Analysis of the Relationship Between Trade Openness and Economic Growth in Kenya

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Abstract
Given that policy makers and civil society in Kenya disagree on the contribution of openness to economic growth. It is therefore not clear whether trade openness does or does not promote growth in the case of Kenya. The purpose of this study was therefore to analyze relationship between trade openness and economic growth in Kenya. This study was modeled on Adam Smith's absolute advantage theory. The study used correlation research design based on annual time series data spanning 30 years from 1980 – 2009. Data was obtained from the World Development Indicators. The study used Vector Error Correction Mechanism to integrate long run and short run dynamics and Granger causality for directional causality. The results indicated significant positive effect and unidirectional causality between trade openness and economic growth in Kenya, with coefficient of 0.98 implying that 1 % increase in trade openness increases economic growth by 0.98% respectively. Economic growth is significantly error correcting at 34.7% annually. The study concluded that in the long run trade openness promote growth in Kenya. In view of this, the study recommends that the government of Kenya to continue pursuing trade openness policies to increase trade volumes to enhance economic growth.
Keywords: Trade Openness, Economic Growth, Kenya

1.0 Introduction
1.1 Background of the Study
While theory would indicate that trade and growth are positively correlated, it is not clear from empirical perspectives whether or not trade is a proximate determinant of economic growth (Capolupo & Celi, 2008). In the world economy since 1950 there has been a massive liberalization of world trade, first under the auspices of the General Agreement on Tariffs and Trade (GATT), established in 1947, and now under the auspices of the World Trade Organization (WTO) which replaced the GATT in 1993 (Thirlwall, 2000). Regional Trade Agreements (RTAs) have also become very fashionable in the form of Free Trade Areas and Customs Unions (Emeka, 2010). Trade openness has led to a massive expansion in the growth of world trade relative to world output, while world output (or GDP) has expanded fivefold, the volume of world trade has grown 16 times at an average compound rate of just over 7 percent per annum (Emeka, 2010). It is difficult, if not impossible, to understand the growth and development process of countries without reference to their trading performance (Thirlwall, 2000).

Between the early 1960's and the early 1980's, many African countries operated highly interventionist trade regimes on both import and export sides. On the import side, trade was characterized by restrictive import licensing systems, and tight foreign exchange controls. From the export side, substantial implicit and explicit taxes, as well as the prohibition of certain export items and other non-tariff barriers were common features of the trade regimes (Yahya et al., 2013). Trade as a share of Gross Domestic Product (GDP) for Sub-Saharan Africa (SSA) averaged 45.0 % in 1980/1981 as compared to 50.4 % in 2000 /2001, Africa's share in world exports averaged about 6 per cent in 1980 and its share of world imports averaged about 4.6 per cent in 1980 (United Nations, 2003). Omolo (2011) argues that Trade openness can take different forms; it can be preferential, such as regional trading agreements which are specific to countries or a region like the East African Community (EAC) customs union, or the Common Market for East and Southern Africa (COMESA). Trade openness can either be unilateral and in most cases it is non-discriminatory, since it is applied by the customs authority for all goods and services entering its territory and was undertaken under the Structural Adjustment Programs (SAPs) of the World Bank and the International Monetary Fund (IMF) (Omolo, 2011).

Omolo (2011) further asserted that from Independence in 1963 to 1979, Kenya's main economic objective was to protect small industries in order for them to be able to compete in the global market. However, the country suffered economic shocks due to the oil crisis and the break-up of the East African Community which led to macroeconomic instability. In the 1960s and 1970s, GDP growth fluctuated from 23 percent to minus 5 percent, the result of a variety of factors, including world oil crisis in the early 1970s and the collapse of the East African Community in 1977 (Omolo, 2011). The country approached the World Bank and IMF for support in order to restore macroeconomic stability and revive economic growth. Several trade reforms were undertaken under the SAPs of the World Bank and IMF that resulted in trade openness with these programmes being carried out in three phases: Phase I was 1980-84, Phase II 1985-91 and phase III 1992-95(Omolo, 2011). According to Kenyan experts, policy makers, stakeholders and investors, trade is among the six priority sectors

that make up 57% of Kenya's GDP and promise to raise GDP growth rate to the region of 10 per cent per annum (Kenya Vision 2030, 2007).

This study was modeled on the postulates of Adam Smith's absolute advantage theory. Emeka (2010) argued that the doctrine that trade enhances welfare and growth has a long and distinguished ancestry dating back to Adam Smith. In his famous book, and inquiry into nature and causes of the wealth of nations (1776), Smith stressed the importance of trade as a vent for surplus production and as a means of widening the market thereby improving the level of productivity (Emeka, 2010). Trade openness refers to the sum of exports and imports as a ratio of GDP (Liberati, 2007) and according to Bajwa and Siddiqi (2011), openness is proxied by the ratio of imports plus exports to GDP. According to Olopade and Olopade (2010), economic growth represents the expansion of a country's GDP or output. In this study, trade openness was captured as the ratio of imports plus exports to GDP and economic growth represented by expansion of a country's GDP.

International trade plays an important role in the development of any economy and assumed to be an engine of growth. International trade may affect the economy through different channels; creation of employment, generation of capital formation that leads to better living standards in terms of higher level of GDP and GDP per capita (Bajwa & Siddiqi, 2011). Further, Trade openness may influence economic growth in several ways which Din et al. (2003) outlines as; first, trade openness may enhance efficiency through greater competition and improved resource allocation. Secondly, greater access to world markets may allow economies to overcome size limitations and benefit from economies of scale. Third, imports of capital and intermediate goods can contribute to the growth process by enlarging the productive capacity of the economy. Fourth, trade can lead to productivity gains through international diffusion and adoption of new technologies. Trade and industry accounted for 20 per cent of GDP and employed about 300,000 people in the formal sector and 3.7 million in the informal, in addition, the sector accounted for over 43 per cent of Kenya's total export earnings in 2002 (Ministry of Planning, 2003). The trade and industry sector is strategic to economic recovery because it is the sector likely to recover fastest (Ministry of Planning, 2003).

According to Economic Survey (2010), Africa's economic prospects for 2009 were reduced due to its integration in the global economy through trade. As a result, the continent recorded a slowed real GDP growth of 1.9 % in 2009 compared to 5.2 % in 2008. The continent was mostly affected due to its reliance on primary commodity exports in the face of contraction in global demand and declining prices. In Kenya, domestic exports grew marginally by 0.3% while re-exports declined by 4.1%. Total imports grew by 2.3% in 2009 compared to a 27.4% growth recorded in 2008. This resulted in the volume of trade growing by 1.6% in 2009 compared to a growth of 26.8% in 2008 with the economy recording a minimal GDP growth rate of 2.6% in 2009 (Economic Survey, 2010) . Although, according to Din et al. (2003), the relationship between trade openness and economic growth has been examined extensively in theoretical and empirical literature, the scenario above strongly indicates that there is correlation between trade and growth in Africa and as Emeka (2010) puts, no economy can isolate itself from trading with the rest of the world because trade acts as a catalyst of growth.

