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EFFECTS OF HUMAN CAPITAL DEVELOPMENT ON KENYA'S MANUFACTURING EXPORTS TO REGIONAL TRADE BLOCS IN AFRICA

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Abstract

Like many other developing countries Kenya has witnessed a stunted GDP growth rate as a result of overreliance on low value agricultural exports. This scenario will be improved if value addition is carried out through production of manufacturing exports based on the principle of comparative advantage within the regional trade blocs such as Common Markets for East and Southern Africa (COMESA) and East African Community (EAC). This is key in achieving Kenya's vision 2030. Manufacturing exports diversifies the economy and increases productivity of capital and labour. Kenya is an active participant in regional trade and the main exporter to both COMESA and EAC. Within the last five years manufactured exports has witnessed a steady growth recording exports worth USD 1.85 within the last five years and out of which 37.4% were Exports to COMESA and EAC. This informs the decision to study manufactured exports to COMESA and EAC as which comprises many countries with different social, institutional, historical and political features and market accession. A number of studies have been done in this area most of which have mostly been on general exports and bilateral trade. For this reason, this reasons this study sort to estimate the effects of human capital development on Kenya's manufactured exports to regional trading blocs. The specific objective is to analyze the effect human capital development on Kenya's manufacturing exports to East African Community and Common Market for East and Southern Africa.

The gravity model was used and Correlational study design was adopted. Panel data was sourced from secondary sources for twenty Kenya's trading partners (EAC and COMESA) for the period 2005–2015 to capture the operationalization and Membership of these trading blocs. Panel data unit root tests was be estimated using Im-Pesaran and Shin, and Levin-Li-Chu tests. Hadri Lagrangian Multiplier (Hadri LM) test was used to choose between Feasible Generalized Least squares and Generalized Equation Estimation methods. Haussmann Taylor method was used to choose between fixed and random effect models.

Introduction

Manufacturing is the value added production of merchandise for use or sale using labour and machines, tools, chemicals and biological processing (Lundvall *et al.*, 2002). The term is commonly applied to industrial production in which raw material is transformed into finished goods on a large scale (Lundvall, ibid). Manufacturing exports is the shipping of value added goods and services out of the jurisdiction of a country (KAM, 1988). The transition from agriculture to manufacturing is still the route to higher productivity and rising living standards for developing economies. In advanced economies, manufactured goods stand as the tangible

Vol. 3, No. 02; 2019

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expression of innovation and competitiveness (Banga, 2006). A decade into the 21st century, the role of manufacturing in the global economy continues to evolve (UNCTAD, 2015). Developing economies are likely to drive global growth in demand for manufactured goods becoming just as important as markets as they have been as contributors to the supply chain (UNCTAD, 2015).

HDI measures the standards of living in a country in terms of Health, Education and Life Expectancy (Blanchard 2015).

Foreign trade is the exchange of capital, goods, and services across international borders or territories in a legal fashion (Hill, 2010). A nation's trade with others consists of imports and exports flowing in and out of the country respectively. International trade arises because no country can be completely self-sufficient (Deardorf, 2015). Exports are important for the process of growth (Bosworth, & Collins, 2009). Exports generate the foreign exchange necessary to increase the import capacity of the country, boost its industrialization and overall economic activities, which in turn, augments its economic growth. Exports also enable them to expand their markets and hence take advantage of the economies of scale (Giles et al., 2010). The value of world exports of manufactures increased by 67% between 2005 and 2014, reaching close to $12.3 trillion in 2014. However, in the wake of the global economic crisis, and amid persistently low growth rates in both developed and emerging economies, global trade growth has been weak – at less than 2% per year between 2011 and 2014 (Hoekman, 2008). This has been matched by much lower average annual growth in the value of manufacturing exports since 2011 and a declining share of manufactures in total merchandise trade from 70% to 65% in 2014 (UNCTAD, 2015). The value of manufacturing exports from developing countries more than doubled between 2005 and 2014, reaching nearly $5.4 trillion in 2014. Much of this growth has been driven by expansion in exports of manufactures from developing LICs and middle-income countries (MICs) (UNCTAD, 2015). Growth in manufacturing exports from least developed countries (LDCs) has also been strong – expanding at an average annual rate of 12.5%. As a group, developing countries (low- and middle-, as well as high-income developing countries such as China) accounted for around 60% of world merchandise exports in 2014 (up from 50% in 2005). Developing countries are also importing more manufactures (UNCTAD, 2015)

Not only has world merchandise witnessed momentous growth over the past several decades, but the global trade pattern has also witnessed dramatic shifts, as developing and emerging economies have moved from peripheral players to major centers of global trade (Rault *et al.*, 2008). In the early 1970s, trade was largely confined to a handful of advanced economies, notably the United States, Germany, and Japan, which together accounted for more than a third of global trade (Cherunilam 2008). By 1990, the global trading landscape had become more diversified to include several developing and emerging economies, especially in East Asia. In 2011, total exports from these economies reached 42.75% of world trade, steadily rising from 24.17% in 1990 (UNCTAD Stats, 2012). While developed economies, or the North, remain a significant market for exports from the South, a prominent feature of this unprecedented rate of trade expansion has been the growing importance of trade among developing countries (South-South trade), at a pace faster than the global average (UNCTAD Policy Brief, 2009). In 2011,

