



## Economic Growth and Institutional Quality: Empirical Proof from selected SADC and ECOWAS Nations

**Susan Uzuazo Felix-Ashakah**

Department of Economics Faculty of the Social Sciences  
Delta State University, Abraka, Delta State,  
NIGERIA

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**\* Corresponding author:**

Susan Uzuazo Felix-Ashakah, Delta State University, Abraka, Delta State, Nigeria. ✉ [susanfelixashskah@gmail.com](mailto:susanfelixashskah@gmail.com)

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**Abstract**

**ABSTRACT**

**Background of study:** Institutional mechanisms play a critical role in strengthening corporate governance and improving firm transparency and accountability. In emerging markets, the effectiveness of institutional oversight remains a key concern due to information asymmetry, weak monitoring, and inconsistent governance practices. Understanding how institutional factors influence corporate behavior is therefore essential to support sustainable business performance.

**Aims and scope of paper:** This paper aims to examine the influence of institutional factors on corporate governance outcomes and firm performance within the context of sustainable business and accounting practices. The scope of the study focuses on publicly listed companies in Indonesia, emphasizing the role of institutional involvement in enhancing monitoring quality, transparency, and long-term value creation.

**Methods:** The study employs a quantitative research design using secondary data obtained from published annual reports and financial statements. The sample was selected through purposive sampling based on data availability and institutional ownership criteria. Panel data regression analysis was applied to test the proposed relationships, supported by classical assumption tests to ensure the robustness of the model.

**Result:** The empirical findings indicate that institutional involvement has a significant effect on corporate governance quality and firm performance. Higher levels of institutional monitoring are associated with improved transparency, reduced agency problems, and more effective managerial decision-making.

**Conclusion:** This study concludes that institutional mechanisms serve as an important governance tool in promoting sustainable corporate performance. Strengthening institutional oversight can enhance accountability and support long-term business sustainability, particularly in emerging market environments.

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### INTRODUCTION

The poor performance of economies in the Sub-Saharan Africa (SSA) region has continued to fuel the debate of the effectiveness of government and the growth of economies. Even though the ECOWAS and SADC nations have recorded significant growth in the past three decades, this region has lagged behind many other developing areas worldwide, including South Asia and Latin America (Wanjoo & Roux, 2017). The primary challenges faced globally include negligible growth in income and an expanding income gap. Considering the fact that economic conditions in Sub-Saharan Africa remain precarious and are susceptible to domestic shocks as it is to external shocks. According to Fosu (2017), the area still has a substantial journey ahead in order to regain the ground lost over the last twenty years.

Some economic developmental progress has been made nonetheless, but poverty remains significantly dominant across African countries. Institutional quality in African countries attracts debates, while political aspects are given more priority in these countries. Coupled with the poor growth and development of economic conditions, the institutional structure in Africa does little or nothing to inspire entrepreneurs, investors, and innovators. The officials have manipulated the economy in favour of the politicians and higher-income individuals (Shin et al., 2019). Some empirical research studies have posited differing stances regarding the role that institutions play in economic growth (Musah et al., 2025; Appiah et al., 2020; Mohammed et al., 2023; Hussen, 2022; Chakravorty, 2019; Adefeso & Aransi, 2022; Gibogwe, 2022; Kabiru et al., 2022; Mojeed et al., 2023; Mbulawa & Chingoiro, 2024; Ejubekpokpo, 2024; Liko, 2024). The mixed results of the empirical studies brought about the current investigation as regards the relevance of the quality of institutions in the growth of the economies of the selected ECOWAS and SADC nations.

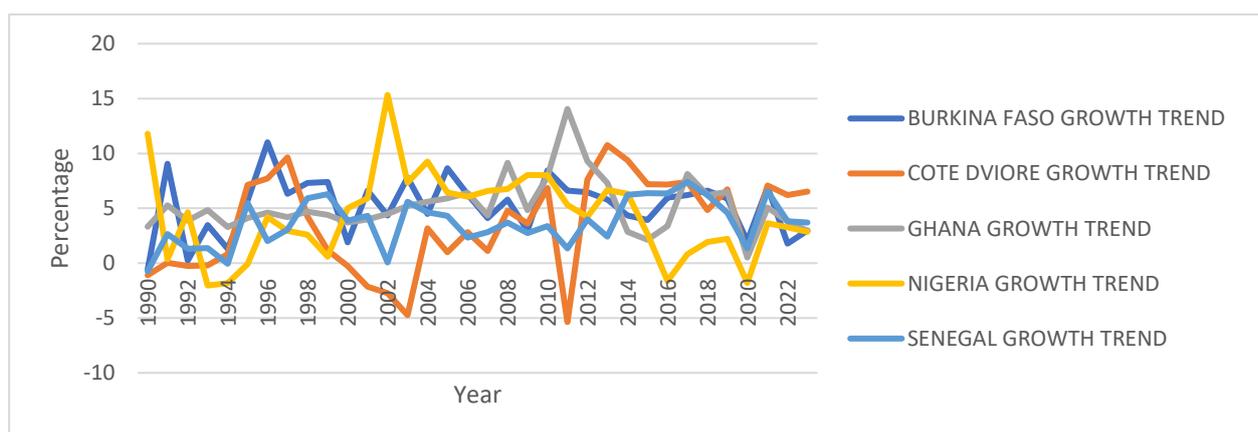
This research aimed to reveal more evidence as regards institutional quality's impact or government effectiveness on performance of the selected ECOWAS and SADC nations' economies. In this study, we have focused solely on the implications of quality of institutions on growth of economies of the chosen ECOWAS and SADC countries using the fully modified ordinary least squares (FMOLS) as well as the fixed effect model, that allows for the modelling of the interrelationships between the variables integrated in different orders. No research employed two estimators as employed in the current study, in investigating the nuances involved in the quality of institutions or government effectiveness as well as the performance of economies, focusing on ECOWAS and the SADC sub-regions. This identified gap is what this study intends to close, and that makes the study relevant in the discourse on the growth nexus and quality of institutions. The other sections in this study are organized in the following manner: in Section 2 we highlight key stylized facts regarding the quality of institutions and economic growth; in Section 3 we review empirical literature bordered around the topic; in Section 4 we delineate the analytical techniques employed; in Section 5 we examine the findings; and in Section 6 we conclude with a summary, as well as recommend policies.

### Some Stylized Facts- Data Visualizations

The research presents a stance that outlines, investigates, and evaluates carefully, the patterns of economic growth in specific ECOWAS and even SADC nations, as well as at regional to global scales. Additionally, it explores the trends in institutional quality for each of our ECOWAS and SADC countries. These analyses aim to elucidate the implications of institutional quality for growth at the individual country and regional levels.

