



Impact of education and security on sustainable development in selected countries in Africa

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Abstract

This study investigates how security and education affects sustainable development in Africa. The Panel data of macroeconomic indicators of African countries such as Nigeria, Benin Republic, Niger and Cameroon were used to investigate the impact of security and education on sustainable development in Africa for the period of 10 years (2011 – 2021). The study applies pool OLS, fixed effects, and fixed effects techniques are used. The empirical results show that security and education have positive and negative effect on sustainable development in Africa. Gross capital formation has a positive (0.76) and significant at (1%) while government expenditure on education has a positive (0.11), terrorism has a negative (-0.14) and trade openness has a positive (0.34) and significant at (1%) respectively. The study concludes that, security and education affect sustainable development in Africa. It recommends on the need for the government of African countries to invest more fund in education and security so that they would develop human capital and have conducive environment for macroeconomics activities to strived.

Keywords: Security, Terrorism, Education, Sustainable Development and Africa.

1. Introduction

Education, security, and economic development are entwined. Thus, without education; there can be no sustainable economic development. Experience shows that the opposite is also true: persistent, widespread insecurity can also undermine a country's stability. Stability is also severely compromised if a large section of society is insecure. There are many examples not only especially in Africa but also in Asia and Latin America.

A productive development with a market or central economy is the most significant source of per capita product in any nation. The key to economic prosperity is, however, rising per-capita production. It is a common knowledge that, people are the most valuable and promising resource for boosting productivity and economic growth. Only humans can create tools and technology since they are creations of the human intellect. Any productive program's

success depends on fresh concepts and human creativity.

However, if there is no security for one's life and property, no amount of advancement in human education can result in improved production. Thus, the Sustainable Development Goals of the UN are connected to human security, which emphasizes freedom of will. Above all, one of these objectives is to make sure that every kid has access to a quality education. This is a worthwhile and significant objective.

Because it is viewed from many angles, the notion of security has not yet had a universal conceptual perspective, making it difficult to understand the concepts of security and insecurity. In terms of security, several academics have underlined that there is no greater threat to peace, stability, national unity, or political and socioeconomic goals of a nation than security (Igbuzor, 2011 and Oche, 2001). It

is seen as being safe and free from the fear of physical and mental abuse, violence, persecution or death, and provides needs such as food, health, and decent work (Asmau & Abdulrasheed, 2020). Security has for a long time be devilled African nations. The Global Terrorism

Index 2021 currently ranks Somalia, Burkina Faso, and Nigeria in third, fourth, and sixth positions, in the world respectively.

Table 1.1. Overleaf paints a very good picture of the world ranking for these nations

**Table 1.1 GLOBAL TERRORISM INDEX**

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Afghanistan	9.094	9.124	8.920	8.889	8.854	8.708	8.849	9.070	9.039	9.051	9.109
Iraq	9.684	9.595	9.862	9.847	9.785	10.000	9.742	9.418	9.013	8.695	8.511
Somalia	7.896	7.954	7.817	7.682	7.705	8.180	8.739	8.660	8.571	8.489	8.398
Burkina Faso	0.000	0.000	0.000	0.000	3.477	5.620	6.226	6.861	7.895	8.122	8.270
Syria	5.776	8.246	8.429	8.289	7.999	8.090	7.932	7.810	7.897	8.300	8.250
Nigeria	7.479	8.103	8.342	8.927	9.118	8.761	8.645	8.482	8.380	8.421	8.233
Mali	4.348	5.505	5.862	5.971	6.891	7.036	7.509	7.711	7.832	7.922	8.152
Niger	3.829	3.190	3.836	4.390	6.656	6.684	6.602	6.528	7.230	7.415	7.856
Cameroon	3.186	2.607	2.766	6.172	7.362	7.250	7.253	7.598	7.774	7.625	7.432
Mozambique	0.509	0.291	3.033	3.593	3.007	4.432	4.799	6.452	7.331	7.831	7.432
Egypt	5.299	5.811	6.798	7.207	7.828	7.890	8.180	7.853	7.567	7.304	6.932
Congo	5.798	5.826	5.743	5.059	5.302	5.029	4.356	3.612	4.793	6.020	6.733
Chad	3.518	1.201	0.793	0.407	6.746	6.286	5.823	5.845	6.243	6.659	6.379
Kenya	5.778	6.696	6.975	7.263	7.280	6.915	6.950	6.672	6.566	6.358	6.166
Libya	1.733	5.518	6.194	6.665	7.191	6.908	6.461	6.774	6.311	5.641	5.100
Zambia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Zimbabwe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Source: World Terrorism Index (2021)

