ANTECEDENTS OF ECONOMIC GROWTH IN KENYA

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ABSTRACT

FDI, exports, gross capital formation and government expenditure play a significant role in shaping Kenya's economic landscape. This has been through contributing to job creation, developing the infrastructure, and the expanding the industries. It has attracted investors from various sectors, such as manufacturing, services, and natural resources, due to Kenya's strategic location, which is favorable business environment, and robust economic policies. Kenya has experienced steady growth in FDI inflows over the years. However, the magnitude of these inflows has remained relatively modest compared to other developing countries. The Gross capital formation, is vital for the economic growth this is through investments in infrastructure, machinery. In Kenya, efforts to increase gross capital formation have focused on sectors like manufacturing, agriculture, and transportation to enhance competitiveness and stimulate economic growth. Exports also play a vital role in economic growth by generating foreign exchange earnings, promoting international trade, and creating opportunities for local industries to expand and diversify. Kenya has actively pursued export-oriented policies, particularly in sectors like agriculture, horticulture, and manufacturing, to leverage its comparative advantages and enhance its participation in global markets. Government expenditure, especially in strategic sectors like education, healthcare, and infrastructure, has a significant impact on economic growth. Effective utilization of public funds can create an enabling environment for private sector activities, attract investments, and enhance productivity. The Kenyan government has allocated substantial resources to key sectors with the aim of enhancing human capital development, improving physical infrastructure, and creating an investor-friendly environment. Research studies have provided mixed findings regarding the impact of FDI on economic growth in developing countries. Some studies have shown a positive relationship between FDI inflows and GDP growth, highlighting the contributions of FDI to capital formation, technology transfer, job creation, and productivity improvement. However, challenges and concerns related to enclave development, limited spill-over effects, and the quality and sustainability of FDI remain. The current study has found that Foreign Direct Investment (FDI) inflows, gross capital formation, exports, and government expenditure pose a significant impact on Economic Growth.

Keywords: Foreign Direct Investment inflows, Gross capital Formation, Exports, Government Expenditure, Gross Domestic Product growth.

1.0 INTRODUCTION

Foreign Direct Investment (FDI) has gained increasing significance as a vital source of capital, technology transfer, and economic growth for countries around the world. In Kenya, FDI has played a pivotal role in shaping the country's economic landscape. This has been through

efforts such as creating jobs and developing infrastructure (UNCTAD, 2018). According to research by UNCTAD, (2018), Africa has consistently faced a lower influx of foreign direct investment (FDI) compared to other global regions. This situation has led the continent to lag in terms of FDI attraction when compared to other parts of the world. Despite the country's positive attributes such as development progress and market potential, the magnitude of FDI inflows into Kenya has not reached the levels seen in other developing countries.

According to a report by UNCTAD (2006), Kenya experienced a steady growth in foreign direct investment (FDI) starting from the 1970s. This growth was attributed by relatively high level of development, improved infrastructure, larger market size, sustained economic growth, and openness to foreign direct investment. In the early 1970s, FDI inflows into Kenya were relatively low, at around $10 million per year. However, these inflows reached a peak of $80 million in 1979-80.

Despite the implementation of economic reforms and improvements in the business environment, Kenya's FDI inflows remained relatively modest compared to other developing countries. In addition, the country's exports has been declining with the highest percentage of exports per GDP been in 1993. In addition, the GDP growth was highest in 1977 while the Gross capital formation has been declining since 1977. The government expenditure stabilized at approximately 12% of GDP since 2013 to 2021.

From 1997 to 2001, net FDI accounted for approximately 0.6% of Kenya's GDP, which was considerably lower than the African average of 1.9%. By 2003, FDI inflows represented only 7.5% of Kenya's GDP, while the African average stood at 25.3% and the average for developing countries was 31.5% (UNCTAD, 2006).

Gross capital formation has also been critical in shaping the country's economic prospects. This, has been through investment in infrastructure, machinery, and equipment which are essential for improving productivity in the country. In Kenya, efforts to increase gross capital formation have targeted agriculture which is the country's backbone in terms of production. It has also targeted other sectors such as manufacturing, and transportation. However, despite the raising efforts to raise the gross capital formation in the country, majority of the capital will be used in repaying the external debt in future (Ndemange, 2018).

Exports play a vital role in economic growth by generating foreign exchange earnings, promoting international trade, and creating opportunities for local industries to expand and diversify. Kenya has been actively pursuing export-oriented policies, particularly in sectors such as agriculture, horticulture, and manufacturing, to leverage its comparative advantages and enhance its participation in global markets. According to International Cement Review (2023), the Kenya's cement export will increase after the reduction in tax and increased importation tax per clinker.

Government expenditure, particularly in strategic sectors such as education, healthcare, and infrastructure, has a significant impact on economic growth. Effective utilization of public funds can create an enabling environment for private sector activities, attract investments, and enhance productivity. The Kenyan government has been allocating substantial resources to key sectors, aiming to enhance human capital development, improve physical infrastructure, and create an investor-friendly environment (Gachunga, 2019). Between the years 1985 and 2010,

the performance of the Kenyan economy displayed a mixed pattern, characterized by varying GDP growth trends (Mosiori, 2014). Over this period, the economy experienced several declining GDP growth rate between 1985 to 2002, increasing growth from 2002 to 2007, fall in 2008 to 2009 due to global recession, and recovery in 2010 (Republic of Kenya, 2011).

This article intends to contribute to the existing knowledge on foreign investment, Gross capital formation, Exports, government expenditure and its implications on GDP. Multinational corporations investing in the country often bring advanced technologies, management practices, and technical expertise, which can have a positive impact on local industries. This transfer of knowledge and skills can lead to improved productivity, product quality, and innovation capacity within domestic firms.

2.0 OBJECTIVE OF THE STUDY

2.1 General objective

The current study sought to examine the impact of FDI, Exports, government expenditure, and gross capital formation on Economic development in Kenya.

2.2 Specific objective

Specifically, the study sought to:

  i.   To establish the impact of FDI on the Kenya's economic growth.
 ii.   To find out the impact of gross capital formation on economic growth.
iii.   To examine the impact of exports of gods and services on economic growth.
 iv.   To explore the impact of government expenditure on economic growth.

2.3 Research questions

This study aimed at answering the following questions:

  i.   What is the impact of FDI on economic Growth in Kenya?
 ii.   What is the impact of GCF on economic growth in Kenya?
iii.   What is the impact of exportation of goods and services on the economic growth in Kenya?
 iv.   What is the impact of Government expenditure on economic growth in Kenya?

3.0 LITERATURE REVIEW

Gachunga, (2019), conducted a quantitative analysis to examine the relationship between foreign direct investment (FDI) and economic growth in Kenya. The study established there is a positive impact of FDI on economic growth. The author cited technology transfer, job creation, and improved infrastructure as key benefits. The study found that there is statistically significant and positive relationship between FDI and economic growth in Kenya.