#### 1. Stylized Facts of the Growth of the Economy

This section explores and analyzes key insights into economic growth within our selected ECOWAS and SADC countries, while also considering the broader regional and global contexts.

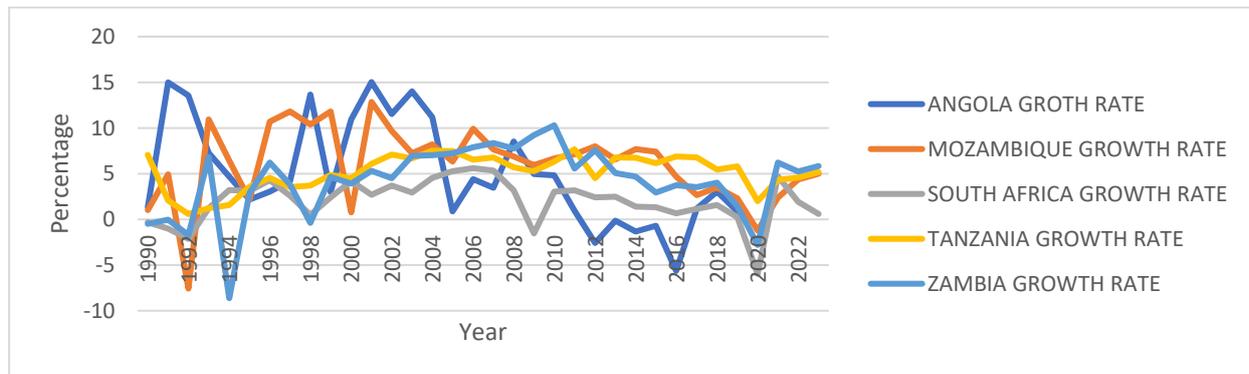


**Figure 1.** Growth Trends in Chosen ECOWAS Countries.

**Source:** World Development Indicators (WDI), 2024.

According to the World Development Indicator 2024, Figure 1 illustrates observed trends in the growth rates of economies of nations that are among our selected ECOWAS nations for this research. The data indicates that Nigeria recorded the most significant positive growth rate in 2002, reaching approximately 15%. Ghana followed Nigeria closely by attaining a peak growth rate (14%) in 2011 during the study period. Burkina Faso experienced its most notable positive growth rate that towers about 11% as at 1996, while Côte d'Ivoire reported a growth rate of approximately 10%. Additionally, even Senegal reached its peak positive growth rate measuring 7% in the year 2017. In contrast, Côte d'Ivoire experienced its most significant downturn in growth rate in 2011, that was approximately 5%. Nigeria faced its own decline in 2020, which was around 1.7%, likely attributable to adverse effects of the COVID pandemic. Similarly, at about 0.7%, Senegal in 1990 has also recorded a negative growth rate. Importantly, Ghana Burkina Faso, the other two ECOWAS nations did not experience any significant growth rates downturn during the studied period.

The nations displayed varying growth rate averages throughout the period under study. Burkina Faso (5.24%) achieved the highest growth average, closely followed at 5.19% by Ghana. Nigeria, deemed the largest economy within ECOWAS, recorded growth rate upturn of 4.25%, while Senegal stood at 3.69% average growth rate. Côte d'Ivoire also reported a noteworthy 3.49% growth rate average within the same period between 1990 and 2023. Although these ECOWAS nations showed positive growth averages, they have also encountered significant fluctuations. These variations in growth rates can be directly linked with the differing policies in the economies under consideration and the various other factors influencing the dynamics of growth (World Development Indicator 2024).



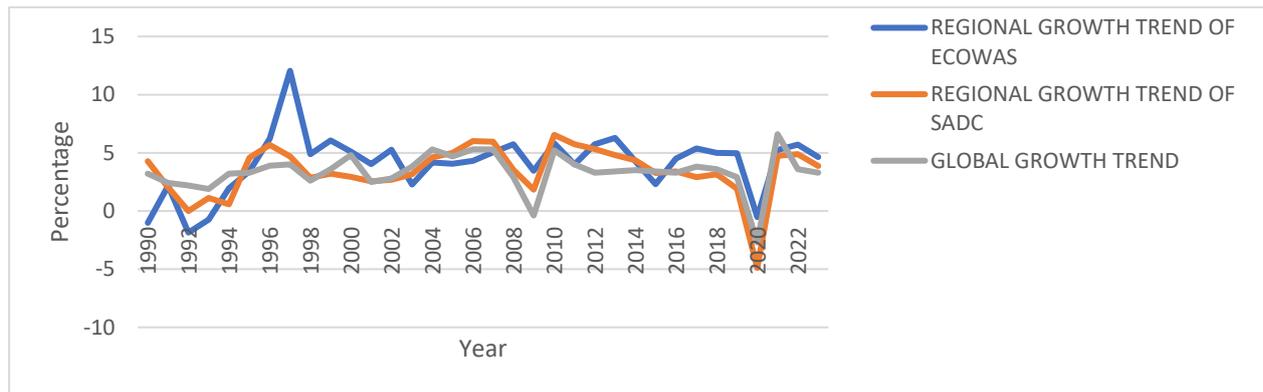
**Figure 2.** Growth Trend of Selected SADC Countries.

**Source:** World Development Indicators (WDI), 2024.

According to the World Development Indicator, Figure 2 This analysis highlights the economic performance trends of SADC nations in this study during the period under study. From data informed sources, Angola has been seen to have achieved the highest growth rate upturn (15%) in both 1991 and 2001. This was closely followed by Mozambique, that recorded a peak growth rate of around 13% in 2001. In 2010, Zambia saw its highest positive growth rate (10%), while Tanzania experienced a notable growth rate of around 7% in 1990. South Africa also registered a growth rate upturn in 2006 of approximately 7%. With the exception of Tanzania, virtually all other SADC countries included in the study experienced negative growth rates during the study period, particularly in 2020 result from the COVID pandemic. Specifically, Zambia in 1994 experienced an 8.6% downturn in growth rate, Mozambique in 1992 saw a decline of 7.5%, South Africa reported a 6% approximate decrease, while Angola in 2016 experienced a growth rate downturn of around 5.6%.