Vol. 3, No. 02; 2019

ISSN: 2456-7760

54.90% of their exports went to other developing countries, compared to 40% in 2000, 42.55% in 1995, and less than 25% in 1960. On The advent of globalization has sparked renewed interest in regionalism in Africa amidst fears of African marginalization (Agbodji, 2008). African countries believe that their coming together under a regional body would be an effective means of asserting their economic independence (Huff, 2000). There is also consensus that developing countries have a great deal to gain from free trade. Regional integration in Africa has been seen as a vehicle for promoting trade and securing economies of scale and market access, and pave way for sustainable growth and development (Ogunkola, 1998).

Common Market for East and Southern Africa (COMESA) began in December 1994 when it was formed to replace the former Preferential Trade Area (PTA) which had existed from the earlier days of 1981. COMESA (as defined by its Treaty) was established as an Organization of free independent Sovereign states which have agreed to cooperate in developing their natural and human resources for the good of all their people' and as such it has a wide ranging series of objectives which necessarily include in its priorities the promotion of peace and security in the region (Luke et. al. 2015). The member states includes: Republic of Kenya, Federal Democratic Republic of Ethiopia, Union of the Comoros, Kingdom of Swaziland, Republic of The Sudan, Republic of Zimbabwe, Republic of Seychelles, Republic of Zambia, Republic of Rwanda, Republic of Uganda, Republic of Mauritius, Republic of Malawi, Republic of Madagascar, Libya, State of Eritrea, Arab Republic of Egypt, Union of the Comoros, Democratic Republic of the Congo, Republic of Djibouti and Republic of Burundi. Due to COMESA's Economic history and background its main focus is on the formation of a large economic and trading units that is capable of overcoming some of the challenges that are faced by individuals states

COMESA's current strategy can thus be summed up in the phrase 'Economic prosperity through regional integration' with its 19 member states, population of over 389 million and annual import bill of around US$32 billion with an export bill of US$82 billion COMESA forms a major market place for both internal and external trading. Its area is impressive on the African continent covering geographical area of 12 million (sq km). Its achievements to date have been significant more so in the area of bilateral trade (Alemayehu *et al.*, 2002)
The East African Community (EAC) is a regional intergovernmental organization of 6 Partner States: The Republics of Burundi, Kenya, Rwanda, South Sudan, the United Republic of Tanzania, and the Republic of Uganda, with its headquarters in Arusha, Tanzania (Ligami, 2012).

The EAC is home to 158 million citizens, of which 22% is urban population. With a land area of 2.42 million square kilometers and a combined Gross Domestic Product of US$ 169.5 billion (EAC Statistics for 2015), its realization bears great strategic and geopolitical significance and prospects for the renewed and rejuvenated EAC (Makame, 2012).

The work of the EAC is guided by its Treaty which established the Community. It was signed on 30 November 1999 and entered into force on 7 July 2000 following its ratification by the original three Partner States - Kenya, Tanzania and Uganda. The Republic of Rwanda and the Republic of Burundi acceded to the EAC Treaty on 18 June 2007 and became full Members of the

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Community with effect from 1 July 2007 (Braude, 2008). The Republic of South Sudan acceded to the Treaty on 15 April 2016 and shall become a full Member once the instruments of ratification of the Treaty are deposited with the Secretary General of the Community.

As one of the fastest growing regional economic blocs in the world, the EAC is widening and deepening co-operation among the Partner States in various key spheres for their mutual benefit. These spheres include political, economic and social.

The manufacturing sector in Kenya is the third largest by sect oral contribution to GDP (10.3 per cent) after transport and communication (11.3 per cent) and agriculture and forestry (23.4 per cent) (KNBS, 2008).

Table 1: Manufacturing value added (% GDP)

	2004	2005	2006	2007	2008
Egypt	18	17.3	16.6	15.7	16.9
Botswana	4.1	3.7	3.7	3.3	3.2
Kenya	11.3	11.8	11.6	11	9.1
Mauritius	21.1	20.2	19.1	19.9	19.4
Malaysia	30.4	29.6	29.6	28	..
Singapore	27.5	26.9	26.9	24.9	20.8
South Africa	19	18.5	18.4	18.1	18.5
Uganda	7.6	7.6	7.7	7.7	7.6
Tanzania	7	6.8	6.9	..	..
Korea	27.7	27.5	27.1	27.3	28.1

Source: World Bank (2011).