Duru & Ezenwe, (2020) explored the relationship between exports and economic growth in Nigeria using empirical analysis. Data was collected from 1980-2016. The authors highlight

the consensus that exports play a crucial role in promoting economic growth by stimulating production, generating foreign exchange, and attracting investments. The study found that exports impact the economic growth. The authors further indicated that the relationship is also influenced by trade openness, technological advancements, and domestic policies.

Adebayo et al., (2020) did a study on the impact of major macroeconomic variables on foreign direct investment in Nigeria. The study used ARDL technique to capture the coreleation between FDI infows and its determining indicators. The findings of the study indicate a positive correlation between FDI and the trade openness. Similary, the study found a positive correlation between FDI and gross capital formation, exports, and inflation. FDI was found to have a negative relationship between FDI and GDP growth. The authors recommended lowering of tax rate to improve the interest in working and production.

Olowe (2022) investigated the relationship between foreign direct investment (FDI) and capital formation in Nigeria, with a focus on achieving pro-poor growth. The study used augmented Dickey Fuller test and the autoregressive distributed lag model to find the long-run relationship between FDI and capital formation. The author found that FDI positively impacts capital accumulation. The study also identifies government expenditure, gross domestic product, and interest rate as factors that positively impacted capital formation. However, exchange rate and inflation rate have a negative correlation on private investment. The study emphasizes the need for the government to attract foreign investment to stimulate capital formation. It also recommends the financial sector, particularly the central bank, to mobilize investible funds through high saving deposit rates and accessible lending rates to support private investors.

Acquah, & Ibrahim, (2020) did a study Foreign direct investment, economic growth and financial sector development in Africa. The study used annual panel data spanning 1980–2016 from 45 African countries. The study found a positive relationship between FDI and GDP growth rate. The study indicates that there is a 0.161% increase in the economic growth when FDI raises by 1 unit. The study concludes that the impact of FDI is great when proxied by GDP per capita.

Zaman et al., (2021), did a study on the significance of IT exports, capital formation, foreign direct investment (FDI), and trade openness in the context of countries involved in the Belt and Road Initiative (BRI). Panel data was collected from 2013 to 2018. Given that the number of moment conditions exceeded the number of parameters, the study used two-step system generalized method of moments (GMM) technique on the sample. The researchers discovered that IT exports, capital formation, FDI, and trade openness, play pivotal roles in fostering long-term economic growth in nations. These factors serve as crucial components that contribute to the sustainability and stability of countries' economies. The results suggested that FDI and gross capital formation had a substantial positive and significant impact on economic growth. However, IT exports and trade openness were found to have a negative, and insignificant impact on the economic growth.

Dinh et al. (2019) conducted a literature review on the relationship between foreign direct investment (FDI) and economic growth in developing countries. They examined studies that utilized the Vector Error Correction Model (VECM) and Fully Modified Ordinary Least Squares (FMOLS) methodologies. Their review encompassed research conducted between

2000 and 2014. The findings from their literature review revealed mixed results regarding the impact of FDI on economic growth. In the short run, the majority of the studies showed that FDI had a detrimental impact on economic growth. This suggests that FDI inflows may have immediate adverse consequences for the receiving economies. However, in the long run, most of the studies indicated a positive relationship between FDI and economic growth.

Callado Munoz et al., (2022), examined the relationship between arms exports, labor productivity, and economic growth. The study employed a connectedness-measurement technology rooted in modern network theory to determine the size and direction of spillover effects among these variables. The findings of the study indicate that shocks originating from arms exports have direct spillover impact on labor productivity and GDP growth, while the reverse relationship is not captured by the available data.

4.0 THEORETICAL REVIEW

4.1 Slow growth model

The model was formulated by Robert Solow and Trevor Swan 1956. Model offers insights into how capital accumulation influences economic expansion and has played a pivotal role in shaping modern macroeconomic analysis. Solow-Swan model contends that economic growth is influenced by the accumulation of physical capital (Solow, 1956). It provides a framework to explore how the interaction between capital, labor, and technology shapes a nation's trajectory towards steady-state growth. The model's central proposition is that an increase in capital stock contributes to economic growth. However, the model suggests that this growth is subject to diminishing returns. In the early stages of capital accumulation, the marginal productivity of capital is high, leading to rapid economic expansion. However, as the capital stock grows, the incremental output produced by each additional unit of capital diminishes, ultimately leading to a steady-state equilibrium where output and capital growth stabilize.

Potential output is the maximum level an economy can produce with its available resources and technology. The gap between actual and potential output represents the degree of economic inefficiency or slack in the system. This gap can be addressed by policies that aim to increase capital accumulation, improve technological progress, or enhance labor productivity. One of the model's significant contributions is its ability to explain differences in economic growth rates between countries. Countries with lower initial capital levels can experience rapid growth as they converge towards the steady-state equilibrium. However, over time, diminishing returns to capital lead to a slowdown in growth rates.

4.2 Keynesian Economics theory

John Maynard Keynes introduced his revolutionary ideas in his landmark work "The General Theory of Employment, Interest, and Money," published in 1936. Keynes argued that economies can experience prolonged periods of underemployment and economic instability due to insufficient aggregate demand. The theory suggests that fluctuations in aggregate demand, composed of consumer spending, business investment, government spending, and net exports, lead to variations in economic activity (Keynes, 1937). During periods of economic downturn, the theory suggests that a decrease in aggregate demand result in reduced output, lower employment, and even deflation. The theory advocates the role of government

intervention in stabilizing economies. Keynes proposed that during times of economic depression, governments should increase their spending to boost aggregate demand. This injection of demand stimulates economic activity, creates jobs, and ultimately lead to recovery. Additionally, Keynes emphasized the significance of monetary policy, suggesting that central banks should control interest rates to encourage borrowing and spending.the theory introduced the multiplier effect which suggests that an raise in government spending can impact the economic output than the initial spending itself. For instance, if the government invests in public infrastructure, this spending not only directly contributes to economic activity but also triggers a chain reaction of increased consumption and investment.

