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DETERMINANTS OF INTRA-EAST AFRICAN COMMUNITY (EAC) TRADE



A Research Report submitted in partial fulfilment of the Degree of
Master of Commerce (Economics/Economic Science) in the School of Economic and Business Sciences,
University of the Witwatersrand

BY

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SUPERVISOR: DR NYASHA MAHONYE Date: 16th November 2018

Word-Count: 19 593

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CHAPTER ONE

1.1 Introduction and Background Information

Given scarcity of resources and that no country can independently satisfy the needs and wants of its population, world trade gained popularity and became the most reliable way in promoting growth. Thus, world trade has become a significant factor in improving standards of living, creating employment, improving countries' balance of payments and making it possible for consumers to have a wide variety of goods and services to choose from (Vijayasri, 2013). Living examples of some of the benefits of world trade are those brought by the African Growth and Opportunity Act (AGOA) initiative.[1]

Since the passing of the act, the region's abundant natural resources and blooming economic potential attracted more foreign investors. This includes enterprises supported by the state from countries such as China which has now become the sub-Saharan Africa's largest trading partner (Williams, 2015). Another notable mark made by the AGOA initiative is that of creating jobs for thousand Africans, thereby improving the citizens' standards of living and helps alleviate poverty in the continent (Williams, 2015). It is trade benefits like these that have made world economies to grow into a single highly integrated global market (African Economic Outlook, 2017).

Notwithstanding these trade benefits, the impacts of commodity price shocks and unbalanced trade gains, with some economies losing out regardless of the overall net benefits, are a major concern. To confront these daunting experiences of world commerce and strengthen the global bargaining power, the African Economic Outlook (2017) advocated that countries should jointly pool their resources in regional arrangements. This is because it is believed that by effectively integrating countries on a regional level will assist such economies to tap into global markets. This therefore implies that regional integration is a necessary tool liable for resisting the hard-line effects of globalisation, and a stepping stone towards improved trade patterns (Frankel &Rose, 2000).

In defining the concept, Hill (2011) indicated that regional integration refers to an agreement between countries which belong to the same geographic region aiming at

[1] With the AGOA beneficiary status, about 40 sub-Saharan African countries are beneficiaries of the act. Of these 40, 5 EAC members (Burundi, Kenya, Tanzania, Uganda and Rwanda) are part of the beneficiary countries of the act, (Mfumukeko, 2016).

improving trade patterns by eliminating "tariffs" and "non-tariffs" barriers among member countries (Hill, 2011). However, even though eliminating these trade barriers is an important step in improving trade patterns, desired effects will not be experienced if the removal of trade barriers is not complemented by other trade policy measures Hill (2011).

Accordingly, in an attempt to induce trade and investment policies and provide a remedy for Africa's fragmentation, African leaders also advocated for unity (integration). Among others, Ghana's Kwame Nkrumah is one of the visionary leaders who advocated for continental integration (regional integration). Nkrumah believed that regional integration can ensure that Africa is taken seriously on the world stage and help the continent to be an independent actor. The initiative was also believed to be the continent's remedy to its twin problems of high poverty and low levels of economic growth (Jordaan, 2014). Besides, Seid (2013) indicated that a call for strong and viable intra-Africa was to help the continent to reap the gains for economics of scale, promote industrialisation and accelerate growth.

Moreover, the storyline of Africa is that 16 out of 54 African countries are landlocked. It is believed that this situation hinders these countries from independently experiencing economic growth. Thus, the geographic structure of most countries in Africa is said to deprive such countries an opportunity to expand and become independently competitive, (Alemayehu & Haile, 2008). The authors believed that trade integration would therefore be an imperative that will help African economies to address and reorganise the skewed trading practices and neo-classical relations which in the past, maintained the continent's overreliance on exporting primary commodities. In the same breadth, Jordaan (2014) maintained that Africa's geographical structure, low economic growth and high reliance on international markets, are the driving forces in the formation of regional trade unions.

The history of debates around regional integration in the continent dates back as far as early 1900, when five Southern African economies; South Africa, Lesotho, Botswana, Swaziland and Namibia, established in 1910, the South African Customs Union (SACU) (Olivier, 2010). The union was believed to be the most efficient step in achieving the common goal of Pan Africa, implying a united Africa working together with the aim of creating a better future for the continent (Olivier, 2010). It is this vision that gave rise to the formation of numerous Regional Economic Communities (RECs) operating at sub-continental level and serving the agenda of regional integration (Olivier, 2010).

To date, there are fourteen RECs in the continent, with eight being regarded as "pillars of the African Economic Community (AEC)" (Seid, 2013). Such RECs include; Arab Maghreb Union (UMA), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Southern African Development Community (SADC), Economic Community of West African States (ECOWAS), Southern African Development Coordination Conference (SADCC), Community of Sahara-Sahel States (CEN-SAD) and Intergovernmental Authority on Drought and Development (IGADD) (Seid, 2013).

Unfortunately the plethora of regional trading blocs has given rise to almost, if not all, African countries being member states of more than one REC. This issue of overlapping membership is argued by some to be one of the factors that hinder the process of integration in the continent (Seid, 2013). Notwithstanding the existence of these numerous RECs in Africa, the record of intra-African trade has been a disappointing one, with trade flows still influenced by colonial and historical ties (Jordaan, 2014). Despite the geographical proximity, the author argues that majority of Africa's exports are still destined to countries outside Africa.

Table 1 Share of Exports from Africa's Regional Economic Communities, for the period 2012 to 2015

	REC Member Countries		Non-REC member African countries		Non-African countries	
RECs	**2012**	**2015**	**2012**	**2015**	**2012**	**2015**
SADC	17.3	19.5	2.3	2.7	80.4	77.8
EAC	19.7	18.1	13.9	15.2	66.4	66.6
ECOWAS	7.6	12.1	5.0	6.3	87.4	81.6
IGAD	14.4	12.0	12.8	14.2	72.8	73.8
COMESA	7.6	11.7	3.4	5.6	89.0	82.7
UMA	2.1	3.4	1.3	2.7	96.6	93.9
ECCAS	0.8	1.5	4.1	4.9	95.1	93.6

Source: International Monetary Fund (2016) data. http://data.imf.org/

As the statistics in table 1 portrays, the notion of building a united Africa with improved levels of intra-African trade and thus be beneficiaries of theoretical gains of regional integration, have not significantly materialised in the continent. This is because trade between member countries is very low yet trade with these countries and non-African countries continues to flourish. Notwithstanding positive developments in most African RECs, lack of progress and weak intra-regional trade – regardless of a number of treaties – calls for further exploration. Thus, should the weak intra-African trade solely be associated with lack of policy implementations? Or should it be associated with some features of African countries which made Foroutan & Pritchett (1993) among others, have a strong believe that even without trade restrictions, the scope of Africa's trade is basically modest? To this effect, the current study is set out to address these questions by investigating other determinants of low intra-regional trade. This follows from the fact that like Hill (2011) has argued eliminating tariffs alone seem not to be enough in helping to achieve high intra-regional trade. Given, the time frame and the scope of the current research, the focus will be confined to examining factors that account for low intra-regional trade using the case study of East African Community (EAC).

1.2 East African Community

In an attempt to reduce Africa's reliance on other nations outside the continent, African governments, through successive agreements, committed themselves to pursuing a united African nation. The motive behind the efforts of the continent's regional integration lies in the history of colonialism. Thus, trade in Africa came as a way of placing an end to high reliance on the continent's colonisers. Among the most successful unions in the continent is EAC which is the regional intergovernmental organisation of the United Republic of Tanzania, Kenya, Uganda, Rwanda, Burundi and South Sudan. EAC has its headquarters in Arusha, Tanzania (Drummond et al, 2015).

Furthermore, the organisation was founded in 1967 with Tanzania, Kenya and Uganda being the only members back then. In 1977, EAC collapsed and was revived in 2000. Since then, the organisation expanded, and became a united and successful organisation of six member countries, with South Sudan being the sixth member. To achieve high intra-EAC trade patterns, trade liberalisation was one of the most significant gears in EAC policy agendas. Unlike other RECs in Africa which mostly relied on free trade to induce trade among partner states, EAC has gone beyond this initiative. Thus, in an attempt to boost trade among member states, other than the free trade initiative, EAC went further to establish the custom union.

Besides, the common market was one of trade initiatives in EAC's agendas. The initiative was put in force in 2010 as one of the endeavours to further liberalise intra-EAC trade (Drummond et al, 2015). Again, in 2013, the EAC members signed a joined protocol – the EAC Monetary Union (EAMU) – with the aim of further improving regional integration. The protocol, EAMU, was believed to be a stepping stone in introducing a common currency among EAC member states (Drummond et al, 2015). In addition, the fourth step after the custom union, common market and monetary union was the political federation.

In May 2017, the political confederation was adopted by the EAC Heads of States as a transition model of EAC political federation. These initiatives; custom union, common market, monetary union and political federation, are some of the most efficacious strategies towards improved regional integration that make EAC stand head and shoulders above other African RECs. "…Most RECs are still yet to implement a common market…"African Development Report (2014). Like Hill (2011) argued, going beyond tariff elimination in order for the region to realise improved trade patterns, has significant outcomes.

Moreover, in the United Nations Economic Commission for Africa (2018)'s report, it has been advocated that, even though there is room for improvement, EAC has made much progress in intra-regional trade than other trading blocs in Africa. This contention is corroborated by the statistics in table 1. Thus, the organisation is one of a few that is seen to proceed at a faster rate than most RECs in Africa. Taking a few initiatives in each RECs' agendas towards high regional integration (Table 2), most EAC's policies have been successfully implemented while others are making progress. However, other RECs in the continent such as IGAD, ECCAS and UMA, are still lacking behind, (table 2). Besides, according to the African Development Bank Report (2014) EAC is further seen to have made the most linear progress towards economic integration and it is also regarded as the most ambitious among other African RECs. This is also in accordance with table 2.

Table 2 Progress towards economic integration of RECs in Sub-Saharan African

RECs	**FTA (Free Trade)**	**Customs Union**	**Common Market**	**Monetary Union**	**Political Federation**
UMA					
COMESA					
EAC					
ECCAS					
ECOWAS					
IGAD					
SADC					

Note: Green (achieved); Orange (in progress); Blue (planned); White (not planned)
Source: African Development Report (2014)

Notwithstanding the organisation's progress, EAC is still engulfed in debilitating challenges, some of which send chilly messages about the very existence of the organisation itself. One of such challenges is that all the EAC member countries trade more with outside

members than they do with EAC members. Another notable issue faced by EAC is that of the REC's multiple and overlapping membership by partner countries. Thus, each EAC member is a member of more than one REC. This according to Mengistu (2015) is an indication of lack of members' commitment to the REC, which indeed further questions the significance of the REC and the commitment each member has in the REC.

Besides, the trading baskets of these member countries seem to be uniform. Thus, the imports and exports among the EAC countries are mostly dominated by raw materials, which then force these countries to seek other categories of goods from non-EAC members (Mfumukeko, 2016). This view is consistent with figures 1, 2, 3, 4, 5 and 6. It is for these challenges that this study seeks to unload some of the reasons why regardless of so much progress, constraints still remain within EAC. Besides, the findings in table 1, table 2, tables 3 through 8 and figures 1 through 6 seem to cast some doubt about the significance of the REC.

Thus, is there potential for intra-EAC trade after all? If so, what are the major restraints holding EAC partner states from realising gains of regional integration? It is this gap that makes one believes that there are other factors responsible for low intra-EAC trade. This therefore implies that it takes more than being a part of the best REC in order to realise improved trade patterns. Thus, while other RECs such as IGAD, UMA and ECCAS would be advised to work towards implementing the ingredients of high trade integration in table 2, EAC has to try a different toolkit since it is now on the edge of exhausting the list in table 2. Hence, exploring other determinants of intra-regional trade may be of help in assisting African countries to realise high regional integration and improved trade balances.

Moreover, like many other African countries, EAC members are characterised by commodity composition of exports heavily dominated by primary products and a less proportion of manufactured goods. Commodity structure of imports is mainly weighted in manufactured goods and capital goods and high concentration of its trade is with China, the United States and India (African Economic Outlook, 2017). According to Martin (2001), this high dependence of African countries on primary exports reflects lack of investment in infrastructure, equipment, plant and skills required to successfully take part in global markets. These trade patterns within the region are a cause of concern to proponents of regional integration as a panacea of increased economic growth. Besides, Shinyekwa & Othieno (2013) argue that countries which mostly export primary products will experience low terms of trade balance caused by lower price and income elasticity of demand. Almost

all EAC members have a high export product share in primary products, (supported by tables 3 through 8), and this jeopardise high trade balances for member states. Accordingly, the establishment of EAC and eliminating trade tariffs is not enough to realise the benefits of regional integration in Africa. Hence an empirical study that looks at other determinants of trade integration is highly relevant.

