

Export intensity and manufacturing firm characteristics in Kenya

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DECLARATION

This research paper is my original work and has not been presented to any other university for the award of a degree.

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This research paper has been submitted for examination with my approval as University Supervisor.

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Daniel Abala

DEDICATION

This study is dedicated to my family and friends for their constant love and support.

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ABBREVIATIONS

AGOA:	Africa Growth Opportunity Act
CFTA:	Africa Continental Free Trade Area
CET:	Common External Tariff
ELG:	Export Led Growth
EPZ:	Export Processing Zones
GDP:	Growth Domestic Product
IMR:	Inverse Mills Ratio
MTP:	Medium Term Plan
MUB:	Manufacturing Under Bond
NTP:	National Trade Policy
OPEC:	Organization of Petroleum Exp

ABSTRACT

This study examines the influence that specific firm level characteristics have on export intensity of Kenyan manufacturing firms. Three waves of panel data (2007, 2013 and 2018) from the World Bank Enterprise Survey was used focusing on 410 manufacturing firms. The aim of the study is to determine the factors influencing the growth of exports in the manufacturing sector which have been proven to be the driver of growth a country's exports. Due to possible sample selection bias, Heckman selection model is used to preselect exporting firms which are only observable if a firm is an exporting firm. The specified model is then estimated using the 2SLS estimation technique which controls for suspected endogeneity and heterogeneity. The key findings showed a statistically significant positive relationship between export intensity and skilled human capital as well as innovation. Further, the results indicated that larger firms export more than smaller firms due to efficiency and lower cost of production required for export purposes. The study concluded that Kenya needs to rethink its exporting structure and provided policy recommendations aimed at promoting growth of exports in the manufacturing sector and eventually the growth of the country's exports

CHAPTER ONE

INTRODUCTION

1.1 Background

Foreign exchange earnings in Kenya are generated from international trade. Export of goods and services in the country has seen an extraordinary growth over the years in terms of value and has contributed to some extent the easing of pressure on balance of payment as well as opening up opportunities for employment. (Were, et.al, 2002).

The government of Kenya in the Vision 2030 recognizes the importance of trade in its journey towards industrialization and development to become a middle income country. In the second Medium Term Plan (MTP II) of the vision 2030, exports increased to Ksh.594.1 billion in 2016, contributing to 6.7% of GDP, from Ksh.502 billion in 2013. However, it is reported, that although the East African Community remains the largest market for Kenya's exports, the exports to East African Community declined from Ksh.124.9 billion in 2013 to Ksh.114.8 billion in 2017. There was a decline in exports from the manufacturing sector, agriculture and commodities as well. The Common Market for Eastern and Southern Africa (COMESA) is also major export destination for Kenya regardless of the decline in exports by 2.2 percent in 2017 from the previous year to Ksh.166 billion. Other trading partners including European Union, USA, China among others (KNBS Economic Survey 2019).

ELG is envisaged in Kenya's development strategy seen in the country's commitment towards regional and international trade. Kenya signed to join the Africa Continental Free Trade Area (CFTA) in March 2018 along with other 44 African states and is also working to increase the volume of exports to the USA through the African Growth and Opportunity Act (AGOA). The

Tripartite Free Trade Area (TFTA) was ratified in Kenya, as well as the EPA between the EU and EAC partner states. All these, in the effort widen the countries reach in international trade.

Manufacturing is one of the pillars of the vision 2030 that is expected to drive Kenya's economic growth. Studies have shown that exports and manufacturing exports in particular have a significant influence in the growth of an economy. The government of Kenya intends to become the regional (East and Central Africa) provider of basic manufactured goods by 2030 which will be made possible by raising its share in that market to at least 15% by improving competitiveness of the manufactured goods.

Despite all the effort by the government to promote export growth especially in the manufacturing sector through establishment of export processing zones and other policies, evidence shows that the annual export growth in terms of percentages has been fluctuating and the trend is slightly downward slopping. The motivation of this paper therefore, is to examine the performance of Kenya's manufacturing exports taking keen interest in firm level characteristics that influence export intensity. Export intensity being defined as the total output that a manufacturing firm in Kenya is able to sell in the export market. Such firm characteristics include, inter alia, the size of the firm; where a large firm has more capacity and is likely to export more than a smaller firm, percentage of the firm owned by foreigners, age of the firm, human capital and innovation.

The section following the introduction explains the evolution of Kenya's trade policy and export profile. Section 2 contains a brief survey of literature followed by section 3 which discusses the methodology used in the study. Section 4 describes the data and the data sources followed by section 5 which concludes the paper.

1.1.1 Evolution of Kenya's Trade policy from 1963 to 2018

Shortly after Kenya attained independence in 1963, the then government inherited industrialization and trade policy set before them by the colonialists largely focused on import substitution. The policy had protectionist characteristics placing emphasis on promotion of domestic industries advocating for production of import substitutes thus offering protection from international competition. During this period there was a drive towards rapid industrialization with a mission of achieving autonomy or self-reliance. Multinational corporations like United Steel, and Firestone set up shops and started producing in Kenya following the attempts by the government to attract foreign investment Gertz, (2008). Up until 1969 the manufacturing and industrial sectors experienced high rates of growth with exports to the neighboring markets doing well. Textile industries, agricultural produce especially coffee and tea and leather tanning were among the sectors that were performing well during this period.

The 1973-1974 Arab-Israeli war caused the OPEC to enforce an oil embargo, and there was a sudden halt of oil exports to the USA. This decision caused the oil prices in the USA to rise which caused a panic and a crisis ensued. The oil shock slowed down foreign exchange earnings in Kenya resulting in a balance of payment crisis in the country, increasing cost of production and in the face of these challenges the government decided to respond by intensifying import substitution policies; import licensing and tariffs increased considerably. All the same, during this period, the price of coffee increased temporarily absorbing the foreign exchange shock holding off any economic reforms (Granér & Isaksson, 2002).

However, by 1980, coffee prices had come down, dwindling the trade gains made earlier and letting in the impact of foreign exchange shortage on the economy which then diminished prospects of growth. The links that Kenya had made around the region for economic integration

were not doing well, given the collapse of the EAC in 1977, instability in the neighboring Uganda which heavily contributed to shrinking of Kenya's export market. At this point, it was clear that the import substitution trade policy was failing and to resuscitate the economy the government needed to get help.