4.3 Conceptual Framework

The conceptual framework serves as a comprehensive integration of existing literature, elucidating the way the study variables are interconnected. The foundation of this study is derived from existing knowledge, prior research, and the perspectives and observations of previous scholars regarding the Economic growth. Furthermore, a conceptual framework serves to illustrate the anticipated outcomes of the research. Hence, within this context, the conceptual framework elucidates the way independent variables exert their impact on the Economic growth. The relationship is indicated in the Figure 1 below.
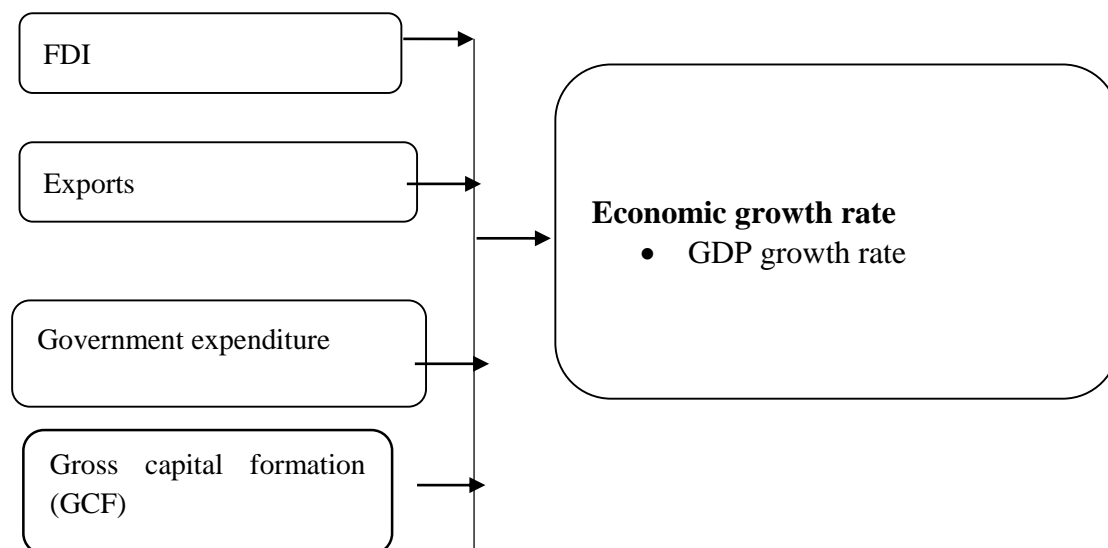
5.0 METHODOLOGY

This study employed a explanatory research design and a time series data was used. According to Rahi, (2017) an explanatory research design seeks to identify the causes and impact of a phenomenon and explain the relationships between variables and report on a situation as it is. This was appropriate for the study since the researcher sought to find the causes and on economic growth in Kenya. The study incorporates a comprehensive dataset spanning from 1975 to 2021, providing a wide-ranging analysis of the variables and trends under investigation. By using a longer time, the study benefits from a larger sample size, it allows for a more robust examination of the relationship between the variables of interest. The inclusion of data from

multiple decades enhances the study's ability to capture long-term patterns, assess changes over time, and provide a more comprehensive understanding of the topic under investigation. The extensive sample size provides a solid foundation for drawing meaningful conclusions and making informed policy recommendations based on the analysis of the data. The data utilized in this study was collected from the World Bank Databank. The World Bank Databank serves as a reputable and comprehensive source of economic and development data from various countries across the globe. It provides a wide range of indicators related to different aspects of the economy, such as GDP, and foreign direct investment. Further, the World Bank Databank was used because it enables comparability and consistency in the analysis. It provides standardized data collection methods and definitions for the variables of interest. This allows for meaningful comparisons and reliable conclusions to be drawn from the data.

VECM was used to analyze the long-term relationships and short-term dynamics among the study variables. It was suitable for the study since the variables were cointegrated, meaning they have a long-run equilibrium relationship. Variance decomposition was used to understand the extent to which each study variable contributes to the forecast error variance of other variables. This helped assess the degree of interdependence and spillover effects within the system. Impulse response analysis was used to examine the dynamic response of variables in a system to an exogenous shock in one of the variables. It helped understand the short-term impact and propagation of shocks throughout the system. The Granger causality test helped identify the direction of causality between variables. It indicated that past values of GDP growth rate provide useful information for predicting the future values of the Government expenditure.

The regression model will be:

$$Y_{it} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \epsilon_t$$

Where:

X_{1t} represents FDI in period t.

X_{2t} represent exports for period t

X_{3t} represent govt expenditure in period t

X_{4t} represent GCF in period t

Data processing and analysis

The study considered normality, multicollinearity, heteroscedasticity, autocorrelation, stationarity, granger causality and Johansen cointegration. Normality of study variables was examined by using statistical method and graphical representation. The dominant statistical test on normality test used in the study was Jarque Berra test. The null hypothesis is that the data is normally distributed while the alternative hypothesis is that the data is not normally distributed. If the p value is less than 0.05, then data is not normally distributed and requisite transformation should be carried out prior to classical modelling. The Multi-collinearity was tested using variance inflation factors if its VIF exceeded 10 then the predictor variables were highly

correlated. During estimation, the problem is not lack of multi-collinearity but rather its severity. Presence of a correlation of more than 0.8 indicates severe multi-collinearity. The regression model was done to find whether there was significant relation between the study's variables. If the p-value is greater than 0.05, the variable was insignificant while if it was below 0.05 it was significant.

6.0 FINDINGS AND DISCUSSION

6.1 Descriptive Statistics

The average value of FDI is 0.739%. on the other hand, the data points vary by 0.714 from the mean. The data is skewed to the right since the skewness coefficient is 1.681. The distribution of FDI has positive kurtosis (kurtosis = 2.467), suggesting that it has heavier tails and a more peaked distribution compared to a normal distribution. The null hypothesis that the data is normally distributed was rejected since the p-value of the Shapiro-Wilk test is less than 0.001.

The exports of goods and services has an average value of 23.438 while the government expenditure and the Gross Capital Formation (GCF) has an average of 15.774, and 20.395 respectively. Only the GCF is skewed to the right, indicating that exports and government expenditures is located at the left-hand side of the normal distribution table. The GCF is normally distributed since the p-value for Shapiro Wilk test is greater than 0.05.

The average GDP growth is 3.937% and the data points vary, by 2.460% from the mean. The distribution of GDP growth is slightly negatively skewed (skewness = -0.023), indicating a slightly longer left tail. The distribution of GDP growth has negative kurtosis (kurtosis = -0.661), suggesting it has lighter tails and is less peaked compared to a normal distribution. The p-value of the Shapiro-Wilk test for GDP growth is 0.599, indicating that the distribution is likely to be approximately normal.