The manufacturing sector's share of GDP has increased only marginally in the last three decades, contributing only 10 per cent in the 1964–1973 period and 13.6 per cent in the 1990–1995 period. It reverted back to 10 per cent and stagnated at that level for most of the past decade. A combination of factors, including the import substitution strategy, poor weather conditions, import liberalization and deteriorating infrastructure could explain the slack. Although there has been a slight upswing in more recent years, the contribution of manufacturing to GDP has remained low; contributing 11.5 per cent and 12.8 per cent in the second quarters of 2009 and 2010, respectively. The manufacturing sector in general suffers from low value added compared to Malaysia, Singapore, Mauritius and South Africa but is higher than that of Uganda and Tanzania (Table 1).

The manufacturing sector in Kenya grew at 3.5% in 2015 and 3.2% in 2014, contributing 10.3% to gross domestic product (GDP) (KNBS, 2016). On average, however, manufacturing has been growing at a slower rate than the economy, which expanded by 5.6% in 2015. This implies that the share of manufacturing in GDP has been reducing over time. The sector's contribution to GDP has remained fairly stable at around 10% since 2005. The performance of the manufacturing sector has improved compared to the 1990s and early 2000s, when the industry's performance was at its lowest ebb due to the macroeconomic instability that gripped the country.

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Between 2010 and 2015, manufactured exports were worth US$ 1.85 billion, or around 37.4% of total exports Otuki, (2016). The regional EAC and COMESA markets continue to absorb a large share (69%) of Kenya's manufactured exports, with Uganda (24%) and the United Republic of Tanzania (17%) being the biggest importers. (World Bank, 2016a)

One major indicator of human capital development is the level of literacy (education). The indicators on net and gross enrolment rates at primary and secondary level are completion rates, transition rates, literacy rate as well as quality enhancement indicators such as pupil-teacher ratio, pupil-classroom ratio and pupil- textbook ratio. Gross primary enrolment rate from Kenya and Burundi improved ranging from 115.0 percent in Kenya to 138.3 percent in Burundi during the review period. (EAC Secretariat, 2012). This is in line with the Partner States' efforts towards achievement of universal primary education. Similarly, gross secondary enrolment rates improved in 2011 although low compared to the gross primary enrolment rates. The ratio of expenditure on education as a percentage of GDP for Kenya increased to 7.3 percent in 2010/2011. On the contrary, the ratios of expenditure on education as a percentage of GDP for Burundi and Uganda decreased to 6.1 and 2.9 percent, respectively. EAC Secretariat (2012) Kenya is keen to achieving MDGs as reflected in her increased allocations of resources to the health sector. On the other hand, allocations of resources to the health sector for Uganda declined during the review period. In 2011, Uganda and Burundi registered improved immunization rate whereas the rate for Tanzania remained the same as recorded in 2010. Kenya's immunization rate declined from 81 percent in 2010 to 80 percent in 2011 (EAC Secretariat, 2012).

Statement of the Problem

Kenya is an active participant in regional trade and the main exporter to both COMESA and EAC. The main motivation of engaging in regional trade is to overcome the limitations of small and fragmented markets. Free trade involves mainly tariff liberalization and one would expect Kenya to trade more with member states of both the COMESA and EAC. This is due to preferential trade arrangements and close proximity to trading partners which arguably lowers transaction costs. Both COMESA and EAC member states have been implementing mechanisms for eliminating non-tariff barriers (NTBs) so as to promote regional trade

Results obtained on Human Capital Development studies vary from one region to the other. The study was unable to find studies on HCD with respect to manufacturing exports in regional markets.

Objective of the study

To analyze the effect of human capital development on Kenya's manufacturing exports to EAC and COMESA.

Research Hypothesis

H_0 : Human Capital Development does not affect Kenya's manufacturing exports.

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Scope of the Study

The study will focus on determinants of manufacturing exports between Kenya and its 20 trading partners; six EAC and nineteen COMESA countries and because of multiple memberships the total number of countries under observation will be twenty and will cover the period between 2005 and 2015.

Justification of the Study

Kenya like many other developing countries is involved in economic integration programmes to increase market access. Greater market size can expand opportunities for exporting products and lead to enterprise and employment growth. Economic integration by easing on trade friction offers a great opportunity of fostering economic growth as was the case with the Newly Industrialized Countries (NICs) through growth of exports more so manufacturing exports. Thus, identifying factors that promote or impede regional trade is important to policy makers in designing and implementing appropriate policies meant to make Kenya benefit.

All African countries belong to some Regional Trade Arrangement. However, it is theoretically impossible for a country to belong to more than one customs union not unless they have the same Common External Tariffs (CET). COMESA-EAC member states have recognized the challenge posed by multiple memberships in their effort of accelerating inter-regional economic integration, thus creating the need of initiating the process of harmonizing and coordinating their regional integration programmes so as to mitigate the problem. The study will give an insight about countries in which Kenya has less trade friction and therefore offers greater opportunity for exports growth through trade promotional activities. This will reduce cost of promotion since the returns are likely to be much higher. This will help the government broaden and deepen export base and markets as is expounded in the Ministry of Trade Strategic Plan, Go K (2008-2012).