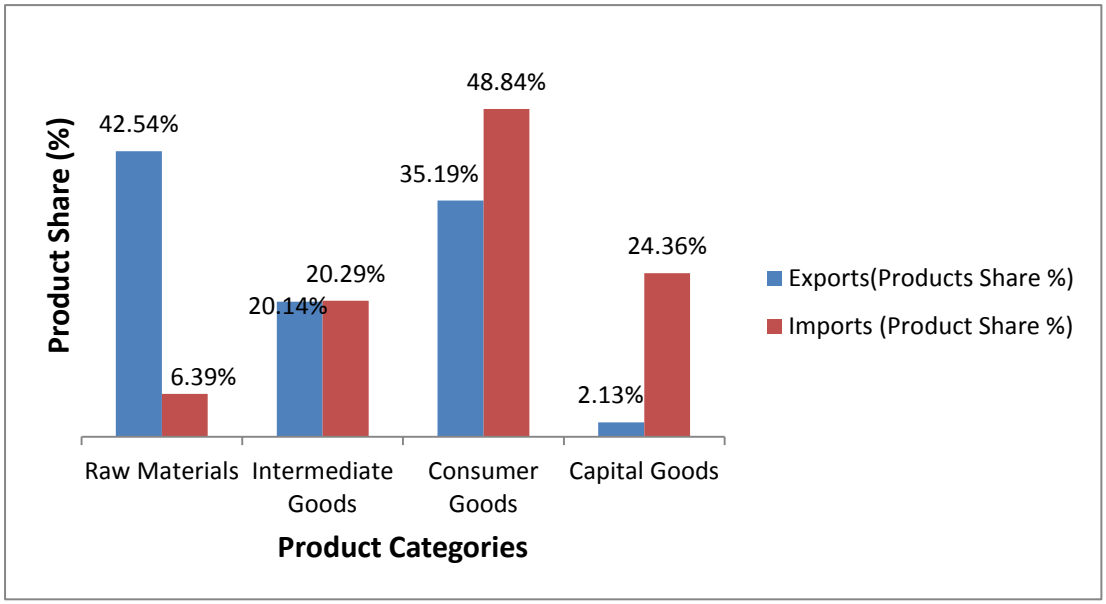
Table 3 Burundi's Top 5 Export and Import Partners

Market	Partner Share (%)	Exporter	Partner Share (%)
Democratic Republic of Congo	24.85	China	12.58
Switzerland	19.79	India	11.98
United Arab Emirates	12.74	***Tanzania(EAC)***	7.85
*** Kenya (EAC) ***	11.80	***Kenya (EAC)***	6.46
Singapore	4.66	South Arabia	6.34

Source: World Bank database (2016)

Table 3 shows Burundi's top 5 trading partners. According to the table, a high percentage of the country's exports are destined to non-EAC member states. Kenya being the only EAC member state among Burundi's top 5 markets, the country has a very low percentage share of Burundi's exports. Thus, even though Kenya imports some of its products from Burundi, it does so at a low rate (11.80 per cent), yet Democratic Republic of Congo – non-EAC member – has a share of 24.85 per cent of Burundi's exports. Besides, Tanzania and Kenya are among Burundi's top 5 exporters. However the export share of these two EAC members is less than 10 per cent, yet that of non-EAC members (China and India) is above 10 per cent. The statistics in table 3 provides conclusive evidence that Burundi trades more with non-EAC countries than it does with other EAC members.

Figure 1 Burundi's Exports and Imports of Product Groups



Source: World Bank database (2016)

Figure 1 shows Burundi's product shares by product categories. According to the diagram, Burundi exports more raw materials and consumer goods, and less capital goods. Besides, the highest import share is that of consumer goods and capital goods with the statistics of 48.84 and 24.36 per cent, respectively.

Table 4 Kenya's Top 5 Export and Import Partners

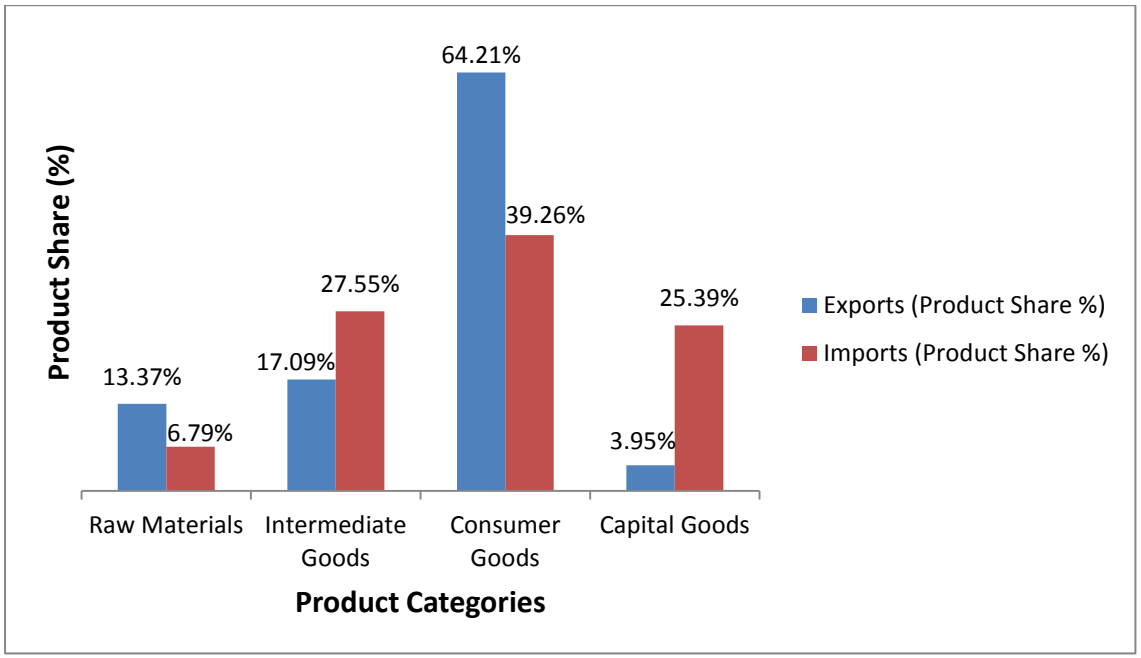
Market	Partner Share (%)	Exporter	Partner Share (%)
Uganda (EAC)	11.90	India	18.29
United Kingdom	7.88	China	12.92
Tanzania (EAC)	7.66	United Arab Emirates	8.31
Netherlands	6.83	Japan	5.93
United States	6.27	South Africa	5.01

Source: World Bank Database, (2016)

Table 4 shows records of Kenya's top 5 trading partners. Among the country's markets, two of the EAC member, Uganda and Tanzania are among the top 5 trading partners. On the other hand, none of the EAC members are among Kenya's top 5 exporters. This is however disappointing given that Kenya is regarded as one of the EAC's giants. Thus, one would

expect that Kenya would be among the EAC countries that strive for high regional integration given that it has been the most dominant player in the region, (Mburu, 2014).

Figure 2 Kenya's Exports and Imports of Product Groups



Source: World Bank database, (2016)

Figure 2 reports statistics for Kenya's product share by product categories. The diagram confirms the fact that Kenya's highest product share of exports is that of consumer goods (64.21 per cent), and the least percentage share is that of capital goods (3.95 per cent). Besides, consumer goods seem to have the highest import product share while raw materials have the lowest percentage share of Kenya's imports.

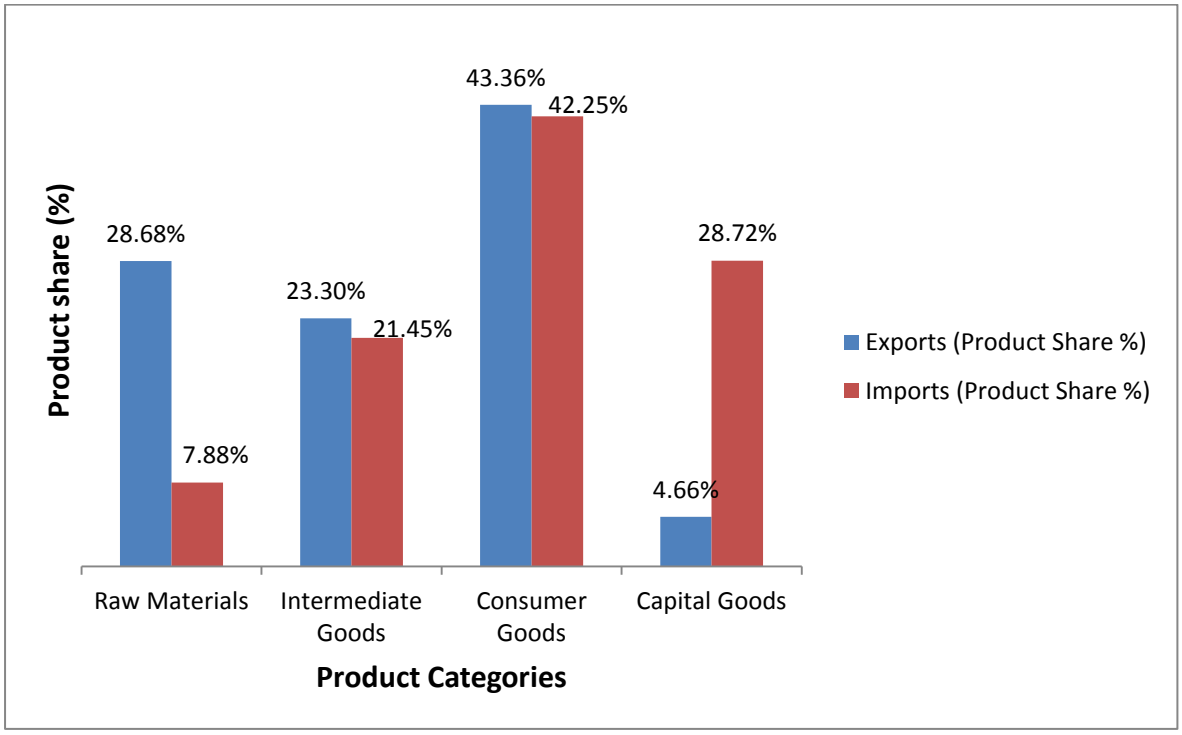
Table 5 Rwanda's Top 5 Export and Import Partners

Market	Partner Share (%)	Exporter	Partner Share (%)
Democratic Republic of Congo	31.82	China	21.24
Kenya (EAC)	16	***Uganda (EAC)***	11.24
United Arab Emirates	14	***Kenya (EAC)***	7.84
Switzerland	8.83	India	7.42
Burundi (EAC)	5.78	United Arab Emirates	5.80

Source: World Bank Database (2016)

Table 5 is a record of Rwanda's top 5 exports and imports partners' percentage share. According to the table, Democratic Republic of Congo is Rwanda's top trading market, with a percentage share of 31.82, which is 15.82 per cent higher than that of Rwanda's second trading market (Kenya). Even though Kenya and Burundi are among Rwanda's top 5 trading markets, these EAC member states' partner shares are more than 15 per cent less than that of Rwanda's main trading market (The Democratic Republic of Congo). Besides, Kenya is Rwanda's only exporter that is within the EAC, which is not even the major exporter of Rwanda. Thus, table 5 confirms highly held views about challenges besetting regional integration among the EAC member states.

Figure 3 Rwanda's Exports and Imports of Product Groups



Source: World Bank database (2016)

Figure 3 shows a record of Rwanda's product share by product categories. According to the diagram, consumer goods seem to have the highest exports product share (43.36 per cent), while capital goods have the least export product share (4.66 per cent). On the other hand, consumer goods take the first rank of Rwanda's main imports given its high product share of 42.25 per cent.

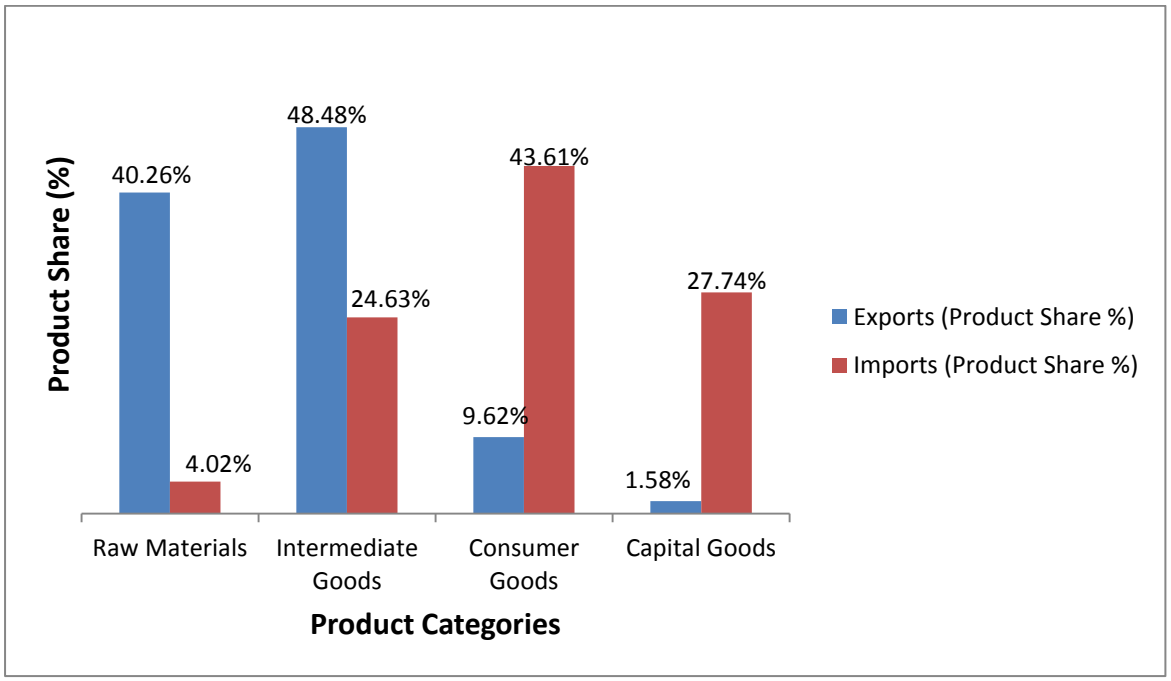
Table 6 Tanzania's Top 5 Export and Import Partners

Market	Partner Share (%)	Exporter	Partner Share (%)
Switzerland	16.19	China	20.80
India	14.82	India	18.14
South Africa	13.32	United Arab Emirates	7.52
China	7.47	South Africa	6
Kenya (EAC)	6.62	Japan	4.71

Source: World Bank database (2016)

Table 6 illustrates a record of Tanzania's top 5 trading partners. According to the table, Kenya is the only EAC member country that is part of Tanzania's top 5 trading partners. With a percentage share of 6.62, Kenya is among Tanzania's top 5 importers. Besides, none of the EAC members is part of the country's top 5 exporter. Given that Tanzania is among the EAC's best trading partners, the fact that the country seems to trade more with non-EAC members than it does with EAC members implies that it takes more than within border initiatives to improve intra-regional trade. Hence, this is where the current study fits in. Thus a study that will look into other determinants of intra-EAC trade is quite important.

Figure4 Tanzania's Exports and Imports of Product Groups



Source: World Bank database (2016)

Figure 4 shows statistics of exports and imports product shares by product categories. Unlike the other three EAC members, Burundi, Kenya and Rwanda, Tanzania's highest product share of exports is that of intermediate goods (48.48 per cent). While capital goods, like with the other three EAC members in previous tables, accounts for the least export product share. Besides, consumer goods have the highest imports product share (43.61 per cent), while, as expected, raw materials have the least import product share (4.02). This is because all the EAC countries have abundant raw materials (Mfumukeko, 2016).