Table 1: Descriptive statistics

	FDI	Exports	Govt expenditure	GCF	GDP growth
Mean	0.739	23.438	15.774	20.395	3.937
Std. Deviation	0.714	6.685	2.487	3.201	2.46
Skewness	1.681	-0.062	-0.207	0.459	-0.023
Std. Error of Skewness	0.347	0.347	0.347	0.347	0.347
Kurtosis	2.467	0.044	-1.325	0.266	-0.661
Std. Error of Kurtosis	0.681	0.681	0.681	0.681	0.681
Shapiro-Wilk	0.807	0.978	0.922	0.974	0.98
P-value of Shapiro-Wilk	< .001	0.522	0.004	0.372	0.599
Minimum	0.005	9.64	11.742	15.004	-0.799
Maximum	3.095	38.904	19.803	29.789	9.454

6.2 Diagnostic tests

Table 2: Multicollinearlity

	Tolerance	VIF
FDI	0.739	1.353
Exports	0.521	1.92
Govt expenditure	0.429	2.33
Gcf	0.889	1.124

From the table 2 above, the FDI variable has a tolerance of 0.739, which indicates that it has a moderate level of collinearity with the other independent variables in the model. The VIF value of 1.353 suggests that FDI has a low level of multicollinearity, as it is below the threshold of 5.

The Exports variable has a tolerance of 0.521, indicating a relatively higher level of collinearity compared to FDI. The VIF value of 1.920 suggests that Exports also has a low level of multicollinearity. The Govt expenditure variable has a tolerance of 0.429, which indicates a relatively higher degree of collinearity. The VIF value of 2.330 suggests that Govt expenditure has a moderate level of multicollinearity. The Gcf variable has a tolerance of 0.889, indicating a lower level of collinearity compared to Govt expenditure. The VIF value of 1.124 suggests that Gcf (% of GDP) has a low level of multicollinearity.

6.3 Autocorrelation

$$\text{Durbin-Watson d-statistic}(\ 5,\ \ 47) = 1.997014$$
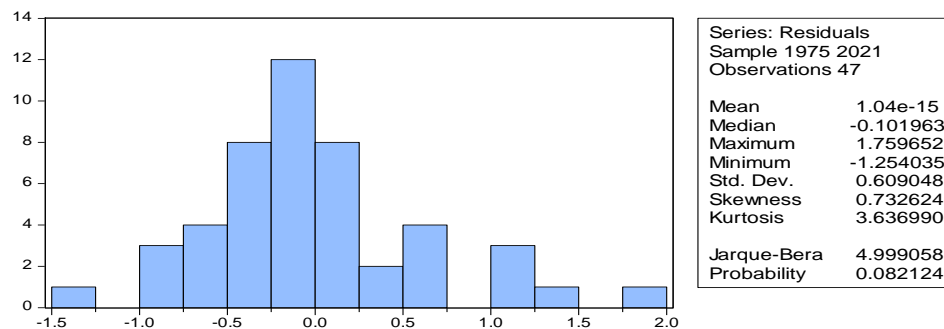
Figure 2: Durbin Watson test

According to the figure 2 above, there is no autocorrelation in the data since the Durbin Watson test is 1.997.

6.4 Normality

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. jb residuals
 Jarque-Bera normality test:  3.434 Chi(2)  .1796
 Jarque-Bera test for Ho: normality:
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Figure 3: Normality test

Further, regression modelling assumes the normality of error term. This was examined through use of Jarque Berra tests whose null hypothesis stated that the error term was normally distributed. Figure 3 depicts that the error term was not normally distributed since the p value was greater than 0.05.

6.5 Regression analysis

Even though the study's data was time series in nature. The examination of impact of FDI, Exports, Gross Capital Formation, and Government expenditure on the GDP growth was examined through ordinary least squares method. After the model was fitted, its robustness was assessed by conducting diagnostic tests, including tests for multicollinearity, autocorrelation, and normality of the error term.

The results in Table 3 have an R squared of 0.24; this indicates that 24% of the changes in GDP growth rate was explained by FDI, Exports, GCF, and government expenditure, while the remaining percentage was associated with other aspects not included in the study. Further, the model has an f statistic of 3.08 with p value < 0.05. This depicts that the OLS model reveals that the variables have a significant impact on Economic growth in Kenya.

Further, the impact of macroeconomic variables on GDP growth rate had mixed findings. FDI had no statistically significant impact on economic growth. The variable had a coefficient of 0.443 indicating that FDI has a weak and positive relationship with GDP growth rate. In contrast exports and constant term have negative and not statistically significant impact on Economic growth rate in Kenya. There is a impact a weak, positive, and insignificant relationship between government expenditure on the GDP growth. Only the Gross Capital Formation had a weak, positive, and significant impact on the GDP growth rate.

Table 3: Regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.443	0.539	0.822	0.416
EXPORTS	-0.062	0.069	-0.899	0.374
GOVT_EXPENDITURE	0.067	0.203	0.330	0.743
GCF	0.335	0.110	3.052	0.004

C	-2.827	2.888	-0.979	0.333
R-squared	0.240	Mean dependent var		3.937
Adjusted R-squared	0.167	S.D. dependent var		2.460
S.E. of regression	2.245	Akaike info criterion		4.556
Sum squared resid	211.680	Schwarz criterion		4.752
Log likelihood	-102.056	Hannan-Quinn criteria.		4.630
F-statistic	3.308	Durbin-Watson stat		1.710
Prob(F-statistic)	0.019			

6.6 Timeseries Analysis

Since the data violated some regression assumptions and was time series in nature. Time series analysis was applied to examine the impact of exports, GCF, FDI and Government expenditure on the GDP growth in Kenya.

6.7 Stationarity Test

Stationarity of the variables was examined by using Augmented Dickey Fuller (ADF) test. The null hypothesis stated that the variables were non-stationary (presence of unit roots) while the alterative hypothesis assumed that there were stationary (no unit roots). Results in Table 4 indicates that GDP growth rate, Exports, and Government expenditure were stationary at levels. While Gross capital formation, and Foreign Direct Investment were stationary at levels.

Table 3: Stationarity test

	At levels			At first difference		
	T	CV	Sig	T	CV	Sig
Gross Domestic Product growth rate	-4.61	-3.58	0.05	-5.26	-3.58	0.00
Exports	-1.19	-3.58	0.67	-6.31	-3.58	0.00
Government expenditure	-1.03	--3.58	0.73	-6.52	-3.58	0.00
Gross capital formation	-3.67	-3.58	0.00			
Foreign Domestic Investment	-5.25	-3.58	0.00			

6.8 Johansen Cointegration Test

Cointegration test was carried out to examine presence of long run relationship between FDI, Exports, GCF, and Government expenditure on GDP growth rate in Kenya. The study has a null hypothesis that there is no cointegration. Results in Table 5 depicts that there are at most 1 cointegration. Hence, the Vector Error Corrected Model (VECM) was applied in examination

of the impact of exports, FDI, Government expenditure, and Gross capital formation on GDP growth in Kenya. The presence of cointegration supports use of VECM

Table 5: Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.669472	96.28545	69.81889	0.0001
At most 1	0.481383	46.46754	47.85613	0.0671
At most 2	0.216549	16.92099	29.79707	0.6459
At most 3	0.114756	5.938902	15.49471	0.7028
At most 4	0.010033	0.453769	3.841466	0.5005

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

6.9 Optimal Number of Lags

Selection of the optimal number of lags was guided by final prediction error, Schwarz information criterion, Hannan-Quinn information criterion and Akaike information criterion. These indicated the optimal number of lags to be 2. Hence, all variables under examination were lagged once.