During this study period, the SADC nations selected exhibited varying growth rate averages. Mozambique's 6% growth average recorded was the highest, followed by Tanzania's 5.2%. Zambia demonstrated a 4.3% growth rate, while Angola achieved 3.56% positive growth rate. In comparison,

South Africa attained a 2% growth rate average upturn. These figures reflect the growth trends observed from the selected SADC countries between 1990 and 2023.

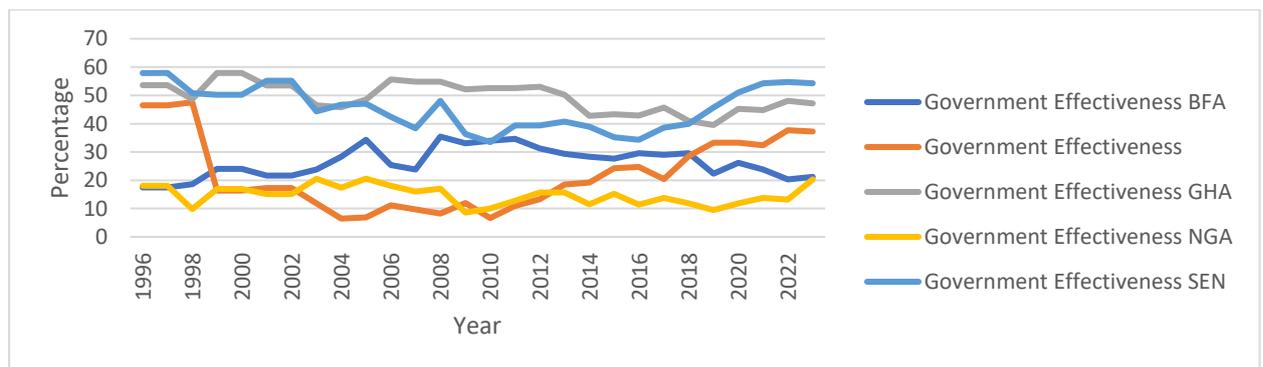


**Figure 3.** Trends of Regional and Global Growth Rates.

**Source:** World Development Indicators (WDI), 2024.

In Figure 3 it is shown that the trends observed in the economic performance of the nations selected in this study as well as that of the global economy from 1990 to 2023. The regions and the World economy followed almost the same growth path. The trends showed that there was a general decline in growth rate from 1991 to 1994. In 1991, the growth rates of ECOWAS, SADC, and the global economy were about 2.4%. The ECOWAS economy declined in growth from 2.4% in 1991 to -1.8% in 1992. The SADC economy declined from about 2.4% to 1.9% in 1993, and the global economy declined from about 2.4% to about 1.9% in 1993.

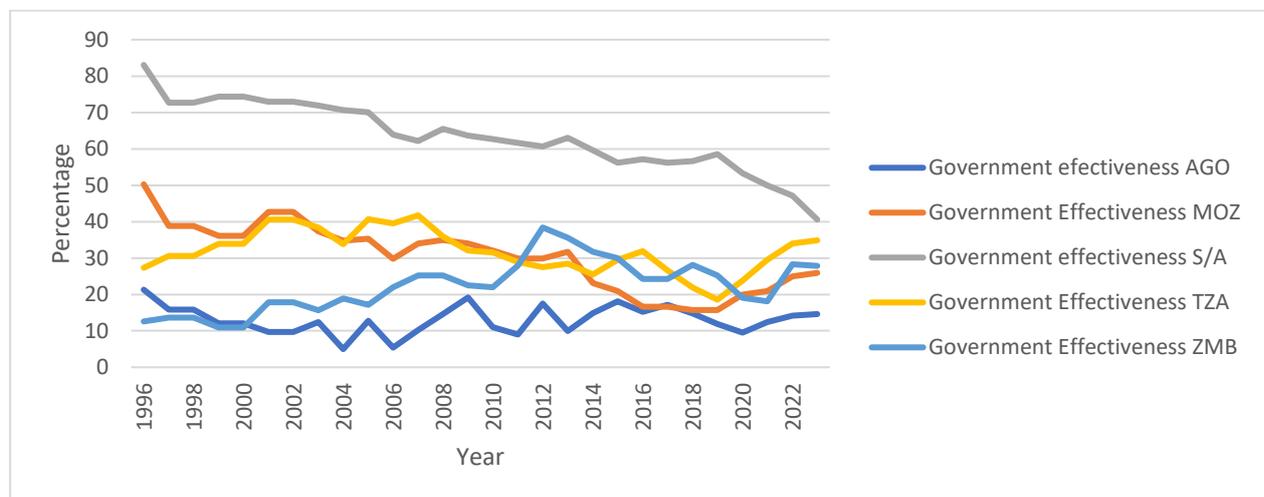
The regional (ECOWAS & SADC) and global economies experienced a decline in 2010 and 2020. The decline in 2010 could be attributed to the aftermath of the Great Recession, which was caused by several factors, including financial industry deregulation when the government failed to regulate the financial industry, allowing banks to lend mortgages to people who were not creditworthy, excessive risk-taking by financial institutions, excessive borrowing, and many more factors. The decline in 2020 could be linked to adverse effects of the COVID pandemic. ECOWAS region generally has had a regressive growth to the tune of 0.5% in 2020, SADC also witnessed a regressive growth rate of 2.7% in 2020, and the global economy had an adverse growth rate of 2.7% in 2020. The Global economic growth rate was negative in 2009 at 0.4%. Figure 3 showed that the ECOWAS region had its highest rate of growth at about 12% in 1997 during the period studied. The SADC region had its highest rate of growth (6.5%) in 2010 during the period of the study, and the world economy had its highest rate of growth (6.6%) in 2021. The average growth rate of the world economy was 3.4%, ECOWAS and SADC had 4.1% and 3.45% growth rate average respectively during the period under study. Based on the above, it became obvious that the regions (ECOWAS and SADC) and the world economy had different growth experiences. The differences can be linked to differences in the economic policy formulation and implementation strategy at regional and world levels.



**Figure 4** Trends of the Government Effectiveness in the ECOWAS nations selected for this study.

**Source:** World Development Indicators (WDI), 2024.

In Figure 4 it has been revealed that the flows of government effectiveness of each of the chosen ECOWAS nation in this study. Government effectiveness in the these countries varies. Nigeria posted the least government effectiveness among the selected ECOWAS countries at about 15% (14.82272), Côte d'Ivoire posted the next low figure of about 22% (21.96106%), followed by Burkina Faso at about 26% (26.29085). Next to Burkina Faso was Senegal at about 46% (45.73998). Ghana had an average of about 49% (49.49566). Ghana had the highest percentage of government effectiveness among the selected countries in ECOWAS for the study and during its period. Ghana's highest percentage of government effectiveness reflects its regulatory quality of about 47%. It means that government effectiveness has implications for its institutional regulatory quality.