This study intends to investigate how spending on security and education affects long-term development in Africa in the light of the aforementioned setting. The study's goal is to examine how spending on security and education affects long-term development in Africa. This study tries to investigate the view that there is no meaningful connection between the cost of education, security, and sustainable development in Africa for the reasons mentioned above. This essay is broken up into five pieces to accomplish the aforementioned goals. The first part is an introduction. The second section describes the literature review. The third part deals with the process. The fourth chapter focuses on the presentation of data,

analysis, and analysis of research findings. The fifth chapter is about the conclusions of the study, and recommendations.

2. Literature Review

2.1 Conceptual Clarification

2.1.1 Concept of Security

Salah (2010) analyze five broad concepts of security given by Buzan (1991) that can affect human collective effort for sustainable development. He looks at the concept of security in terms of military security which concerns the interplay between the armed offensive capacity and defensive capacities of the state and their perceptions; Political security concerns the organizational stability of state with the system of governance Ideologies that pave

way for legitimacy and authority; Economics security regards the access of level State has to the resources finance and market necessary to sustain acceptable level of welfare and State power; Societal security concerns with the sustainability of traditional pattern of language, culture religious natural identity and customs and Environmental security has to do with maintenance of the local and the planetary biosphere as the essential support system upon which all other human enterprises depend. Building human capital through both education and on the job training the impact of social security on human capital has used wider public concern.

2.1.2 Terrorism

A UN panel, on March 17, 2005, defined terrorism as any act "intended to cause death or serious bodily harm to civilians or non-combatants with the purpose of intimidating a population or compelling a government or an international organization to do or abstain from doing any act.

2.1.3 Education

Paulo (1999) defines education as an act of depositing knowledge in which students are the depositories and the teachers are depositors. Knowledge is an awareness gain by experience of a fact or situation.

2.1.4 Sustainable Development

According Emas (2015), sustainable development is the long - term stability of the economy and environment, achievable through the integration and acknowledgement of economy, environmental and social concerns throughout the decision-making process. Conserving resources for future generation and is the main characteristics that differentiate sustainable development from traditional policy.

The connection between education and security in economic growth has been the subject of several studies. For instance, Omede (2012) sees security as a dynamic

condition that incorporates the state's relative capacity to fend off attacks to its fundamental interests and values. Security can be characterized as the consistency and continuity of one's way of life (a consistent and stable income), predictability in day-to-day activities (knowing what to expect); protection against crime (feeling safe); and psychological innocence (security or protection against stress). These characteristics stem from safety, or the conviction that one is desired, accepted, loved, and protected in one's community or neighborhood and by the environment (Nwanegbo & Odigbo, 2013).

Security encompasses all measures taken to protect citizens and the property of individuals, groups, businesses and the nation in order to prevent disruption or violence (Ogunleye, Adewale, Alese & Ogunde, 2013). The concept of uncertainty is uncertainty; Danger; Danger; insecurity; lack of protection and security. Beland (2005) argues that insecurity is a state of fear that results from a lack of concrete or perceived protection. It means the absence of danger or inconvenience.

Achumba, Ighomereho, and AkporRabaro (2013) describe uncertainty in two ways. The first is hazard, which is a state that is likely to cause harm or damage, uncertainty, risk, or exposure to impending danger. Second, fear is a feeling of uneasiness and disquiet brought on by the possibility of bad luck. Insecurity is exposure to risk or dread. As was already noted, the phenomena of security or insecurity comprises a physical occurrence as well as a psychological state that impedes the peace and growth of people and communities. These definitions of security and insecurity demonstrate how many individuals in Nigeria's North West are impacted by insecurity.

2.2 Theoretical Framework

2.2.1 The Queer Ladder Theory (QLT)

This study adopts the QLT because it is the most suitable theory for the purpose of this study. The theory was influenced by an American Sociologist, Daniel Bell (1919-2011), who coined the idea of 'queer ladder' in an attempt to explain the instrumental essence of organized crime as a desperate means of socio-economic empowerment and social development.

This theoretical perspective has since fertilized into a popular theoretical framework widely used in contemporary crime studies. The basic assumptions of QLT are:

- i. Organized crime is an instrumental behavior; it is means to an end;
- ii. It is an instrument of social climbing and/or socio-economic advancement; and
- iii. It is a measure to accumulate wealth and build power.