Kenya government, following persuasion from the World Bank adopted a more outward looking trade policy, and received a Structural Adjustment Program loan conditioned on adaptation of more liberal policies and practices. This marked the transition from import-substitution strategy to export-led growth trade policies, and the government showed its commitment through the, Sessional Paper No.1 of 1986 on Economic Management for Renewed Growth, which largely expressed the government's will to liberalize the economy (Granér & Isaksson, 2002).

In the mid-1980s the government reduced tariffs, loosened restrictions on imports and laid down other barriers to trade such as quotas and licenses following on its liberalization commitment. Tariff bands for instance reduced from 15 to 4 between 1990 and 1998. This began the process that led to the Kenya government adopting tariffs as its main instrument of trade later on. Export promotion programs were initiated to help propel trade especially for manufactured exports. Some of the initiatives and schemes included Export Processing Zones (EPZs), Manufacturing Under Bond (MUB), Export Guarantees among others.

These reforms notwithstanding, the problem of foreign exchange restrictions was considered an even greater barrier to trade as compared to tariffs and quotas. All foreign currency transactions before the reform was controlled by the government pegging import demand on foreign exchange allocations available. In 1982 the government adopted a foreign exchange policy that pegged the exchange rate on a basket of currencies of principal trading partners. Finally, after adopting a dual exchange rate policy and undertaking a currency devaluation, in 1990, Kenya sought to adopt a

floating exchange rate in 1993. Export earnings in this period increased significantly, in the order of 20% between 1993 and 1996.

The manufacturing sector experienced a dramatic recovery, mostly credited to regional integration reforms and liberalization measures. The government reduced controls on the coffee and tea subsectors giving the market autonomy in its operations increasing earnings from exports. Incentives were provided to the manufacturing sector, the EPZs, boosting production and increasing export volume especially the apparel sector exporting to the USA. Regional integration initiative, increased market access for Kenyan exports, under the East African Cooperation (EAC) now the East African Community (EAC) which introduced a common external tariff (CET) in 2005, as well as (COMESA). A case in point is the record increase of exports to COMESA in the order of 34% between 1992 and 1998 (Gitonga, 2015).

Export oriented growth is still the trade policy used in Kenya as of the year 2020 as embedded in the Kenya National Trade Policy's vision which is "To make Kenya an efficient domestic market and Export Led globally competitive Economy". However, the government introduced a development plan in 2008 known as the vision 2030 that aims to transform Kenya into an industrialized medium income country by 2030. The program has five-year medium term plans that guide its progress with a keen interest in trade development (Gitonga, 2015).

1.1.2 Composition of Exports

Kenya's export profile largely consists of primary goods such as tea, horticulture and coffee which have been the country's main exports since the import-substitution regime. Up to early 2000s Kenya's exports were highly concentrated both for product and market shown by the Herfindal index indicating 0.1 for products and 0.26 for market. However, concentration has since decreased due to diversification of export goods and wider market access.

In 2018 domestic exports rose from Ksh. 530.6 in 2017 to Ksh. 541.5 billion with food and beverage remaining the highest contributor of domestic exports earnings accounting for 47.7 percent in 2018

The composition of exports is as follows:

Table 1: Composition of Exports

Commodity	% of domestic exports	2018 Ksh (billions)	2017 Ksh (billions)	Variance
Food and beverages	47.70%	258.4	254.7	1.43%
Industrial supplies(Non-food items	23.54%	127.4	125.4	1.57%
Fuel and lubricants	0.86%	4.7	5.2	-10.64%
Machinery and other capital equipment	1.25%	6.8	7.1	-4.41%
Transport equipment including industry and non-industry motor vehicles	1.12%	6.1	4.4	27.87%
Consumer goods(durable, semi and non-durable)	25.49%	138	133.7	3.12%
Total Exports		541.5	530.6	2.0%

This section clearly shows that Kenya has diversified its exports basket to a considerably noteworthy extent enabling the country to access a larger share of the world market. However, the

volume and the value of the exports needs to similarly increase at a higher proportion to realize growth of exports.

1.2 Statement of the problem

The National Trade Policy (NTP) is aimed at unleashing Kenya's international trade potential to place the country in the world market as a competitive player and grow the domestic economy on an export led footing. Kenya adopted the ELG strategy, which has worked fairly well in the South East Asian countries enabling them to attain sustained high growth level of exports and economy. A lot of emphasis has been placed on growth of exports as the driver for Kenya's economic growth as evidenced in the country's trade policies.

Kenya's export of goods and services as a percentage of GDP in 2018 was 13.18 percent which is low as compared to the world average at 44.74 percent. This means that Kenya's main economic driver is domestic consumption which accounted for 81.17 percent of GDP in 2018 which is significantly above the world average placed at 63.64 percent as of 2018 (Kenya Economic Survey, 2019).

Evidence show that there has been growth in the value of the Kenya's exports of goods and services as shown in figure 1 but on the other hand the growth in terms of percentage year on year has been fluctuating and the trend is downward sloping as shown in figure 2.