**Figure 5** Trends of the Chosen SADC Countries' Government Effectiveness

Source: World Development Indicators (WDI), 2024.

In Figure 5, this study shows the of government effectiveness trends (in percentage ranking) of the chosen SADC countries for this study. It is shown that all SADC countries considered for the study had average government effectiveness of less than 50% except South Africa, with an average government effectiveness of about 63% (63.36695). This shows that government effectiveness in the SADC sub-region is low and below average. Angola had an average government effectiveness of about 13% (13.07664%), Mozambique had an average government effectiveness of about 30% (30.34628%), South Africa had an average of government effectiveness of about 63% (63.36695), Tanzania had an average of government effectiveness at about 32% (31.8631%), and Zambia had an average government effectiveness of about 22% (22.31796%). South Africa, the largest economy in SADC within the period studied, posed the highest government effectiveness of about 63% average.

### Empirical Literature Review

Throughout the years, scholars and economists have examined how institutional quality influences economic growth. The inquiry into the overlapping nuances between growth and institutional quality has been driven by the importance of the growth of the economy. In this study a number of research articles have been reviewed, in order to promote a better understanding of what impact quality of institutions have on growth of the economy.

Nathan et al. (2024) analyzed this relationship linking quality of institutions to growth of the economy in eighteen Asian developing nations between 2012 and 2020 using a fixed effect model. The study's results deciphered that regulations positively and significantly affected economic development. Contrarily, the property rights of the legal system, the size of the government, international trade, as well as money were statistically equal to zero (insignificant). To attain the long-term Development Goals, the structure provided by the General Assembly of the United Nations also prioritized the countries' institutional quality. The study recommended that regulations should be tightened in the Asian developing countries to promote the performance of the economy.

[Mohammed et al. \(2023\)](#) examined the impact that quality of institutions and economic inclusion has on the performance of economies in SSA. Their study concluded that economic inclusion has quite a favourable influence on growth of the economy in SSA, regardless of growth metrics that was analyzed. Additionally, the findings revealed institutional quality poses distinct effects on different metrics used to quantify economic growth. This suggests that the role that financial inclusion and institutions play ought to be prioritized in strategies for economic development.

[Hussen \(2022\)](#) conducted an analysis of how various phases of institutional quality impact growth of economies across SSA nations. In their study, they utilized a data set panel comprising 31 SSA nations between 1991 and 2015. They also employed Generalized Method of Moments estimation strategy (which is a two-step method). The result of their research revealed that institutions that promote investments, along with democratic and compliance institutions, significantly contribute to enhanced economic performance. Conversely, when the institutions that were taken into account, institutions that avoid conflict did not demonstrate substantial impacts on growth of economies. These results suggest that ongoing institutional reforms are pivotal for fast tracking economic growth in the region.

According to [Chakravorty \(2019\)](#), having explored the nuanced relationship of misconduct and the quality of institutions, specifically its effects on the economic performance of Nigeria. In their study the validity of "sand the wheels" versus "grease the wheels" hypotheses of corruption were tested using the Barrow-type endogenous growth model, an aspect often overlooked in prior studies. Their analysis, which drew upon time-series data (annual) from WDI, Transparency International (TI) and the Central Bank of Nigeria (CBN) between 1970 and 2020, employed an Autoregressive Distributed Lag (ARDL) technique to assess the interwoven impacts of corruption and quality of the institutions has on the performance of economies. The results indicated that the interaction of corruption and institutional quality has adverse effects on economic performance. This finding highlights the fragility of the quality of institutions in Nigeria, which is significantly compromised by widespread corruption and individual influences. Consequently, the performance of Nigeria's economy has been sluggish. This is possibly constrained by the prevalence of corruption and the fact that the frameworks of the nation's institution is quite weak. It is therefore crucial for policy initiatives to prioritize combatting corruption and enhancing the quality of institutions, as such measures could lead to beneficial outcomes for Nigeria's economic performance.

In Cameroon, [Adefeso & Aransi \(2022\)](#) have explored the influence that the quality of institutions has on economic performance by applying the ARDL model. Utilizing World Bank data that spans from 1996 to 2019. It was revealed in the study that variable related to controlling corruption definitely has a positive impact on economic growth in the short term. Notably, a one-point increase associated with corruption control level led to only a 0.57% upturn in the rate of growth of the economy. That notwithstanding, on the long run, analysis revealed that corruption adversely impacts economic growth. These findings reinforce the notion that corruption detracts from economic performance over time. Therefore, it is essential to implement policies aimed at combating corruption.

[Mohammad \(2021\)](#) deciphered the relationship existing between the quality of institutions and the growth of the economy from 1996 to 2017 in Jordan. Employing ARDL model, their study's practical deliveries revealed that a co-integration exists between growth of the economy and its determinants. Both on the long-term and the short-term, there was a statistically significant and positive correlation between economic growth and institutional quality. The implications of the policy derived from their research indicate that there should be a prioritization of the enhancement of quality of institutions across all facets to foster sustained growth of the economy by the Jordanian government.

[Gibogwe \(2022\)](#) employed ARDL techniques to examine the effect of the quality of institutions on the growth of Tanzania's economy between 1990 and 2021. Their results indicated that all modification terms in the models exhibiting a longterm relationship had the correct negatively skewed signs and values greater than one, suggesting that is a converging progression towards long-term equilibrium. The speed with which the aforementioned convergence occurred spanned between 15% and 106.6%

yearly. Additionally, quality of institutions demonstrated a noticeable positive longterm causal effect (recorded at 0.047) on Tanzania's economic growth. The study recommended strengthening institutions in Tanzania to bolster economic performance.

An investigation by [Mojeed et al. \(2023\)](#) on the influence of quality of institutions on the development of the economy of Nigeria in the 21st century, using data of annual time-series spanning between 2001 and 2019. In this study the researchers applied the ARDL model and discovered that the institutional quality (INSQ) had a noteworthy negative effect on economic growth. This negative and statistically significant error correction term indicated that economic growth has the potential to gradually revert to its path of long-term equilibrium in the case of any possible disequilibrium. Their study recommended enhancing a country's institutions quality through a robust campaign against corruption, has increased accountability as well as freedom of expression. Also, it improved regulatory authority, and enhanced government effectiveness via better selection processes in leadership.