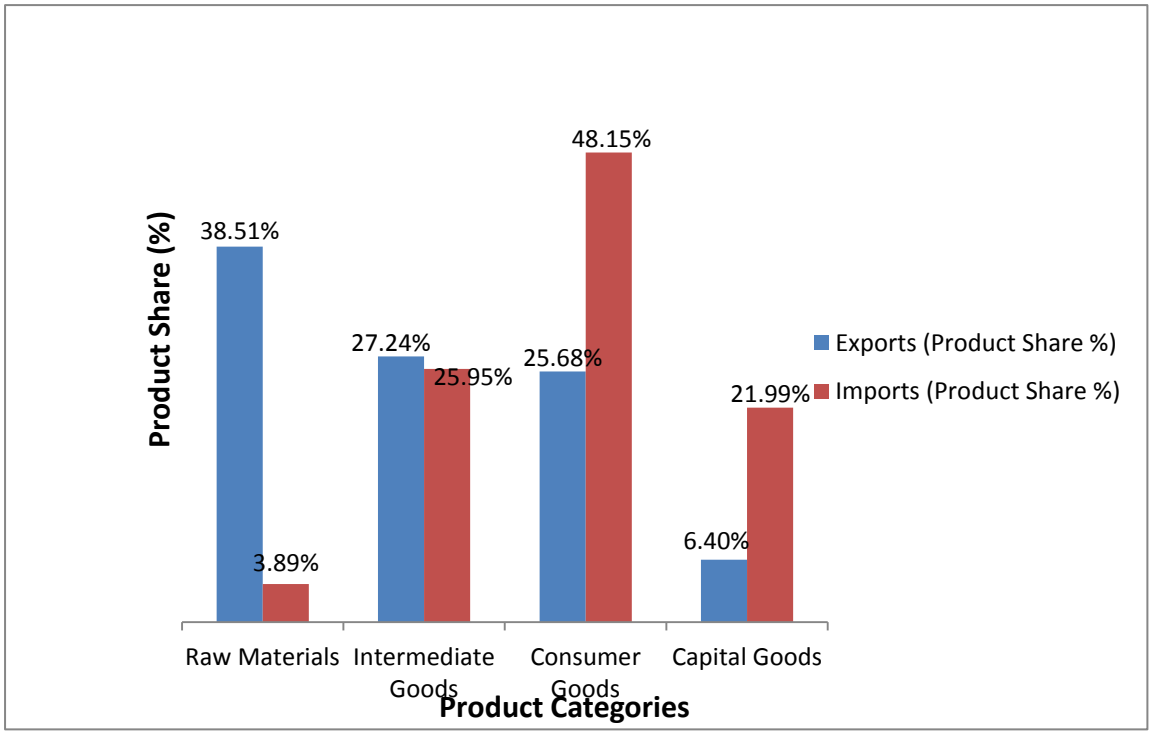
Table 7 Uganda's Top 5 Exports and Imports Partners

Market	Partner Share (%)	Exporter	Partner Share (%)
Kenya (EAC)	18.84	India	20.87
South Sudan (EAC)	11.69	China	15.83
Rwanda (EAC)	10.48	***Kenya (EAC)***	10.03
Democratic Republic of Congo	6.73	United Arab Emirates	7.34
Unspecified	5.47	Japan	6.27

Source: World Bank database (2016)

Table 7 shows Uganda's top 5 exports and imports partners and their partner shares in percentages. Unlike other EAC member countries, Uganda is the only EAC member that has its top three trading markets being the EAC partner states. With other EAC members, the Democratic Republic of Congo took the first ranking. This could mean that, unlike other EAC members, Uganda may be doing something to improve intra-EAC trade. Besides, China and India have the highest exporter share, with Kenya occupying the third position.

Table 5 Uganda's Exports and Imports of Product Groups



Source: World Bank database (2016)

Figure 5 presents Uganda's exports and imports product share by product categories. As the diagram illustrates, raw materials have the highest export product share compared to other product categories. Capital goods, like it has been the case with other EAC members, have the lowest export share. Besides, the highest import product share is that of consumer goods (48.15), while raw materials have the least imports product share.

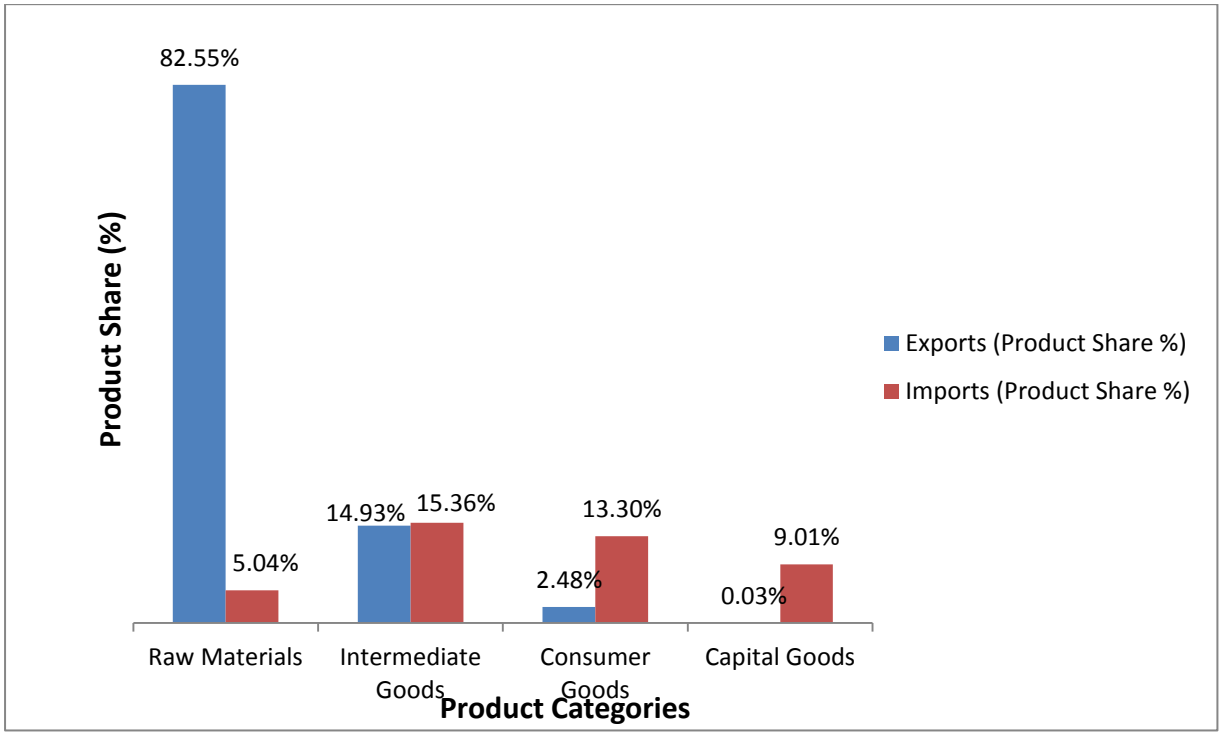
Table 8 South Sudan's Top 5 Export and Import Partners

Market	Partner Share (%)	Exporter	Partner Share (%)
China	52.43	China	22.76
United Arab Emirates	14.42	Jordan	8.59
Saudi Arabia	14.38	India	8.53
India	3.65	Arab Republic of Egypt	6.49
Arab Republic of Egypt	2.72	United Arab Emirates	5.57

Source: World Bank database (2016)

Table 8 shows South Sudan's top 5 trading partners and their percentage partner shares. According to the table, none of EAC member states are part of both South Sudan's top 5 markets and exporters. Thus, South Sudan seems to trade more with non-EAC members than it does with other EAC member countries. This emanates from the fact that among South Sudan's top 5 trading partners, none of them is an EAC member state. This further raise questions about the initiatives EAC have put in place in order to promote trade among its EAC partners.

Figure 6 South Sudan's Exports and Imports of Product Groups



Source: World Bank database (2016)

Figure 6 presents exports and imports product shares by product categories. According to the diagram, South Sudan's highest export product share is that of raw materials, which is also the highest among other EAC countries. Thus, raw materials account more of South Sudan's total exports, while capital goods only accounts for 0.03 per cent of South Sudan's exports. The capital goods have a product share of exports which is lower than that of other EAC countries. Besides, intermediate goods have the highest imports product share, while raw materials have the lowest imports product share.

Moreover, following from figures 1 to 6, it can be seen that the highest export product share of all the EAC countries is that of raw materials and intermediate goods. This therefore

implies that in order to meet the demand of other product categories (consumer goods and capital goods) such commodities have to be imported from other countries. The question that then follows would be whether these product categories are imported from other EAC member states or from non-EAC members. However, given the statistics in tables 1, 3, 4, 5, 6, 7 and 8, it can be concluded that only a small proportion of such commodities is imported from the EAC member states. This is due to the fact that for each EAC member, majority of their top 5 importers are non-EAC members. To determine why this is so, information on how diverse the export trading basket of EAC members, is of vital help. In this regard, if the basket of exports for these countries is similar, each member is therefore left with no choice, but to import other product categories from non-EAC member states. Table 9 addresses this issue by providing information on the most traded products within EAC partners and between EAC and non-EAC countries.

Table 9 Most traded goods within EAC and between EAC and the rest of the world

EAC Member State	Major Exports Within EAC Members	Major Imports Within EAC Members	Major EAC's Exports to the Rest of the World	Major EAC's Imports from the Rest of the World
Burundi	**Tea and coffee, tobacco**, steel and iron, soap and waxes, and aluminium,	**Oil and mineral fuels**, vegetables and animal fat, cement, cereals and beverages	**Tea and coffee**, **tobacco**, raw hides and skins, precious metals and pearls (unwrought gold)	**Foodstuffs**, **petroleum products, machinery and equipment,** and capital goods
Kenya	**Oils and mineral fuels**, plastics, pharmaceutical products, electronic and electrical equipment, and machinery	Oil seed, **dairy products**, paper and paperboard, cotton and textiles	**Tea and coffee**, plastics, cut flowers, edible vegetables, and **tobacco**	**Machinery and equipment**, motor vehicles, **petroleum products**, steel and iron, plastics and resins
Rwanda	**Tea and coffee**, cereals, articles of iron and steel, skins and raw hides, animal and vegetable oil	**Oil and mineral fuels**, cement, **dairy products,** fertilizers and edible vegetables	**Tea and coffee**, ores, slag and ash (including rare metal ores), skin and raw hides, articles of steel and iron, and beverages	**Machinery and equipment**, cement and construction materials, **petroleum products**, and **foodstuffs**
Tanzania	**Oils and mineral fuels**, paper board and paper,	Vehicles, **dairy products**, cereals, meat, animal and	**Tea and coffee**, pearls, metals and precious stones, ash and slag, nuts,	**Machinery and equipment**, construction materials,

	cereals, salt and sulphur ,textiles and clothing	vegetable oil	fruits and oil seed	**petroleum products**, industrial raw materials, agricultural machinery, pesticides and implements, and consumer goods
Uganda	**Tea and coffee**, **tobacco**, sulphur and salt, steel and iron, animal and vegetable oil	**Oils and mineral fuels**, plastics, pharmaceutical and beverages products	**Tea and coffee**, **mineral and oils,** animal and vegetable oil, fish, and **tobacco**	Capital equipment, **petroleum products**, motor vehicles, and medical supplies; cereals
South Sudan	Animals, edible vegetables, **oils and minerals fuels**, wood, hides and skins	**Tea and coffee,** paper and plastic goods, fertilizers, and oil seeds	**Oil and minerals**, wood, edible vegetables, hides and skins	**Foodstuffs**, **petroleum products**, **machinery and equipment,** textiles, chemical product and motor vehicles

Source: International Trade Centre (2016)

Like tables 3, 4, 5, 6, 7 and 8 has shown, the basket of exports from EAC countries is made up of raw materials and intermediate goods. This is also consistent with information provided in table 9. Thus, columns 2 and 4 of table 9 show each EAC member's most exported products to other EAC members and non-EAC countries, which as stipulated by tables 3 through 8, are indeed raw materials and intermediate goods. More specifically, the most exported commodities are tea and coffee, tobacco, oil and minerals, and dairy products. This explains why the major import trading partners of EAC members are non-EAC countries. Thus, even though the foremost object of EAC is to boost trade among member states, the challenge of having similar baskets of exports force these countries to source other product categories from non-EAC countries. Besides, according to column 5 of table 9, major EAC members' imports from non-EAC partners comprise of foodstuffs, petroleum products, machinery and equipment. These are goods that none of the EAC members seem to export. Thus proving lack of such products by EAC countries and hence a need to import such products from non-EAC countries.

1.3 Problem Statement

Since the early 1960s, regional integration was declared a vital component of development strategies in Africa. This was mainly driven by its economic rationale for, among other things, overcoming the restraint of fractioned and small economies working in isolation. Like any other forms of trade liberalization, one of the expectations for bringing regional integration into play was to allow partner states expand their production and reap economies of scale. Thus benefiting consumers and increasing producers' competitiveness (Keane et al, 2010).

Keane et al (2010) contented that the initiative of trade integration among East African countries was not just a stepping stone for creating the production chain, but also to enhance product diversification and thus improve growth within EAC partner states. Besides, not only was the initiative believed to reduce Africa's dependence on its colonisers, but it was also considered a suitable tool to mitigate external shocks. The elimination of customs duties among partner states was regarded as an important step towards deepening trade in the EAC region (Keane et al, 2010). Bennett (1999) postulated that having a common market encourages foreign direct investment and protect infant businesses from non-member states' competitors.

However, in spite of the existence of trade arrangements including that of having a common market, trade patterns are low among EAC members. Thus, the record of trade among the members has been a sobering one when in comparison with trade records of other trading blocs in Asia, Latin America and Europe (World Economic Forum, 2016). This is also in accordance with the statistics in tables 1, 3, 4, 5, 6, 7 and 8. According to the EAC 2016 report, trade among member states shows a falling trend as members look beyond the borders for other trading partners. This is in accordance with a 13 per cent fall in intra-EAC trade within three years, with the total value of trade dipping from $5.8 billion in 2013 to $5.6 billion in 2014 and $5.1 billion in 2015. However, the trends with non-EAC members have shown a significant growth (World Economic Forum, 2016).