Often ascribed to Queer Ladder Theory, it is based on the notion that organized crime thrives in contexts where the government's capacity is to detect, sanction and deter crime is poor; where public corruption is endemic; and where prospects for legitimate livelihood opportunities are slim. Under these circumstances, the incentive to indulge in crime is high, while deterrence from criminal living is low. In other words, the benefits of committing a crime surpass the costs and/or risks. This creates pretext for criminal impunity and franchise. For a long time, this theoretical viewpoint has gained popularity and is now a commonly utilized theoretical framework in contemporary criminological research. The central thesis of QLT is that organized crime is a tool for social and/or socioeconomic growth, a gauge of money and power accumulation, and a means to a goal (Mallory, 2007; Okoli & Orinya, 2013). According to the Queer Dimension hypothesis, organized crime thrives in

environments with inadequate government oversight, a lack of effective criminal justice systems, a high level of corruption, and few opportunities for legitimate employment (Nwoye, 2000; Lyman, 2007). In such cases, the incentive to commit a crime is high, while the deterrence to pursuing a life of crime is low. Simply, the benefits of committing a crime outweigh the costs and/or risks. This creates a rationale for criminal immunity and privilege (Okoli and Orinya, 2013). QLT has been applied in this article and allows it to consider the investigation of organized crime in Africa.

2.2.2 Solow- Swan Theory

The study reviewed the theory of Solow and Swan model of (1956). The model is built on four variables: Output (Y) referring to total amount of production of final goods; capital (K) referring to machine and structure used in production, labour (L) corresponding to hours of employment or number of employees. Finally, technology (A) referring to multifactor productivity. The neoclassical model inspired by Solow and Swan assumes a continuous production function relating output to inputs of capital and labour. The two theories OLT, Solow and Swan model emphasizes the effect of insecurity on education and sustainable development in the society.

2.3 Empirical Review

Veshapdze, et; al. (2021) used content analysis to examine the relationship between education and economic security. The study noted that, economic security is the key indicator for general security and other level of security can be achieved easily through it. The study established the strong relationship between education and economic security. Ursul and Ursul (2018) studied environmental education for sustainable development in Russia using content analysis. It was found that environmental education had contributed to



the sustainable development in Russia. The study further affirmed that environmental security also contributed to sustainable education. The study focuses on the impact of education and security and sustainable development in selected Africa.

Using in-depth interviewer and dialogue with individual student as well as classroom discussion Kopnina and Meijers (2012) explored the challenges posed by the conceptual framework and diversity of practice of education for sustainable development in Netherlands. The study established that there was a wide and inconclusive debate about the aims of education for sustainable development based on the critique of sustainable development discussion. Based on the result of qualitative evaluation, it critically viewed the inconsistencies and challenges inherent in multiple goal of sustainable development. The present study applied robust method of panel data to examine the impact of education and security n sustainable development in Africa.

Lankausviciene and Tvaronaviciene (2012) investigated the impact of security and sustainable development using content analysis. It was found that security was significant to sustainable development. The conception of security and sustainability had been currently globalized world issues. Bajaj and Chiu (2009) used content analysis to examine the impact Education for sustainable development in the United Nation. The study found that education had positive impact in sustainable development United Nations. Education involves methods and learning process that include inquiry and critical thinking. The present study different from the previous research in terms of the objective and method of data analysis on the impact of education and security on sustainable development in Africa.

3. Methodology

The study employed correlation research design to investigate how security and education affect sustainable development in Africa. The study used secondary data extracted from World Bank Data base, for the period of ten years (from 2011 - 2021), based on panel data of macroeconomic indicators of African countries such as Nigeria, Benin Republic, Niger and Cameron.

The study makes use of Ramsey's (1928), neoclassical production function to analyze how security and education affect economic growth in a sustainable way. Solow (1956), made the neoclassical model widespread. This strategy makes the assumptions that returns to scale are consistent and technological development is exogenous. The model makes the assumption that labor and capital are interchangeable and that their productivity declines. The fundamental neoclassical production function is:

$Y = f(K, L) \dots\dots\dots 1$

Here, Y stands for the rate of production, K for capital formation, and L for the labor force.