Figure 1: Kenya Exports of goods and services

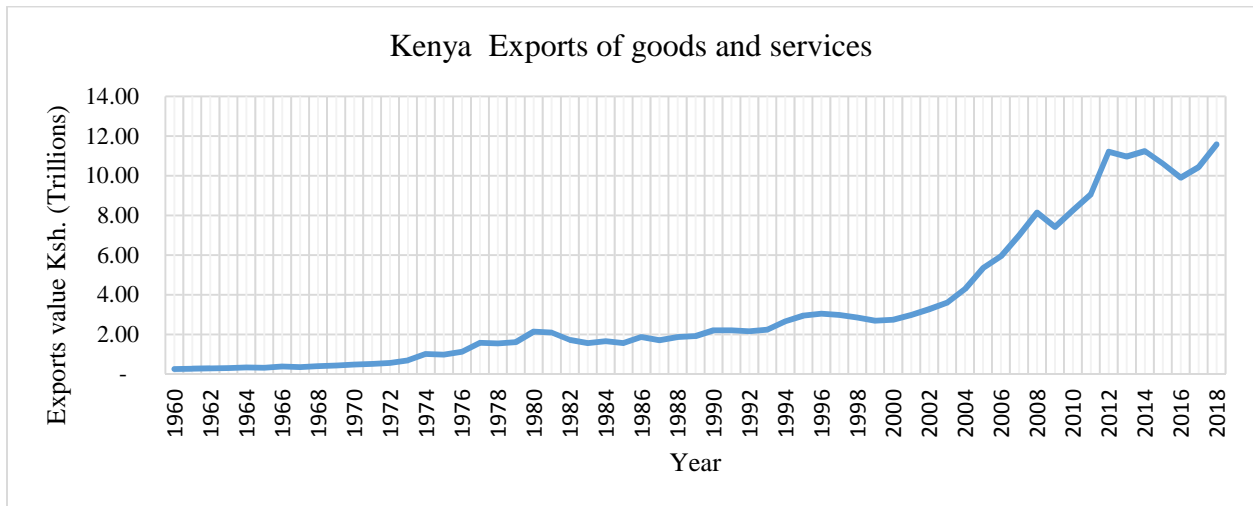
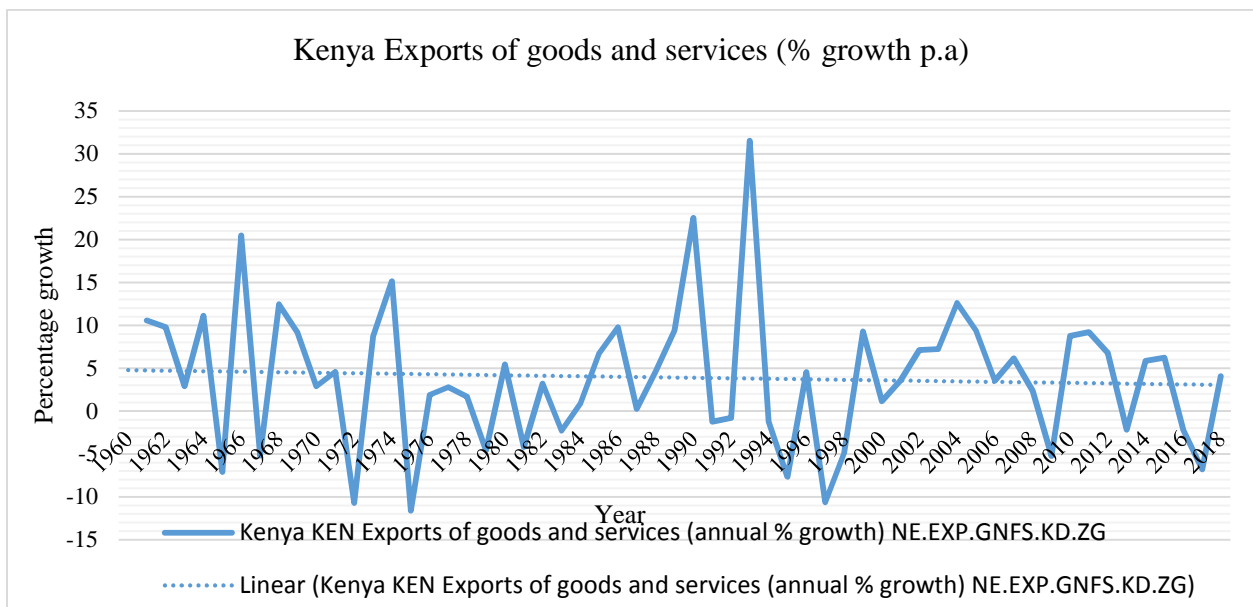


Figure 2: Kenya Exports of goods and services (annual % growth)



Despite efforts to promote exports in Kenya, through policies and establishment of Export processing zones (EPZs), we have not been able to achieve a sustained high growth level in exports. Looking at the Africa Growth Opportunity Act (AGOA) initiative, as of 2018, Kenya was able to export only 470 products to the United States out of the 6,500 products eligible for export under AGOA with apparel taking the largest percentage. Global trade growth is at its all-time high

and is even growing faster than the growth of global economy. The same picture is not presented in the case of Kenya's exports, the question being, what is preventing Kenya from capturing a greater share in the global market?

Previous studies have shown that, to achieve a significant growth in exports, manufacturing exports, play a crucial role. It has been noted that manufacturing sector has a high employment multiplier, for instance, a previous study found that in the manufacturing sector 100 jobs had the potential to produce 239 jobs in other sectors. It is therefore important for Kenya to grow its manufacturing exports if prolonged economic growth is to be realized.

It appears though, that in Kenya, it has been difficult to achieve prolonged high growth to be at least on the same trajectory as its South East Asian counterparts who are using the ELG strategy. This paper seeks to identify the factors that determine how much manufacturing firms export in the export market by examining specific firm level characteristics and how they influence the export intensity. Export intensity being the total output that a manufacturing firm in Kenya is able to sell in the export market.

1.3 Research Question

Why is Kenya struggling to export more of its manufacturing merchandise to the global trade market?

1.4 Objectives of the Study

1.4.1 General Objective of the Study

The main objective of this study is to examine factors among Kenyan manufacturing firms that influence how much they export.

1.4.2 Specific objectives

1. To identify the factors that influence export intensity among exporting firms in Kenya's manufacturing sector
2. To propose policy recommendations to improve export performance

1.5 Justification of the study

The National Trade Policy of Kenya is hinged on export oriented strategy. Previous studies have shown that the export-oriented strategy has worked in other countries more so the Southeast Asian countries that were at the same economic level as Kenya in the 1960s. Yet Kenya has not experienced the high level of extended growth to even meet its GDP growth target of 10 percent annually.

There has not been a conclusive explanation on the factors that determine export intensity in Kenya based on the previous studies on manufactured exports that majorly focused on the macroeconomic factors. This study intends to focus on the microeconomic factors (analyzing firm characteristics) using the most recent panel data from the World Bank Enterprise Survey in order to shed light on areas where policy makers should turn their focus and more importantly raise questions that trigger conscious inquiry into the country's trade policy. The paper lays out policy implications based on the findings aimed at improving the performance of exports in Kenya as well as pointing out areas that need further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers the survey of literature in the area of study both theoretical and empirical providing a critique of the literature and a pointing out gaps that this study intends to fill.