Moreover, the fact that trade between EAC and non-EAC members seem to increase more than trade among member countries raises doubts about the existence of the organisation. Therefore the idea of creating unity in the region with high levels of intra-EAC trade share, boosting economic growth and improving East African's standards of living, still appears to be a dream. That is, the process of signing multiple trade agreements with the aim of fostering trade within the region seem to be merely a paper work with no real economic progress. This is so since the idea of theoretical benefits of regional integration in East Africa which includes low reliance on primary exports, reduced costs in doing business and high intra-EAC, have not significantly materialised in the region. Hence an empirical study, with a diagnostic and better knowledge about intra-EAC trade patterns and signifying factors affecting trade flows within the region, is required. This study falls within this line as it aims at examining trade intensity and identifies factors that restrict trade expansion among EAC member states.

1.4 Justification of the Study and Contribution to Knowledge

The current study is motivated by the benefits associated with international trade especially given that no country can independently satisfy the needs and wants of its population without interacting with other nations. Besides, scarcity of resources is one of the reasons why economies felt a need to interact with other nations. For African countries, the initiative was also believed to be a pathway to induce increased levels of trade and ensure easier access to bigger markets. However, because of commodity price shocks and unbalanced trade, African leaders advocated that African countries should jointly pool their resources in

regional arrangements. The initiative (regional integration), was believed to have the ability to assist the continent in fighting the hard-line effects of globalisation and be a stepping stone towards improved trade patterns (Frankel &Rose, 2000).

Most importantly, regional integration was believed to help reduce the continent's dependency on its colonisers. As a result, in order to ensure that the continent realises improved economic growth, promote industrialisation and reap economics of scale, about 14 regional groups have been established in Africa. As a way to ensure that these RECs prosper and meet the demands of the continent, there are 5 steps proposed by policy makers for the RECs to follow. These steps range from the formation of free trade area to establishing customs unions, common markets, monetary unions and establishing a political federation. Besides, an important step in regional integration is believed to be that of establishing a free trade area. This is due to the fact that the idea of free trade is believed to promote intra-regional trade and discourage trade with non-member countries. This is because goods from member countries are trade free thus making them to be relatively cheaper than those from non-member countries. Given this theory, the expectation was for African countries to trade more with other African countries than they do with non-member states.

Besides, theory also postulates that transport costs are relatively lower for neighbouring countries and countries that share the same boarder and language. As a result, trade among African countries is expected to be higher than that between African countries and non-African countries. This is however not the case given statistics in table 2. Thus, African countries trade more with the rest of the world than they do with member states. Moreover, one would expect improved trade patterns within RECs which have implemented the free trade initiative and are in the next stages. However, given statistics in table 2, trade among member countries and other African countries is lower than that between African countries and non-African countries. Besides, RECs such as EAC are in the last stages yet trade with Inon-member countries is higher than that among trading partners.

Furthermore, tables 3 through 8 show each EAC member's top trading partners, and majority of such partners are non-EAC countries. This therefore implies that having gone through all the 5 stages does not make much of a difference in terms of inducing trade among member countries. Hence persuading other RECs to go through all the 5 stages does not guarantee that such RECs will realise improved trade patterns within the REC. A study that looks at factors that influence intra-trade other than just focusing on the 5-stage-initiative is therefore relevant. The current study falls within this range as it looks at

determinants of intra-EAC trade. For RECs which have tried the proposed initiatives yet the intended objective of promoting intra-trade has not been achieved, further implies that there is need to explore other initiatives. The initiatives found in the current study will therefore be useful in helping to induce regional integration in Africa.

Moreover, it is also worth noting that a large proportion of exports from Africa are mostly raw materials. Such commodities however, only fetch lower prices in world markets. Thus, even though Africa is endowed with raw materials, the fact that these are exported without value being added to them means the continent is not profitably benefiting from the sale of its raw materials. This implies that there is need to further investigate factors that influence regional integration in Africa. By taking the case of EAC, the expectation is that policy recommendation which will apply in the current study, will also be useful for other RECs in the continent.

Furthermore, there is lack of information on the determinants of low-EAC trade. Studies that tried to unpack this subject mostly employed the traditional gravity model. The model portrays countries' GDP and geographic distance as the only significant variables which affect bilateral trade (Shinyekwa & Othieno, 2013). The ignorance of other factors that affect intra-regional trade, can lead to omitted variable bias (Nordås &Piermartini, 2004). Besides, other studies that employed the augmented gravity model focused on factors of intra-regional trade for other RECs besides EAC. Another similar study that tried to unpack this issue is that by Munyao (2012), which looked at factors influencing EAC trade patterns. However, to determine such factors, the author's focus was on the 2000 to 2012 period. The author also used primary data to make the analysis. This element also differentiates itself from the current study as it will employ secondary data.

Moreover, the current study aims at going beyond Munyao's (2012) focus by considering secondary data from 1988 to 2016, and employing the intuitive and theoretical augmented gravity model in panel data framework. Using a wider period will therefore enable the researcher to have a better insight about the determinants of intra-EAC. Given also that the organisation collapsed in 1977 and reorganised in 2000, the current study will therefore be able to determine the factors that might have led to the collapse of the organisation and the significance of the current trade agreements in the organisation. This will be achieved by looking at the significance levels of the determinants of intra-regional trade. Highly significant variables will be regarded as the main determinants of intra-EAC trade.

Furthermore, the results of the current study can also be used to make a conclusion of which determinants are responsible for low intra-African trade. Thus, the results of the current study can provide a wide range of information to policy makers about factors to consider as they interrogate plans and policies to employ to ameliorate living conditions of multitudes of destitute people in Africa. The researcher's contention is that Africa abounds with opportunities. Hence it is necessary to find the right mix of policies and interventions which will help extricate the continent from the devastating state of low intra-regional trade. EAC, with its promising future, does provide hope for inducing high intra-regional trade provided all the stumbling blocks thwarting full realisation of the union can be identified so that other regional unions can follow into its footsteps.

1.5 Research Questions

- What are the determinants of intra-EAC trade?
- What are the economic impacts of intra-EAC trade?

1.6 Objectives

1.6.1 Main Objective

- To determine the determinates of intra-EAC trade

1.6.2 Minor Objective

- To determine the significance of factors of intra-regional trade in boosting EAC trade

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two provides a review of literature on the determinants of intra-regional trade. The chapter is divided into theoretical and empirical literature and are presented in sections 2.2 and 2.3 respectively.

2.2 Theoretical Literature

Trade theories which enlighten gains from economic integration dates as far back as the period when there was a shift from autarky to global trade. Such theories provide justifications for regional groupings (regional integration) (Shinyekwa & Othieno, 2013). The standard trade theory put forward by Ricardo contends that trade boosts countries' potential welfare. As a result, this shifts resources to the production of goods where they can be put in efficient use, and import goods whose production in the country is less efficient (Marinov, 2015). Autarky on the other hand, only entails self-reliance and no interaction with other economies. In this case (autarky), countries only benefit from the goods they have a comparative advantage in and loss in goods whose production is less efficient or costly to produce.

Moreover, the other important trade theory is the Heckscher-Ohlin (H-O), which defines international trade based on the factor endowment of a country. Important ingredients of this theory (H-O) are qualities of labour and capital available for production. The theory assumes that countries' technology is homogeneous. In this case, economies endowed with abundant supply of labour will tend to produce and export economic activities that are predominantly labour intensive. Imports of such an economy will, on the other hand, be dominated by products produced through capital intensive means. The implication of this is that, capital intensive countries will continuously dominate developing economies which are relatively labour intensive. This is because capital intensive goods have high monetary value attached to them more than labour intensive goods (Shinyekwa & Othieno, 2013).

The authors further indicated that according to the H-O model, the mobility of factors of production is only possible within the country's borders and immobile beyond borders of the country. This implies that developing countries will find it difficult to access capital inventive technology. Building on these theories, economists and trade theorists advocated for trade linearization in order for economies to realise the benefits from trade; these included the "within border" and "beyond border" initiatives. One way of coordination between economies is to set tariffs to zero among member countries. This is however, just one form of harmonizing trade among member states (Shinyekwa & Othieno, 2013).

Even though trade negotiations vary widely, the most conventional motive behind a country's participation in any form of trade negotiation is that, through mutual interchanges of concessions on barriers of trade, members will experience improvements in accessing markets. Non-member states will, on the other hand, face discriminatory trade policies. Such trade negotiations can either be regional or global. Lack of resources and inability to satisfy people's needs and wants around the world do compel countries to work hand-in-clove to coordinate their policies for their mutual benefits. This is because coordination can generate gains that could otherwise be impossible if countries are not purely independent (Suranovic, 2016).

To mention a few merits of the process, Linder (1966) and Sakamoto (1969) indicated that trade integration boosts economies' market size and eliminate costs through economies of scale and space. Besides, the authors further indicated that integration promotes import substitution which then helps member states to spend their foreign currency on capital goods and other goods which might be costly to produce within the union. Similarly, gains can also accrue among economies that liberalize capital and movements of labour across borders, harmonize monetary and fiscal policies, and allow for easy allocation of resources (Linder 1969). Arrangements or negotiations that lead economies to coordinate either their monetary and/or fiscal policies, or trade, are referred to as economic integrations (Suranovic, 2016).

Furthermore, literature on regionalism dates back from Viner (1950). The author's view was that impacts of regional integration can either be "trade diverting" or "trade enhancing". The author argues that like any other form of trade liberation, the main objective of regionalism is to enable producers expand their production then reap economies of scale. As a result, consumers and less competitive producers, who would have collapsed if they were to compete in global markets, were believed to be great beneficiaries of the initiative.

According to Viner (1950), this is called "trade creation (enhancing)". The author further indicated that after the formation of economic union, the goods under consideration become cheaper, leading to an improvement in the efficiency of integration. Thus, the benefits of trade creation lies in the elimination of custom tariffs within the borders of the integrated member countries, leading to a further price reduction and creation of new trade flows.

Trade diversion transpires when elimination of tariffs among member states leads to trade flows being diverted from cost-efficient member states to less efficient ones. Viner (1950) further indicated that trade creation only happen when member states shift their reliance on high cost products supplied by local firms, to importing from low cost trading partners. Whereas trade diversion happen when expensive products from member countries are replaced by cheaper products from non-member states. Marinov (2015)'s take on the issue of trade diversion is that, consumers within the trade bloc import goods and services at relatively low prices. This is because trade between trading partners is free of tariffs, which then boost consumers' savings.

Moreover, the initial understanding was that regional integration has the ability of increasing intra-regional trade performance and improving efficiency by expanding markets. This initiative was believed to be welfare enhancing. However, Viner (1950) contends that welfare enhancing for preferential trade negotiations is a bit ambiguous for agreements which only depend on eliminating tariffs. According to the author, there is more to high intra-regional trade than just eliminating tariffs. Thus, in order for economies to foster competition, widen market access through trade, promote large and diversified production and investment, ensure political and socio-economic stability, and boost bargaining power for integrated countries (Marinov, 2015). Viner (1950) indicated that countries therefore need to look beyond border trade measures.

Furthermore, Baldwin &Venables (2004) pointed out that the determinants of intra-regional agreements depend on allocation, accumulation and location factors. The accumulation effect is said to operate through technology or infrastructure spill-over effects, which in turn influence the long term growth and development of trading partners. The authors further indicated that this effect has an impact on factor prices such as the capital's rate of return for member states and non-member countries. This is believed to have an influence in increasing investment proportions for physical and human capital. This can lead to agglomeration effect contingent on trade cost changes. Besides, trade within countries in the same region is believed to serve as a solution to structural challenges faced by small

national markets and also a strategic component for mitigating the negative impact of imbalanced multilateralism (Anderson & Blackhurst, 1993).

Similarly, Biswaro (2003) indicated that earlier literature on regional integration, particularly in the context of economics, emanated from the comparative advantage theory. The author further pointed out that the initiative (regional integration) also takes its roots from liberal economists' interests in improving trade patterns by eliminating tariff and non-tariff barriers between partners. The initiative is also built on the element of having policies that induce unity among members and trade restrictions against none member countries. Other ingredients include free movement of factors of production, harmonizing policies and accepting a common currency. The motive behind fostering closer regionalism implies the development of new policy rules. This involves developing regional trade mechanisms that encourage intra-regional trade flows including harmonising standards to smoothen the flows of trade, and imposing rules which ensure that there is no trade defection. Some of these mechanisms may raise concerns on legitimate public health while others may be more regional or naturally strategic for developmental objectives (Biswaro, 2003).

Additionally, Calì (2009) indicated that in order for economies to enjoy the benefits exuded by intra-regional trade, there are vital determinants of intra-regional trade that can act in favour of member states. The author pointed out that such determinants range from economic variables including factor endowments differences and trade structure complementarities, to policy measures such as tariff barriers and non-tariff obstacles to trade. According to Calì (2009) geographical location is one of the non-tariff-natural-barrier to gaining access to particular markets which can be targeted through effective government intervention. Besides, according to the World Trade Report (2013), six factors are believed to have an impact on regional trade. These include demographic changes, investment, technology, institutions, transport costs, energy and other natural resources. According to the report, demographic change is believed to affect trade through import demand and countries' comparative advantage. The report indicated that an ageing population, improved education system, migration and female participation in labour force, are vital for improving trade performance. Besides, physical infrastructure investment is believed to facilitate economies' integration into regional supply and demand chains.

On the other hand, capital accumulation, improvement in technology and knowledge associated with investment, especially foreign direct investment, have the ability to enable economies to move up the value chain through their comparative advantage alteration. The

report (World Trade Report, 2013) also indicated that technological progress in one country can have positive spill-over effects on its member states. For instance, landlocked countries depend on appropriate infrastructure established for smoothening trade movements. Besides, other countries in the region can have a stronger influence on the provision of, for instance public goods which may include hard and soft infrastructure. In support of this, Mothae (2005) also believes that infrastructure is vital for boosting socio-economic development and has the ability to deepen regional integration.