Low GDP in Kenya has been contributed by overdependence in low value agricultural exports. This scenario will be improved if it is supplemented by manufacturing exports to regional trade blocs; Common Markets for East and Southern Africa (COMESA) and East African Community (EAC), which is key in achieving vision 2030. Manufacturing exports diversifies the economy and increases productivity of capital and labour, in addition to attracting FDIs. The choice of EAC and COMESA for this study is because Kenya is a member of the two regional Trading blocs. Because if the member countries proximity to Kenya it eases market accession. In addition it harmonizes policies in areas of common interests. The period of study 2005 to 2015 is to capture all the variables in the study after the two were Operationalized keeping in mind that COMESA came into effect in 1994 and EAC in 2000 with some countries joining later (Braude W. 2008).

Theoretical Framework

The gravity model has often been used to explain Origin-Destination (i j) flows such as international or regional trade, transportation flows, population migration, commodity flows and information flows along a network. Reasons for the prosperity of this model are the simplicity of

Vol. 3, No. 02; 2019

ISSN: 2456-7760

its mathematical form and the intuitive nature of its underlying assumptions, as Sen and Smith (1995) noted in their monograph.

In relation to international trade, there exists a large literature on theoretical foundations for these models (Anderson, 1979; Anderson and Wincoop 2004). In the regional science literature, the gravity model has been labeled a spatial interaction model (Sen and Smith, ibid), because the regional interaction is directly proportional to regional size measures. The model relies on a function of the distance between origin and destination as well as explanatory variables pertaining to characteristics of both, origin and destination countries. The principal explanatory variables used to explain trade flows are as follows. The variables with a positive effect include size of importing economy, per capita income differential of the two countries involved, their degree of openness, the existence of general trade agreements, the existence of a common official language and/or currency, a shared colonial past or the existence of a favorable exchange rate. The factors with a negative impact on trade volumes include cost of transport, which usually depends on the distance between the countries involved. Foreign direct investment, human capital and infrastructure development are expected to have a positive effect on manufacturing exports

CHAPTER TWO: LITERATURE REVIEW

Theoretical literature

Gravity model is borrowed from Newton's gravitational theory and utilizes the concept of gravitational force to explain the volume of trade, capital flows, and migration among countries of the world. Newton's theory postulates that the force of attraction between two separate entities i and j is positively related to entities' respective masses and inversely related to the square of distance between the objects as shown in equation 1.

$$F_{ij} = \frac{GM_i M_j}{D_{ij}^2} \quad \text{..... (1)}$$

Where F_{ij}=gravitational force between i and j; M_i M_j=masses; D_{ij}=Distance between i and j; G=gravitational constant.

In the gravity model of international trade, gravitational force in Newton's law is replaced by trade flows or exports from country i to j, while GDP is used as a proxy for a country's mass, while distance is often measured using 'great circle' calculations in accordance with equation 1. Gravity model of international trade between countries is represented by equation 2.

$$X_{ij} = \frac{KY_i^{\alpha} Y_j^{\beta}}{T_{ij}^{\theta}} \quad \text{..... (2)}$$

Where X_{ij}=exports (in value) between country i and j; K=gravitational constant; Y_{ij}=economic size (GDP or Population) for country i and j; T_{ij}=trade costs between country i and j. If α=β=1 and θ=2, we get the Newton's law.

The above equation can be converted into a Log-log form

$$LnX_{ij} = LnK + \alpha LnY_i + \beta LnY_j - \theta LnT_{ij} + \delta Z \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.(3)$$

Where δZ denotes other factors that positively or negatively affects export flows.

According to the generalized gravity model of trade, the volume of exports between pairs of countries, X_{ij} is a function of their incomes (GDPs), their population, their geographical distance and a set of dummies. The general gravity model is specified as follows:

$$X_{ij} = \beta_0 Y_i^{\beta_1} Y_j^{\beta_2} N_i^{\beta_3} N_i^{\beta_4} D_{ij}^{\beta_5} A_{ij}^{\beta_6} DU_{ij}^{\beta_7} \dots\dots\dots\dots\dots\dots\dots.\dots\dots\dots\dots\dots(4)$$

Where Y_i (Y_j) represents the GDP of the exporter (importer), N_i (N_j) are the populations of the exporter (importer), D_{ij} measures the distance between the two countries' capitals and A_{ij} represents other factors that could aid or impede trade between countries, DU_{ij} is a vector of dummies.

In Log-log form

$$LnX_{ij} = \beta_0 + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnN_i + \beta_4 lnN_j - \beta_5 lnD_{ij} + \beta_6 lnA_{ij} + \beta_7 lnDU_{ij} \dots\dots..(5)$$

Introducing the new variables (FDI, HDI and ID)

$$LnX_{ij} = \beta_0 + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnN_i + \beta_4 lnN_j - \beta_5 lnD_{ij} + \beta_6 lnA_{ij} + \beta_7 lnDU_{ij} + \beta_8 FDI_{ij} + \beta_9 HDI_{ij} + \beta_{10} ID_{ij} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(6)$$