2.2 Theoretical Literature

There are multiple studies done in the area of international trade and a significant number of them showing how international trade theories have evolved. The firm heterogeneity model or the “New” New Trade Theory as is commonly referred is a mainstream theory in international trade. Bernard et al (2007) in their study found that exporting firms were associated with productivity levels higher than that of non-exporters, further, those exporting firms included just a few highly productive firms. The earlier trade theories including the New Trade Theory and the Heckscher-Ohlin model could not explain this phenomenon; that exporting firms comprised only few but very highly productive firms. Meltz (2003) in his model based on the premise that exporting firms were only the few highly productive firms proposed that only those highly productive firms had the ability to generate enough profit to meet the high cost of production required for export for example fixed costs (setting up factories). The “New” New Trade Theory actively uses individual firm characteristics with the assumption that firms are heterogeneous to explain export behavior of firms.

Numerous arguments have been presented concerning exports being one of the major factors that stimulate growth of the economy. Exports and economic growth according to most influential studies have positive relationship largely attributed to positive externalities received from

engaging in foreign markets. According to Siliverstovs & Herzer (2007), the basic principal for regarding exports as an engine of growth is that exports contribute to output growth through the increase of aggregate demand. Increased aggregate demand stimulates production leading to increase in both employment and output in the economy.

Studies looking at the connection between economic growth and exports in developing countries found that exports of goods and services to international markets opens up the domestic market for technology transfers, and learning by exporting effect where there is transfer of knowledge and skill. Balassa (1985), De Loecker (2007). Such skills and knowledge earned by exporters improve management skills and efficiency improving production capacity of the economy. On the flip side questions have been asked about export led growth like the famous Dani Rodrick's "Is export led growth passe?" suggesting that the strategy has outlived its purpose and it could be time for a new regime. Many countries having tried to adopt the strategy including Kenya but not being as successful because of not fulfilling domestic preconditions for this strategy to work.

Studies have been done on the issue of composition of exports and they confirm that the impact exports have on economic growth is positive, however, the effect of the manufacturing export sector is statistically more significant on growth as compared to primary exports sector (Fosu, 1990). The argument is that exports from manufacturing sector are less volatile, less sensitive to price shocks and other changes in the international market compared to primary exports.

2.3 Empirical Literature

Various studies have been done on the area of manufacturing exports illustrating the linkage between firm characteristics and export intensity. This section highlights some of those studies.

Söderbom & Teal (2003) investigated the effect of manufacturing exports on economic growth of nine African countries. The study estimates a reduced form production function by means of probit models using maximum likelihood. Evidence shows a positive link between export and income growth which was true for several countries. However, the study also found that in some other countries, major factors that slow down growth of manufacturing exports is the small size of firms and the level of efficiency. The study also looked at labour and capital intensity of firms controlling for size and age concluding that African firms have more potential to export labor intensive goods like garments thus, to improve performance of exports large firms for obvious reason should be relatively more labour intensive. However, the research used data from a past period, in my view, more recent data would probably show different result.

Abbas, Sheikh & Abbasi (2015) investigated the relationship between export performance and the size of the firm in Pakistan's manufacturing sector. The study used panel data and OLS to estimate the structural performance model and found a positive link between firm size and export performance. The explanation given involved firm economies of scale that contribute to its competitiveness in terms of price and standards, also large firms benefit from learning by doing spillage. The paper however does consider the fact that some firms however large might be built to serve the domestic market which might influence the overall export intensity of manufacturing firms.

Jongwanich, (2010) examined the determinants of export performance among eight East and Southeast Asian countries focusing on the role of real exchange rate on exports emphasizing on export components and parts. Exports were estimated in three categories, total merchandise, manufacturing exports and transports and machinery equipment. The reduced form model used determined export volume as a function of world demand, real exchange rate, production capacity and foreign direct investment. The results showed that world demand, production capacity and FDI have an increasing significance in determining the performance of exports. The findings also showed that diversifying exports from the traditional assembly of components and manufacturing has weakened the relationship between real exchange rate and performance of exports.

Hao & Cervantes, (2016) investigated the link between innovation and export growth sustainability on Chinese manufacturing firms using the Heckman model. The study revealed that relationship between innovation export intensity margin is U-shaped using the threshold effect test to verify the non-linear relations. The study does well to show that innovation has a dynamic effect on export performance. However, the study was only limited to the relationship between independent firm's innovation suggesting a further study to incorporate openness of innovation in the research.

Jongwanich & Kohpaiboon (2008) using evidence from Thai manufacturing firms the paper sought to find out the effect of foreign ownership on export performance. The results showed that those multinational corporations had a higher propensity to export than domestically owned firms concluding that policies aiming to attract MNCs would enhance export intensity. On the flipside, the study acknowledges that influence of MNCs on export spillovers is far from automatic or linear. A further investigation on how protectionist policies affect MNCs activity that translates to high export is needed.

Fugazza (2004) studied export performance and its determinants splitting the determinants into internal and external components. A gravity model was used to identify the extent to which export components constrained export performance. The findings for sub-Saharan African countries at the time of the study indicated that intra-regional trade was declining due to supply capacity constraints. The results further indicated that in other regions like Southeast Asia export growth was explained by increasing supply capacity. It was also found that limited access to foreign market translated to poor export performance. The limitation of the study however is that it was carried out on an aggregate level, a more sectoral specific approach would give more targeted results on the topic.

Were et al, (2002) analyzed the performance of Kenya's export focusing on factors that influence the country's export volumes. Export volume was categorized into traditional exports majorly coffee and tea during the time of the study and other exports. The standard trade model determined exports as a function of real exchange rate, real foreign income and investment as a proportion of GDP. The results showed that real exchange rate has a significant influence on export performance. The study showed changes in the patterns of composition of trade, with volumes of coffee reducing and volumes of horticulture in other exports increasing significantly, indicating a reduction in Kenya's heavy dependence on traditional exports. Nonetheless, the study did not consider the influence of non-price factors on export performance and the contribution of exports in the manufacturing sector in the export performance.

Seyoum, B. (2007) studied the performance of exports in developing countries under the (AGOA) to mainly assess impact of AGOA on exports of those countries. The study used the Wilcoxon ranked test approach incorporating ARIMA regression analysis in its investigation and found that AGOA has a positive but not statistically significant effect on exports of beneficiary countries. In

sectoral comparison, only textile and apparel exports showed significant effects from AGOA. This led to conclusion that it's not only trade barriers that limit export growth in developing countries since AGOA promoted duty free exports, suggesting that other factors include severe financial constraints and limited production and trade capacity of high value added products among others. There, however, has been several policies by the government of Kenya with the end of promoting exports especially in the manufacturing sector including AGOA, so there is room to study how these policies impact export intensity.