Mothae (2005) also pointed out that infrastructure has the ability to unlock opportunities for economic development, regional and global commerce and enhance global competitiveness. Besides, according to the World Trade Report (2013) policy actions that aim at reducing transportation costs and offsetting impacts of increased fuel costs, are necessary in improving regional trade. This can be accomplished through improving the quality and quantity of infrastructure, concluding negotiations on facilitations of trade, establishing more competition on transport routes and encouraging innovation. Lastly, the report indicated that improving the quality of institutions particularly on contract enforcement relation, can also reduce trade costs. Institutions are also believed to be the basis of comparative advantage. Thus, trade and institutions are believed to strongly influence each other.

2.3 Empirical literature

A number of empirical studies have been performed with the aim of determining the determinants of trade integration and the effects of trade arrangements on member states. In particular, the empirical work on determinants of regional trade integration and the impacts of trade negotiations between regions followed after Tinbergen's seminal work. To this effect, one of the highly recognised and early works on this concept is that carried by Tinbergen in 1962. As a pioneering attempt to model economic "networks", Tinbergen proposed the gravity model of international trade. This initiative predicts that the intensity of trade between two countries is explained by a formula similar to Newton's law of gravitation (Squartini & Garlaschelli, 2013). The intuition behind the model was to explain trade exchanges in terms of macroeconomic quantities such as GDP and geographic distance between trading partners (Squartini & Garlaschelli, 2013). The model assumes that trade between two countries is positively related to countries' economic size, measured by their

GDP, and inversely related to the geographic distance between them (Chaney, 2011). Moreover, the author indicated that the model suggests that the relative size of the economy attracts economies to trade with each other while greater distance weakens the attractiveness.

Besides, the model has the ability of forecasting the impact of changes in trade policy on trade costs (Chaney, 2011). The author highlighted the fact that initially, the model was seen as an empirical initiative with less theoretical foundation. However, the widespread adoption of the model in explaining trade patterns has been regarded by a number of economists, as a significant development on previous theoretical models. These include the Ricardian model which explains trade patterns in terms of differences in the distribution of technology. Another model is the Heckscher-Ohlin model which depends on differences in factor endowments among economies as the basis for trade. In these pre-gravity models, the size of an economy was said to be insignificantly considered. Besides, Squartini & Garlaschelli (2013) highlighted the fact that the model's success is seen in reproducing well, the observed (non-zero) trade flows among economies. The authors added that minor changes to the model, such as the inclusion of other factors either suppressing or favouring trade, are easy to make, and thus further improve the fit to data. Empirically, Tinbergen (1961) employed the gravity model to examine trade patterns of 42 countries. The author found distance elasticity of trade of -0.89. The exporter and importer's GDP was found to positively affect trade patterns. The conclusion from these findings was that, distance and GDP significantly affect trade flow, with distance negatively affecting trade patterns, and GDP showing a positive impact.

Furthermore, in order to determine the role of regional integration among European Community (EC), the Association of South-East Asian Nations (ASEAN), Mercosur and Australia-New Zealand, Frankel et al (1997) employed the gravity trade model. The authors' findings revealed the fact that trade blocs have a significantly strong influence on bilateral trade. The results showed that Austrian-New Zealand and ASEAN boost trade among the partner states by five folds and more. The findings also showed that regardless of high levels of intra-European Community, trade between the periods 1960 to 1970 was mostly affected by countries' size, economic development, common language, contiguity and proximity. When controlling for these variables, the level of intra-trade attributed to EC was found to be lower.

Moreover, in determining the impact of intra-regional trade, Elbadawi (1997)'s estimates were compatible with intra-regional trade patterns reported by earlier studies. The author estimated the gravity model, using a sample of 62 countries of which 28 were sub-Saharan African countries, with a sample of two periods (1980-1984 & 1986-1990). As expected, the results of the model were consistent with literature and the traditional gravity variables were found to be significant and had plausible signs. Besides, the author's results also revealed the fact that being a member of SADC has an insignificant effect in boosting trade. However, the trade performance of the bloc showed a slight improvement when controlling for impacts of exchange rate policy.

Furthermore, Martinez &Nowak (2001) also employed the gravity model using panel data to investigate factors affecting Mercosur and European Union's trade. According to their findings, partners' incomes positively affect bilateral trade patterns. The elasticity of income was found to be in correspondence with theoretical expectations. However, the impact of the traders' population had opposite signs. Thus, the exporters' population had a larger negative coefficient, while that of the importers had a large positive impact. This implies that, less populated countries import less than highly populated economies. Based on the findings, the authors concluded that income differences and exchange rate are some of the important factors in boosting regional integration.

Moreover, in examining the potential of Africa's regional and internal trade, with a particular emphasis on West and Central Africa, Geda & Seid (2015) made use of the Pseudo Poisson Maximum Likelihood (PPML). The choice of this estimation method (PPML) was based on its ability in dealing with problems associated with the OLS estimation. For robust check and completeness, the authors employed the panel-Tobit based estimation. The authors' results were found to be statistically significant and had expected signs for the traditional gravity variables. The proxy for multilateral resistance – remoteness index – was found to significantly affect bilateral trade. Besides, a proxy for preference or the so called "Linder effect" – per capita income, was found to negatively affect bilateral trade.

Besides, comparing actual trade and results from simulation exercise which was performed to determine intra-Africa trade potential, all countries' actual trade was found to be below the trade patterns estimated from the gravity model. Bac (2010) employed a panel gravity approach in order to estimate factors affecting export flows in Vietnamese. The author's results revealed the fact that a rise in exchange rate or currency depreciation, positively

affect exports. Besides, Makochekanwa (2012) employed the panel gravity approach to determine impacts of regional trade agreements applied on selected food products (rice, maize and wheat). The analysis was done in three African RECs: COMESA, SADC and EAC. The author found that the coefficients of the traditional gravity variables significantly affect trade patterns. Given the findings, the authors concluded that the three trade blocs have an impact on selected agro-food.

Another relevant study in determining key factors of dynamics of regional trade integration is a study by Zannou (2010) who also employed the gravity model on the geographic, socio-cultural, commercial and economic factors using ECOWAS's data. The author employed the pooled OLS estimation and the fixed effect method. According to the results, economic growth was found to have a great influence on intra-community trade patterns. Besides, population growth was found to proportionately affect trade patterns of ECOWAS members. Trade factors such as linguistic, geographical and common currency, were also believed to trigger trade flows. At the economic policy levels, the appreciation of national currency penalises regional trade flows by reducing trade patterns, whereas commercial openness was found to positively stimulate intra-regional trade flows. When taking into account all fixed effects, exchange rate, population and openness were the only factors which were found to affect intra-ECOWAS trade.

On the other hand, per capita income seemed to have an influence when controlling for other fixed factors. This implied that there are other factors influencing ECOWAS trade which are not taken into account. It is these factors which can explain the volume of intra-regional trade in a much superior manner than economic dynamics (Zannou, 2010). Moreover, Yabu (2014) applied the gravity model and relative measure of trade intensity, which aimed at capturing the trade share of SADC member states. The gravity panel approach was performed and two regression estimations were performed. These included the seemingly unrelated and the fixed effect regressions. The relative measure results showed that even though the intra-SADC trade seemed to be low, there were signs of improvement as compared to previous findings. Thus, according to the results, the share of intra-SADC exports averaged to 31.3 per cent between 2008 and 2012.

Besides, the findings from the fixed effect regression revealed that per capita income negatively affect exports value of most SADC members. According to the author, the negative impact of per capita income on exports is an indication of a positive relationship between consumption and income. The results also revealed a significant and positive

relationship between inflation and the value of export for countries with lower rates, and these were for South Africa and Mauritius. Population results were found to be mixed (positive and negative) while those of exchange rate depreciation were found to positively affect exports of non-landlocked countries.

In addition, after a vivid study on factors influencing intra-regional trade, Marinov (2015) concluded that the basis behind regional integration in developing countries cannot only be explained by dynamic and static effects which regulate integration within developed economies. The author believed that this was due to the fact that with developing countries, some of trade determinants have strong influence on trade patterns. Controversially, other factors had weak influence on countries' willingness to participate in regional trade blocs. Given these, the author advocated that in order to assess the determinants of integration, factors such as economic development, production characteristics, economy structure, demand preferences, trade policies and regimes, need to be taken into account.

Table 10 Summary of main research on determinant of regional trade

Author, year	Country	Objective	Methodology used	Main Outcome variables considered	Results/Findings
1. Yabu, 2014	SACU	Identify factors affecting intra-regional trade within SADC member states;	To estimate the determinants of intra-regional trade flows in SADC region, the gravity model was used. To find out which model will be most appropriate for the data, fixed and random effect models were estimated using the Hausman specification test; and random effect vs pool effect models using the Breusch-Pagan test	GDP, per capita income, population, value of manufacturing, and exchange rates.	It was found that South Africa has a comparative advantage in trade, receiving the largest share of exports and imports from other member states within the region. Generally, findings indicated that most SADC member states appear to trade more with other countries outside the SADC region. Besides, trade flows even among SACU members was found to be relatively small. However, South Africa, was found to be the most export destination and import source of other member states
2. Mulenga,	Zambia and	1. To establish the extent	In a panel data	Real Exchange Rate (EXRT),	reveal that apart from the common

2012	SADC countries	of the existence of intra-industry trade between Zambia and its trading partners in the SADC region. 2. To identify the determinants of intra-industry trade between Zambia and its trading partners in SADC. 3. To evaluate the existence of intra-industry trade between Zambia and its trading partners in SADC. 4. To identify the significant factors influencing the levels of intra-industry trade between Zambia and its trading partners in the	framework, the study employed the Feasible Generalized Least Squares in the random effects model to estimate the gravity equation covering a period of 9 years from 1998 to 2006	GDP, Per Capita Income (PCI), Dissimilarity in Per Capita Income (DPCI), Distance between capital cities of trading countries (DIST), Trade Intensity (TI) and dummy variables for Common Borders (D1) and Common Language (D2).	gravity equation variables (GDP, PCI and DIST), IIT between Zambia and her trading partners in SADC is also determined by other variables such as DPCI, common border and common language. The results further reveal that GDP, DIST, Common Border and Common Language have a positive impact on IIT, while DPCI depresses it. EXRT and TI, however, seem to have no effect on IIT between Zambia and its trading partners in the SADC as they are found to be statistically insignificant although with the anticipated signs

		SADC.			
3. Klimczak and Trivić, 2015	Western Balkan countries	Identify factors that have an influence on bilateral trade among the Western Balkan countries for the period from 1995 to 2012.	The augmented gravity model was employed, and this was analysed using pooled, fixed and random effect model. After running several tests, the fixed effect model was found to be the appropriate model to perform the analysis.	GDP, population, distance, common language, common border, being a part of the same territory, participation in a free trade agreement and valuation effects of exchange rates.	The strongest influence on trade values were exhibited by variables representing ease of a direct communication and similarity of religious structures. Besides, war and one-year-post-war effect showed a strong and statistically important influence. Thus, the main conclusion is that non-economic factors in the region of the Western Balkans play the most important role in determining trade values between countries.
4. Hussain and Xue	Economic Cooperation Organization members.	To assess determinants of low intra-regional trade in the ECO region.	The augmented gravity model was estimated in a panel data framework using pooled OLS, random effects and fixed effects estimations were employed, with fixed effect model found to be	The standard gravity model was augmented with infrastructure, tariff rates and exchange rates in search of trade costs causing low intraregional Trade.	Findings of the study show that trade in ECO region is positively determined by the income, population and a better state of infrastructure and negatively affected by distance, tariff rates and exchange rates. Moreover, the policy implications of the findings are that, ECO countries should liberalize their trade

			the most preferred model.		policy further by removing tariff and nontariff barriers to promote intra-regional trade.
5. Zannou, 2009	Economic Community of West African States (ECOWAS)	To determine the key factors behind the dynamics of intra-community trade flows.	The pooled form of the gravity model was used. The fixed effect was then introduced to take into account the heterogeneity of trade flows.		As expected, it resulted that remoteness and enclosure reduce the volume of intra-community trade while proximity (geographical, linguistic or monetary) increases it. Besides, economic and demographic dynamics are sources of more increased trade within ECOWAS. The same conclusion was also found on the analysis of stability of exchange rates and the openness of national economies. However, taking into consideration the heterogeneity of flows through the control over invariable factors in time, only the depreciation of exchange rates and the openness of economies determine the volumes of intra-ECOWAS trade

					flows.

CHAPTER THREE

METHODOLOGY

3.1 Introduction and the Gravity Model

The commonly used analytical framework in international trade is the gravity model. The model has been applied in numerous articles and research papers covering all trade areas. The model's popularity emanates from its ability in estimating the impacts of various trade disciples, from the traditional view of considering tariffs as the main determinant of trade, to the new view of looking into "behind border" measures (Anderson, 2016) - which is the key element covered in this study. Thus, the current study will go beyond the within border measures as the main determinants of intra-trade. Now given a wide variety of data in both developing and developed countries, the gravity model has been regarded as a starting point in answering a variety of research questions with policy components in international trade.

Moreover, the first application attempt of the gravity model in assessing and analysing international trade flows dates back from early 1960s by Tinbergen (1962) and Poyhonen (1963). Since then, the model gained popularity and was believed to produce a good fit in various economic disciplines. The original gravity model of economic interaction over space was inspired by "newton's physical law of gravity" (Anderson, 2016). The motive behind this was that, economic flows could differ with the masses of economic activities at the departure and destination, and negatively with the distance between the departure and the destination (Anderson, 2016).

Despite the model's success stories, the gravity model was criticised for lacking the theoretical foundation (Matyas & Konya, 2000). In Shinyekwa & Othieno (2013)'s words, "…the model was heavily criticised for lacking the ingredients of the prominent models of international trade that include the Ricardian model … and the Heckscher-Ohlin (H-O) model … as the basis for trade theories," However, this is certainly no longer the case given the growing advancements made in both theoretical and empirical works of the gravity model. "…it is remarkable to observe that in the space of a little more than a decade, the

gravity model has gone from a theoretical orphan to having several competing claims to maternity" Shepherd (2013). Thus, following the criticisms about lack of theoretical framework, trade economists provided the theoretical justifications of the model based on different foundations. The first initiative was that by Anderson (1979), who provided the theoretical foundation of the model based on Constant Elasticity of Substitution (CES), goods differentiated by the country of origin and preferences of goods – "Armington Assumption" Anderson, (1979). The implication of this assumption is that at equilibrium, all countries are expected to participate in trade. The assumption also implies that all products are traded so that overall revenue becomes the aggregation of home and foreign demands for the goods produced by each country. Given this theory of the Armington assumption, larger countries are expected to import and export more than others Anderson (1979).