There are various arguments raised by researchers regarding the relationship between trade openness and economic growth; Whereas, Ahmadi et al. (2012) found a negative relationship in Pakistan, Atif et al. (2010), Muhammed (2012), among others found a positive relationship in Pakistan and Cote d'Ivoire, Arif and Ahmed (2012) found a bi- directional causality and Atif et al.(2010) unidirectional causality in Pakistan. Omolo (2011) asserted that to policy makers trade openness is good for Kenya as there are development opportunities that accompany free trade, such as transfer of technology which improves productivity and hence results in economic growth while the civil society as argued by Omolo (2011), on the other hand, holds the position that trade openness does not result in gains for segments of the population such as farmers, who tend to be the greatest casualties when openness takes place. Based on the civil society arguments Omolo (2011) asserted that, it is, therefore, not easy to provide policy prescriptions on how trade openness can be a tool for development and poverty reduction making it difficult for policy makers to negotiate confidently at the World Trade Organization (WTO) given that they do not have evidence on the true impact of trade openness on poverty. In addition, most empirical reviews on the relationship between trade openness and economic growth are based on panel data set and do not give a clear indication of the relationship between trade openness and economic growth with various researchers establishing varied results. This lack of consensus on the contribution of trade openness to economic growth and the use of panel data set methodology make it difficult to clearly point out to whether trade openness enhances economic growth or has the opposite effect in Kenya, hence this study analyzed the relationship between trade openness and economic growth in Kenya. This study therefore provided evidence on whether or not trade openness enhances growth in Kenya and can therefore be used by policy makers, academia, civil society and other stakeholders in making informed decisions geared towards achieving economic growth through trade openness.

1.2 Statement of the Research Problem
Policy makers argue that trade openness is good for Kenya as there are development opportunities that

accompany free trade. Civil society, on the other hand, holds the position that trade openness does not result in gains. Empirical perspectives also lack consensus on the relationship between trade openness and economic growth. This arises from the divergent views of various researchers ranging from positive, negative, unidirectional and bi-directional relationship. The empirical question posed then is, what is the relationship between trade openness and economic growth in Kenya? More importantly, studies on the relationship between trade openness and economic growth are not exhaustive. They partially analyze the relationships by not conducting correlation, cointegration and causality analysis. In view of the gap created by; the lack of consensus on the contribution of trade openness to economic growth between policy makers and civil society, the divergent views by various researchers on the relationship between trade openness and economic growth and the failure to exhaustively analyze the relationships, the main purpose of this study was to analyze the relationship between trade openness and economic growth in Kenya. Annual time series data for the period 1980 – 2009 was used to establish correlation, cointegration and causality characteristics of the relationship between trade openness and economic growth in Kenya which therefore informs policy, academia and add to the existing literature review.

1.3.0 Objectives of the Study
1.3.1 Main Objective
The purpose of this study was to analyze the relationship between trade openness and economic growth in Kenya.
1.3.2 Specific Objectives
The specific objectives of the study were to;
  i.   Determine the effect of trade openness on economic growth in Kenya
  ii.   Draw policy recommendations based on (i) above

1.4 Research Hypothesis
This study focused on the following hypotheses such that for the;
  i.   Effect of trade Openness and economic growth in Kenya,
      H_0: There is no significant effect of trade openness and economic
        Growth in Kenya
      H_1: Trade openness has a significant effect on economic growth in Kenya

1.5 Scope of the Study
This study on the analysis of the relationship between trade openness and economic growth in Kenya was conducted between 1980 and 2009 based on annual time series data. It should be noted that in 1980, Kenya became one of the first countries to sign a Structural Adjustment Loan with the World Bank and in 2009 the world growth was projected to fall to ½ percent in 2009, its lowest rate since World War II according to World Economic Outlook Update (2009).

1.6 Justification of the Study
To assess the existing opportunities and challenges for Kenya's economic growth, a diagnostic analysis was conducted by the vision 2030 research teams who settled on six priority sectors trade included that make up 57% of Kenya's GDP and promise to raise GDP growth rate to the region of 10 percent per annum (Kenya Vision 2030, 2007). According to (Economic Survey, 2010), Africa's economic prospects for 2009 were reduced due to its integration in the global economy through trade. As a result, the continent recorded a slowed real GDP growth of 1.9 % in 2009 compared to 5.2 % in 2008. The continent was mostly affected due to its reliance on primary commodity exports in the face of contraction in global demand and declining prices. In Kenya, domestic exports grew marginally by 0.3% while re-exports declined by 4.1%. Total imports grew by 2.3% in 2009 compared to a 27.4% growth recorded in 2008. This resulted in the volume of trade growing by 1.6% in 2009 compared to a growth of 26.8% in 2008 with the economy recording a minimal growth rate of 2.6% in 2009 (Economic Survey, 2010). Given the minimal growth in volume of trade by 1.6 % in 2009 and a minimal GDP growth rate of 2.6% in 2009 in Kenya, it was important to analyze the long run and causality relationship between trade openness and economic growth which was expected to produce valuable knowledge on the subject matter by analyzing the relationship between trade openness and economic growth in Kenya. This was to form useful material for reference to other researchers and policy makers in the area of formulating policy decisions. This study suggested significant policy measures through its recommendations on the functional relationship between trade openness and economic growth in Kenya which not only add to literature but also important to policy makers and academia in trying to make decisions regarding what Kenya has to trade, and the terms on which trade should take place with other countries. This will enable the country by adopting the various policy recommendations to increase trade volumes which will in turn enhance growth.

2.0 Literature Review
2.1 Introduction
This chapter discusses literature related to relationship between trade openness, foreign aid, external debt and economic growth. The review particularly focused on theoretical framework and the empirical reviews in line with the objectives of the study mainly the relationship between; trade openness and economic growth, foreign aid and economic growth, external debt and economic growth. These are considered as the main pillars in this study.

2.2 Theoretical Framework
2.2.1 Absolute Advantage Theory
This study was modeled on Adam Smith's absolute advantage theory. Sen (2010) argued that to trace back the evolution of what today is recognized as the standard theory of international trade, one goes back the years between 1776 and 1826, which respectively mark the publications of Adam Smith's Wealth of Nations. Emeka (2010) asserted that the doctrine that trade enhances welfare and growth has a long and distinguished ancestry dating back to Adam Smith (1723-90). In his book, and inquiry into nature and causes of the wealth of nations (1776), Smith stressed the importance of trade as a vent for surplus production and as a means of widening the market thereby improving the level of productivity. He asserted that "between whatever places foreign trade is carried on, they all of them derive two distinct benefits from it. It carries the surplus part of the produce of their land for which there is no demand among them, and brings back in return something else for which there is a demand. Emeka (2010) further summarized the absolute advantage theory of Adam Smith that countries should specialize in and export those commodities in which the trading partner has an absolute advantage. That is to say, each country should export those commodities it produced more efficiently.