Table 6: Optimal Number of Lags

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-468.955	NA	2578.748	22.04440	22.24919	22.11992
1	-379.117	154.6040	127.5470	19.02871	20.25745*	19.48183*
2	-350.724	42.25918*	114.3901*	18.87090*	21.12360	19.70162
3	-329.785	26.29579	157.2691	19.05977	22.33642	20.26810
4	-323.626	6.302310	493.8294	19.93609	24.23670	21.52202

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

6.10 Granger Causality

Results in Table 6 below of granger causality indicates that GDP growth rate has unidirectional causality with Government expenditure. It was notable that Government expenditure have either unidirectional or no causality with GDP growth rate.

Table 7: Granger Causality

Null Hypothesis:	F-Statistic	Prob.
FDI does not Granger Cause GDP_GROWTH	0.04258	0.9584
GDP_GROWTH does not Granger Cause FDI	0.95448	0.3936
EXPORTS does not Granger Cause GDP_GROWTH	0.14600	0.8646
GDP_GROWTH does not Granger Cause EXPORTS	1.73249	0.1898
GOVT_EXPENDITURE does not Granger Cause GDP_GROWTH	0.02984	0.9706
GDP_GROWTH does not Granger Cause GOVT_EXPENDITURE	3.04373	0.0588
GCF does not Granger Cause GDP_GROWTH	1.89054	0.1642
GDP_GROWTH does not Granger Cause GCF	2.19449	0.1247
EXPORTS does not Granger Cause FDI	1.46200	0.2439
FDI does not Granger Cause EXPORTS	2.72100	0.078
GOVT_EXPENDITURE does not Granger Cause FDI	3.07702	0.0571
FDI does not Granger Cause GOVT_EXPENDITURE	1.73008	0.1903
GCF does not Granger Cause FDI	0.26701	0.767
FDI does not Granger Cause GCF	1.08561	0.3474
GOVT_EXPENDITURE does not Granger Cause EXPORTS	4.23249	0.0215
EXPORTS does not Granger Cause GOVT_EXPENDITURE	0.68367	0.5106
GCF does not Granger Cause EXPORTS	0.88206	0.4218
EXPORTS does not Granger Cause GCF	1.33444	0.2748
GCF does not Granger Cause GOVT_EXPENDITURE	0.06440	0.9377
GOVT_EXPENDITURE does not Granger Cause GCF	2.62499	0.0849

6.11 VECM model

Since there were 1 cointegration the study adopted VECM to examine the impact of exports, FDI, Gross capital formation and Government expenditure on GDP growth rate. All variables were lagged once which was the optimal number of lags. The resultant equation is as follows:

Equation 1: VECM Equation

Equation: D(FDI) = C(13)*(GDP_GROWTH(-1) +

2.13547078606*FDI(-1) -

3.23210611069*D(EXPORTS(-1)) + 25.6752104946

*D(GOVT_EXPENDITURE(-1)) +

0.50866863379*GCF____OF_GDP_(

-1) - 14.8314116078) + C(14)*D(GDP_GROWTH(-1)) +

C(15)

*D(GDP_GROWTH(-2)) + C(16)*D(FDI(-1)) +

C(17)*D(FDI(-2)) + C(18)

*D(EXPORTS(-1),2) + C(19)*D(EXPORTS(-2),2) + C(20)

*D(GOVT_EXPENDITURE(-1),2) +

C(21)*D(GOVT_EXPENDITURE(

-2),2) + C(22)*D(GCF____OF_GDP_(-1)) +

C(23)*D(GCF____OF_GDP

_(-2)) + C(24)

Observations: 43

R-squared	0.477509	Mean dependent var	-0.005325
Adjusted R-squared	0.292109	S.D. dependent var	0.914730
S.E. of regression	0.769619	Sum squared resid	18.36173
Durbin-Watson stat	2.161608		

Table 8: VECM Results

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.015140	0.024509	-0.617749	0.5376
C(2)	-0.244513	0.191310	-1.278095	0.2031
C(3)	-0.233679	0.190315	-1.227854	0.2214
C(4)	-0.101697	0.548022	-0.185572	0.8530
C(5)	-0.429531	0.565142	-0.760042	0.4484

C(6)	-0.108582	0.117525	-0.923903	0.3570
C(7)	0.055087	0.115019	0.478938	0.6327
C(8)	0.159484	0.586246	0.272042	0.7860
C(9)	0.704055	0.442607	1.590702	0.1137
C(10)	0.200505	0.166864	1.201609	0.2313
C(11)	-0.171678	0.169462	-1.013074	0.3126
C(12)	-0.039811	0.390573	-0.101930	0.9189
C(13)	-0.010472	0.007429	-1.409544	0.1607
C(14)	0.033869	0.057991	0.584046	0.5600
C(15)	0.128136	0.057689	2.221152	0.0278
C(16)	-0.565064	0.166119	-3.401564	0.0009
C(17)	-0.237001	0.171308	-1.383474	0.1685
C(18)	-0.054614	0.035625	-1.533020	0.1273
C(19)	-0.036005	0.034865	-1.032694	0.3034
C(20)	0.014764	0.177706	0.083082	0.9339
C(21)	-0.177077	0.134165	-1.319847	0.1888
C(22)	-0.061066	0.050581	-1.207294	0.2292
C(23)	-0.005434	0.051368	-0.105778	0.9159
C(24)	-0.034049	0.118392	-0.287596	0.7740
C(25)	0.088286	0.029197	3.023819	0.0029
C(26)	-0.316515	0.227902	-1.388817	0.1669
C(27)	-0.507346	0.226717	-2.237796	0.0267
C(28)	0.603174	0.652843	0.923919	0.3570
C(29)	-0.157716	0.673238	-0.234266	0.8151
C(30)	-0.481095	0.140005	-3.436278	0.0008
C(31)	-0.225992	0.137019	-1.649344	0.1011
C(32)	-1.417718	0.698379	-2.030012	0.0441
C(33)	-1.903977	0.527265	-3.611044	0.0004
C(34)	-0.349887	0.198780	-1.760170	0.0804
C(35)	-0.103477	0.201875	-0.512576	0.6090
C(36)	0.079860	0.465279	0.171638	0.8639