Kipsaat (2019) studied the factors that determine export intensity in manufacturing firms in Kenya using panel data focusing on firm level characteristics to explain export intensity. The paper used the Heckman model for sample selection and OLS for estimation of the model and found that ownership (foreign or domestic), innovation and certification significantly influence firm export intensity. This paper provided valuable insight on how Kenyan firms would increase its exports, focusing on the microeconomic factors at the firm level. To investigate the subject further, more recent data observing a longer time span would shed more light and provide more dependable results.

Bigsten & Gebreeyesus (2009) studied the causal relationship between firm productivity and exports with evidence from manufacturing firms in Ethiopia. The study used total factor productivity as a measure of productivity using panel data observed for ten years at firm-level. Abala, (2013) noted that exporting firms had higher productivity and paid their productive workers 1.6 times more than non-exporting firms. Further literature reviewed however, was not conclusive on the causality direction between productivity and exports, but several studies have suggested that other factors like learning-by-exporting and spillovers influence the direction of causation.

2.4 Overview of the Literature Review

According to trade theory, exporting firms are few but highly productive; a characteristic that enables them to generate a high level of income enough to meet the high cost of production for export purposes Meltz, (2003). There is therefore, a clear relationship between high productivity and exporting firms.

The literature reveals that there is an evident link between exports and GDP growth of a country upholding the importance of trade in exports in any economy. It has also been established in the literature that the composition of exports is important determinant of export performance, with multiple recommendations to diversify exports, moving away from traditional exports to high value added commodities. It is also evident that manufacturing sector exports significantly influence export growth of a country and looking at the characteristics of manufacturing firms; firm size, age of firms, ownership (foreign or domestic) and human capital among others, the literature reveals that these characteristics impact the export intensity of manufacturing firms. This study examines these same characteristics in the case of manufacturing firms in Kenya observing how they affect export intensity.

To contribute to the extensive literature on export performance, this study brings a better understanding of Kenya's export performance by focusing firm level characteristics of exporting firms in the manufacturing sector using more recent data. The paper uses panel data which makes it possible to account for individual firm specific effects and how they influence volume of exports by a firm.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the theoretical framework, model specification, definition of variables, data types and sources as well as the data analysis techniques that were applied.

3.2 Theoretical Framework

This study adopted Heckman sample selection model because of suspected sample selection bias. To enter into the sample for analysis, manufacturing firms were non-randomly selected on a condition that the firm had to be an exporting firm. The sample selection rule applied in this case was such that data was only available on P_{1i} if $P_{2i} > 0$ while if $P_{2i} = 0$ then P_{1i} had no observations. Where P_{2i} represents exports and P_{1i} manufacturing firms.

Heckman (1979) noted that bias arises when a non-randomly selected sample is used to estimate behavioral relationships and this causes a problem of loss of efficiency and the results cannot be relied upon. To take care of this problem the study uses the two step Heckman sample selection model.

The first step is modeled as the probit model, where a firm's probability to export is measured for the full sample:

$$P(E = 1 | X_i) = \Phi(X_i \beta) \dots \dots \dots 1$$

Where:

P = Probability

E = indicates whether or not a firm is an exporter (E=1 if a firm is an Exporter, 0 otherwise)

X = Independent variables

Y = Exogenous parameters

θ = cumulative distribution function(CDF) of standard normal distribution (export intensity predictor for each firm)

To take care of the sample selection bias, we include the inverse Mills ratio which will act as an additional variable in the stage that follows, given as;

$$\lambda_i = \frac{\theta(X_i Y_i)}{1 - \theta(X_i Y_i)} \dots\dots\dots 2$$

Where, θ is the CDF and λ_i is the Inverse Mills Ratio IMR linked to an individual firm. The λ_i here represents the effects of the unobservable characteristics that are related to the manufacturing firms' propensity to export.

In the second stage, the export intensity equation is specified, by converting the previous individual probabilities as independent variables to correct for firm pre selection bias. The IMR (λ_i) is included in the equation as a regressor to act as the control factor for the unobserved characteristics. The λ_i represents the effects of the unobserved characteristics related to the decision to export while the coefficient of λ_i will explain the part of the unobserved firm characteristics related to export intensity.

$$P^* = X_i \beta + \mu \dots \text{if } S_i = 1 \text{ assume } \mu, \text{ dist } N(0, \sigma^2) \dots\dots\dots 3$$

$$P^* = 0 \text{ if } S_i = 0 \dots\dots\dots 4$$

Where:

P^* = export intensity, not observable if a firm in a non-exporter

X_i = Factors influencing export intensity (firm characteristics including: firm size, innovation, foreign ownership, firm age and human capital, industry, imr)

The assumption made for this model is that the error terms are normally distributed. The conditional expectation for exporting firms can therefore be shown as,

$$E(P_{1i} | X_i, P_{2i} > 0) = X_i \beta + E(\mu | X_i, P_{2i} > 0)$$

3.3 Model Specification

The study identifies a number of variables that would explain export behavior at the firm level which includes firm size, innovation, foreign ownership, firm age, human capital and industry. The definition of export intensity in this study is the ratio of a firm's annual revenue from export sales to total annual sales of the firm.

Export intensity = f (Firm size, innovation, foreign ownership, firm age, firmage², firm's human capital, industry dummies, imr)

The study uses two stage Least Squares approach to estimate the model because we suspect presence of endogeneity caused by unobserved heterogeneity. Due to the non-randomness in the sample selection, it is likely that omitted variable bias might occur leading to variations in the individual observations causing endogeneity (correlation between error term and explanatory variable). It is possible to control for endogeneity and heterogeneity using 2sls and obtain robust results as compared to OLS regression. Basile, (2008) noted that when selecting instrumental variables, exclusion restriction is assumed, that the instrumental variable does not have a direct causal effect on the outcome variable.