Trade between two countries is positively affected by the economic mass of trading partners and inversely related to distance between them. Additional variables, such as physical area, population, indicators of cultural affinity, and sharing contiguous boarders are usually added to empirical gravity models to elaborate on the 'economic mass' and distance variables (Clarete *et al.*, 2012). Tinbergen (1962) was the first to publish an econometric study using the gravity equation for international trade flows. In his first study involving data on 18 countries in 1958, the volume trade between two countries was specified to be proportional to the product of an index of their economic size, and the factor of proportionality depended on measures of trade resistance between them. Among the measures of trade resistance, he included the geographic distance between them, a dummy for adjacency (common borders), and dummies for British Commonwealth and Benelux memberships. Tinbergen found that both incomes and distance had their signs and were statistically significant. He also found that adjacency and membership in the

Vol. 3, No. 02; 2019

ISSN: 2456-7760

British Commonwealth (Benelux FTA) were significantly associated with 2 percent and 5 percent higher trade flows respectively (Bonuedi, 2013).

Application of the gravity model in the context of international trade was for the first time independently done by Tinbergen (1962) and Poyhonen (1963) who nonetheless did not make any attempt to justify it theoretically but instead referred to a simple analogy of physics (Makochekanwa and Jordaan (n.d). Trade theorists have attempted to connect the gravity model to key elements in trade theory. The standard assumption of the Heckscher Ohlin (H-O) model that prices of traded goods are the same in each country has proved to be faulty due to the presence of what trade economists call 'border effects'; accounting for these costs requires prices of traded goods to differ among the countries of the world.

First attempt was made by Anderson (1979) who derived a gravity model from a linear model of expenditures using Armington assumption (that is, goods differentiated by country of origin). By specifying demand in these terms, Anderson helped to explain the presence of income variables in the gravity model, as well as their multiplicative (or log-log form). Later on, Berg strand (2007) addressed the role of multilateral prices. Another attempt was made by Help man (1987) and Berg strand (1989) using monopolistic competition model approach. Here, the product differentiation by country of origin approach was replaced by product differentiation among producing firms, and the empirical success of the gravity model considered to be supportive of the monopolistic competition of intra-industry trade. Berg strand (1990) built on the work of Anderson and monopolistic competition, but used existing price indexes instead of those derived through theory.

However, Deardorff (1995) showed that the gravity model could be derived from the H-O model based on comparative advantage and perfect competition if it is properly considered. According to him, absence of all barriers to trade in homogenous product causes producers and consumers to be indifferent to the trading partners, both domestic and foreign, so long as they buy or sell the desired goods. Based on this assumption, he derived the expected trade flows that correspond exactly to the simple frictionless gravity equation whenever preferences are identical (Makochekanwa and Jordaan, (n.d)).

Anderson and van Wincoop (2003) enhanced the theoretical foundations of the gravity model equation to emphasize the importance of accounting properly for the endogeneity of prices. Though elegant, the model assumed symmetric bilateral trade costs to generate an estimable set of structural equations (Bergstrand et al., 2007). The most recent attempt was by (Helpman *et al.*, 2006) who derived the gravity equation from heterogeneous firm model of trade (ART Net, 2008)

Empirical literature

Emily Blanchard and William W. Olney (2014) investigated how educational attainment (Human capital development) responds to exogenously-driven changes in the pattern of a country's exports and uses the results to gain insight into how investment in human capital responds to the

Vol. 3, No. 02; 2019

ISSN: 2456-7760

pattern of production across different sectors. They construct a panel data set that spanned 104 countries and 45 years and used Gravity model approach that utilizes bilateral trade data to identify the variation in exports that was unrelated to domestic factors. The results indicated that educational attainment decreased with agricultural exports, decreased with unskilled intensive manufacturing exports, and increased with skill-intensive manufacturing exports. They found that the results were strongest where it was most expected, and were robust to a variety of extensions and sensitivity checks. The findings carried important policy implications. First, while the benefits of international trade were often stressed the more complex question of what types of exports are most beneficial for human capital accumulation were examined. Since most countries were already integrated into world markets, the relevant policy question was how best to engage in trade with the rest of the world; the results suggested that exporting skill-intensive goods had important long-run benefits via an empirically demonstrated increase in human capital. Accordingly, they found empirical support for the concern voiced by Bajona *et al.*, (2010) and others that trade may exacerbate economic differences across countries through its impact on educational attainment. The results provided evidence that less developed countries that export low skill-intensive goods may see a decline in average educational attainment. To the extent that human capital is a key driver of economic growth, as demonstrated yet again in compelling terms by Jones (2014), this mechanism may undermine the development process. The same logic suggests that developed countries that export skill-intensive goods may continue to experience an increase in educational attainment that would reinforce initial economic advantages. These implications are striking and warrant additional research.

Fafchamps (2008) did a study on human capital, exports, and earnings. In his paper he tests whether manufacturing exporters pay more to educated workers in an effort to ascertain whether the productivity of human capital is raised by exports. Using a panel of matched employer-employee data from Morocco, he found no evidence that the education wage premium is higher in exporting sectors and firms. Although exporters pay more on average, much of the wage differential could be explained by the fact that exporters had a larger workforce and more capital. Educated workers who start working for an exporter did not experience a larger wage increase relative to their previous job. He found a mild positive association between exports, technology, and product quality, part of which is due to differences in firm size.

