4.3 Kao panel Cointegration Test

ADF t-statistic	**Probability**
-2.764379	0.0029

Source: *Researcher computation using E-views 10.*

Table 4.3 presents the result of Kao residual panel cointegration test. The result confirmed the presence of cointegration amongst the variables employed as the ADF t-statistics probability value is significant at 1%. Therefore, we reject the null hypothesis and conclude that there is long run relationship amongst the variables employed, because the p-value is less than 5%.

4.4 Panel Vector Autoregressive (Panel VAR) Model

Table 4.4 Panel VAR result

Dependent variable: EDUOUTP

Variables	Coefficient	Standard Error	T-statistics	P-Value
EDUEXP	0.2.31279	237.8113	0.093826	0.9253
IGG	0.807.106	4474.254	1.297894	0.1948
LRGDP	0.677.249	6623.413	0.555189	0.5790
LFDI	0.102.072	6346.618	0.331211	0.7406
PSE	0.1.39305	115.3510	0.705612	0.4807
FAID	0.538416	3.446990	0.156199	0.8759
VAR Residual Heteroskedasticity				0.1372

Source: *Researcher computation using E-views 10.*

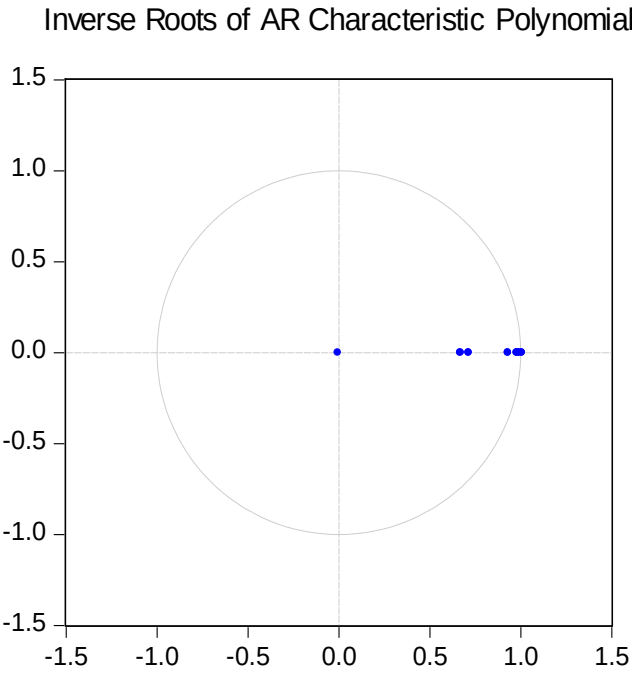
Table 4.4 present the Panel Vector Autoregressive estimated in the analysis, the result indicates that the shocks effect of education expenditure to education output was found to be positive, the elasticity coefficients is 0.23. This means that 92.5% increase in education expenditure will cause 23% increase in education output in the selected African Countries all things being equal. Indicators of good governance depicts positive shocks to education output with the elasticity coefficients of 0.80, by implication 19.4% innovations from indicators of good governance will result 81% increase in education output in the selected African Countries. The positive findings is in line with the finding of Afolabi (2019) Elbargathi and Al-Assaf (2019) and Bayar (2016). The variable real gross domestic product indicates positive shocks to education output in the selected African Countries. Foreign direct investment depicts positive response to education output in the selected African Countries, this implies that 74% increase foreign direct investment will bring about 10% increase in education output in the selected African Countries. Primary school enrolment shows positive shocks to education output in the selected African Countries. This means that 48% increase in primary school enrolment will cause 13% increase in education output in the selected African Countries all things being equal. Foreign aid indicates positive shocks to education output in the selected African countries. The Chi-Square residual diagnostic test was conducted to test for heteroskedasticity of the Panel VAR. From the VAR model, the join test result shows that probability of (0.1372) is in excess of 0.05 (5% significant level). This lead to the rejection of the presence of heteroskedasticity; implying the residuals are homoscedastic, meaning that, the estimated model is valid and can be used for policy making without re-specification.

4.5 Eigen-Value Stability Test Results

Eigen value stability test was carried out to actually ascertain the efficacy and the strength of the panel VAR model. The decision is that the roots should lie inside the unit circle. From the result, all the Eigen-Values lies inside the unit circle and thus satisfy the stability condition of the Panel

VAR model at can be seen in figure 4.1. Therefore, in a general note, the above results confirm the fact that the Panel VAR model estimated passed the Eigen-Value stability tests.

Figure 4.1 Panel VAR stability test.



Source: *Researcher computation using E-views 10.*

5 CONCLUSIONS AND RECOMMENDATIONS

The study evaluated the effect of shocks of good governance on education output among selected African countries using panel data from 2000 to 2020. variables employed in the analysis include; real gross domestic product, health outcome, indicators of good governance, life expectancy, health expenditure and foreign aid. The study employed panel unit root test such as Im Pesaran and Shin, Levin Lin and Chu. The Panel unit root tests indicated that real gross domestic product, indicators of good governance, and foreign direct investment are stationary at level while health expenditure and foreign aid are stationary at first difference. The panel Cointegration test has confirmed the presence of cointegration amongst the variables employed. The Panel Vector Autoregressive result indicates that the shocks effect of education expenditure to education output was found to be positive. Indicators of good governance have positive shocks to education output. Real gross domestic product has a positive shock to education output in the selected African Countries. Foreign direct investment has a positive response to education output in the selected African Countries. Primary school enrolment has a positive shock to education output in the selected African Countries. Foreign aid has a positive shock to education output in the selected countries. The study recommended that African Countries should ensure that indicators of good governance such as political stability, accountability and voice, and control of corruption are moving smoothly without any interruption, by so doing economic growth of African countries will increases. African countries should increase their expenditure on education, this will bring about an increase in economic growth of the continent.

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