[Mbulawa & Chingoiro \(2024\)](#) employed the two-step system, known as the Generalized Method of Moments (GMM), when analyzing the impact of the quality of institutions on Sub-Saharan African economic growth between 2006 and 2018. Their findings indicated notable improvements in the quality of institutions significantly enhancing economic output in the region. Furthermore, the study provided evidence that the effects that the quality of institutions has on output varies by geographical location of the countries within SSA. Notably, institutional quality was found to have more effectiveness in driving the growth of income in West African countries in comparison to those in Central and Eastern Africa. In addition, the results suggested that quality of institutions has variable influence of on economic growth, and this is based on the level of income of the countries. Specifically, enhancements in institutional quality were shown to be more beneficial for low-income economies than for middle-income ones. The authors recommended that Sub-Saharan African nations strengthen independent institutions responsible for tackling economic misconduct.

The investigation by [Hussen \(2025\)](#) on the 1996 to 2019 relationship between quality of institutions and Nigeria and Ghana economic growth, utilizing panel data. Their research concluded that measures of corruption control were particularly effective when accompanied by stricter penalties. They also recommended that the Ghanaian government focus on improving regulatory quality to foster economic growth. Ultimately, they advocated for both national governments to implement policies for re-engineering business process, supported by political will, will help to enhance government effectiveness and subsequently boost economic growth.

[E et al. \(2025\)](#) explored the directional implications of the quality of institutions on Nigeria's economic growth by examining the comprehensive money contract and the index of effective governance, utilizing time-series data (annual) between 1979 and 2018. In their study they used both Johansen Co-integration as well as Ordinary Least Squares (OLS) method to analyze the data. The OLS model indicated a statistically significant positive reaction of growth of the economy to quality of the institutions, whereas the index of effective governance displayed a statistically insignificant yet positive effect on the economy. Furthermore, empirical findings revealed that the growth of the economy responded both positively and negatively to the influences of domestic direct investments as well as foreign direct investments (FDIs), with significant effects noted. These outcomes underscore the urgent need for quality institutions that are capable of ensuring that both private and public enterprises operate efficiently to promote long-term development in Nigeria.

[Nathan et al \(2024\)](#) investigated the impact that quality of the institutions has on investments as well as the economic growth in Nigeria between 1990 and 2016. This research utilized time-series data (annual) obtained from the CBN Statistical Bulletin; the Freedom House and the Heritage Foundation. This study developed a functional model to examine the interdependency of quality of the institutions, investment, as well as economic growth, with the results gotten using Eigen Granger approach of the Error Correction Model. The findings showed that the quality of the institutions, as indicated by the index of corruption perception, portends a significance statistically and shows a

negative effect on both investment and even economic growth. In contrast, when quality of the institutions was evaluated in terms of efficiency of financial system and economic freedom, it demonstrated a statistically significant and positive influence on investment and growth of the nation's economy. Therefore, the study recommended that the government of Nigeria enhance the quality of its institutions to create a better favorable investment and economic development environment.

The investigation by [Nguyen et al. \(2018\)](#) elucidated the effects that the quality of institutions has on the growth of nation's economy from 2002 to 2015 across 29 developing countries, employing System Generalized Method of Moments (SGMM) as suitable estimators. Their research revealed a significance statistically and shows a positive relationship between the quality of institutions and growth of the economy. Moreover, institutional quality was found to hinder the beneficial impacts of FDIs and openness of trade has on the growth of the economy. Nonetheless, improvements in quality of the institutions could combat the challenges posed by openness of trade, particularly in sectors where FDIs aim towards enhancing their spillover effects.

## METHOD

### Data: Nature and Sources

This study used secondary annual data on economic growth (GDP growth rate, or GDPGR), capital (Gross Capital Formation, or GCF), labor (employment, or EMPL), institutional quality (government effectiveness, or GOVEFF), and inflation rate (INFL). The data were organized in a panel format due to the cross-sectional nature of the research. Sources included the [World Development Indicators \(2024\)](#) and local custodians of financial data, such as Central Banks and Statistical Bureaus of the Nations. The annual data spanned from 1990 to 2023. In this study, GDPGR served as the dependent variable representing growth of the economy, following the methodologies of [\(Felix & Ogieva, 2020; Gamette et al., 2024\)](#). The explanatory variables included capital, labor, government effectiveness, exchange rate, external debt, and inflation. While GDPGR, capital, and labor formed the core parameters of Neo-classical model of growth, the effectiveness of government was the main focus of this study, with the rate of inflation included as the control variable for the macroeconomic environment.

### Specification of Model

The framework for the study is modelled around the principles of neoclassical growth theory. This model suggests that a nation's growth is fundamentally piloted by the contributions of capital and labor. By understanding these key factors, we can gain pivotal insights into mechanisms that are capable of fostering economic development. The study specified one model in line with [Hussen \(2022\)](#) to analyze the effect of quality of institutions have on the performance of the economy in the chosen ECOWAS and SADC nations. The model is stated as follows:

$$GDPGR_{it} = \beta_0 + \beta_1 GCF_{it} + \beta_2 EMP_{it} + \beta_3 GOEF_{it} + \beta_4 INFL_{it} + \beta_5 EXCH_{it} + \beta_6 EXDBT_{it} + \mu_{it} \text{ -----} \\ \text{-----}(1.)$$

Where:

1. GDPGR stands for the Growth Rate of the Gross Domestic Product which is a proxy for economic growth,
2. GCF stands for the Gross Capital Formation, Employment, which is a proxy for capital
3. GOEF stands for the Institutional quality, proxy for government effectiveness
4. INFL stands for the Inflation rates
5. EMP stands for the proxy for labour
6. EXCH stands for the Exchange rates
7. EXDT stands for the Total external debt stock

8.  $i$  stands for the Individual countries in the chosen ECOWAS and SADC countries
9.  $t$  stands for the Time factor
10.  $\mu$  stands for the error term
11.  $\alpha$  stands for the parameters of variables

### Estimation Techniques

The Fixed Effect model, Random Effect model, and panel completely modified ordinary least squares (PFMOLS) (Triansyah et al., 2023; Ebenezer et al., 2017) were used to estimate the models provided for this investigation, as stated in equation 1. These methodologies are employed in the analysis of long panel data that includes observations of time series,  $t = 1, 2, \dots, T$  across various groups,  $i = 1, 2, \dots, N$ . In this study the volume of time-series observations ( $T$ ) is sufficiently large, allowing for the estimation of individual equations for each country, meaning the number of time-series observations ( $T$ ) exceeds the number of cross-sections ( $N$ ); thus,  $T > N$ . In the case of long panels ( $T > N$ ), the suitability of GMM estimation techniques is doubtful (Wooldridge, 2010). There are three possible states for the panel data: mixed behavior, unit root process  $[I(1)]$ , integrated of order zero  $[I(0)]$ , or stationary. Applying the Ordinary Least Squares, Fixed Effect, and Random Effect models to the panel data set does not significantly alter the order of integration (Verbeek, 2017). The need to handle any individual effects or heterogeneity in the panel data set is what motivated the selection of these techniques. Whereas random effect model examines changes in error variance component over time or among people, fixed effect model evaluates whether intercepts vary across or through groups or time periods.