C(37)	-0.025966	0.009258	-2.804565	0.0057
C(38)	0.055338	0.072268	0.765722	0.4450
C(39)	-0.031268	0.071892	-0.434924	0.6642
C(40)	0.369769	0.207018	1.786170	0.0760
C(41)	-0.065063	0.213485	-0.304764	0.7610
C(42)	-0.081717	0.044396	-1.840656	0.0676
C(43)	-0.056844	0.043449	-1.308298	0.1927
C(44)	-0.078886	0.221458	-0.356213	0.7222
C(45)	-0.036096	0.167197	-0.215890	0.8294
C(46)	0.016130	0.063034	0.255890	0.7984
C(47)	0.036277	0.064015	0.566694	0.5717
C(48)	-0.050704	0.147541	-0.343661	0.7316
C(49)	-0.011980	0.022911	-0.522893	0.6018
C(50)	0.269230	0.178835	1.505466	0.1342
C(51)	0.063005	0.177905	0.354148	0.7237
C(52)	0.361211	0.512286	0.705097	0.4818
C(53)	0.800405	0.528290	1.515086	0.1318
C(54)	0.067373	0.109862	0.613250	0.5406
C(55)	0.140420	0.107519	1.306002	0.1935
C(56)	-0.568658	0.548018	-1.037662	0.3010
C(57)	-0.203988	0.413745	-0.493028	0.6227
C(58)	-0.571162	0.155983	-3.661697	0.0003
C(59)	-0.227610	0.158412	-1.436823	0.1528
C(60)	-0.169952	0.365104	-0.465489	0.6422

Determinant residual covariance	16.24593

Equation: D(GDP_GROWTH) = C(1)*(GDP_GROWTH(-1) +

2.13547078606*FDI(-1) - 3.23210611069*D(EXPORTS(-1)) +

25.6752104946*D(GOVT_EXPENDITURE(-1)) + 0.50866863379

*GCF(-1) - 14.8314116078) + C(2)*D(GDP_GROWTH(

-1)) + C(3)*D(GDP_GROWTH(-2)) + C(4)*D(FDI(-1)) + C(5)*D(FDI(-2)) +

C(6)*D(EXPORTS(-1),2) + C(7)*D(EXPORTS(-2),2) + C(8)

*D(GOVT_EXPENDITURE(-1),2) + C(9)*D(GOVT_EXPENDITURE(-2),2)

+ C(10)*D(GCF (-1)) + C(11)*D(GCF-(2))

+ C(12)

Observations: 43

R-squared	0.315875	Mean dependent var	0.014067
Adjusted R-squared	0.073121	S.D. dependent var	2.637203
S.E. of regression	2.538955	Sum squared resid	199.8351
Durbin-Watson stat	1.973564		

Equation: D(FDI) = C(13)*(GDP_GROWTH(-1) + 2.13547078606*FDI(-1) -

3.23210611069*D(EXPORTS(-1)) + 25.6752104946

*D(GOVT_EXPENDITURE(-1)) + 0.50866863379*GCF

-1) - 14.8314116078) + C(14)*D(GDP_GROWTH(-1)) + C(15)

*D(GDP_GROWTH(-2)) + C(16)*D(FDI(-1)) + C(17)*D(FDI(-2)) + C(18)

*D(EXPORTS(-1),2) + C(19)*D(EXPORTS(-2),2) + C(20)

*D(GOVT_EXPENDITURE(-1),2) + C(21)*D(GOVT_EXPENDITURE(

-2),2) + C(22)*D(GCF1)) + C(23)*D(GCF

_(-2)) + C(24)

Observations: 43

R-squared	0.477509	Mean dependent var	-0.005325
Adjusted R-squared	0.292109	S.D. dependent var	0.914730
S.E. of regression	0.769619	Sum squared resid	18.36173
Durbin-Watson stat	2.161608		

Equation: D(EXPORTS,2) = C(25)*(GDP_GROWTH(-1) + 2.13547078606

*FDI(-1) - 3.23210611069*D(EXPORTS(-1)) + 25.6752104946

*D(GOVT_EXPENDITURE(-1)) + 0.50866863379*GCF

-1) - 14.8314116078) + C(26)*D(GDP_GROWTH(-1)) + C(27)

*D(GDP_GROWTH(-2)) + C(28)*D(FDI(-1)) + C(29)*D(FDI(-2)) + C(30)

*D(EXPORTS(-1),2) + C(31)*D(EXPORTS(-2),2) + C(32)

*D(GOVT_EXPENDITURE(-1),2) + C(33)*D(GOVT_EXPENDITURE(

-2),2) + C(34)*D(GCF(-1)) + C(35)*D(GCF

_(-2)) + C(36)

Observations: 43

R-squared	0.637860	Mean dependent var	0.161697
Adjusted R-squared	0.509359	S.D. dependent var	4.318014
S.E. of regression	3.024586	Sum squared resid	283.5917
Durbin-Watson stat	2.192832		

Equation: D(GOVT_EXPENDITURE,2) = C(37)*(GDP_GROWTH(-1) +

2.13547078606*FDI(-1) - 3.23210611069*D(EXPORTS(-1)) +

25.6752104946*D(GOVT_EXPENDITURE(-1)) + 0.50866863379

*GCF (-1) - 14.8314116078) + C(38)

*D(GDP_GROWTH(-1)) + C(39)*D(GDP_GROWTH(-2)) + C(40)*D(FDI(

-1)) + C(41)*D(FDI(-2)) + C(42)*D(EXPORTS(-1),2) + C(43)

*D(EXPORTS(-2),2) + C(44)*D(GOVT_EXPENDITURE(-1),2) + C(45)

*D(GOVT_EXPENDITURE(-2),2) + C(46)*D(GCF(-1)) +

C(47)*D(GCF(-2)) + C(48)

Observations: 43

R-squared	0.580359	Mean dependent var	-0.061982
Adjusted R-squared	0.431454	S.D. dependent var	1.271986
S.E. of regression	0.959103	Sum squared resid	28.51624
Durbin-Watson stat	2.012051		

Equation: D(GCF) = C(49)*(GDP_GROWTH(-1) +

2.13547078606*FDI(-1) - 3.23210611069*D(EXPORTS(-1)) +

25.6752104946*D(GOVT_EXPENDITURE(-1)) + 0.50866863379

*GCF(-1) - 14.8314116078) + C(50)

*D(GDP_GROWTH(-1)) + C(51)*D(GDP_GROWTH(-2)) + C(52)*D(FDI(

-1)) + C(53)*D(FDI(-2)) + C(54)*D(EXPORTS(-1),2) + C(55)

*D(EXPORTS(-2),2) + C(56)*D(GOVT_EXPENDITURE(-1),2) + C(57)

*D(GOVT_EXPENDITURE(-2),2) + C(58)*D(GCF(-1)) +

C(59)*D(GCF(-2)) + C(60)