The model estimated is as follows:

$$\text{Exp}_i = \beta_0 \text{FSize} + \beta_1 \text{Innovation} + \beta_2 \text{FOwnership} + \beta_3 \text{FAge} + \beta_4 \text{FAge}^2 + \beta_5 \text{HumanCapital} + \beta_6 \text{Industry} + \beta_7 \lambda_i + \mu$$

3.4 Definition and Measurement of variables

Table 2 : Definition and measurement of variables

Variable	Description	Measurement	Priori Expectation
Export Intensity	The dependent variable, defined as the ratio of exports to total sales p.a of firm i	Derived by exports/total sales per annum of firm i	
Firm size	Number of a firm's full time workers	Small < 50 workers Medium 50 > workers < 100 Large > 100 workers	Indeterminate (+ or -)
Innovation	Improvement of manufacturing process like addition of technology (dummy variable)	New product introduced or a significant improvement of a product over the past three years.	(+) Positive
Foreign ownership	The status of firm ownership	Firm with Percentage of Foreign ownership = 1, Else = 0	(+) Positive
Firm age	Number of years the firm has existed calculated by (2018-year firm was established)	Firm age younger than 20 years = 1 Between 20 and 50 = 2 Older than 50 years = 3	Indeterminate (+ or -)
Firm Age ²	The square of the number of years the firm has existed	Calculated as the square of firm age to determine linearity	(+) Positive
Human Capital	Skill level of workers in a firm	Measured by the number of full time production workers that are skilled and unskilled	(+) Positive

Variable	Description	Measurement	Priori Expectation
Industry	The industry that a firm i belongs to (dummy variable)	Textile = 1 Food=2 Chemicals=3	Indeterminate (+ or -)

3.5 Data types and Sources

The study employs secondary panel data of three waves 2007, 2013 and 2018 from the World Bank Enterprise Survey. The data was collected from a number of manufacturing firms in Kenya from different industries. The study takes an interest in the exporting firms among the manufacturing firms in the dataset which are 410 in number. The firm being the basic unit of study.

This paper focuses on the information available about the individual firm characteristics like year of incorporation, firm exports, size of the firm, innovation activities, foreign ownership status among other characteristics. The panel data provides this information about the firms over the three waves of interest to the study.

Panel data is good for the study because it contains both time series and cross-sectional components that allows for analysis of a number of economic questions not possible using time series or cross-sectional data alone such as the change of individual units over a certain period of time. It allows the researcher to analyse observable characteristics that may be constant or vary over time as well those individual characteristics that cannot be observed.

The STATA 15.0 statistical package is used to analyse the data.

3.6 Estimation Method

The study uses 2SLS method to estimate the specified model. The approach is selected because there is suspected endogeneity resulting from omitted variables occurring due to non-random sample selection which can be corrected by 2SLS. There is also presence of unobserved heterogeneity occurring due to firm specific effects. The presence of endogeneity in the regressors makes the estimates inconsistent and thus the inferences cannot be relied upon. To correct endogeneity problem, 2SLS uses instrumental variables which works by focusing on variations of the independent variable that are not correlated with the error term and disregarding the variations in the independent variable that cause the OLS coefficients to be biased.

The study assumes that the relevance assumption is met, (Wooldridge,2009) such that the instruments selected and the endogenous regressors are correlated sufficiently. To imply that the instrumental variables have direct causal effect on the endogenous variables. This is necessary to avoid asymptotic bias resulting from weak instruments. The exclusion restriction ensured that the instruments only affected export intensity through the endogenous variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides the results of the analysis of the secondary panel data obtained from the World Bank enterprise survey through the use of STATA software for statistical analysis.

4.2 Descriptive Statistics

Table 2 gives a brief summary of descriptive statistics including the number of observations, mean, standard deviation, max and min as well as the skewness and kurtosis.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
Export intensity	410	.3463049	0	.3201029	0	1	1.9450	4.3195
Innovation	410	.6731707	1	.4696273	0	2	0.3532	1.1243
Firm age	410	1.634768	2	.6532924	1	3	0.6127	2.3634
Firmage ²	410	3.004768	4	2.396292	1	9	1.2088	3.9117
Foreign ownership	410	18.01746	0	33.58344	0	100	2.7859	9.2249
Firm size	410	1.485854	1	0.789442	1	3	1.1714	2.6415

It was observed that the values of the mean and median values are almost identical, and the values of skewness are close to zero. This implied that the variables are normally distributed (Mishra, Pandey, Singh, Gupta, Sahu & Keshri, 2019). It can be noted however, that some variables including firm size, foreign ownership and export intensity are slightly positively skewed implying that their distributions have longer right tails than left ones. On the other hand, relatively small standard deviations observed for all the variables implies that they are not dispersed significantly from their mean values. Finally, kurtosis statistic, which measures sharpness of the peak of a frequency-distribution curve, indicated that all the variables are platykurtic with the exclusion of

foreign ownership. This means that the rest of the variables' distributions are flatter than a normal distribution, with a wider peak. This is because their values are less than 3 (McMillan and Schumacher, 2014).

4.2 Model Estimation

The study estimated a two stage least squares model in order to control for endogeneity resulting from omitted variables due to the non-random sample selection. The Heckman two step selection model was used to take care of sample selection bias occurring due to the presence of unique firm characteristics. The Heckman model generates the inverse mills ratio that is used as a regressor in the 2SIS model to control for the effects of unobserved firm characteristics on export intensity.

The following pre-estimation tests were carried out to test the nature of the data confirm suitability of estimation technique and to check the features of the panel data before estimation.

4.2.1 Panel Unit root test

A unit root test was done using the Levin-Liu-Chin variable and it showed that all the variables are stationary at level apart from unskilled human capital.

4.2.2 Test for individual effects

The F two-way statistic as described by Kunst (2010) indicated that there was a presence of unique or unobserved characteristics presented by individual firms signifying the presence of heterogeneity.

Table 4: F two-way statistic

Effects test	statistic	d.f	prob	interpretation
F statistic	0.46571	(65,451)	0.5820	Fail to reject H_0
Chi square	6.3872	13	0.3619	Fail to reject H_0

4.2.3 Endogeneity test

The Durbin Watson test is employed to test for endogeneity whose findings point to a statistically significant presence of covariance between the error terms and the explanatory variable.

4.3 Results

The table 4. Presents the regression results output from the IV2SLS regression.