However in adopting this classical trade theory, the researcher is not ignorant of its weaknesses. Thirlwall (2000) mentioned that the trade theory based on the classical ideas of Smith ignores the balance of payments consequences of trade. If a particular pattern of trade leads to balance of payments difficulties and the balance of payments is not self correcting through relative price (i.e. real exchange rate) movements, the gains from trade can easily be offset by the reductions in output and the increase in unemployment necessary to compress imports. This is an important consideration in thinking about the potential role of strategic protection and the speed of trade openness.

As applied to this study, the trade theory holds that trade openness would influence economic growth, thus there is a functional relationship between trade openness and economic growth hypothesized by use of Cobb–Douglas production function (3.3) to analyze the relationship between trade openness and economic growth in Kenya which as argued by Saleem et al. (2012) represents the relationship between outputs and inputs. In our relationship economic growth is the output and trade openness, foreign aid and external debt the inputs. Thirlwall (2000) argued that there can be little doubt about that, historically, trade has acted as an important engine of growth for countries at different stages of development, not only by contributing to a more efficient allocation of resources within countries, but also by transmitting growth from one part of the world to another. Further, Thirlwall (2000) asserts that, given the predictions of trade theory and the facts, the important point to make is that the issue for developing countries in general, and Africa in particular, is not so much whether to trade but in what to trade, and the terms on which trade should take place with the developed countries of the world (or between themselves).

2.3 Empirical Literature
2.3.1 Relationship between Trade Openness and Economic Growth
Ahmadi and Mohebbi (2012) in their paper considered the effect of trade openness on economic growth in Iran for the period 1971-2008. Estimation results indicated that trade openness had a significantly positive effect on economic growth in Iran. However, there study was not exhaustive in the sense that they failed to incorporate correlation and causality analysis which forms an important part of the relationships analysis.

Ahmadi et al. (2012) analyzed the impact of trade openness and institutional variables on GDP growth of Pakistan using annual time series data for the period 1984 to 2010. The result indicated that there exists a negative long run equilibrium relationship between real GDP and trade openness. The error correction term (ECT) was statistically significant at the 5% level of significance. Although the authors tried to show trade openness- economic growth relationship, the gap that arose was that they failed to undertake correlation and causality relationship analysis to assess the association and direction of causality.

Arif and Ahmed (2012) analyzed the long run relationship between trade openness and output growth for Pakistan using annual time series data for 1972-2010. The study indicated a positive long run relation between the variables. The results of granger causality showed that there is a bi-directional significant relationship between trade openness and economic growth. However, Arif and Ahmed (2012) missed to undertake correlation analysis. This is an important part in relationships analysis and gives an overview of the

association between variables.

Atif et al. (2010) investigated the impact of financial development and trade openness on GDP growth in Pakistan using annual data over the period 1980-2009. The empirical results confirmed the validity of trade led growth and financial led growth hypothesis in Pakistan. A co-integrated relationship between economic growth, trade openness and financial development was noticed in both the long-run and short-runs. Further analysis showed that trade openness and financial development Granger-cause economic growth in the period of study. Although, Atif et al. (2012) did cointegration and causality analysis, the gap of correlation analysis is evident in their study making relationship analysis not exhaustive.

Bajwa and Siddiqi (2011) investigated the causal link between trade openness and economic growth based on annual data for four South Asian countries that are Bangladesh, India, Pakistan and Srilanka for the sample period 1972 to 2007 with data divided into two spans that are from 1972 to 1985 and 1986 to 2007. In 1972-85 short run unidirectional causality from GDP to openness is found whereas, in 1986-2007 there existed bi-directional causality between GDP and openness. However, the points of departure in relationships analysis included the failure to carry out correlation and cointegration analysis.

Domirhan and Akçay (2005) examined the causal relationship between openness and economic growth for the nine selected Middle East and North African (MENA) countries. This study used annual data on economic growth and openness for the following countries; Algeria (1960-1996), Egypt (1950- 2000), Iran (1955-2000), Israel (1950-2000), Jordan (1954-2000), Morocco (1950-2000), Syria (1960-2000), Tunisia (1961-2000) and Turkey (1950-2000). The results were indicative of unidirectional causality running from openness to economic growth in Egypt, Jordan and Syria. The test results also indicated that there is a bi-directional causality in Algeria. Even though, causality analysis was conducted, the gap of inconclusiveness was evident given the varied results and failure to incorporate correlation and cointegration analysis.

Hassan and Islam (2005) examined temporal causality among financial development, trade openness and economic growth in Bangladesh over the period from 1974 to 2003. The paper did not find any causal relationship between trade openness and growth. Also, Haq (2008) investigated empirically the direction and shape of causality among Trade openness, investment and economic growth using data for Bangladesh during the period 1980-2006. Granger causality test results confirmed that there exists unidirectional causality between trade openness and growth. The results supported the conventional presumption about the relationships between trade openness and economic growth. Although, the researchers carried out their studies in the same country, it is evident that the results were varied hence a gap of lack of consensus on trade openness- economic growth relationship.

Hossain and Mitra (2013) examined the dynamic causal relationships between trade openness, foreign aid, domestic investment, long-term external debt, government spending and economic growth for a panel of 33 highly aid-dependent African countries Kenya included for the period 1974-2009. The long-run effects of trade openness, domestic investment and government spending on economic growth were significantly positive. Short-run bidirectional causality was found between economic growth and trade openness. Whereas these researchers tried to analyze trade openness- economic growth relationship, they failed to address the correlation analysis question.

Iqbal (2005) analyzed the impact of trade liberalization policy on GDP growth of Pakistan for the period ranging from 1972 to 2002. They found insignificant positive correlation between GDP and export and import. Both the models showed positive and significant correlation between GDP and investment. Also, Muhammed (2012) investigated effect of trade openness on economic growth in the long run by incorporating financial development as an additional determinant of economic growth in Pakistan using time series data for the period 1971 to 2011. The results confirmed cointegration among the series. In long run, trade openness promotes economic growth. As much as the authors analyzed the relationship between trade openness and economic growth in Pakistan, they failed to incorporate at least one of the relationships analysis concepts; correlation, cointegration and causality.

Kahnamoui (2013) looked at the impact of trade barriers and trade openness on economic growth in the presence of export credits of 90 non-Organizations for Economic Co-operation and Development (OECD) countries. Even though the researcher did conduct correlation and causality analysis. The results showed no evidence of any change in the impact of trade restriction on economic growth but a positive and significant impact of trade openness on economic growth in the presence of export credits.