Human capital is also considered as the main determinant of economic growth in the endogenous growth theory proposed by Romer (1986, 1990) and Lucas (1988) and constitutes the main extension of the neoclassical model. Coordination of public expenditure on education (GEED) and security (TEROSM) in the neoclassical basic production function:

$Y = f(K, L, GEED, TEROSM) \dots\dots 2$

The entire standard publication can be modified as suggested by Feder (1983), Grossman (1988) and Ram (1996). 2 represents the quality of institutions and the openness of trade because the independent output of the total production function can be given as:

$Y = f(TEROSM, SIMPLE, GCD, TOO)...3$

To find the economic function of the model, this study defines:

$$LNGDPPC = \beta_0 + \beta_1LNTEROSM + \beta_2LNGEED + \beta_3LNGCF + \beta_4LNTROP + \mu \dots 4$$

GDPPC is gross domestic product per capita, TEROSM is the terrorism index, GCF is gross investment, TROP is trade openness, and μ is the error term.

The following statistical tools were employed in this investigation to evaluate statistical significance: Modified R-Square Using R-Square: This is used to measure the quality of fit of the prediction model. They gauge the percentage of changes in the dependent variable that can be accounted for by variations in the explanatory factor. F-Statisti presumable that the dependent variable and the

independent variable have a meaningful linear relationship. The Durbin-Watson (D-W) level is used to determine whether or not the projected model is autocorrelative, and the F statistic is frequently used to assess the predicted model's overall relevance. The research spans the years 2011 through 2021. Based on the availability of data, a timeframe is chosen.

4. Results and Discussion

4.1 Descriptive Analysis

The results of the summary statistics are presented in Table 4.1. displays Summary Statistics.

	LNGDPPC	LNGCF	GEED	TEROSM	TROP
Mean	7.820708	23.09205	12.80468	3.079795	0.661132
Median	7.943392	23.07895	10.01952	1.767000	0.577250
Maximum	8.744289	25.12169	26.39040	9.118000	1.071141
Minimum	6.465070	21.04098	5.131437	0.000000	0.349164
Std. Dev.	0.755667	1.454670	7.100658	3.356933	0.233280
Skewness	-0.561982	0.126988	0.738609	0.793194	0.381730
Kurtosis	2.021003	1.330236	1.986370	2.017029	1.735798
Jarque -Bera	4.073174	5.229797	5.884302	6.385247	3.998645
Probability	0.130473	0.073175	0.052752	0.041064	0.135427
Sum	344.1111	1016.050	563.4059	135.5110	29.08982
Sum Sq. Dev.	24.55437	90.99074	2168.032	484.5671	2.340046
Observations	44	44	44	44	44

Source: Researcher computation from In-view, 2022

From 2011 to 2021, the following variables' values are shown in Table 4.1: Gross Domestic Product (GDP), Gross Capital Formation (GCF), Public Education Expenditure (GEED), Terrorism Index (TEROSM), and Trade Openness (TROP): 7.82, 23.09, 12.80, 3.08, and 0.66,

respectively. This suggests that, the magnitude of the variables differs significantly, which raises the possibility that the weighted estimates may inject bias into the findings.

4.2 Correlation Matrix

Another type of descriptive statistics is the pairwise correlation matrix. The strength of the linear link between the observed variables is gauged using a binary correlation matrix. The range of this

connection is 0 to 1. It may be added from the correlation table overleaf that, there is a significant linear link between the observed values with a coefficient larger than 0.5.

Table 4.2: Correlation Matrix

	LNGDPPC	LNGCF	GEED	TEROSM	TROP
LNGDPPC	1.000000	0.246099	0.367395	-0.287121	0.640602
LNGCF	0.246099	1.000000	-0.729952	0.677380	-0.273655
GEED	0.367395	-0.729952	1.000000	-0.556055	0.504830
TEROSM	-0.287121	0.677380	-0.556055	1.000000	-0.688053
TROP	0.640602	-0.273655	0.504830	-0.688053	1.000000

Source: Researcher computation from In-view, 2022 □

The variables' relationships with the sample data for the years 2011 through 2021 are shown in Table 4.2. The table demonstrates that the variables have an internal correlation coefficient of 1. This demonstrates that the variable's connection to itself is flawless. The graph's outcome demonstrates a positive correlation between GDP and public capital formation, public education spending, and trade openness, with coefficients of 0.25, 0.37, 0.64, and 1. There must be a consistent movement of the above variables. The consistent movement implies that, as one variable rises, the other does too. This implies that trade liberalization, public investment in education, and public capital formation all

increase everyone's gross domestic product. On the contrary, there is an inverse association between per capita GDP and terrorism (insecurity). TEROSM and GDPPC are thus moving in opposing directions. Hence, the findings demonstrate that the variables are not dependent on one another and that they may be introduced to the regression analysis as independent variables without producing false-positive results. The results is in line with the findings of Lankauskiene and Tvaronaviciene, M. (2012).