Table 5: Regression results

Variable	2sls
Innovation	0.0389*** (3.049)
Firm age	0.6118 (1.782)
Firmage ²	0.0008* (1.401)
Foreign ownership	0.0107** (2.114)
Frim size	
Large	0.9940*** (4.540)
Medium	0.1018 (0.183)
Human Capital	
Skilled	0.0073** (2.678)
Unskilled	-0.0921* (0.070)
Industry	
Food	0.0601* (0.041)
Textile	0.2187*** (-0.910)
Chemical	-0.0536 (0.208)
Inverse Mills Ratio	0.4577 (-2.595)
Constant	0.36971
Observations	410
R²	0.3179
Adjusted R²	0.2158

Source: Authors computations

Key:

- I. T-statistic in parenthesis
- II. Significance at *, ** and *** stands for significance at 10%, 5% and 1% percent respectively.

Innovation was marked by whether a new product was introduced in the market over the last three years by a firm or significant changes made on an existing product. The results show that those firms that introduced a new product in the market exported more by 0.0389 as opposed to those that did not. This can imply that a firm used technology to improve competitiveness of their products and hence were able to export more. This is in line with the apriori expectation that innovation has a positive effect on export intensity and the findings of Hao, Qiu & Cervantes (2016).

Firm age appears to have no significant effect on the export intensity of a firm, implying that an older firm does not necessarily have more capacity to export than a relatively new company. However, the square of age has a positive significant relationship with export intensity. This suggests that the older the firm gets it would export 0.0008 more units than a newer firm. This can be justified by the fact that older firms have more experience in the business which is in agreement with the findings of Lucas, S. (2017) and therefore have networks and connections to enable them reach a larger market.

The size of the firm was measured by the number of full-time production workers employed in the firm. A firm with 100 and more full time production workers was categorized as large, 50-99 full time workers (medium) and a small firm with less than 50 full time workers. As a categorical variable size small was taken as the base for firm size. Large firms exported 0.9940 units more than other firms (medium and small). This corroborates the finding of Abbas et al (2015), that concluded that large firms are more efficient and are able to reduce sunk costs involved producing

for export hence have the ability to export more. A large firm enjoys economies of scale both internal and external. A large firm is able to produce large volumes of goods and services at a lower cost as compared to smaller firms. Larger firms according to theory are more efficient such that they have the capacity to employ better quality staff (experts) and more experienced managers who ensure operations run efficiently. Externally, a large firm is more likely to receive government support in terms of tax holidays and financing either from government or financial institutions. Large firms can therefore, easily diversify or increase their production volume for export market explaining the positive relationship between large firm size and export intensity.

Similarly, the results showed that firms fully or partly owned by foreigners exported 0.0107 units more than fully domestically owned firms. This is because foreign owned firms have access to international markets simply because of their foreign owners. It is possible that such firms were set up in Kenya for production of products that the country has a comparative advantage specifically meant for export. Thus, the export intensity of foreign owned firms is higher than that of fully domestically owned firms which is in agreement with the apriori expectation.

Human capital marked by the number of skilled workers in a firm indicate that firms that employ skilled workers export 0.0073 units more than those that do not. There is a negative relationship between unskilled labour and export intensity. The firms that employ a large number of unskilled workers export less by 0.0921. This indicates that human capital is important for production of manufacturing output, that is, the more skilled the labour force is, the more efficient and competitive the output. Export market demands for competitiveness of goods and services majorly in line with the set international standards.

The results from industry dummies portrayed weak statistical significance on the export intensity question. However, the firms that produced textile and garments exported 0.2187 more units than

other firms considered in this study probably because of the Kenya Government support extended the industry through the establishment of Export processing zones and the inter-governmental partnerships like AGOA.

The inverse mills ratio calculated from the Heckman first stage model had a positive coefficient of 0.4577 and was not significant at 5 percent level of significance. Thus, implying that unobservable characteristics from sample selection bias have a positive but not have significant influence on export intensity in this study. More importantly, it can be noted that the R-squared is 0.3179 implying that 31.8 percent of the dependent can be explained by the independent variables. The explanatory variables are significant but the R-squared value is slightly low because of the correlation between the dependent and the independent variable, meaning that the model fails to explain fully the variation in the dependent variable.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1 Summary of findings

This study examined the influence that specific firm level characteristics have on export intensity of manufacturing firms using three waves of panel data 2007, 2013 and 2018 from the World Bank Enterprise Survey. The study used the Heckman selection model to preselect exporting firms then later on adopted the 2SLS estimation method to estimate the specified model. Some of the variables that were instrumented include work experience of managers, and highest level of education of top managers. The 2SLS was selected in order to control endogeneity and because of its ability to provide more robust results than other approaches like the control function approach. The study was able to observe 410 Kenyan manufacturing firms from over the 2007 to 2018.

The findings showed a statistically significant positive relationship between export intensity and skilled human capital and innovation. Further, the results of this paper agree with other studies that large firms export more than smaller firms due to efficiency and lower cost of production involved for export to meet set standards. The foreign ownership dummy also indicated that foreign ownership has a statistically significant influence on export intensity of firms. The study however showed that industry had little significance on export intensity with the exception of textile industry that has received a lot of support in terms of finances and infrastructure in the recent past from the government of Kenya.

5.2 Conclusion

In summary, it is evident that the results found in this paper are in agreement with other studies performed earlier like Abbas, Sheikh & Abbasi (2015), Abala (2013), Granér & Isaksson (2002), Kipsaat (2019), Lucas, S. (2017) among others. The factors that influence export intensity have remained the same over a significant period of time which signify that there is enough knowledge to enable firms to work on ways to improve their performance or increase export volume.

From the results, it is notable that most Kenyan firms (domestically owned) do not fully specialize in exporting since most firms are small and medium sized hence cannot meet the competitiveness and standards of the international market as well as the costs involved with producing for export. Because of the small scale operations also, it implies that Kenya's manufacturing industry is highly labour intensive hence incur more cost in production and are less efficient. This however, does not explain fully why Kenya is struggling to grow its exports especially in the recent past where there has been technological improvement and globalization. Transport networks are efficient, communication is easy, information is easily available and markets are easier to access in the 21st century than in the early years.

Perhaps, some of the reasons why Kenya is not able to capture a larger market share in the international market is that governments are implementing protectionist measures. In the same fashion, most countries have been increasing barriers to trade especially outside Africa, in countries like USA and within Europe and Asia.