Karras (2003) investigated the effects of openness to international trade on economic growth by considering three variables; the investment-to-GDP ratio; the population growth rate; and government-purchases-to-GDP ratio using annual data for a sample of 56 economies Kenya included. The findings show that the effect of openness on economic growth is positive, permanent, and statistically significant. Also, Redlin and Gries (2012) examined the short-term and long-run dynamics between per capita GDP growth and openness for 158 countries Kenya included over the period 1970-2009. They explored the causal relationship between these two variables. The results suggested a long-run relationship between openness and economic growth and

indicated a positive significant causality from openness to growth and vice versa. Whereas the researchers established cointegration and causality, it is evident that, relationship analysis was not exhaustive since they failed to attempt correlation analysis.

Osabuohein (2007) examined the impact of trade openness, real government expenditure, labour force and real capital stock for both on economic performance of ECOWAS Members focusing on Ghana and Nigeria (1975-2004). A unique relationship between economic performance, trade openness, real government expenditure, labour force and real capital stock for both Ghana and Nigeria was established. Trade openness and real government expenditure impact positively the economies of Ghana and Nigeria. Further, Omisakan et al. (2009) examined the empirical econometric evidence of causal interrelationship among foreign direct investment, trade openness and economic growth in Nigeria. The study covered the periods from 1970- 2006. The results revealed unidirectional causality running from Foreign Direct investment to output and trade openness to output. However, the points of departure in relationships analysis included the failure to carry out correlation and cointegration analysis.

Razmi and Rafaei (2013) investigated how economic freedom impacts economic growth using 17(Middle East and East Asian) countries' data during 2000-2009 using five variables; openness, physical capital, employment, human capital and population. The results showed that overall index of economic freedom is positively and robustly correlated with growth, further, the results demonstrated that trade openness is positively associated and statistically significant determinant of growth. They found that economic freedom has significant effect on economic growth. Although, the researchers' analysis focused on correlation and cointegration, the gap of relationship analysis exhaustiveness arose by failing to incorporate causality test.

Saleem et al.(2012) in their study estimated the impact of FDI, exchange rate, capital-labor ratio and trade openness on GDP growth rate for 38 African countries Kenya included from 1980 to 2008. The results found trade openness having a positive relationship with GDP. On the other hand, Ulaşan (2012) revisited the empirical evidence on the relationship between trade openness and long-run economic growth in Turkey over the sample period 1960-2000. Their findings indicate that many openness variables are positively and significantly correlated with long-run economic growth. However, Saleem et al. (2012) and Ulaşan (2012) in their trade openness- economic growth relationship analysis failed to conduct causality test, hence the gap of relationship analysis exhaustiveness.

Yaoxing (2010) examined the long-run impact of foreign direct investment and trade openness on economic growth in Cote d'Ivoire using data span for the period 1980-2007. Amongst the key results it was found: a long run relationship between the foreign direct investment, trade openness and output. Both foreign direct investment and trade openness were significant in explaining output growth in Cote d'Ivoire. The Granger causality revealed unidirectional causal relationship running from foreign direct investment, trade openness to output and from output, foreign direct investment to trade openness. Both foreign direct investment and trade openness are significant in explaining output growth in Cote d'Ivoire. Although the researcher attempted to analyze trade openness- economic growth relationship, the gap clearly evident is that of exhaustiveness by failing to carry out correlation analysis.

Yusoff and Febrina (2012) examined the relationships among economic growth, domestic investment, real exchange rate, and trade openness in Indonesia. The results suggested that there exists a significant long-run relationship among the variables. All coefficients had the correct positive signs and significant at least at 5 percent level. Granger causality test results suggest that all the variables cause real GDP in the short-run. Both the trade openness and gross domestic investment cause growth uni-directionally in short-run. The gap of exhaustiveness in relationship analysis is evident in the works of Yusoff and Febrina (2012), where they failed to carry out correlation analysis.

Based on the review of respective studies, several studies on the relationship between trade openness and economic growth have been undertaken. However, it is evident that there is a gap created by lack of consensus on the relationship between trade openness and economic growth given the varied results. Further, it is noted that most of the researchers did not exhaustively examine the relationship by not undertaking correlation, cointegration or causality analysis. This study therefore analyzed the relationship between trade openness and economic growth in Kenya.

3.0 Research Methodology
3.1.0 Introduction
This chapter covers the research design, model specification, measurement of variables, diagnostic test, study area, target population, sample size, sources of data and analysis.

3.2.0 Research Design
This study was conducted using correlation research design based on time series data. According to Oso and Onen (2011), correlation research design provides rigorous and replicable procedure for understanding

relationships and determines whether, and to what degree, a relationship exists between quantifiable variables. The study analyzed the relationship between trade openness and economic growth in Kenya by use of correlation coefficients, cointegration test, vector error correction mechanism and the Granger Causality test.

3.2.1 Model Specification

The functional relationship between trade openness and economic growth is represented as $Y_t = f(T_t, \mu_t)$ (3.1)

Where,

Y_t = Real GDP, T_t = Trade openness and μ_t = Error term

The functional relationship (3.1) transformed into natural logs is given by;

$$\ln Y_t = \alpha_0 + \alpha_1 \ln T_t + \mu_t \qquad (3.2)$$

Where

t = 1980, 1981,..., 2009 denotes time period

$\mu_t \text{ } \sim \text{IID}(0, \sigma^2)$ = error term

α_0 = constant

α_1 = Elasticity coefficient

$\ln Y_t$ = Dependent variable (economic growth),

$\ln T_t$ = The independent variable representing trade openness.

3.2.2 Measurement of Variables

The variables specified in the model (3.2) were measured as below;

Real GDP

Y_t – Represents Gross Domestic Product. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

Trade Openness

T_t- Refers to Trade Openness. Implies the removal or reduction of restrictions or barriers on the free exchange of goods between nations (imports and exports).Trade openness is measured by the sum of exports and imports of goods and services measured as a share of gross domestic product.

$$TradeOpenness = \frac{(imports + \exp orts)}{GDP}$$

3.2.3 Correlation

Correlation is concerned with finding out whether there is an association between two or more variables, and if there is determines its strength and direction. This study used correlation coefficients obtained from the correlation matrix to determine if there exists correlation between trade openness and economic growth in Kenya. This was based on the hypothesis that;

$H_0 : r = 0$; There is no correlation

$H_1 : r \neq 0$; There is correlation

3.2.4 Stationarity Test

3.2.4.1 Introduction

A stochastic process is said to be stationary if its mean and variance are constant over time and the covariance between the two time periods depends only on the lag between the two time periods and not the actual time at which the covariance is computed (Gujarati, 2004). The study employed unit root test. Unit root is a widely popular test of stationarity (or non-stationarity) over the past several years (Gujarati, 2004).

Practically, this study involved estimating equation (3.3) to ascertain the existence of unit root.

$\Delta Y_t = \delta Y_{t-1} + \mu_t$ (3.3)

Where equation (3.6) is the first difference operator.

The following hypothesis was tested;

$H_0 : \delta = 0$, that is, unit root exists (time series is non stationary)

$H_1 : \delta < 0$, time series is stationary

This study adopted the Augmented Dickey Fuller (ADF) test to test for unit root. The test is based on the assumption that the error term μ_t are correlated (autocorrelation).