Furthermore, in Bergstrand (1985)'s view, the gravity model of trade is based on monopolistic competition established by Krugman (1980). According to the author, the implication of the model is that countries with homogenous characteristics trade different commodities due to the fact that consumers' preferences differ. The deviation of the gravity model by Helpman &Krugman (1985) is based on the assumption of increasing returns to scale to production. Besides, Deardorff (1998)'s theoretical formulation of the gravity model is based on Heckscher-Ohlin assumption of factor endowment. On the other hand, Eaton & Kortum (2002)'s development is rooted from Ricardian model of international trade emanating from differences in technology which includes geographical factors. Their model gives an expression that relates the volume of bilateral trade to differences in purchasing power parity, geographical and technological barriers.

3.2 Model Specification

This section draws its inspiration from Anderson (1979), Bayoumi & Eichengreen (1997), Cheng & Wall (2005), and Portugal-Perez & Wilson (2010)'s works. The section first begins with the traditional gravity model. The rationale behind the traditional gravity model is that trade flows are based on countries' economic size and distance between trading partners (Roy & Rayhan, 2012). The standard proxy for size is Gross Domestic Product (GDP) while that of distance is the actual distance between two trading economies (Shinyekwa & Othieno, 2013). The derivation of the model will however not be shown in the current study since that is not the objective of the current study. This is also due to the

fact that a number of articles have provided enough contribution in the derivation of the model.

The mathematical formulation of the traditional gravity model is expressed as:

$$T_{ijt} = \alpha {Y_{ijt}}^{\beta_1} {D_{ij}}^{\beta_2} \varepsilon_{ijt} \quad \ldots\ldots\ldots\

Incorporating these variables, the augmented gravity model becomes;

$$T_{ijt} = \alpha Y_{ijt}^{\beta_1} DIS_{ij}^{\beta_2} POP_{ijt}^{\beta_3} TOT_{ijt}^{\beta_4} FIS_{ijt}^{\beta_5} EXC_{ijt}^{\beta_6} INFRA_{ijt}^{\beta_7} BORD_{ij}^{\beta_8} LANG_{ij}^{\beta_9}$$

$$LAND_{ij}^{\beta_{10}} EAC_{ijt}^{\beta_{11}} OTHER_{ijt}^{\beta_{12}} \varepsilon_{ijt} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Where POP_{ijt} represents the population for each EAC member state at time t. TOT_{ijt} represents terms of trade for each EAC member at time t. FIS_{ijt} represents fiscal policy for each member at time t. EXC_{ijt} represent exchange rate of EAC members at time t. $INFRA_{ijt}$ represents transport and trade related infrastructure between EAC member states at time t. $BORD_{ij}$ represent a dummy for EAC members with common border, taking the value of 1 if they have the same border and zero if they do not have a common border. $LANG_{ij}$ represents a dummy for common language, taking 1 if EAC members have a common language and zero otherwise. $LAND_{ij}$ represents a dummy for landlocked, taking the value of 1 if EAC members are landlocked and zero otherwise. EAC_{ijt} represents membership of EAC trading bloc at time t, taking 1 if a member and zero otherwise. $OTHER_{ijt}$ represents membership in multiple RECs at time t, taking 1 if a member of multiple RECs and zero otherwise. Other variables are as per the definitions given in equation (1).

The specification of the linearized gravity model is as follows;

$$LT_{ijt} = L\alpha + \beta_1 LY_{ijt} + \beta_2 LDIS_{ij} + \beta_3 LPOP_{ijt} + \beta_4 LTOT_{ijt}$$

$$+ \beta_5 LFIS_{ijt} + \beta_6 LEXC_{ijt} + \beta_7 LINFRA_{ijt} + \beta_8 BORD_{ij} + \beta_9 LANG_{ij} + \beta_{10} LLAND +$$

$$\beta_{11} LEAC_{ijt} \beta_{12} LOTHER_{ijt} \varepsilon_{ijt} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

"L" shows that the variables are in logarithm form, which implies that their interpretation will be in terms of elasticity. It is worth noting that divergence of net exports happens when propensity to export to other trading partners outside EAC increase while the exports to EAC members decrease.

3.3 Variables and Expected Signs

- GDP (Y): This is a proxy for economic size. Its relationship with net exports can either be positive or negative. The basic idea is that as GDP increases the variety of tradable products (exports) increases thereby making net exports to be high, and as GDP decreases, exports reduce making next exports to deteriorate.

- Population (POP): This is the total population of each country and it represents a proxy for market size. Its relationship with net exports could either be trade-enhancing or trade-inhibiting (Eita, 2007). A negative relationship represents an absorption effect. In this regard, the domestic market is said to be large enough to consume more local products thereby reducing local produce that could be exported. The reverse of this leads to trade-enhancing (Yabu, 2014).

- Terms of Trade (TOT): TOT is the ratio of export prices to import prices. It measures relative competitiveness. If the exports' price increases relative to import prices, exports become less competitive and "TOT" improves. As a result, the value of net export deteriorates. A negative "TOT" implies that exports are more competitive than imports. In this instance, net exports improve (Reinsdorf, 2009).

- Fiscal policy (FP): The impact of "FP" on net export could either be negative or positive. Assuming expansionary fiscal policy, if government spending increases or taxes are cut, aggregate demand will increase and some of the increase in demand will lead to higher levels of imports. An increase in import demand, with exports remaining the same will lead to trade deficits. On the other hand, contractionary fiscal policy will reduce aggregate demand in the economy and some of the decrease will lead to lower imports. As imports reduce, with exports fixed, will lead to trade surplus (Monacelli &Perotti, 2008).

- Exchange rate (EXR): EXR represent a proxy for relative prices. The appreciation of the currency makes the country's products to be more costly for foreign markets. As a result, this reduces the prices' competitiveness. In this case the coefficient of

exchange rate will be negative. Thus implying that an appreciation of exchange rate discourages exports (Wang & Badman, 2017). On the other hand, a weaker domestic currency makes exports to be more competitive and make imports more expensive. The end result of this will be that of improving net exports.

- Transport costs: Transport costs are captured by distance, and dummies for landlocked, border and language, and a variable for infrastructure. Transport costs are believed to increase with distance, increase for countries that are landlocked and for islands, and be low for neighbouring countries and countries with a common language and border. Increase also for countries with improved levels of infrastructure (Nordås & Piermartini, 2004).

    - *Distance (DIS):* This is a measure of transport costs and it is inversely related with net exports. This is because neighbouring countries incur lower transport costs while countries that are far apart incur higher transport costs. Thus, transport costs increase with distance and negatively affect net exports.

    - *Landlocked (LAND):* Transport costs are anticipated to be high for landlocked countries and be low for neighbouring countries. As a result, "LAND" is expected to negatively affect net exports.

    - *Common language (LANG):* Common language captures information costs. For countries that have a common language their trade patterns are likely to improve through the mechanism of facilitating communication and making transportation easier. As a result, transport costs for countries that share a common language will reduce thereby positively affecting net exports.

    - *Border (BORD):* The impact of countries that have a common border on trade patterns is expected to be positive. This is because such countries are said to be closer to each other thereby reducing transportation costs.

    - *Transport and trade related infrastructure (INFRA):* Given that information on infrastructure is either unavailable or of bad quality, this study will use an index ranging between one and seven, which measures the quality of trade

infrastructure. The question mostly asked: "Is transport and trade related infrastructure extensive and efficient? (1 if strongly disagrees and 7 if strongly agree)". If the values of this variable are far apart from 7, then the impact of "INFRA" on net exports will be negative, as this will imply that "INFRA" is not efficient and extensive. On the other hand, if the values of this variable are close to 7, the impact of "INFRA" on net exports will be positive. Thereby implying that "INFRA" is of good quality.

- EAC (EAC): Given the mandate of EAC and that the chief objective of this REC is to boost trade among EAC member states, the coefficient of EAC is expected to be positive. This will therefore imply that being a member of EAC has a positive impact on net export.

- Other RECs (OTHER): The coefficient of "OTHER" is expected to be negative. This is due to the fact that as it has been stipulated in the literature, one of the negative challenges affecting intra-regional trade is that of multiple and overlapping membership by partner states. In Mengistu (2015)'s opinion, overlapping membership by partner countries is an indication of lack of commitment of member states in the REC. As a result, "OTHER" is expected to negatively affect net exports.

3.4 Estimation Method

In estimating the gravity model, most researchers adopted pooled Ordinary Least Squares (OLS) technique. This estimation method was believed to provide a good fit in proving a connection between trade or GDP and the variables stipulated in previous sections. Under certain assumptions, Shepherd (2013) indicated that pooled OLS provides parameter estimates which are both intuitively appealing and provide useful statistical characteristics. This, in Shepherd (2013)'s view, makes it possible to conduct hypothesis tests and make necessary statistical inferences.

Over time, as more researchers enriched the gravity model and looked into other estimation techniques, Silva & Tenveyro (2006) among others employed the Monte Carlo simulation. The simulation revealed the fact that in the presence of heteroscedasticity, the estimation of non-liner models using OLS lead to biased estimates. Sevestre (2002) indicated that the

OLS estimator assumes an identical model for all partner states. This implies that there are no special characteristics that determine trade relations besides those included in the model. That is, it is possible that the variables selected in the model ignore other characteristics that determine trade relations between member states thus leading to omission and incorrect model specification. As a result, there has been a shift in literature to other regression estimation methods.

Even though in most cases the pooled OLS yields inadequate estimates, its estimates provide a baseline for comparison with estimates of more complex estimation methods. In this regard, the use of Hausman and Breusch-pagan tests will be of great relevance. The tests provide comparison of pooled OLS against the chief alternatives – random effect (RE) and fixed effect models (FE) (Miran et al, 2013). The RE is mostly appropriate for estimation of trade flows which are between random samples drawn from a large population set (Eita, 2007). The rationale behind RE is that, the difference between objects is assumed to be random and not correlated with the model's regressors (Torres-Reyna, 2017). The author further indicated that if the variation across units has the ability to influence the dependent variable, then the RE becomes the appropriate method.

Besides, employing RE requires specifying individual effects which might have an influence on the predictors. The issue with this is that the unavailability of some variables could lead to omitted variable bias (Torres-Reyna, 2017). Furthermore, FE is said to be mostly appropriate for estimation of trade patterns between ex-ante predetermined countries' selection or for time-variant variables (Eita, 2007). It (FE) is also suitable for exploring the relationship between the outcome and the predictor variables within an entity. Each entity is believed to have its own individual features which could stimulate the predictor variables (Torres-Reyna, 2017).

Besides, Torres-Reyna, (2017) indicated that in adopting the FE, the assumption is that "something" within the individual may have an influence or bias the outcome or predictor variables, and this need to be controlled for. This according to the author is the rationale behind the assumption of the correlation between the disturbance term and predictor variables. Moreover, the author also indicated that FE has the ability of removing the impacts of such time-invariant features, which then makes the assessment of the net effect of predictors on the outcome variables possible. It is worth noting that each entity has unique time-invariant features which should be uncorrelated with other individual characteristics. The uniqueness of each entity also implies that the entity's disturbance term

and constant should be uncorrelated with other entities' error and constant terms. Failing which, FE will be regarded as an inappropriate estimation method as it will lead to incorrect inferences (Torres-Reyna, 2017).

Regardless of the model's merits, Shinyekwa & Othieno (2013) pointed out that FE is associated with the limitation that time-invariant variables cannot be directly estimated. The authors indicated that this is due to the fact that the inherent transformation wipes off such time-invariant variables. Besides, Gujarati & Porter (2009) postulated that using FE to estimate a regression model that includes a number of dummies will lead to loss of degrees of freedom. As a result, one will lack enough observations to make meaningful analysis. Besides, one of the drawbacks that could be brought by adding a lot of dummies is that of multicollinearity, which can make the parameter(s) estimation difficult (Gujarati &Porter, 2009).

In summary, both the FE and RE estimators are models designed to handle specific structures of panel or longitudinal data. Thus, the two models have the ability to take into account unobservable individual heterogeneity (Shinyekwa &Othieno, 2013). The difference between the two models is whether the individual-specific time-invariant effects are correlated with the regressors or not. As noted, there are perils that rely with both the FE and RE models. As pointed out, time-invariant variables cannot be used under FE model. Besides, measurement error in X and endogenous changes in X might lead to biased results when using FE model. Moreover, as pointed out above, there are also perils relying with RE model only. As such, an alternative model that at least combines the merits of the two models will mostly be appropriate. This is a model suggested by Hausman &Taylor (1981) which pools together benefits of both FE and RE estimators.

Unlike the RE model that assumes that the included explanatory variables are uncorrelated with the error term, the Hausman-Taylor (HT) only uses information contained in the model to eliminate correlation between country specific effects and the error term (Hausman& Taylor, 1981). Thus, the choice of correlation between the individual effects and the regressors prompt Hausman &Taylor (1981) to propose a model where some of the regressors are correlated with individual effects. The resulting estimator is the HT estimator, which is based on an instrumental variable estimator using both the within and between variation of strictly exogenous regressors as instruments (Baltagi, 2001). The author further emphasized the fact that the individual means of the strictly exogenous variables are used as instruments for time-invariant variables which are correlated with the individual effects. The

choice of strictly exogenous variables is a testable hypothesis. Thus, it is the hausman test comparing the FE and HT estimators. Most economies studies since the 1980s chose between FE and RE estimators based on the standard hausman test. The null hypothesis under which this will be done is that the RE is the preferred model while the alternative will be that FE is the preferred model. Rejecting the null implies that RE is not the appropriate model. Otherwise the researcher reports the RE, (Cardellichio, 1990). However, given the down falls of the RE and FE estimators, the researcher will employ the hausman test to choose between the FE and HT models. If the choice of strictly exogenous regressors based on the difference between the FE and HT is not rejected, then the HT estimator becomes the appropriate model. Otherwise the test reverts to FE. Moreover, the Breusch-pagan test will also be employed in order to determine if the simple pooled OLS or RE is an adequate model. The null under the test is that there are no random effects (Miran, 2013).