The results obtained from fixed effect model and random effect model are validated using the panel completely modified ordinary least squares (PFMOLS). A co-integration estimation method called PFMOLS is intended to produce long-term parameter estimations for a model. A long-term interrelationship between the variables was revealed by the Johansen and Kao co-integration technique. Given the established long-term link between the variables, this estimating technique is also in line with the goals of the study. Im, Pesaran, and Shin, IPS (2003), a heterogeneous unit root testing technique, and Levin, Lin, and Chu, LLC (2002), a root procedure that is a homogeneous unit, were used to evaluate the variables for unit roots. To ascertain the data attributes, we ran unit root and co-integration tests on our panel data set.

## RESULTS AND DISCUSSION

### Descriptive Statistics

The models of estimation outlined in this research, as equation 1 described, was undertaken utilizing Fixed Effect model, Random Effect model, and PFMOLS (Ebenezer et al., 2017; Adekunle, 2025). These methodologies are employed to assess long panel data characterized by  $t = 1, 2, \dots, T$  time-series observations, across multiple groups,  $i = 1, 2, \dots, N$ . Given that the time-series observations number ( $T$ ) is considerably large, individual equations for each country can be estimated. According to this, there are more time-series observations ( $T$ ) than cross-sections ( $N$ );  $T > N$ . The application of GMM estimate techniques might not be appropriate when dealing with a long panel ( $T > N$ ) (Wooldridge, 2010). The panel data set may show a mixed pattern, follow the unit root process  $[I(1)]$ , or show stationary characteristics in integrated order zero  $[I(0)]$ . The Ordinary Least Squares, Fixed Effect, and Random Effect models can be implemented without regard to the sequence of integration in the panel data set (Verbeek, 2017).

The need to address any individual effects or heterogeneity in the panel data set is what drove the selection of these techniques. Whereas a random effect model looks at differences in the error variance components between people or time periods, a fixed effect model looks at whether intercepts vary between groups or periods. The results of the fixed effect model and random effect model are validated using the PFMOLS approach. Long-run parameter estimates within a model are

derived using the PFMOLS which is a co-integration estimation technique. A long-term link between the variables was revealed by the Johansen and Kao co-integration technique. Given the finding of a long-term correlation existing between the variables, this estimating method fits in almost perfectly with the objectives of the study.

The Levin, Lin, and Chu (LLC) technique (2002), which uses a homogeneous unit root procedure, and the Im, Pesaran, and Shin (IPS) method (2003), which uses a heterogeneous unit root testing procedure, were used in this study to conduct unit root tests. The goal of applying unit root testing and co-integration to our panel data set was to ascertain the data's statistical characteristics.

**Table 1.** The Group Descriptive Statistics of Variables

	<b>GCF</b>	<b>EXDBT</b>	<b>GDPGR</b>	<b>EMP</b>	<b>GOEF</b>	<b>EXCH</b>	<b>INFL</b>	<b>FDI</b>	<b>TOPN</b>
<b>Mean</b>	22.109	75.512	4.345	61.614	23.731	306.42	43.978	3.0381	54.615
<b>Median</b>	21.287	52.424	4.506	62.592	20.952	91.905	7.2803	1.5431	53.898
<b>Maximum</b>	56.395	581.11	15.32	85.434	83.060	2297.7	4145.1	40.167	135.27
<b>Minimum</b>	0.0000	0.0000	-23.98	0.0000	0.0000	0.0000	-3.2333	-10.038	0.0000
<b>Std. Dev.</b>	11.419	80.235	3.967	15.192	19.868	433.54	285.92	5.9446	24.686
<b>Skewness</b>	0.0463	2.4740	-1.162	-1.1708	0.5146	2.3300	11.708	3.3366	0.2877
<b>Kurtosis</b>	3.1416	11.339	10.91	6.6547	2.4201	9.8560	151.91	17.270	3.8383
<b>Jarq-Bera</b>	0.3952	1296.8	937.39	259.83	19.248	947.79	313389	3422.8	14.259
<b>Probability</b>	0.8206	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000000	0.0008
<b>Sum</b>	7318.3	24994	1438.2	20394	7855.0	10143	14557	1005.6	18078
<b>S. Sq. Dev.</b>	43031	21244	5195.1	76170	13026	62026	269787	11661	20110
<b>Observation</b>	331	331	331	331	331	331	331	331	331

The Fixed Effect model, Random Effect model, and panel completely modified ordinary least squares (PFMOLS) were used to estimate the models described for this study, as shown in equation 1 (Ebenezer et al., 2017; Marsono, 2022). Long panel data, which includes time-series observations,  $t = 1, 2, \dots, T$  over several groups,  $i = 1, 2, \dots, N$ , are analyzed using these techniques. There are enough time-series observations ( $T$ ) to allow for the estimation of separate equations for every nation. To put it another way,  $T > N$  because there are more time-series observations ( $T$ ) than cross-sections ( $N$ ). GMM estimate methods may not be appropriate for long panels ( $T > N$ ) (Wooldridge, 2010). The panel data may be in stationary form, follow the unit root process  $I(1)$ , be integrated of order zero  $I(0)$ , or show mixed features. When using the Ordinary Least Squares, Fixed Effect, and Random Effect models, the panel data's integration order is not a crucial consideration (Verbeek, 2017).

The need to handle potential individual effects or heterogeneity in the panel data led to the selection of these techniques. Whereas a random effect model examines changes in error variance components over time or among people, a fixed effect model assesses if the intercepts vary between groups or over time periods. The results obtained from the employed fixed effect model and random effect model are verified using the PFMOLS. The PFMOLS is a co-integration estimating method used to estimate a model's long-term parameters. A long-term link between the variables was revealed by the Johansen and Kao co-integration approach. Given the long-term correlation between the variables, this estimation method fits in nicely with the goals of the study.