Blanchard (2015) in his study on "Globalization and Human Capital Investment: Export Composition Drives Educational Attainment" concludes that Human capital is among the most important drivers of long-run economic growth, but its macroeconomic determinants are still not well understood. His paper demonstrated the importance of a key demand-side driver of education using exports as a lens to study how shifting patterns of production affect subsequent educational attainment. Using a panel of 102 countries and 45 years, He found that growth in less skill-intensive exports depresses average educational attainment while growth in skill-intensive exports increases schooling. His results provided insight into which types of sectoral growth are most beneficial for long-run human capital formation and suggest that trade liberalization could exacerbate initial differences in factor endowments across countries. Employing Mexican micro-

Vol. 3, No. 02; 2019

ISSN: 2456-7760

level data, Atkin (2015) finds that the arrival of less-skilled export manufacturing jobs increases school dropouts at age 16.

Fonchamnyo (2014) carried out the study on determinants of export propensity and intensity of manufacturing firms in Cameroon and his empirical findings on the one hand showed that human capital; years of experience, turnover, and modernization have positive effect on both the likelihood to export and on the export intensity. On the other hand, insecurity and power outage had a detrimental effect on export performance. The results also pointed to the fact that many of the firms were labour intensive firms, taking advantage of the abundant cheap labour in the country. Liu et al. (1999) in their study on the intensity of export revealed that productivity did not play a statistical significant role in influencing the quantity of goods exported. This result was also established by Castellani (2002) when studying the factors influencing the level of export by manufacturing firms in Italy. In the study of firms from Spain, Farinas and Martin-Marcos (2007) found out that the effect of productivity was heterogeneous for export oriented and domestic firms. A set of studies meanwhile have shown empirically that Human capital has a positive and statistical significant effect on the level and likelihood to export. For instance, in a study by Iyer (2010) on the level of export of New Zealand Agriculture and Forestry industry, it was shown that the productivity of firms influence the quantity exported by firms. This result is also supported by Alvarez (2002) in the study of Chilean firms and by Arnold and Hussinger (2005) in their study of the role of productivity on the level of exports in the manufacturing sector in Germany.

Gashi, (2014), Following the propositions of firm internationalization theories including the Melit'z dynamic model of export participation, investigated the effects of human capital on the export decisions of Kosovo's firms. Using a unique dataset of around 500 Small and Medium Enterprises, econometric estimates show mixed indications regarding the relationship between the propensity to export and longevity in export markets and human capital variables, measured by the education of the workforce, and investment in training. While education generally has a negative effect on exporting decisions, the latter shows a consistent positive effect.

CHAPTER THREE: RESEARCH METHODOLOGY

Model specification

Empirical model that was used in this study is specified as follows:

$$LnX_{ijt} = \alpha_{ijt} + \beta_1 Ln(GDP_{ijt}GDP_{ijt}) + \beta_2 LnPoP_{ijt} + \beta_3 LnD_{ijt} + \beta_4\ LnFDI_{ijt} + \beta_5\ LnHDI_{ijt} + \beta_6 LnID_{ijt} + \beta_7 COMESA_{ijt} + \beta_8 EAC_{ijt} + \beta_9 T_{ijt} + \varepsilon_{ijt} + \nu_{ijt} \quad \text{.....(7)}$$

Where:

Ln denotes variables in natural logs. α_{ij} is a constant. GDP_{ij} is Gross Domestic Product for country i and j. PoP_j is the population for country j and D_{ij} is the distance from i to j.

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Three dummy variables were introduced; COMESA, EAC and New variables introduced is HDI_{ij}. Time dummy (T) captures the effects of time. An F-test was carried out to find out whether time was jointly significant in determining export flows. The null hypothesis was that time dummies were not jointly significant; Rejection of the null hypothesis meant that time was important and therefore was included in the regression. The error term was decomposed into ε_{ij} which denoted the unobservable individual specific effect and ν_{ijt} being the stochastic error term which changes across time and cross-section.

Estimation Procedure

The study estimated a gravity model using panel data econometrics techniques. This panel data specification allows analysis of relative competitiveness of COMESA and EAC member country.

To estimate the long-run relationship between the variables in the gravity models, the study employed Pooled Mean Group (PMG) and panel dynamic OLS (DOLS) co integrating estimators due to Pesaran, Shin and Smith (1999) and Kao and Chiang (2000) respectively. The PMG estimator which was developed by Persaran *et al.,* (1999) offers a new technique for estimating non stationary dynamic heterogeneous panels, and relies on a combination of pooling and averaging of coefficients across groups (Blackburne III and Frank, 2007). A superior method to both the FEM and REM that can estimate time invariant variables and address the problem of endogeneity was proposed by Hausman and Taylor (1981) and is called Hausman Taylor Method (HTM). The source of potential endogeneity bias in gravity model estimations is the unobserved individual heterogeneity (Rault et al., 2008). HTM uses variables that are specified in a regression equation as instruments to solve the problem of endogeneity. This mades it possible to eliminate the correlation between the explanatory variables and the unobserved individual effects that undermines the appropriateness of the REM in the gravity model context (Keith, 2006). Another advantage of HTM is that it is usually difficult to find variables not specified in an equation that can serve as valid instruments for endogenous regressors. Haussmann Taylor method was used to choose between fixed and random effect models.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

Summary Statistics

The summarized view of the panel data is as presented in table 4.1 below.