3.5 Diagnostic tests

A unit root test will be performed in order to observe if a cointegration relationship exists between the variables. If all variables are stationary, an estimation method that aims at determining the relationship between the variables will be employed. If the variables are however non-stationarity, a cointegration test will be relevant (Shinyekwa & Othieno, 2013). In determining the stationarity of the variables, different panel unit root tests can be performed and these entails Levin, Lin and Chu (2002)'s test (LLC test) which assumes that the null entails the existence of a unit root. The other test is that of Hadri (2000) which employs the null hypothesis of no unit root. These two tests (LLC and Hadri tests) assume common autoregressive parameters across countries.

Besides, the other panel unit root test is Im-Pesaran-Shin (IPS) test which was developed by Im, Pesaran & Shin (2003). This test permits for variation of autoregressive parameters across countries and for the processes of individual unit root. The test (IPS) is computed by pooling the unit root tests of individual countries. This is to ensure that there is a specific result for the panel. The IPS test is believed to have more power than Augmented Dickey Fuller (ADF) test (Straus & Yigit, 2003). On the other hand, Pesaran (2015) indicated that not only does IPS allow for heterogeneity between cross-sectional units, but it also allows for simultaneous stationary and non-stationary data series. Given these justifications the current study will use the IPS test in order to determine if there is a unit root.

3.6 Data

Most of the earlier empirical works estimating the gravity model relied on cross-sectional estimation techniques. However, Shinyekwa & Othieno (2013) pointed out that employing cross-sectional estimation methods ignore heterogeneous features related to bilateral trade relationships. For example, a country may export different quantities of homogeneous products to two different trading partners. This could be the case even if such trading partners have identical GDPs and are equidistant from the exporter. Shinyekwa & Othieno (2013) also indicated the fact that cross-sectional techniques fail to account for these heterogeneous dynamics. Such techniques are believed to likely suffer from ample heterogeneous bias. It is for these reasons that Shinyekwa & Othieno (2013) among others, advocated for the use of panel-based method in estimating the gravity model. The authors indicated that a panel-based approach has the ability of dealing with the issue of heterogeneity as the impact of such factors could be modelled by incorporating country-pair individual effects.

Besides, Zannou (2010) stipulated that adopting panel data increases degrees of freedom and also ensure proper specification of target country, sources, time or business cycles' effects. Matyas (1997) revealed the fact that panel data framework yields better estimates as compared to cross-sectional approach. This is because panel data allows capturing business cycles' records and have merits of disentangling time-invariant country specific effects. Hence this study will use panel data to carry out its estimations. Moreover, the data will be in yearly pairwise country, with trade flows constructed for the period of 1988 to 2016. GDP, exchange rate, transport and trade related infrastructure, population, net exports, prices of imports and exports prices, tariffs, government spending and taxes data will obtained from the World Bank Development Indicators.

Due to South Sudan's lack of data in most of these variables, this study will only determine factors of intra-EAC trade using data for Kenya, Rwanda, Burundi, Uganda and Tanzania. The other reason of excluding South Sudan is because it only joined EAC in 2016 hence its inclusion in the study may not give a clear picture of trade integration in EAC especially because the estimation period of the current study does not go beyond 2016. Thus the researcher believes that the benefits of intra-EAC trade on South Sudan will only materialize years later. Moreover, data on whether a country is landlocked or not; has a

common border and has a common language will be obtained from the CEPII gravity dataset. Countries membership in trading blocs will be obtained from existing information on regional trade blocs.

CHAPTER FOUR

ESTIMATION AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter presents interpretation of results based on model (3) formulated in the previous chapter. Other regression procedures discussed in chapter three are also presented in this chapter. Section 4.2 presents diagnostic test results. To determine if the variables are stationary and explore if there will be need to perform a cointegration test, the IPS panel unit root test was performed and results are presented in table A1. Given that the null hypothesis that "there is unit root" was rejected, there was no need to perform the cointegration test. As a result, the researcher then estimated the regression model and the results are presented in the appendix, with the RE results presented in table A2 and those of FE, pooled OLS and HT presented in tables A4, A5 and A6, respectively. Moreover, regardless of the short falls of some of the estimation methods mentioned in the previous chapter, the current study recorded results from all estimation methods, with the Hausman and Breusch-pagan tests employed to determine the appropriate estimation model.

4.2 Diagnostic Tests

According to the correlation matrix results, the correlation coefficients were all found to be less than 0.80 for all the variables. Given Studenmund, (2001)'s view that below this threshold (0.80), one can safely continue with their estimations since there is no problem of multi-collinearity, the current study will also follow Studenmund (2001)'s stand on this and move onto the unit root tests. Moreover, since non-stationarity is a common matter within most macroeconomics data; a diagnostic test on this is an excellent step in ensuring the reliability of the estimation results and policy recommendations that will follow. As a result, the current study employed IPS unit root test for panels in order to determine if the panel is non-stationary and possesses a unit root. As indicated in the methodology, the choice of IPS test was motivated by its superior test power (Chou & Lee, 2003). The test results are

presented in table A1. The null hypothesis under which this was performed is that, there is a unit root while the alternative hypothesis is that the panel is stationary. The p-values of the variables were used as the determining factors of whether the null hypothesis should be rejected or accepted. The p-value less than the critical value was an indication that the null hypothesis has to be rejected thereby implying that the panel is stationary.

According to the results presented in table A1, T, POP, Y, TOT, FIS, DIS, LAND, LANG, BORD, INFRA are significant at all significant levels. This is because the p-values of these variables are less than 0.01, 0.1 and 0.05 significance levels. Besides, EXC is significant at both 5 per cent and 10 per cent levels of significance as its p-value is less than 0.05 and 0.1. Besides, OTHER is significant at 10 per cent level of significance. Given that all the variables are significant this implies that the null hypothesis that there is a unit root has to be rejected. The alternative hypothesis is then accepted. As a result, this led to the conclusion that all the variables process stationarity. Like it was stipulated in the methodology, if the variables were stationary there would not be a need to perform the cointegration test. The regression estimations then followed and the results are presented in the appendix.

4.3 Breusch-Pagan Test

Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

Ho: Constant variance

Variables: fitted values of logNet exports

chi2 (1) = 12.43

Prob > chi2 = 0.0004

Above are the Breusch-pagan test results. This statistical test determines if heteroscedasticity exist in a linear regression model. Thus, the test is used to test whether the variance of the residuals depend on the values of the explanatory variables. The Breusch-pagan test is a chi-squared test and its test statistic is an nx^2 with k degrees of freedom. If the p-value of the Breusch-pagan test is below an appropriate threshold (say 5 per cent), then the null that homoscedasticity exists will be rejected and heteroscedasticity

will be assumed (Cook & Weisberg, 1983). In this case, even though OLS estimators will be unbiased such estimators will be inefficient as the true covariance and variance will be underestimated (Goldberger, 1964).

Moreover, given that one of the OLS assumptions is that the variance should be constant, (homoscedasticity is assumed) the presence of heteroscedasticity will therefore imply that the RE model is the preferred model. According to the Breusch-pagan test results, with one degree of freedom, the p-value of obtaining a chi-square value of 12.43 or greater is 0.4 per cent. This implies that the null hypothesis that homoscedasticity exists is rejected. Thereby implying that heteroscedasticity is assumed. Given this analysis, the RE model is therefore the appropriate model. The Breusch-pagan results therefore reinforce the conclusion made from the Hausman test results, which also indicated that RE model is the preferred model.

4.3 Hausman Test

Table A4 in the appendix reports the Hausman test results. The Hausman test, also called the test for model misspecification, is used to determine if FE or RE is the preferred model. The null hypothesis under which this is done is that, RE is the preferred model. The alternative hypothesis is that FE is the preferred model. If the p-value is less than the significance level, the null that RE model is preferred model will be rejected. This will suggest that FE model is the preferred model. Besides, if the p-value from the test is greater than the significance level, the null that RE model is the preferred model will be accepted. According to the results in table A4, the p-value of the Hausman test is 0.9993 which is greater than all levels of significance (0.001, 0.05 and 0.1). This therefore implies that the null hypothesis that RE model is the preferred model is accepted. Thereby rejecting the alternative that FE is the preferred model.

Given however that the use of RE is ruled out on the bases that it is very "… unlikely to believe that the individual-specific effects are uncorrelated with the relevant covariates …" (Hausman &Taylor, 1981). As a result, it then becomes appealing to prefer FE estimator over RE. This however does not make FE model an appropriate model either as time-invariant variables cannot be estimated under FE. Besides, "…Measurement error X and endogenous changes in X might lead to biased results under fixed effects …" (Hausman & Taylor, 1981). As recommended by the authors, the researcher employed "the second

Hausman test" under the null that the preferred model is the HT. The p-value from the test is 0.0614 which is less than 10 per cent level of significance. The implication is that the null that the preferred model is HT is accepted. And as such, to determine the impacts of intra-EAC trade, the analysis will be based on HT estimates.

4.5 Hausman Taylor Model Interpretation

The interpretation of this section is based on the estimates presented in table A6. The results show that there are 112 observations. The results also show the Wald chi2 (9) with the p-value of 0.000. This statistical test (Wald test) determines the hypothesis that at least one of the model's predictor coefficients is not equal to zero. The value 9 is the degrees of freedom of the chi-square distribution. The prob > chi2 from the results is the probability of getting a Wald test value that is more than the observed statistic. The null hypothesis under this is that, all the regression coefficients across the models are simultaneously equal to zero. In the current case, this is the probability of obtaining the chi-square value of 370.73 or more if there is actually no impact on the predictor variables. The p-value of 0.000 leads to the conclusion that at least one of the coefficients of the regression is not equal to zero.

Furthermore, all variables are significant at 10 per cent levels of significance. This is so given that the p-values of these variables are less than 10 per cent levels of significance. Besides, it is worth noting that variables in the model will be estimated as elasticity. This is because in a log-log model the variables are interpreted as elasticity. Besides, the elasticity of -0.349 implies that on average, 1 per cent increase in distance (DIS) is associated with 0.349 per cent decrease in net exports. Besides, the elasticity of 0.671 implies that on average, 1 per cent increase in GDP (Y) relates to a 0.671 percentage increase in net exports. The elasticity of 0.0002 implies that on average, 1 per cent increase in tariffs (TAR) is associated with 0.0002 percentage increases in net exports.

Moreover, the elasticity of -1.085 suggests that on average, a percentage increase in terms of trade (TOT) relates to 1.085 percentage decrease in net exports. Besides, the elasticity of 0.042 means that on average, 1 per cent increase in fiscal policy (FIS) leads to 0.042 percentage increases in net exports. The elasticity of 1.354 implies that on average, a percentage increase in population (POP) is associated with an increase of

1.354 per cent in net exports. Moreover, the elasticity of 0.211 means that on average, 1 per cent increase in exchange rate (EXC) decreases net exports by 0.211 per cent. Besides, the elasticity value of 0.173 suggests that on average, 1 percentage increase in transport and trade related infrastructure (INFRA) increases net exports by 0.173 per cent.

Furthermore, holding other variables constant, net exports decrease by 12.366 per cent [exp (-0.132)-1*100= -12.366] if countries are landlocked. Besides, net exports increase by 231.348 per cent [exp (1.198)-1*100= 231.348] for countries sharing a common language. Being a member of EAC increases net exports by 761.065 per cent [exp (2.153)-1*100]. Net exports decrease by 43.050 per cent for countries who are members of multiple RECs. Lastly, net exports increase by 71.087 per cent [exp (0.537)-1*100] for countries sharing a common border.

CHAPTER FIVE

RESULTS DISCUSSION AND IMPLICATION

5.1 Introduction

The focus of this study was to determine factors influencing intra-regional trade in Africa with particular emphasis on East African countries: Burundi, Tanzania, Kenya, Uganda and Rwanda. The motive behind the study was that, regardless of numerous RECs in the continent with brilliant agendas put in place in order to boost intra-trade, African countries still seem to trade more with non-EAC members than they do with other African countries. Statistics in tables 1, 3, 4, 5, 6, 7 and 8 are consistent with this view. Given the theory behind trade integration and benefits that comes along with being a member of the REC, the issue of low regional trade in Africa questions the presence of the RECs in the continent.

It is worth noting that there is however a number of success stories of countries experiencing improved trade patterns after being committed members of trade blocs in their regions. This therefore implies that indeed intra-regional trade has a significant impact on trade. It is this issue that drew the researcher's attention to determine factors responsible for low intra-regional trade in Africa. Thus, the researcher believed that if other continents are experiencing significant growth in their trade patterns, it therefore shows that African countries are missing out on some important factors liable for improving intra-regional trade. Hence a study that looks at determinants of regional trade integration is highly relevant in helping African countries to boost their trade patterns.

Besides, one of the initiatives that were believed to impact significantly on intra-trade was that of introducing free tariffs among member states. This is because it was believed that by so doing, imports from non-member partners will be more expensive thereby making goods from member states to be more competitive. This initiative has been long enough in place for its impact to have, by now materialised. However, trade patterns among African countries are still disappointing. This therefore implies that it takes more than just a reduction in tariffs for trade patterns in the continent to improve. It was for this reason that the researcher decided to determine factors responsible for low intra-regional trade using the best REC in Africa – EAC. Thus, the researcher believed that the choice of maybe Arab

Maghreb Union (UMA) could have let to advices like, "the REC should implement a custom market, monetary union and/or political federation". These are obvious initiatives that seem less significant in improving trade patterns of RECs in the continent as EAC has already tried their implementation. Moreover, the current study also aimed at contributing to existing literature on determinants of intra-regional trade. The aim was to go beyond the existing literature by expanding the traditional gravity model with other significant variables that have barely been employed in trade integration literature. This was successfully achieved and the analysis of such variables is in the section that follows.