Observations: 43

R-squared	0.536339	Mean dependent var	-0.220691
Adjusted R-squared	0.371815	S.D. dependent var	2.994511
S.E. of regression	2.373394	Sum squared resid	174.6229
Durbin-Watson stat	1.591069		

6.12 Variance Decomposition

The study findings in Figure 5 indicate that variance due to shocks was 100% initially and it declines with notable changes in response to GDP growth rate, exports, Government expenditure, GCF, and Foreign Direct Expenditure.
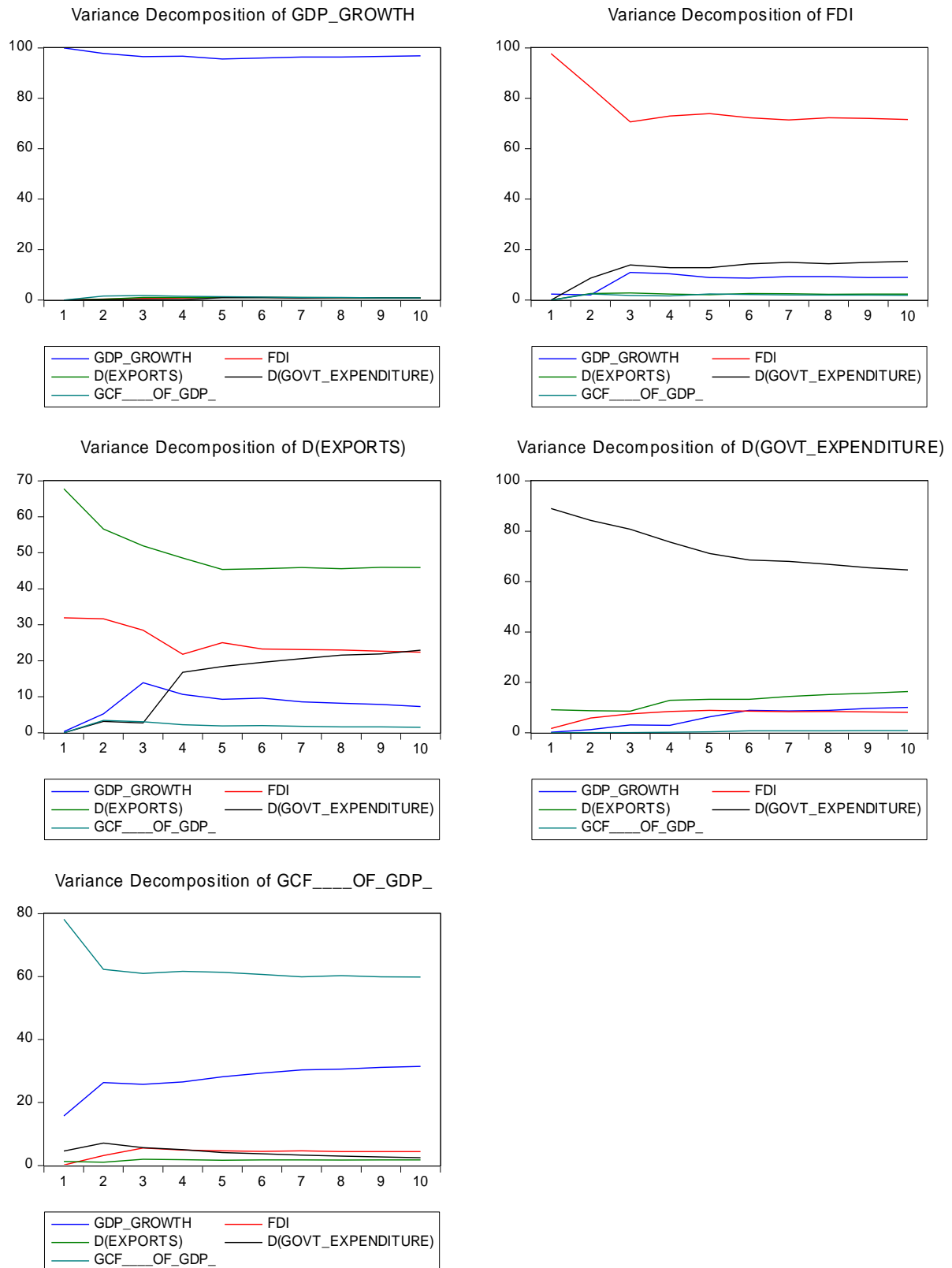
Figure 2: Variance Decomposition

6.13 Impulse response

According to Figure 6 below, a one standard deviation shock to GDP growth rate causes significant decreases in the variable from period 2.5 to 1.5. Further, a standard deviation shock on FDI, exports, government expenditure, and Gross Capital Formation also declined. The increase peaks in period 10.
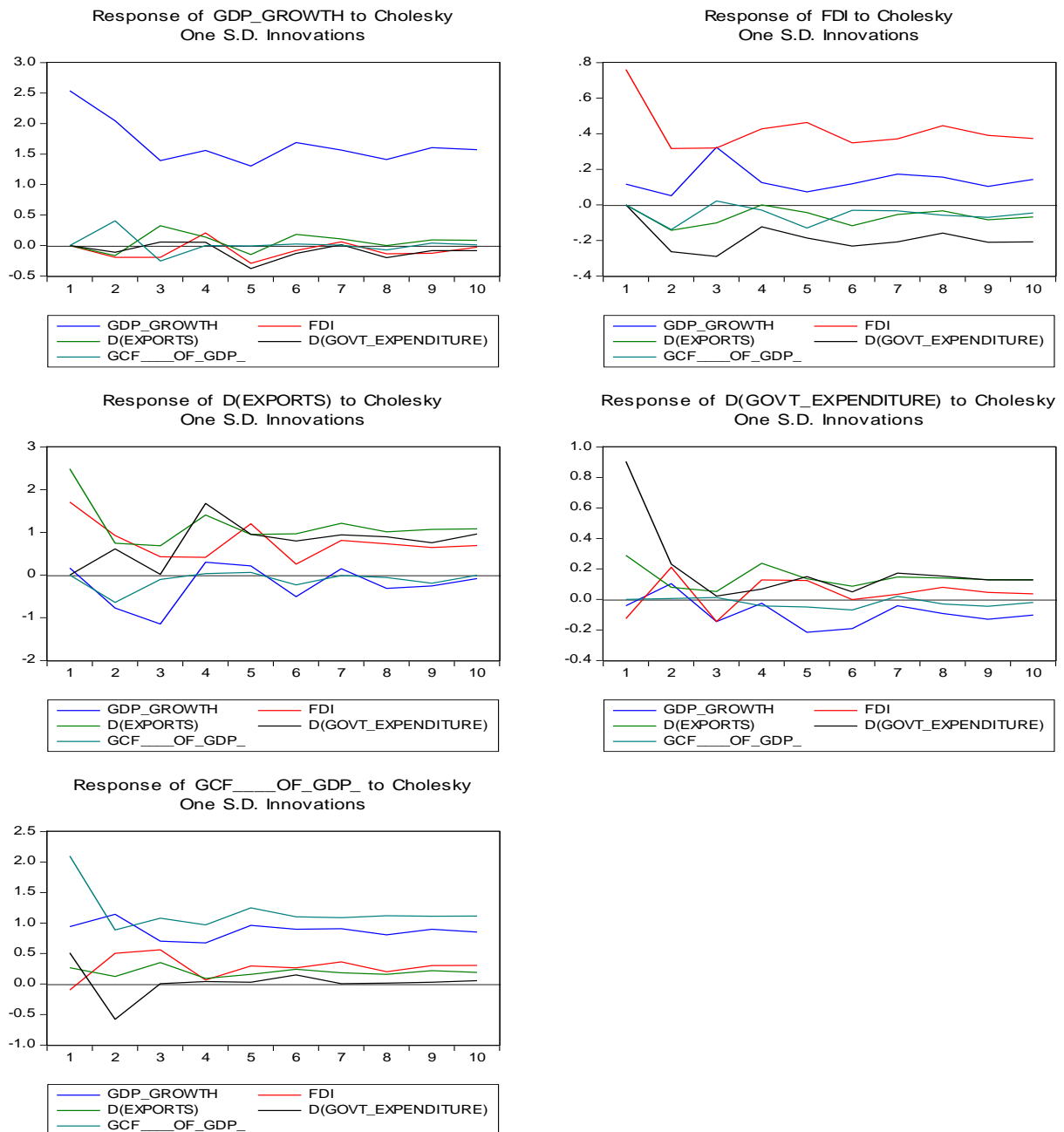