3.2.4.2 Augmented Dickey – Fuller (ADF) Test

A random walk may have no drift, or it may have drift, or it may have both deterministic and stochastic trends (Gujarati, 2004). The ADF test involved testing the following three models to capture the various possibilities.

$$\Delta \ln Y_t = \delta \ln Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta \ln Y_{t-i} + \varepsilon_t \qquad (3.4)$$

$$\Delta \ln Y_t = \beta_1 + \delta \ln Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta \ln Y_{t-i} + \varepsilon_t \qquad (3.5)$$

$$\Delta \ln Y_t = \beta_1 + \beta_2 t + \delta \ln Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta \ln Y_{t-i} + \varepsilon_t$$

(3.6)

Where ε_t is a pure white noise error term ($\varepsilon_t \sim IIDN(0, \sigma^2)$,

m = lag length

In each case we test the hypothesis;

$H_0 : \delta = 0$, unit root exists (time series is non stationary)

$H_1 : \delta < 0$, time series is stationary

3.2.5 Johansen Cointegration Test

Ssekuma (2011) argue that Johansen procedure builds cointegrated variables directly on the maximum likelihood estimation instead of relying on OLS estimators and is able to detect more than one cointegrating relationship if present. The number of cointegrating vectors in Johansen procedure was detected by the use of two likelihood ratio tests namely; the trace test and the maximum eigenvalue.

3.2.6 Vector Error Correction Model (VECM)

Emeka (2003) stressed that an important issue in econometrics is the need to integrate short run dynamics with long run equilibrium. Though there may be a long-term, or equilibrium relationship between variables, in the short run there may be disequilibrium. This study used the Error Correction Mechanism to validate the existence of long-term relationship and correction of the short run disequilibrium. Following Granger representation theorem which states that if two (or more) variables Y and X are cointegrated, then the relationship between (or among) them can be expressed as error correction mechanism, then the relationship in model (3.2) can be expressed as follows

$$\Delta \ln Y_t = \alpha_{10} + \sum_{i=1}^{p} \alpha_{11} \Delta \ln T_{t-i} + \sum_{i=1}^{p} \alpha_{12} \Delta \ln Y_{t-i} + \lambda_i \mu_{t-1} + \varepsilon_{1t} \qquad (3.7)$$

$$\Delta \ln T_t = \alpha_{20} + \sum_{i=1}^{p} \alpha_{21} \Delta \ln T_{t-i} + \sum_{i=1}^{p} \alpha_{22} \Delta \ln Y_{t-i} + \lambda_i \mu_{t-1} + \varepsilon_{2t} \qquad (3.8)$$

Where

ε_{1t} , ε_{2t} = white noise error terms,

p = lag length, μ_{t-1} = Error correction Term (ECT) that guides the variables Y_t , T_t to restore back to equilibrium.

3.2.7 Diagnostic Tests

The study involved carrying out various diagnostic tests to investigate whether the assumptions of the regression analysis are satisfied which refer to the normality test, autocorrelation test, multicollinearity test and heteroscedasticity test.

3.2.8 Causality Test

3.2.8.1 Introduction

Cointegration gives signal that there is possibility of causality but does not show direction of causality. This study adopted the Granger Causality test because according to Gujaratti (2004), the test is a useful descriptive tool for time series data.

3.2.8.2 Granger Causality Test

The following pair of regressions was estimated to establish pair wise Granger causality;

$$\Delta \ln Y_t = \alpha_{1j} + \sum_{i=1}^{p} \alpha_{11i} \Delta \ln Y_{t-i} + \sum_{i=1}^{p} \alpha_{12i} \Delta \ln T_{t-i} + \mu_{1t} \qquad (3.9)$$

$$\Delta \ln T_t = \alpha_{2j} + \sum_{i=1}^{p} \alpha_{21i} \Delta \ln T_{t-i} + \sum_{i=1}^{p} \alpha_{22i} \Delta \ln Y_{t-i} + \mu_{2t}$$

(3.10)

Where it was assumed that the error terms μ_{1t}, μ_{2t} are uncorrelated. The study involved testing the following hypothesis;

H_0: No causality,

H_1: Causality exists

3.3 Data Collection
3.6.1 Sources of Data
Data used in the study was obtained from official published documents of the World Bank; World Development Indicators. The analysis was based on annual time series data trade (% of GDP) and real GDP from the World development Indicators.

3.4 Data Analysis
The study used inferential data analysis to analyze this quantitative research data. The techniques employed included; correlation, cointegration and causality analysis. For the various techniques mentioned data analysis was conducted using Econometric estimation software Eviews.

4.0 Results and Discussion
4.1 Trend Analysis of Trade Openness in Kenya
Figure 4.1 below shows Kenya's trade trend for the period 1980 –2009. Clearly as depicted there is a steady decline in trade in the early 1980s, an increase in the late 1980s and a volatile growth in the early1990s which is lost in the late 1990s. Roberto and Fagernäs (2004) assert that Kenya's economy experienced a declining trend in its trade/GDP ratio until the late 1980s. Kenya lost world market share for its coffee exports, but was able to increase its presence in the exports market for tea and horticultural products, in the 1990's there was rapid real export growth, notably through the expansion of exports of garments (Roberto and Fagernäs 2004). According to the (Ministry of Trade, 2008), the trade sector has shown growth trend from 2003 to 2007. This is partly due to increase in trade particularly within the East African Community (EAC) and the Common Markets of Eastern and Southern Africa (COMESA) regions. According to (Economic Survey, 2010), domestic exports grew marginally by 0.3% while re-exports declined by 4.1%. Total imports grew by 2.3% in 2009 compared to a 27.4% growth recorded in 2008. This resulted in the volume of trade growing by 1.6% in 2009 compared to a growth of 26.8% in 2008.
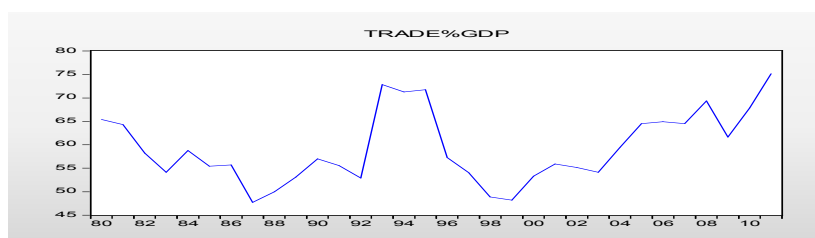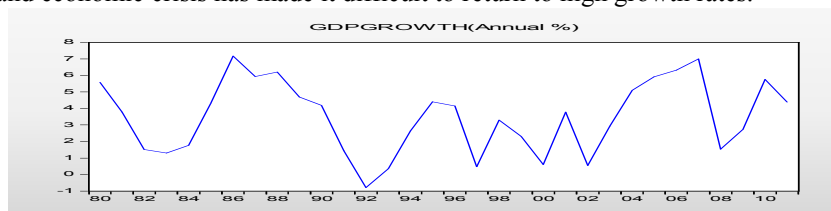