4.3 Regression Results

The results of the regression study are shown in Table 4.3.

Table 4.3: Regression Results

Variables	Pooled OLS	Fixed Effects	Random Effects
Constant	-10.95700 (0.000)	-10.79857 (0.000)	-10.95700 (0.000)
LNGCF	0.765895 (0.000)	0.753027 (0.000)	0.765895 (0.000)
GEED	0.111113 (0.000)	0.111386 (0.000)	0.111113 (0.000)
TEROSM	-0.149425 (0.000)	-0.136553 (0.000)	-0.149425 (0.000)
TROP	0.195193 (0.176)	0.339779 (0.047)	0.195193 (0.160)
R ²	0.97	0.98	0.97
Hausman Test (R ²)			0.01
F. Stat	0.000	0.000	0.000
Obs	44	44	44

Source: Researcher computation from In-view, 2022

4.4. Discussion of Results

Table 4.3 findings include the panel fixed effects, panel random effects, and total pooled regression results (Panel Ordinary Least Squares, POLS) for a subset of African nations. The redundant FE test indicates that the pooled OLS estimator is inappropriate because it rejects the null hypothesis that there are no effects in the cross-section units throughout the time period with $= 0.0000$. According to the Hausman test, where $= 0.0018$, FE estimates are favored above RE estimates. The result of FE in Table 4.3 shows the long run relationship between gross capital formation (LNGCF) and gross domestic product per capita over the period under study. The long run relationship between the dependent variable gross domestic product per capita and the other regressors. The long run coefficient of gross capital formation is positive and statistically significant on gross domestic product per capita. This shows that, a unit change in

gross capital formation would result in about 0.76% increase in gross domestic product per capita over the period under study and it is statistically significant at 1 percent level. This result is in tandem with economic theory which posits that, a rise in gross capital formation will lead to an increase in economic growth hence led to sustainable development as opined by Solow and Swan (1956) theory endogenous growth. These findings support those of earlier research (Chukwueme, Phions, and Agaba, 2021), which established that the long run coefficient of government expenditure on education (GEED) is positive and statistically significant on gross domestic product per capita. The study revealed that, a unit change in government expenditure on education would result in about 0.11% significant rise in gross domestic product per capita over the period under study. These results are consistent with earlier research Olabanji & Ese, 2014. The findings also demonstrate a

strong and favorable relationship between government spending and economic development in Africa.

Furthermore, long run coefficient of terrorism (TEROSM) is negative and statistically significant on gross domestic product per capita. It was revealed that, a unit change in terrorism would result in about -0.14% decrease in gross domestic product per capita over the period under study. This finding concurs with those of earlier research whose found that Africa's economic growth was negatively impacted because of the terrorism. In the same vein, a long run coefficient of trade openness is positive and statistically significant on gross domestic product per capita, this means that a unit change in trade openness would result in about 0.34% increase in gross domestic product per capita over the period under study. The model captures 98% of explanatory variables and only 2% were captured by error term outside the model, this shows that the model has better goodness of fit and it can be reliable for further prediction.

5. Conclusion and Recommendations

5.1 Conclusion

This study aims to investigate how security and education affect sustainable development in Africa from 2011 to 2021 using OLS, fixed effects, and fixed effects) applied in earlier research and concludes that while education has a beneficial impact on sustainable development, terrorism has a negative impact on it. The empirical result clearly revealed that, gross capital formation is positive and statistically significant on gross domestic product per capita, though the contribution of gross capital formation to economic growth higher than the other variables in African. Again, government expenditure on education was positive and statistically significant on gross domestic product per capita, this clearly shows that education contributed to sustainable development in

Africa. On the other hand, terrorism was negative and statistically significant on gross domestic product per capita this shows that terrorism affect economic development in Africa. But the good news was that trade openness is positive and statistically significant on gross domestic product per capita

5.2 Recommendations

According to the results, the study suggests that higher education (human capital ratio) could be the right way to achieve sustainable economic growth in the region. For example, policymakers are faced with great uncertainty in many African countries regarding border security, international cooperation, and public relations. Based on these premises, there is need for the government of African countries to invest more fund in education and security so that they would develop human capital and have conducive environment for macroeconomics activities to strived.

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