Figure 3: Impulse response

7.0 DISCUSSION

The study findings were in line with a study by Pasara & Garidzirai, (2020) who alluded that gross capital formation has a positive and significant relationship with economic growth. The study supported Amjed & Shah, (2021) since the purchase of machinery expands production capacity. Similar findings were reported in Nath's study (2009) which focused on 13 transition economies in Central and Eastern Europe, as well as the Baltic region, during the period 1991-2005. Naguib's (2012) also supports the study findings of no significant relationship between FDI and economic growth. Belloumi's (2014) centered on Tunisia's economic trajectory from 1970 to 2008. The study also found no significant relationship between FDI and economic growth.

The results suggests that investments in physical capital, such as machinery and infrastructure, play a crucial role in stimulating economic growth in Kenya. Contrary to Aslan & Altinoz, (2019), who found that Gross Capital formation had causality on economic growth, the study found only government expenditure to have causality. The study found that FDI had a positive coefficient but was not statistically significant in explaining GDP growth. This result is consistent with the study by Iqbal et al (2012) who found a positive and insignificant relationship between FDI and economic growth. The coefficient for exports was negative, indicating a negative relationship with GDP growth. However, similar to FDI, the relationship was statistically significant. These results are in line with Ronit & Divya, (2014) who found that shocks in exports affected the GDP growth. Further, the finding contradicts the study by Eryiğit, (2012) who found a positive and significant relationship between exports and economic growth. The coefficient for government expenditure was positive, suggesting a positive relationship with GDP growth. However, the variable was statistically insignificant. This finding is inconsistent with previous studies such as Dao, (2012), who found a significant positive relationship between government expenditure and economic growth.

8.0 CONCLUSION

The findings of the study found that FDI, exports, and Government expenditure have a insignificant impact on GDP growth rate. However, Gross Capital formation had a significant impact on the economic growth. Therefore, there is need for continuous monitoring of FDI, exports, capital formation and government expenditure to optimize odds of improving the rate of economic growth. Since, there were some with positive correlation, there is need for alignment of monetary and fiscal policies to improve a countries economy. Further, the study found that as Capital formation increases, the level of economic growth raises.

9.0 RECOMMENDATION

Foreign Direct Investment (FDI.

- Simplify and streamline investment procedures to attract more investors.
- Offer incentives such as tax breaks or special economic zones to encourage foreign investors.
- Strengthen investor protection laws to ensure their interests are safeguarded.
- Gross Capital Formation.
- Invest in infrastructure projects that facilitate trade, transportation, and communication.
- Promote education and skill development to enhance human capital.

- Encourage private sector participation in infrastructure development through Public-Private Partnerships (PPPs).

9.1 Exports.

- Diversify export products to reduce dependency on agricultural products.
- Enhance trade facilitation and reduce trade barriers.
- Provide support to local industries to improve their competitiveness in the global market.

9.2 Government Expenditure.

- Prioritize spending on sectors with high multiplier effects, such as infrastructure, education, and healthcare.
- Ensure transparent allocation and management of public funds to prevent corruption and wastage.

9.3 Political Stability.

Political stability is a fundamental prerequisite for economic growth and investor confidence. The disruption caused by post-election demonstrations and violence can deter investment and hinder economic progress.

- Strengthen democratic institutions and promote a culture of peaceful elections.
- Implement effective conflict resolution mechanisms to address election-related disputes.
- Enhance security measures during election periods to safeguard lives and property.

9.4 Other Considerations

Strengthen the rule of law and ensure an independent judiciary to provide a stable legal environment for businesses.

Foster a conducive business environment by reducing bureaucracy and improving the ease of doing business.

Invest in research and innovation to drive technological advancements and diversify the economy.

Encouraging Gross Capital Formation (GCF) by promoting investment in physical capital and implementing public-private partnerships and infrastructure projects can stimulate economic growth.

Both private organizations, Government and public institutions should implement structural reforms such as improving the business environment, reducing bureaucracy.

The government should strengthen the rule of law and invest in human capital development so as to improve the rate of economic growth. Therefore, government should monitor and evaluate

policy interventions through data collection and analysis to facilitate evidence-based decision-making and enable necessary adjustments for sustained economic growth.

9.5 Areas of further research

Future study should explore more in-depth analysis on the specific factors that drive economic growth in different sectors or regions would enhance our understanding of the dynamics involved. This could include exploring the impact of factors such as technological innovation, human capital development, and institutional frameworks on economic growth. The use of aggregated data at the national level overlooks the variations within regions or specific sectors. Hence, future studies should incorporate more granular data and conduct case studies to capture the nuances and heterogeneity of the economy.

9.6 Limitations of study

The study aimed at exploring the impact of FDI, exports, GCF, and Government expenditure on economic growth. However, the data on all variables was available in time series aspects. Thus, there might have duplication of macroeconomic aspects. In addition, the study did not factor in time invariant characteristics and political risks which have for years proved to have a significant impact on the economic growth in Kenya.

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