5.2 Results Implication

The gravity model's analogy about GDP is that GDP is a measure of countries' economic mass. The relationship between GDP and net exports in most studies was found to be positive, (Head & Mayer, 2013). The implication of this is that, high levels of GDP lead to higher levels of production in the exporting country which then increase exports availability. A high level of income for the importing country on the other hand, implies high imports. As a result, the importer and export's GDP is expected to positively affect net exports (Eita, 2007). This view is consistent with findings of the current study. Thus, according to the results in table A2, GDP's influence on net exports was found to be positive. This significant positive coefficient of GDP implies that as economy's size increases, net exports improve.

On the other hand, in the gravity model population is utilized as a proxy for market size. In Markheim (1994)'s view countries with large population size are expected to have great resource endowment which allows large productive activities which in turn satisfy great proportion of domestic demand. The impact of this (large population) on net exports is expected to be positive. According to the World Population Prospects (2017), "…Africa is second largest and second most populated continent in the world". Hence given this and the fact that East Africa is ranked number 1 in Africa by population statistics, the coefficient of population was expected to be positive. As expected, the results from table A6 show a statistically significant coefficient for population. The coefficient of this variable was found to be positive. The implication of this is that EAC exports are higher than its imports, which then indicates that there is high domestic absorption.

Another variable of interest is terms of trade which is an indicator of the country's economic health. This variable is impacted by changes in exports and imports prices. In Shinyekwa & Othieno (2013)'s view, countries whose basket of exports compose mostly primary products are expected to "suffer terms of trade decline driven by price elasticity of demand and low income" (Shinyekwa & Othieno, 2013). According to the information provided in columns 2 and 4 of table 9, EAC countries' exports are mainly primary products, hence given Shinyekwa & Othieno (2013) argument, the coefficient of terms of trade is expected to be negative.

Moreover, the influence of terms of trade on net exports was found to be statistically significant and had a negative coefficient. The implication of this coefficient is that exports are less expensive and more competitive than imports. Typically, negative terms of trade imply that a country will have lower living standards and will afford relatively less imports. In the current study, this implies that given that EAC members mostly export raw materials, a decline in terms of trade indicates that the price of primary products of these countries will fall relative to the price of imported manufactured goods. A prolonged decline in terms of trade could lead to a decline in standards of living and lower GDP (Shinyekwa & Othieno, 2013).

Moreover, such decline is also expected to reduce export revenue thereby making it hard to pay foreign external debts. For a country faced with this problem, to pay its debts such a country will need a relatively higher percentage of national income in order to repay the debts in foreign currency (Shinyekwa & Othieno, 2013). Besides, exchange rate was used as a proxy for relative prices. The impact of exchange rate on net exports was found to be significant and positive. This relationship suggests that the domestic currency of EAC is weak, thus stimulating exports and making imports to be more expensive. As a result, domestic firms will benefit from increased sales and hence employ more workers thereby creating jobs and lowing unemployment in exporting industries (Wang & Badman, 2017).

Moreover, as indicated in the methodology, distance, landlocked, common border, common language, transport and trade related infrastructure, will be used as proxies for transport costs. As further modifications were made on the gravity model and more research was done using the gravity model, theory on using distance as the only variable that captures transport costs was criticized (Anderson & Wincoop, 2004). It is for this reason that the current study added dummies for landlocked, common border, common language, and a variable for transport and trade related infrastructure as proxy for transport costs. Besides, all these

variables were found to be statistically significant and their signs were as predicted by theory.

The underlying rational of distance as a proxy for transport costs is that transport costs increase with distance thereby negatively affecting net exports (Cassim, 2001). The author further indicated that the implication of a negative relationship between net exports and distance suggests that transport costs are low for neighbouring countries and increase as distance increases. Moreover, the coefficient of distance was found to be significantly negative. This therefore implies that as distance increases transport costs, net exports deteriorates. The implication of the impact of distance on net exports made in the current study is also similar to that obtained in Anderson & Wincoop (2004)'s study.

On the other hand, landlocked countries are believed to incur higher transportation costs than countries that lay on the coast. This is due to the fact that such countries have limited choice of other alternative modes of transport which could be cheaper and thereby reduce transport costs (Nordås & Piermartini, 2004). Hence a negative coefficient of landlocked relates to an increase in transport costs. Since transport costs negatively affect net exports, an increase in transport costs lead to a decline in net exports. Moreover, with an exception of South Sudan, 3 out of 5 EAC member states are landlocked (Burundi, Rwanda and Uganda); as a result the coefficient of landlocked was indeed expected to be negative.

Besides, a positive impact of border on net exports infer to a reduction in transport costs for countries that have a common border. Thus, for countries that have a common border, transport costs reduce, thereby positively affecting net exports. A further implication of this variable suggests that EAC member countries do trade with their neighbouring EAC countries. Besides, a positive impact of common border also implies that the level of integration among these countries significantly affect their trade balance (Roy & Rayhan, 2012). "…It is plausible to suggest that proximity to the border of an EAC partner state increases the salience of the relationship between EAC partner states, increases the likelihood of interaction with out-groups from the borderlands of other partner states, and thus increases support for further East African integration" Knowles et al (2014).

Moreover, as postulated in the methodology, countries that have a common language are likely to experience an increase in net exports. This is because having a common language is believed to have an ability of easing transportation and facilitating communication (Cassim, 2001). Hence a positive relationship between net exports and language implies that for

countries that share a common language, their transport costs will reduce and positively influence net exports. Besides, "…if all countries in a region share a common language this will tend to spuriously attribute the effects of shared language in encouraging economic links to commercial policy measures," Cassim, (2001). This view is also consistent with Bayoumi &Eichengreen (1997)'s view on the positive impact of sharing common language on trade balance.

Besides, a significant and positive impact of transport and trade related infrastructure indicates that transport and trade related infrastructure positively affect net exports. Even though this variable is positive, its relatively low magnitude (0.017) is an indication that the quality of infrastructure is not efficiently satisfactory. As a result the share of world trade of these countries is expected to continue declining (Nordås &Piermartini, 2004). "…Worse, it appears that time to market and hence the quality of infrastructure matter more than before in sectors such as textiles and clothing; a development that threaten to undermine developing countries' comparative advantage in important segments of these sectors…," (Nordås &Piermartini, 2004). The authors further pointed out that improvement in infrastructure quality in developing countries is however costly and is in the short run, beyond governments means. This therefore explains why the quality of infrastructure in African countries is still ranked poor.

Furthermore, being a member of a regional bloc was expected to improve net exports (Shinyekwa & Othieno, 2013). This insight is consistent with findings of the current study portrayed in table A2. According to the findings, the coefficient of EAC is statistically significant and has a positive sign. The positive impact of this variable shows how vital it is for countries to be members of trade blocs in their regions. This analysis is consistent with the theoretical views discussed in chapter two. An increasing value of this variable signifies growing participation (integration) of each EAC member state in the REC.

Besides, in Shinyekwa & Othieno (2013)'s view high intra-regional trade creates potential economic opportunities which allows member states to take advantage of economies of scale, creates jobs and generate income, and enjoy other gains associated with market integration. Besides, being a member of multiple trade blocs was expected to reduce net exports. The theoretical view on this issue is that, overlapping membership by partner states show signs of lack of commitment in the REC (Mengistu, 2015), thereby deteriorating net exports. The coefficient of "OTHER" as a measure of being a member of multiple RECs

was found to be significant and had a negative influence on net exports. The results of the current study are consistent with literature.

5.3 Policy Recommendations

In order to boost intra-EAC trade, factors that were found to positively impact on net exports should be promoted. Given a high magnitude of GDP, this factor is believed to be one of the most significant determinants in improving intra-EAC trade. Hence a great emphasise should be given to EAC member states with higher GDP. Moreover, central banks should pay attention on creating essential conditions in which development and growth will prosper. For this to be achieved, two overriding principles have to be maintained. Such ideologies entail protecting the value of domestic currency and preserving overall financial stability. This is because ensuring that countries' macroeconomic environment is stable is believed to stimulate savings vital for financing investment opportunities, thereby improving trade patterns.

Besides, a significant impact of transport and trade related infrastructure calls for an urgent implementation of "EAC infrastructure development master plan" in order to smoothen trade within the region. Thus infrastructure reforms need to mostly target and connect landlocked EAC members with major centres of economic activities and population to ports. This therefore implies that infrastructure can be regarded as a prerequisite for improved trade integration and high growth. Besides, further attention should be given on infrastructure quality in order to guarantee a sustainable long run usage of these facilities.

Furthermore, a negative impact of distance on net exports suggests that border, language and being landlocked support a need for investment in communication and transport infrastructure in order to reduce shipping and international business costs. This is believed to significantly boost net exports of not just EAC countries, but that of other African countries as the issue of high transport costs is a barrier of trade in the continent. Besides, a positive coefficient of EAC shows the significance of intra-regional trade. As a result, active participation in EAC is advised. This recommendation can also be of great help to other RECs in the continent. Thus full commitment in the bloc significantly affects net exports and is believed to positively affect growth and development.

5.4 Conclusion

To address the issue of low trade among African countries, regional integration perceived to be the basis to address barriers to intra-regional trade in the continent. Once these barriers are eliminated through the process of regional integration, larger regional markets are believed to sustain production systems through economies of scale, thereby boosting overall growth and improving competitiveness. However, from the statistics in tables 1 through 8 and figures 1 through 6, trade among African countries seemed to be low. As a result, the continent is failing to benefit from the initiative of regional integration. This then called for a study that determines factors responsible for low regional trade in the continent. The current study employed the augmented gravity model using the sample of EAC in order to determine such factors and their significance on net exports.

Pooled OLS, FE, RE and HT regressions were employed in order to estimate the gravity model. From these four estimations, all the variables, except fiscal policy, were found to be significant. Thus, population, GDP, tariffs, terms of trade, exchange rate, being a member of EAC, being a member of multiple RECs and transport costs with common language, common border, landlocked, distance and transport and trade related infrastructure, being proxies of transport costs, were all found to be significant factors of intra-EAC trade. Besides, the coefficients of the variables from the four regressions were slightly different. With the help of the Hausman test, the HT model was considered to be the preferred model and the results implications were based on the estimates of this model.

APPENDIX

Table A1 Unit Root Test Results

Unit Root Test (Im-Pesaran-Shin Unit-Root Test)

Variables	Test Statistics	P-value
T	-0.1592	0.000
POP	-1.643	0.012
Y	-6.436	0.000
TOT	-2.740	0.003
FIS	-4.1570	0.001
DIS	-2.1601	0.014
EXC	-0.9423	0.021
LAND	0.0014	0.000
LANG	-1.9761	0.010
EAC	-0.0095	0.000
OTHER	-0.0047	0.076
BORD	-5.014	0.007
INFRA	-4.7914	0.000

Table A2 Random Effect Regression Results

R-square: within = 0.8052 Number of obs = 112

Between = 0.9991 Number of groups = 4

Overall = 0.8456 Wald chi2 (10) = 553.32

Corr(u_i, X) = 0 (assumed) P-Value > chi2 = 0.000

Variables	**Random Effects**	
LogT	***Coefficients***	***P-Value***
logDIS	-1.617	0.000
LogY	0.636	0.000
logTOT	-1.001	0.000
logFIS	0.043	0.176
logPOP	1.667	0.000
logEXC	0.211	0.050
logINFRA	0.017	0.001
LAND	-0.132	0.068
LANG	1.198	0.000
EAC	2.153	0.000
OTHER	-0.563	0.005
BORD	0.537	0.000
_cons	-34.680	0.000

Table A3 Fixed Effect Regression Results

R-square: within = 0.8065 Number of obs = 112

Between = 0.8736 Number of groups = 4

Overall = 0.6217 F(9, 99) = 45.85

Corr (u_i, X) = 0(assumed) P-Value> chi2 = 0.000

Variables	**Fixed Effects**	
LogT	***Coefficients***	***P-Value***
logDIS	0	.
LogY	0.635	0.004
LogTOT	-0.983	0.000
LogFIS	0.069	0.122
LogPOP	1.707	0.045
logEXC	0.283	0.090
logINFRA	0.017	0.001
LAND	0	.
LANG	0	.
EAC	0	.
OTHER	0	.
BORD	0	.
_cons	-25.548	0.011

Table A4 Hausman Test Results

Variables	---------- Coefficients ---------- (b) Fixed Effects	(B) Random Effects	(b-B) Difference	Sqrt (diag (V_b_V_B))
POP	-5.821	-5.821	3.821	2.270
Y	0.843	0.843	-9.30	0.186
FIS	1.721	1.721	7.292	0.073
EXC	0.0000932	0.0000932	2.082	0.096
TOT	-1.119	-1.119	-2.041	0.022
TAR	0.0000217	0.000217	-1.571	0.0006
INFRA	0.832	0.832	6.271	0.0179

b = consistent under Ho and Ha;

B = inconsistent under Ha, efficient under Ho;

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 13.00

Prob > chi2 = 1.0000

(V_b-V_B) is not positive definite)

Table A5 Pooled OLS Regression Results

Number of Observations = 112

F (10, 101) = 55.33

Prob > F = 0.0000

R-squared = 0.8456

Adj R- squared = 0.8304

Variables	**OLS**	
LogT	***Coefficients***	***P-Value***
logDIS	-1.617	0.001
logY	0.636	0.000
logTOT	-1.006	0.000
logFIS	0.042	0.79
logPOP	1.667	0.001
logEXC	0.211	0.053
logINFRA	0.173	0.001
LAND	-0.132	0.068
LANG	1.198	0.000
EAC	2.153	0.000
OTHER	-0.563	0.005
BORD	0.537	0.000

Table A6 Hausman-Taylor Regression Results

Number of Observations = 112

Wald chi2 (9) = 370.73

Prob > chi2 = 0.0000

Variables	**Hausman-Taylor**	
LogT	***Coefficients***	***P-Value***
TVexogenous		
logTOT	-1.085	0.000
logFIS	0.042	0.116
logPOP	1.354	0.021
logINFRA	0.173	0.001
TVendogenous		
logEXC	0.211	0.053
logY	0.671	0.000
TIexogenous		
LAND	-0.132	0.042
LANG	1.198	0.000
EAC	2.153	0.000
OTHER	-0.563	0.005
BORD	0.537	0.000

Note: TV refers to time varying; TI refers to time invariant.

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