Source. Author's computation using EVIEWS 7.1
Figure 4.1. Trend of trade openness in Kenya

4.2 Trend of Real GDP Growth Rate in Kenya (Annual %)
Figure 4.2 shows Kenya's real GDP growth for the period 1980-2009. Economic growth of Kenya was on a downward trend in the 1980s (the early years of the era of trade liberalization and structural adjustment programs). The economy picked in the mid 1980s and averaged over 7% in 1986 before slipping to a negative in the 1990s. Kenya's growth momentum was lost in the 1990s as the result of a combination of factors which include; instability, mounting public debt, the bouched implementation of (extensive) economic liberalization and institutional reforms, the effects of physical insecurity on tourism, worsening corruption at all levels and extension of cronyism in the formal private sector (Roberts and Fagernäs, 2004). Rapid growth of the economy is experienced from 2003 with the economy averaging 7% in 2007 before slipping to as low as 1.6% in 2008. According to (Economic Survey, 2010), growth in Kenya recorded a major decline in 2008 of 1.6% the lowest since 2003. This real GDP growth trend can not only be attributed to trade but many other factors and Wanjala et al., (2009) argued that between 2004 and 2007, Kenya's economy showed signs of revitalization and average annual growth rate climbed above 5 per cent, however, the political turmoil of 2008 slowed growth, and the global financial and economic crisis has made it difficult to return to high growth rates.

Source. Author's computation using EVIEWS 7.1
Figure 4.2. Trend of real GDP growth rate in Kenya (annual %)

4.3 Discussion of Findings

4.3.1 Descriptive Analysis of Variables

The statistics in Table 4.1 indicate that the means and medians are not much different from each other which imply that economic growth (proxied by GDP expansion) and trade openness, foreign aid and external debt are normally distributed. Jarque-Bera test further confirms that the variables are normally distributed at 5% level of significance since the $JB - statistic < \chi^2 (2df) = 5.99147$ for each of the variables.

Table 4.1
Descriptive Statistics of Variables

Statistic	LnY_t	LnT_t
Mean	26.69298	-0.544596
Median	26.79111	-0.571260
Maximum	28.49199	-0.316651
Minimum	24.71058	-0.740181
Std. Dev	1.196705	0.116941
Skewness	-0.15892	0.342562
Kurtosis	1.623151	2.358371
Jarque Bera	2.495928	1.101352
Probility	0.287089	0.576560
Observations	30	30

Source: Author's computation using EVIEWS 7.1

4.3.2 Correlation Analysis

The study involved identifying the existence of correlation between trade openness and economic growth in Kenya using correlation coefficients obtained from the correlation matrix. Analysis of data with regard to correlation was based on the null hypothesis of no correlation. The results summarized in Table 4.2 show thatthere is a weak positive correlation between trade openness and economic growth in Kenya (r = 0.216952). From these results the study therefore rejects the null hypothesis of no correlation between trade openness and economic growth at 5 % level of significance with the correlation between trade openness and economic growth being insignificant.

Table 4.2
Correlation Matrix

Correlation t-Statistic	LnY_t	LnT_t
LnY_t	1.000000	

LnT_t	0.216952	1.000000
	(1.176011)	-----

Note. t-statistics in Parentheses and * indicate statistical significance at 5% level of significance.
Author's computation using Eviews 7.1

4.3.3 Stationarity Test

To identify the time series property of stationarity for each of the variables, Augmented Dickey Fuller (ADF) test was performed on levels and first differences. The ADF test takes the form of equations (3.4), (3.5) and (3.6). This test examined the null hypothesis that the considered variable has a unit root (series non stationary) against the alternative hypothesis that the variable is stationary. The results of ADF tests presented in Table 4.3 reveals that the series of economic growth (proxied by GDP expansion) and trade openness are each found to be integrated of order 1, I(1).

Table 4.3
Unit Root Results

ADF Model: $\Delta lnY_t = \delta lnY_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta lnY_{t-i} + \varepsilon_t$ (No Intercept and No Trend (None))

| | | Level | | | | First Difference | | |
Variable	No. of Obs.	$H_0: \delta < 0$	Lag Length	Inference	No. of Obs.	$H_0: \delta < 0$	Lag Length	Inference
lnY_t	28	0.003196 (0.9992)	2	-	27	-0.081843 (0.3344)	2	-
lnT_t	29	-0.013194 (0.5309)	2	I(1)	28	-1.032720** (0.0000)	2	I(0)

ADF Model: $\Delta lnY_t = \beta_1 + \delta lnY_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t$ (Intercept)

| | | Level | | | | First Difference | | |
Variable	No. of Obs.	$H_0: \delta < 0$	Lag Length	Inference	No. of Obs.	$H_0: \delta < 0$	Lag Length	Inference
lnY_t	29	-0.009262 (0.7911)	2	I(1)	28	-0.687654** (0.0010)	2	I(0)
lnT_t	29	-0.362976 (0.1293)	2	I(1)	28	-1.032419** (0.0001)	2	I(0)

ADF Model: $\Delta lnY_t = \beta_1 + \beta_2 t + \delta lnY_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta lnY_{t-i} + \varepsilon_t$ (Trend and Intercept)

lnY_t	27	-0.166078 (0.6683)	2	I(1)	28	-0.709999** (0.0382)	2	I(0)
lnT_t	29	-0.409796 (0.2265)	2	I(1)	28	-1.037791** (0.0011)	2	I(0)

*Note. The null hypothesis is that the series contains a unit root (series non stationary). The rejection of the null hypothesis is based on the Mackinnon (1996) one-sided p-values given in parentheses. ** implies rejection of null hypothesis of non stationarity at 5% significance level. Author's computation using EVIEWS 7.1*

4.3.4 Cointegration and Vector Error Correction Mechanism
4.3.4.1 Cointegration test results
Having determined that the variables of; economic growth (proxied by GDP expansion), trade openness are integrated of order 1, I(1), this study established cointegration between trade openness and economic growth in Kenya by use of Johansen cointegration. Analysis of data was based on the null hypothesis of no cointegration. The results in Table 4.6 indicate that both the trace test and maximum eigenvalue test in the Johansen procedure each detected two cointegrating vectors, thus the study rejects the null hypothesis of no cointegration at 5% level of significance.