5.3 Policy Implications

The Kenya government through the Kenya Manufacturers Associations is deeply involved in the promotion of the manufacturing sector. It has been noted, however, that majority of the firms in Kenya are small and therefore highly labour intensive and hence cannot be able to produce for export nor meet international competitive standards. The government of Kenya through policy can provide an enabling environment by lowering cost implications involved in import of machinery and plant equipment in terms of duty and taxation as well as providing avenues for access to credit through financial inclusion policies.

More importantly, the study shows that skilled workers impact export intensity positively, it is therefore necessary for the government to invest in the education of its young people as and when they become members of the working population. This will improve efficiency in production as well as competitiveness of our exports.

It is also important that the government takes advantage of the African market through the ACFTA especially in light of the fact that other governments are becoming more protectionist hence shrinking our foreign market. Finally, it is necessary that policy makers think about other means of growing the economy rather than placing too much emphasis on export-oriented growth which has not yielded desired results of sustained high level growth for our economy since its inception.

REFERENCES

- Abala D.O, (2013). Export propensity and intensity of Kenyan manufacturing firms: An empirical analysis.
- Abbas, A., Sheikh, M. R., & Abbasi, M. N. (2015). Firm size, exchange rate and exports performance: A firm level study of Pakistan's manufacturing sector. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 9(3), 818-836.
- Balassa, B. (1985) "Exports Policy Choices, and Economic Growth in Developing Countries after the 1973 Oil Shocks" *Journal of Development Economics*, Vol. 18: 23-35.
- Bascle, G. (2008). Controlling for endogeneity with instrumental variables in strategic management research. *Strategic organization*, 6(3), 285-327.
- Bernard, A. B., Jensen, J. B., Redding, S. J., & Schott, P. K. (2007). Firms in international trade. *Journal of Economic perspectives*, 21(3), 105-130.
- Bigsten, A., & Gebreyesus, M. (2009). Firm productivity and exports: Evidence from Ethiopian manufacturing. *The Journal of Development Studies*, 45(10), 1594-1614.
- Bussolo, M., & Nicita, A. (2005). Trade policy reforms. *Analyzing the Distributional Impact of Reforms*, 1.
- De Loecker, J. (2007). Do exports generate higher productivity? Evidence from Slovenia. *Journal of international economics*, 73(1), 69-98.
- Fosu, A. F. (1990). "Export composition and the impact of exports on economic growth of developing economies". *Economic Letters* 34, pp67-71.

- Found, A. (2005). Are exports the engine of economic growth?: An application of cointegration and causality analysis for Egypt. African Development Bank. Economic Research working Paper series, (76).
- Fugazza, M. (2004). Export performance and its determinants: supply and demand constraints. *Available at SSRN 1281486*.
- Gertz, G. (2008). Kenya's trade liberalization of the 1980s and 1990s: Policies, impacts, and implications. Background paper on the impact of Doha Round on Kenya.
- Ghimire, S., Mukherjee, D., & Alvi, E. (2016). Aid for Trade and export performance of developing countries. *Applied Econometrics and International Development*, 16(1), 23-34.
- Gitonga, N. N. (2015). The evolution of Kenya's trade policy. *Indian Journal of Economics and Development Vol 3, 1*, 120-126.
- Granér, M., & Isaksson, A. (2002). Export performance in the Kenyan manufacturing sector. *Structure and Performance of Manufacturing in Kenya*, Hampshire: Palgrave.
- Hao, L., Qiu, B., & Cervantes, L. (2016). Does Firms' Innovation Promote Export Growth Sustainably?—Evidence from Chinese Manufacturing Firms. *Sustainability*, 8(11), 1173.
- Hendry, D. F. (1995). *Dynamic econometrics*. Oxford University Press on Demand.
- Imbens, G. W., & Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of economic literature*, 47(1), 5-86.
- Iwanow, T., & Kirkpatrick, C. (2007). Trade facilitation, regulatory quality and export performance. *Journal of International Development* 19(6), 735-753.

- Jongwanich, J. (2010). Determinants of export performance in East and Southeast Asia. *World Economy*, 33(1), 20-41.
- Jongwanich, J., & Kohpaiboon, A. (2008). Export performance, foreign ownership, and trade policy regime: Evidence from Thai Manufacturing.
- Kipsaat, K. J. (2019). Firm Characteristics and Export Intensity in Kenyan Manufacturing Firms: An Empirical Analysis. *Journal of Business and Economic Development*, 4(1), 31.
- Kunst, R. M. (2010). Econometric methods for panel data. *Institute for Advanced Studies Vienna*.
- Lucas, S. (2017). The impact of demographic and social factors on firm performance in Kenya. *Journal of Business and Economic Development*, 2(4), 255-261.
- Melitz, M. J. (2003). The impact of trade on intra industry reallocations and aggregate industry productivity. *Econometrica*, 71(6), 1695-1725.
- Paudel, R. C. (2014). *Export performance in developing countries: A comparative perspective*. Arndt-Corden Department of Economics, Crawford School of Economics, and Government, ANU College of Asia and the Pacific.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326.
- Seyoum, B. (2007). Export Performance of developing countries under the Africa Growth and Opportunity Act. *Journal of Economic Studies*. 34(5) 376
- Silverstovs, B., & Herzer, D. (2007). Manufacturing exports, mining exports and growth: cointegration and causality analysis for Chile (1960–2001). *Applied Economics*, 39(2), 153-167.

- Söderbom, M., & Teal, F. (2003). Are manufacturing exports the key to economic success in Africa? *Journal of African Economies*, 12(1), 1-29.
- Vijil, M., & Wagner, L. (2012). Does aid for trade enhance export performance? Investigating the infrastructure channel. *The World Economy*, 35(7), 838-868.
- Were, M., Ndung'u, N. S., Geda, A., & Karingi, S. N. (2002). Analysis of Kenya's export performance: An empirical evaluation. Kenya Institute for Public Policy Research and Analysis, Nairobi, Kenya.
- Zepeda, E., Chemingui, M., Bchir, H., Karingi, S., Onyango, C., & Wanjala, B. (2009). *The impact of the Doha Round on Kenya*. Washington, DC: Carnegie Endowment for International Peace.