The tests of Unit root were conducted using Levin, Lin, and Chu (LLC) method (2002) for assessment of unit root that are homogeneous as well as the Im, Pesaran, and Shin (IPS) method (2003) for heterogeneous unit root analysis. The implementation of co-integration and unit root testing on our panel dataset aimed to determine the data's properties.

### Correlation Coefficients

Table 2 displays the Pearson's pairwise correlation coefficients between the study's pair variables. The degree of correlation between two variables is shown by the coefficients.

**Table 2.** Results of Group Correlation Matrix

Variables	EMP	EXDBT	EXCH	GDPGR	GCF	GOEF	FDI	TOPN	INFL
GDPGR	0.272	-0.168	0.062	1	0.147	0.129	0.106	0.197	0.049
GCF	0.316	-0.065	0.205	0.147	1	0.125	0.181	0.441	-0.227
EMP	1	0.158	0.291	0.272	0.316	-0.065	0.158	0.114	0.013
EXDBT	0.158	1	-0.191	-0.168	-0.065	-0.225	0.409	0.137	0.268
GOEF	-0.065	-0.225	0.029	0.129	0.125	1	0.047	0.239	-0.099
EXCH	0.291	-0.191	1	0.062	0.205	0.029	-0.152	-0.215	-0.093
FDI	0.158	0.409	-0.152	0.106	0.181	0.047	1	0.281	0.057
INFL	0.013	0.268	-0.093	0.049	-0.227	-0.099	0.057	-0.250	1
TON	0.114	0.137	-0.215	0.197	0.441	0.239	0.281	1	-0.250

It is evident that there exists a positive association between gross capital creation and the growth rate when concentrating on the explanatory variable that this study is interested in, which are the GDPGR of the chosen ECOWAS and SADC nations. Despite the relatively low coefficients (14%), this suggests a direct relationship and weak correlation. Except for the foreign debt variable, all other independent variables show a positive correlation with the GDP growth rate. In conclusion, a review of the different correlation coefficients reveals that the majority of them fall below 0.50. This implies that multicollinearity, which is usually linked to highly correlated variables, may not be a problem for regression models generated using these variables.

### Unit Root Tests

Table 3 presents the results of the panel unit root test.

**Table 3.** Results of Unit Root Tests

Variables	LLC	IPS	ADF/Fi	PP	LLC	IPS	ADF/Fi	PP	Remark
	Test/ (Prob.)	Test/ (Prob.)	Test (Prob.)	Fisher/ (Prob.)	Test/ (Prob.)	Test/ (Prob.)	Test/ (Prob.)	Fisher/ (Prob.)	
Results of Level Test					Results of First Difference Test				
GFCF	0.93459 /0.8250	0.33634 /0.6317	20.6394 /0.4186	25.6343 /0.1782	3.68098 /0.0001	3.97832 /0.0000	48.777/ 0.0003	121.74/ 0.0000	I(1)
GDPGR	-3.6809/ 0.0001	- 3.9783/ 0.0000	48.7776 /0.0003	121.74/ 0.0000	N/A	N/A	N/A	N/A	I(0)
EMP	28.0644 /1.0000	0.3698/ 0.6443	18.609/ 0.5473	240.56/ 0.5123	- 11.2495 /0.0000	- 9.5393/ 0.0000	123.78/ 0.0000	173.31/ 0.0000	I(1)
EXCH	3.56870 /0.9998	2.91204 /0.9982	19.8289 /0.4687	16.3025 /0.6977	- 3.92266 /0.0000	- 6.12222 /0.0000	93.4405 /0.0000	137.179 /0.0000	I(1)
FDI	- 3.25713 /0.0006	- 2.29327 /0.0109	34.0292 /0.0259	59.0663 /0.0000	N/A	N/A	N/A	N/A	I(0)
GOEF	1.11940 /0.8685	1.38322 /0.9167	11.0663 /0.9445	154.88/ 0.0000	16.2371 /0.0000	- 12.5806 /0.0000	155.913 /0.0000	2633.91 /0.0000	I(1)
INFL	- .473103 /0.0000	- 5.44725 /0.0000	67.6287 /0.0000	84.0618 /0.0000	N/A	N/A	N/A	N/A	I(1)
EXTDEBT	- 0.41681 /0.3384	- 0.0041/ 0.5016	15.0909 /0.7712	16.5418 /0.6825	- 7.63948 /0.0000	- 3.67671 /0.0001	50.4705 /0.0002	127.52/ 0.0000	I(1)
TOPN	- 1.6895/ 0.0456	- 1.87239 /0.0306	32.8092 /0.0354	33.0337 /0.0335	N/A	N/A	N/A	N/A	I(0)

The results of this study's four tests showed that the study's variables had varying degrees of integration. Gross capital formation (GCF), employment (EMPL), external debt (EXTDEBT), government effectiveness (GOEF), exchange rate (EXCH), as well as the inflation rate (INFL) were found to be integrated of order one, while the growth rate of GDPGR, FDI, and trade openness were found to be integrated of order zero. The unit root panel tests thus suggest that the variables have a heterogeneous order of integration.

### Tests of Panel Co-integration

To determine if there was a long-term link existing between the variables, the Kao co-integration tests was employed in this study. Table 4 shows the findings of the co-integration test.

**Table 4.** Results of Kao Cointegration Test

	T-Statistic	Probability
ADF	-4.388926	0.0000
Residual Variance	17.42128	
HAC Variance	6.177314	

**Table 5. Model Estimation Results: Institutional Quality and Growth Nexus**

Dependent Variables: GDPGR

Sample: 1990-2023

Variable	Fixed Effect Model		Random Effect Model		Panel Fully Modified OLS	
	Coefficient	t-statistic/Prob	Coefficient	t-statistic/Prob	Coefficient	t-statistic/Prob
GCF	-0.046498	-1.878341/ 0.0613	-0.023447	-1.073917/ 0.2837	-0.059338	-2.040552/ 0.0422
EMP	0.039891	1.934651/ 0.039	0.075553	4.846946/ 0.0000	0.214071	2.642379/ 0.0087
GOEF	0.023896	1.948118/ 0.0523	0.012328	1.130122/ 0.2593	0.037253	2.546487/ 0.0114
TOPN	0.040577	3.388379/ 0.0008	0.041413	3.950712/ 0.0001	0.044020	0.057546/ 0.0204
INFL	0.003233	4.126761/ 0.0000	0.002760	3.669813/ 0.0003	0.003358	0.832645/ 0.0002
EXCH	-0.000363	-0.442173/ 0.6587	-6.20E05	-0.108365/ 0.9138	-4.34E-05	-0.045839/ 0.9635
EXDBT	-0.022022	-6.714233/ 0.0000	-0.016209	-5.691807/ 0.0000	-0.019583	-5.143414/ 0.0000
C	1.764145	1.270345/ 0.2049	-1.227040	-1.211936/ 0.2264		
R <sup>2</sup>	0.270746		0.188805		0.275358	
R <sup>2</sup>	0.233586		0.171225		0.237741	
F-st.	7.286052		10.73970			
P.(F-st.)	0.000000		0.0000			
DW sta.	1.639202		1.4775			