Rejection of the null hypothesis of no cointegration at 5% significance level among the variables implies that the variables of trade openness and economic growth in Kenya have a significant positive long run relationship that conforms to a priori expectation. Given Ahmadi et al. (2012) who analyzed the impact of trade openness and institutional variables on GDP growth of Pakistan found a negative long run relationship between real GDP and trade openness, our findings of a significant positive long run relationship between trade openness and economic growth in Kenya is consistent with the findings of Sakyi (2010), Yusoff and Febrina (2012), Yaoxing (2010), Atif and Ahmed (2012) and Atif et al. (2010) who investigated the relationship in Ghana, Indonesia, Cote d'Ivoire and Pakistan respectively. Despite the varied results by various researchers, this finding of a significant positive long relationship between trade openness and economic growth in Kenya implies that trade openness promotes growth in the long run. Thus, a percentage increase in the level of trade openness increases economic growth in Kenya by 0.977006%

From the Johansen procedure results in Tables 4.6, model (3.5) without the intercept becomes the cointegrating equation hence expressed as;

$$\ln Y_t - \underset{[-5.57712]}{0.977006} \ln T_{t} = 0 \tag{4.1}$$

Making lnY_t the subject, equation (4.1) becomes equation (4.2) with t-statistics in parentheses.

$$\ln Y_t = \underset{[5.57712]}{0.977006} \ln T_t \tag{4.2}$$

From the above equation (4.2), the responsiveness of economic growth to a change in the level of trade openness is determined by obtaining differential below;

$$\frac{\partial lnY_t}{\partial lnT_t} = 0.977006 \tag{4.3}$$

This can be interpreted as economic growth in Kenya exhibits a positive relationship with trade openness in the long run which conforms to economic a priori expectation. Thus, a percentage increase in level of trade openness increases economic growth in Kenya by 0.977006%. This coefficient is statistically significant at 5 % level of significance.

Table 4.6
Johansen Cointegration Test Results

The Trace Test			
Eigenvalue	Statistic	Critical Value	Prob.**
0.918196	102.5647	47.85613	0.0000
0.615474	34.97201	29.79707	0.0116
0.285083	9.166960	15.49471	0.3502
0.003920	0.106051	3.841466	0.7447

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Maximum Eigenvalue			
Eigenvalue	Statistic	Critical Value	Prob.**
0.918196	67.59270	27.58434	0.0000
0.615474	25.80505	21.13162	0.0102
0.285083	9.060910	14.26460	0.2811
0.003920	0.106051	3.841466	0.7447

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values

Normalized Cointegrating Coefficients
(Two Cointegrating Equations)

LNY	LNT
1.000000	-0.977006
	(0.17518)

Note. Standard error in parentheses. Author's computation using EVIEWS 7.1

4.3.4.2 Vector Error Correction Model (VECM)

The coefficients of the error correction term μ_{t-1} for the VECM with economic growth (ΔlnY_t) as the dependent variable has the correct sign which conform to economic a priori expectation i.e. negative and statistically significant at 5 % level of significance (validating the existence of long run relationship among trade openness and economic growth in Kenya. This implies that the vector of economic growth (Y_t) is error correcting i.e. 34.7%, of equilibrium error for economic growth will be corrected in the next period (annually). This explains that economic growth (proxied by GDP expansion) in Kenya adjusts significantly to short run disequilibrium (shocks) caused by changes in trade openness

Table 4.8
Vector Error Correction Model

Error Correction:	D(LNY)	D(LNT)
CointEq1	-0.347152*	0.030758
	(0.02990)	(0.12942)
	[-11.6104]	[0.23767]
D(LNY(-1))	-0.258959*	-0.858588
	(0.11130)	(0.48173)
	[-2.32671]	[-1.78231]
D(LNY(-2))	0.138435	-0.259890
	(0.08353)	(0.36153)
	[1.65733]	[-0.71886]
D(LNT(-1))	-0.167507*	-0.279013
	(0.05406)	(0.23399)
	[-3.09849]	[-1.19242]
D(LNT(-2))	-0.098320	-0.498869
	(0.08564)	(0.37065)
	[-1.14812]	[-1.34593]

Note. Values in ( ) are std errors while values in [ ] are t-statistics, * implies statistical significance at 5% level of significance. Author's computation using Eviews 7.1

4.3.4.3 Residual Diagnostic Tests

Regression is based on certain assumptions some of which refer to the; normal distribution of the residuals, correlation between the error terms, constant variance of the residuals and correlation between explanatory variables. The study employed second order tests or econometric tests which include normality, serial correlation, multicollinearity and heteroscedasticity tests to ascertain that the assumptions of regression analysis with regard to residuals and the correlation between explanatory variables are satisfied.

4.3.4.3.1 Normality Test

Normality test is carried out to verify if the error term is normally distributed. The study employed Jacque –Bera (JB) test to test for normality. The results in Figure 4.7 below show that the null hypothesis that residuals are normal distributed is not rejected. The $JB - statistic = 5.349674$ and from the chi-square distribution table at 5% level of significance, the critical $\chi^2 (2df) = 5.99147$. This implies that $JB - statistic < \chi^2 (2df)$, thus we do not reject the null hypothesis that residuals are normally distributed at 5 % level of significance.
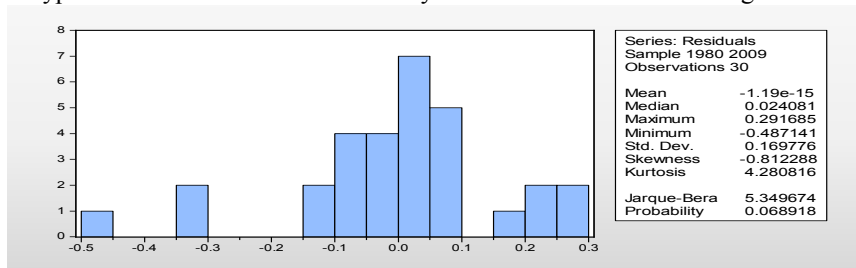

Figure 4.7. Normality test results. Author's computation using EVIEWS 7.1

4.3.4.3.2 Autocorrelation Test

Serial correlation refers to the case in which the error term in one period is correlated with the error term in any other time period. Classical regression assumes that such correlation does not exist. The Breusch- Godfrey serial correlation LM test was employed to test for serial correlation. Table 4.11 results indicate that the null hypothesis of no serial correlation is not rejected at 5% level of significance thus, the residuals are not correlated.

Table 4.11

Residual Serial Correlation LM Test

VEC Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at
lag order h

Included observations: 27

Lags	LM-Stat	Prob
1	8.516557	0.9320
2	13.68509	0.6222

Note. Author's computation using Eviews 7.1

4.3.4.5.3 Multicollinearity

This study involved the use of Variance Inflation Factor (VIF) to test for multicollinearity. The results in Table 4.12 clearly indicate all the VIF are less than 10, i.e. 1.2, 8.3 and 7.7. This implies that none of the variables is highly collinear.

Table 4.12

Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C(1)	1.490155	1390.508	NA
C(2)	0.100947	29.18255	1.245217

Note. The Rule of Thumb is that if VIF Exceeds 10, the Variable is said to be highly Collinear. Author's Computation Using Eviews 7.1

4.3.4.3.4 Heteroscedasticity Test

The study employed White's General heteroscedasticity Test to test for heteroscedasticity. Results depicted in Table 4.13 show that there is no heteroscedasticity. This implies that we do not reject the null hypothesis of no heteroscedasticity (homoscedasticity) at 5 % level of significance thus a constant variance for the residuals.