Table 4.1 Summary Statistics

Variable	Mean	Std. Dev	Minimum	Maximum
Manufactured Exports	5530869	1.28e+07	2839	8.56e+07
Human Development Index	0.5237037	0.1269415	0.32	0.8

Vol. 3, No. 02; 2019

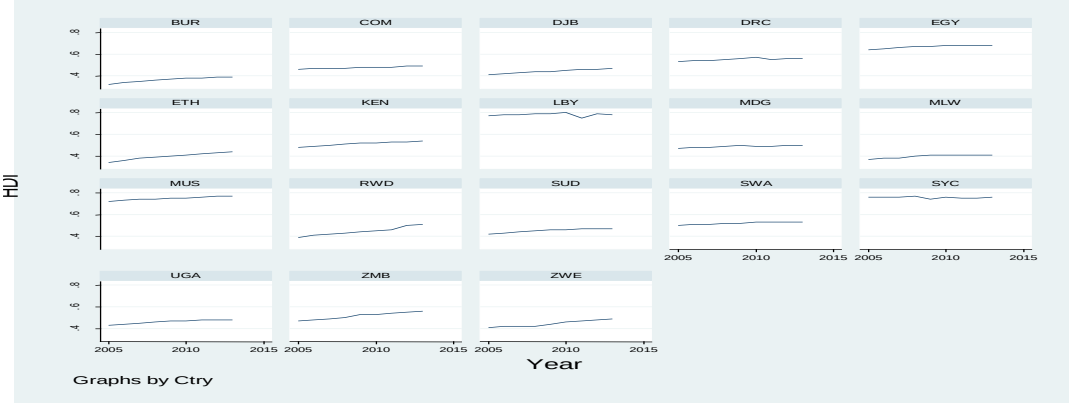
ISSN: 2456-7760

Foreign Direct Investment	5.203677	5.697846	-1.774341	23.17014
Infrastructure Development	28.95582	22.49026	0.8527398	82.86243
Distance (KM)	1898.222	1093.135	0	4535
Dummy Neighbouring Country	0.1111111	.3152442	0	1
Dummy Common Colony	0.6111111	.4890096	0	1
Dummy Common Language	19.7143	.5015504	0	1

Source: Owner's Computation, (2018)

The mean of manufacturing exports was found to be Ksh. 5,530,869 Million with a standard deviation of 1.28e+07. Reporting a maximum value of manufactured exports as 8.56e+07 and the minimum as 2839. Table 4.1 indicates that Kenya's manufactured exports has been increasing steadilly over the period of the study. Human Development Index registered a mean of 0.5237037 with a standard deviation of 0.1269415 recording a maximum value of 0.32 and a minimum value of 0.8. This imply that all the countries in the comesa region had human development index above the level of other subsaharan countries. A graphical representation of the summary report indicates that Rwanda received more of the Kenyan manufactured exports during the study period as shown in the graph of Plot 4.1

Table 4.1 Plot of Human Development Index



Regression Analysis and Test of Hypotheses

Regression analysis was done to test the hypotheses. Results are reported in Table 4.7 for Swamy-Arora transformation and table 4.8 for Nerloves transformation. Results indicated that

the data fitted the model very well Log-likelihood was 2814.598 > 30. The model was also well identified (AIC was 5645.197 > 30, HQ was 5655.26 > 30 and Schwarz criterion 5669.898 > 30). The study sought to determine if Human Capital Development affected Kenya's manufacturing exports. To answer this, first hypothesis stated that Human Capital Development does not affect Kenya's manufacturing exports. Results indicated that Human Capital Development had positive and significant effect on Kenya's manufacturing exports (p –value 0.0000 < 0.05). Based on this the first hypothesis was rejected. It was concluded that Human Capital Development was a significant determinant of Kenya's manufacturing exports. The results further show that for a one unit increase in Human Development Index Kenya's manufactured exports were expected to increase by 68.62 percent.