### Model Selection Criteria

**Table 6. Hausman's Test Results**

Null Hypothesis: Random Effect Model is Appropriate

Test Summary	Model
Chi-Sq. Statistic	23.023003
Chi-Sq. d.f	7
Probability	0.0017

In the study of model estimation results, the Hausman test was used as the criterion to choose between the fixed effect and even the random effect models (Nguyen et al., 2018). Table 4.6 presents the results of the Hausman tests carried out in the study. From the results, the fixed effect model was thought to be more appropriate for model estimation in this study. The Hausman test results and the corresponding probability values led to this conclusion in this study. In cases where the likelihood of the cross-section Chi-Sq. statistic was 5% or below, and the null hypothesis that supported the random effect model was rejected. On the other hand, when the likelihood of the cross-section Chi-Sq. statistic was greater than 5%, we maintained the null hypothesis, which backed the random effect model (Mark et al., 2022).

### Discussion of Model Estimation Results

The coefficient, sign, and significance of the p- values corresponding to the variables in this study were used to evaluate the distinct effects that the independent factors have on the dependent variable. The results posit that growth in the selected ECOWAS and SADC states was favorably and considerably impacted by institutional quality (government effectiveness). This outcome aligns with the findings reported by Nguyen et al. (2018) in their analysis covering 29 emerging nations. The results are consistent with economic theory and established empirical evidence. The estimated coefficient for government effectiveness was 0.023896, with a p-value of approximately 0.0523. The results showed at the 1% level that effectiveness of government had a highly substantial impact on the pace of growth of the economy in the chosen SADC and ECOWAS nations. This implies that during the study period, growth in these regions was positively impacted by good governance.

Additionally, during the study period, trade openness, inflation, and employment all showed a favorable and significant influence on economic growth at the 1% level. On the other hand, it was discovered that whereas gross capital formation had a negative and considerable impact on growth in the chosen ECOWAS and SADC countries throughout the study period, the exchange rate had a negative and negligible effect on economic growth. Furthermore, results of the fixed effect model are corroborated by the Fully Modified OLS results shown in Table 4.5's columns 6 and 7.

The coefficient of determination (R-square), which measures how well all of the explanatory variables in the model explained the systematic variations in dependent variable, GDP growth rate (GDPGR), was estimated to be 27%, according to the empirical results obtained in the fixed effect model estimation. Furthermore, as Andolfatto (2008) points out, the comparatively low R-squared value is not even a major worry because heterogeneity effects might occasionally make the coefficients in panel data studies appear low. GDPGR and all of the model's explanatory variables appear to be significantly correlated, according to the F- statistic (7.286052) and the associated p-value (0.00000). There was little chance of autocorrelation in the calculated model, according to the Durbin-Watson statistic of 1.639202. The coefficient, sign, and size of p- values of the independent variables were also used to determine their respective influences on the explanatory variable. The findings showed that growth in the chosen ECOWAS and SADC states was positively and significantly impacted by institutional quality, or government efficacy. This outcome supports the findings of a study conducted in 29 developing nations by Nguyen et al. (2018). The findings were consistent with empirical data and economic theory. With a probability value of 0.0523, the predicted coefficient of government effectiveness was 0.023896. The findings demonstrated that the pace of economic growth in the chosen ECOWAS and SADC countries is significantly influenced by government effectiveness at the 1% level. It means that effective governance had positive growth implications in the chosen ECOWAS and SADC states within the study period.

During the study period, economic growth was positively and significantly (1% level) impacted by employment, inflation, and trade openness. In the chosen ECOWAS and SADC nations during the study period, gross capital formation had a negative and large impact on growth, but the exchange rate had a negative and negligible impact. Additionally, the Fully Modified OLS results in Table 4.5's columns 6 and 7 confirm the fixed effect model's findings.

The coefficient of determination (R-square) was estimated to be 27%, according to the empirical results of the fixed effect model estimation. This means that only roughly 27% of the systematic variations in the dependent variable, GDPGR, were captured by all of the explanatory variables in the model. Similarly, as [Andolfatto \(2008\)](#) pointed out, the low R-squared value is not a significant problem in the outcome; heterogeneity effects can cause panel data studies to have low coefficients. GDPGR and all of the model's explanatory variables have a significant association, according to the F-statistic (7.286052) and the associated p-value (0.00000). The calculated model does not appear to have any autocorrelation, according to the Durbin-Watson statistic of 1.639202.

### **The Econometric Reliability Test**

The Durbin-Watson (DW) statistic, which measures between zero (0) and four (4), was used in the study to check for autocorrelation in the estimated models. Autocorrelation is considered negligible when the Durbin-Watson Statistic is two (2). Positive autocorrelation is indicated when the Durbin-Watson statistic of less than two ( $DW < 2$ ), while negative autocorrelation indicated then the DW statistic greater than two ( $DW > 2$ ). All four models had an estimated DW statistic of approximately 2, indicating that the estimated model in this study lacked autocorrelation ([Ishioro, 2023](#); [Adekunle, 2025](#)). These findings thus suggest that decisions on government efficacy and the growth of the economy can be made using the estimated models.

### **Summary of Key Findings**

Key findings in this study are Institutional quality (government effectiveness) had a positive impact on the economic growth in the chosen ECOWAS and SADC states in these states. This result finally implies that government effectiveness contributed significantly to growth of the economy during the study period.

## **CONCLUSION**

The study looked into how institutional quality affected economic growth in a few SADC and ECOWAS nations. According to the study, the chosen ECOWAS and SADC nations' economic growth was positively impacted by institutional quality. According to the findings, the ECOWAS and SADC nations should implement efficient economic policies to improve the quality of their institutions.

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## **AUTHOR CONTRIBUTION STATEMENT**

The author solely contributed to all stages of this research, including conceptualization, research design, data collection, analysis, interpretation of results, and manuscript preparation. The author reviewed and approved the final version of the manuscript and takes full responsibility for the accuracy, integrity, and originality of the work.

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