Table 4.13:
Residual Heteroscedasticity Test Result

VEC Residual Heteroskedasticity Tests:

Sample: 1980 2009
Included observations: 27

	Joint test	
Chi-sq	Df	Prob.
173.5423	180	0.6214

Note. Author's computation using Eviews 7.1

4.3.5 Granger Causality Test Results

This study examined causality linkage between trade openness and economic growth in Kenya by estimating two VAR models (3.9) and (3.10) to test for pair wise Granger causality between economic growth and trade openness in Kenya. Data analysis was based on the null hypothesis of no causality.

The results summarized in Table 4.14 indicate that unidirectional causality exists between trade openness and economic growth ($T_t \rightarrow Y_t$). This implies that the null hypothesis of no causality is rejected for the relationship between trade openness and economic growth in Kenya. The unidirectional causality running from trade openness to economic growth in Kenya conforms to a priori expectation and is significant at 10% level of significance. The findings of unidirectional causality running from trade openness to economic growth in Kenya is consistent with the findings of Yaoxing (2010), Yusoff and Febrina (2010), Omisakan et al.,(2009),Domirhan and Akcay (2005) in Egypt, Jordan and Syria, Atif et al.,(2010) and Redlin and Gries (2012). However, this contradicts the findings of bi-directional causality by Arif and Ahmed (2012), Bajwa and Siddiqi (2011), Domirhan and Akcay (2005) in Algeria and Unidirectional causality from economic growth to trade openness by Domirhan and Akcay (2005) in Turkey and Israel. Given that the various researchers established varied results, the finding of causality from trade openness to economic growth in Kenya implies that trade openness promotes economic growth in Kenya.

Table 4.14
Granger Causality Test Results

Pairwise Granger Causality Tests Null Hypothesis:	Obs	F-Statistic	Prob.
LNT does not Granger Cause LNY	28	3.23764	0.0577*
LNY does not Granger Cause LNT		0.80635	0.4587

*Note. The lag length ρ = 2, ** and * implies rejection of the null hypothesis of no causality at 5% and 10% level of significance respectively. Author's Computation Using Eviews 7.1*

5.0 Summary, Conclusions and Recommendations
5.1 Introduction
This chapter presents a summary of the findings on the analysis of the relationship between trade openness and economic growth in Kenya, conclusions and relevant policy recommendations.

5.2 Summary of Findings
This study investigated the relationship between trade openness and economic growth in Kenya. In view of the lack of consensus on the contribution of trade openness to economic growth between policy makers and civil society in Kenya and the gap created by the divergent findings from the empirical reviews on the relationship between trade openness and economic growth, the study was to analyze the relationship between trade openness and economic growth in Kenya to establish country specific characteristics of the effect of trade openness on economic growth in Kenya using annual time series data for the period of 30 years spanning from 1980 to 2009. This study involved testing for stationarity of the variables (economic growth and trade openness) using Augmented Dickey Fuller (ADF) test. The effect of trade openness on economic growth in Kenya was examined using correlation coefficients, Johansen Cointegration test, Vector Error Correction Model (VECM) and pairwise Granger causality test. This made it possible for the study to establish the, association, long run relationship, integrate long run and short run dynamics and examine casual relationship between trade openness and economic growth in Kenya.

Analysis of data on this objective was based on the null hypothesis of no relationship between trade openness and economic growth in Kenya. First, the correlation coefficients show that there is a weak positive insignificant correlation($r = 0.216952$) at 5% significance level between trade openness and economic growth in Kenya. Secondly, the trace test and maximum eigenvalue test in the Johansen procedure each detected two cointegrating vectors at 5% level of significance implying that the variables of trade openness and economic growth in Kenya have a significant positive long run relationship that conforms to economic a priori. Thirdly, the Vector Error Correction Model results indicate that in the short- run trade openness has a significant negative relationship with economic growth at 5% level of significance in Kenya. Fourthly, the pairwise Granger Causality test results indicated unidirectional causality running from trade openness to economic ($T_t \to Y_t$) at 10% level of significance. From these results the study therefore rejects the null hypothesis of no effect significant effect of trade openness on economic growth at 5 % level of significance in Kenya. The findings of a significant positive long run relationship between trade openness and economic growth in Kenya though inconsistent with the findings of Ahmadi et al. (2012) who established a negative relationship in Pakistan, conforms to a priori expectation and are consistent with the findings of Saleem et al. (2012), Osabuohein (2007), Karras (2003), Ahmadi and Mohebbi (2012) who found a positive significant relationship between trade openness and economic growth in 38 African countries, Ghana and Nigeria (ECOWAS members), 56 economies Kenya included and Iran respectively.

5.3 Conclusions

In general, the findings of this study clearly indicate that all the time series variables (trade openness and economic growth) have a positive correlation, integrated of order one, i.e. become stationary at the first difference level (both intercept and trend and intercept), long run equilibrium relationship exists among the variables, economic growth is error correcting at 34.7%. Also unidirectional Granger causality is established running from trade openness to economic growth.

In conclusion, there is a significant positive long run effect of trade openness on economic growth in Kenya. The Johansen procedure by use of two likelihood ratio tests and pair wise Granger causality test results in the Kenyan case validates Adam Smith's absolute advantage theory that finds trade as a vent for surplus production and as a means of widening the market thereby improving the level of productivity (trade causes productivity).

5.4 Recommendations

This study argues that there is a long run equilibrium relationship among the variables of trade openness on economic growth in Kenya. The results of the study indicate that although in the short run trade openness negatively affect economic growth in Kenya in the long run 1% increase in trade openness promote economic growth by 0.98%. It is against these empirical finding that the study makes the following recommendations. First, a proper legal framework should be instituted by the government of Kenya that will hasten trade licensing, review import authorization procedure, harmonize the operations of trade facilitation institutions with the empowerment of this institutions through financing to enhance their services of monitoring, surveillance, cross border clearance and controlling cross border trade to check illegal activities of smuggling, tax evasion and dumping of substandard products in the country. This will enable the country to protect local industries by ensuring that no commodities are getting into the country through unorthodox means, reduce clearance delays at the borders and measure effectively the contribution of any cross border trade to the economy.

Secondly, Kenya as a country should continue pursuing its trade openness policies by; blossoming regional integration through trade blocs such as EAC and COMESA and negotiating new trade agreements with other countries (both at the regional level and world over). This will enable the country to not only foster relationship with other countries but explore new markets and sustain current markets which will see Kenya increase the volume of its trade by exporting its products to many other countries world over. Thirdly, the country should consider diversification of its export products from primary traditional products through value addition by investing in the manufacturing sector which will see Kenya exploit the potential in the international markets and in turn fetch more in terms of foreign exchange that will not only increase trade volume but also reduce on the worsening trade balance.

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