Regression Results Swamy-Arora Transformation

Model 1: Random-effects (GLS), using 162 observations; Included 18 cross-sectional units
Time-series length = 9; Dependent variable: MEXP

Variable	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	*sig*
Const	-50.826	0.1692	-300.37	0.0000	
HDI	0.6862	0.1486	4.620	0.0000	***
FDI	0.6078	0.0658	9.240	0.0000	***
IND	0.3926	0.1092	3.590	0.0000	***
DIS	-0.3568	0.0370	-9.640	0.0000	***
POP	0.6085	0.1345	4.520	0.0000	***
DVNC	0.7111	0.1844	3.860	0.0000	***
DVCL	0.1423	0.0027	51.910	0.0000	***
DVCC	0.2514	0.0372	6.7600	0.0000	***

Mean dependent variable	5530869	S.D. dependent variable	12759359
Sum squared residual	1.17e+16	S.E. of regression	8685897
Log-likelihood	−2814.598	Akaike criterion	5645.197
Schwarz criterion	5669.898	Hannan-Quinn	5655.226

'Within' variance = 2.63297e+013; 'Between' variance = 7.8669e+013; theta used for quasi-demeaning = 0.807159; Breusch-Pagan test - Null hypothesis: Variance of the unit-specific error = 0; Asymptotic test statistic: $\chi^2(1)$ = 236.17; with p-value = 2.69008e-053; Hausman test - Null hypothesis: GLS estimates are consistent; Asymptotic test statistic: $\chi^2(3)$ = 1.86688 with p-value = 0.600491

Source: Authors research, 2017

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Regression Results with Nerlove's Transformation

Model 2: Random-effects (GLS), using 162 observations; Using Nerlove's transformation
Included 18 cross-sectional units; Time-series length = 9; Dependent variable: MEXP

Variable	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	*sig*
const	-56.623	0.2940	-192.57	0.0000	
HDI	0.1423	0.0027	51.90	0.0000	***
FDI	0.2515	0.0372	6.750	0.0000	***
IND	0.1457	0.0475	3.060	0.0002	***
DIS	-0.0933	0.0114	-8.200	0.0000	***
POP	0.1826	0.0416	4.390	0.0000	***
DVNC	0.0381	0.0034	11.17	0.0000	***
DVCL	0.1218	0.0083	14.74	0.0000	***
DVCC	0.0153	0.0024	6.380	0.0000	***

Mean dependent var	5530869	S.D. dependent var	12759359
Sum squared resid	1.22e+16	S.E. of regression	8883170
Log-likelihood	−2818.237	Akaike criterion	5652.473
Schwarz criterion	5677.174	Hannan-Quinn	5662.502

'Within' variance = 2.29166e+013: 'Between' variance = 7.8669e+013;theta used for quasi-demeaning = 0.905961; Breusch-Pagan test - Null hypothesis: Variance of the unit-specific error = 0 Asymptotic test statistic: $\chi^2(1) = 236.17$; with p-value = 2.69008e-053;Hausman test - Null hypothesis: GLS estimates are consistent Asymptotic test statistic: $\chi^2(3) = 0.605747$ with p-value = 0.895115; Test for normality of residual - Null hypothesis: error is normally distributed; Test statistic: $\chi^2(2) = 37.3495$; with p-value = 7.75622e-009

Source: Authors Research, 2017

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSSIONS AND RECCOMENDATIONS

Summary of findings

The general objective of the study was to estimate the effects of human capital development, on Kenya's manufacturing exports to COMESA region. The study established that human capital development significantly determined Kenya's manufactured exports to COMESA region.

Conclusions

Based on the findings above the following conclusions can be drawn. Human capital development affected Kenya's manufacturing exports at 68.62 percent implying that development of human resources is a critical aspect in determining the growth of Kenya's manufactured exports.

Vol. 3, No. 02; 2019

ISSN: 2456-7760

Recommendations

The key findings of this study, as summarized above, have important implications for the manufactured export policy in Kenya. On the basis of these key findings, the following recommendations are advanced for policy configuration and formulation aimed at expanding the volume of Kenya's manufactured exports to the regional trade blocs so as to maximize its gains from trade and boost the pace of the nation's economic growth.

As reported human capital development has a very high impact on manufacturing exports and it will be of great importance if the government and the concern authorities will keep improving the quality of its human resource for it forms the great source of the required labour in the manufacturing sector.

Limitations of the Study and Suggestions for Further Research

The empirical analysis and results presented in this study are not without limitations. A major limitation of the study is that it examined the determinants of Kenya's manufactures exports using an aggregated data. However, an effective implementation of the supply side policies recommended in this study requires identification and a detailed understanding of factors that significantly affect the productive capacity of this particular exports sector in Kenya. Thus, analyzing Kenya's manufacturing exports within the gravity model using disaggregated data specific sectors can be also be considered in future studies.

Another limitation of the study is that it failed to examine Kenya's manufacturing export potential with it partners. That is, this present study is unable to indicate with which countries Kenya has unexploited manufacturing export potentials and those with which it has exhausted its potential. A consideration of this in future studies will help the nation to identify the countries in which there exist high prospects for expanding Kenya's manufacturing exports in order to maximize its gains from the same.

The analysis and findings of the study are likely to be affected by the relative small number of countries and short time period of data used in the study. Of course, Kenya's key trading partners within COMESA and EAC are more than 14 countries, and these relationships have spanned beyond 8 years. However, limited availability of data on manufacturing exports and other variables for all the countries for a longer period of time imposed a constraint on the sample size of the study. A study should be done to fill this gap.

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Vol. 3, No. 02; 2019

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