

# Accelerating regional trade integration in Africa through regional value chains: A SADC perspective

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## ABSTRACT

*Regional integration has been a key ambition, vision and standing agenda of the African continent for the past two decades. The recent signing of the Africa Continental Free Trade Agreement (AfCFTA) (signed by 54 of the 55 members of the African Union as of July 2019) brings to the fore the urgent need to accelerate the implementation of what has been thus far an elongated period of planning and discussion. One of the key mandates of the AfCFTA is to ensure acceleration of intra-African trade and boost Africa's trading position in the global market by strengthening Africa's common voice and policy space in global trade negotiations (African Union, 2018). Intra-regional trade can be considered as a quick avenue for the continent and its respective Regional Economic Communities (RECs) such as the Southern African Development Community (SADC), to implement this agenda by leveraging collective resources and opportunities such as increased focus on the establishment of regional value chains (RVCs).*

*Currently, the SADC region has been at the forefront of driving regional trade integration (RTI) in the continent; however, intra-regional trade is still only but a fraction of the RECs total global trade, averaging 5-7% of total trade in 2015-2017. Because of the myriad of challenges in the region – including but not limited to the low rate of RTI, poor infrastructure, poor institutions, unstable political environments, and slow economic growth – RECs, let alone the continent as a whole, cannot take part in and capitalise on the opportunities from complex trade networks through global and regional value chains. Moreover, when African countries do participate in global value chains, they find themselves at the lower end of the value chain where it is harder to reap the benefits due to the unequal distributional effects of such trade activities. This study therefore examined the key factors that drive RTI, and sought to ascertain the relationship between regional value chains and regional trade integration. Lastly, the study aimed to uncover the contribution to economic growth of such trade activities. Thirteen SADC countries are observed over the period 2000-2017 using panel data analysis and various key estimation techniques to ensure robustness of the models used.*

*The study finds that there are definitely key factors that drive regional trade integration in the REC that require increased focus from policy makers and trade activity participants as they have the potential to change the trajectory of the region and the continent's trade landscape. The study also indisputably finds a two-way relationship between RTI and RVCs, suggesting that if key aspects of these activities are addressed, this would lead to a mutual increase in*

*these factors as they are highly complementary activities. Lastly, the study confirms the positive impact that RTI and RVCs would have on economic growth attributed to an increase in the level of productive economic trade activity thereby contributing to the gross domestic product (GDP) of countries as individuals and as a collective.*

*The study therefore concludes that there should be more focus from policy makers and all key trade activity stakeholders on driving regional trade integration and participation in regional value chains as the benefits could prove highly rewarding to the SADC RECs and the continent as a whole. Such increased focus will ensure that the region is fully capitalising on the unique strengths of the African continent and driving collective growth and development.*

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## GLOSSARY OF TERMS

<b>AfCFTA</b>	Africa Continental Free Trade Area/Agreement
<b>AfDB</b>	African Development Bank
<b>AU</b>	African Union
<b>DTI</b>	Department of Trade and Industry
<b>FDI</b>	Foreign direct investment
<b>FTA</b>	Free trade area/agreement
<b>FVA</b>	Foreign value added
<b>GDP</b>	Gross domestic product
<b>GVC</b>	Global value chains
<b>REC</b>	Regional economic community
<b>RTI</b>	Regional trade integration
<b>RVC</b>	Regional value chains
<b>SDG</b>	Sustainable Development Goals
<b>SADC</b>	Southern African Development Community
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNECA</b>	United Nations Economic Commission of Africa
<b>WTO</b>	World Trade Organization

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## CHAPTER 1: INTRODUCTION

### 1.1. Background

The philosophy of regional integration has been for the last two decades, a topical discussion in Africa, so has the focus on its premise as a way of speeding up the attainment of collective development goals in the region as a whole. This has been driven in part by the constant scrutiny and criticism of African governments' inability to leverage their collective resources to attain economic growth and development for the region. This, however, has also been largely due to the realisation by visionary African leaders themselves that integration of the region is a rational response to the unique challenges that the continent faces and therefore has the potential to advance mutually beneficial outcomes that will accelerate regional social and economic development.

The World Bank (2019) asserts that divisions between countries created by geography, poor infrastructure and inefficient policies are an impediment to economic growth. They advocate for regional integration as a way to allow countries to overcome these costly divisions through integrating goods, services and factors' markets, thus facilitating the flow of trade, capital, energy, people and ideas (World Bank, 2019). Although a trade-driven concept, regional integration is a way of consolidating regional unity, and should therefore be viewed as an initial step to attaining integration and enhancement of economic, social, and political governance policies. This highlights the importance of expediting regional trade integration in Africa, a continent that is currently characterised by slowing economic growth, low levels of social development and concerning political environments.

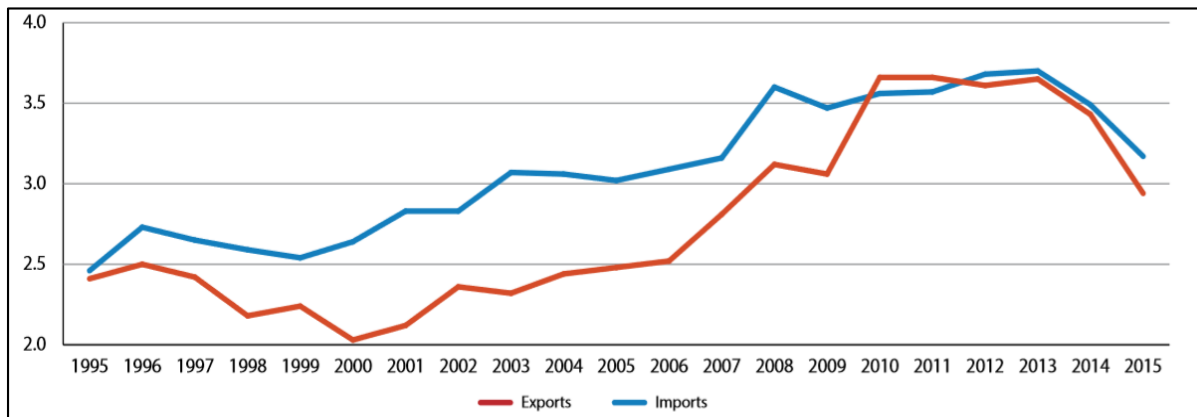
The recent signing of the Africa Continental Free Trade Agreement (AfCFTA) has been a historic milestone and the latest evidence that displays the commitment and strides by African leaders to achieve regional integration. It recognises trade as a critical component in the regions' development strategies, the importance of strengthening international relations amongst countries and where most African governments have been unsuccessful in attaining sustainable growth for their constituents, that maybe two heads are in fact better than one and a collective approach should be taken. UNCTAD (2012) substantiates this view, noting that economic integration in the continent remains a key strategy to foster sustained and inclusive development. They further emphasise that acceleration of African economic integration is an

imperative for the transformation of African economies and building resilience in meeting the new challenges from globalisation as well as the realisation of development benefits.

International trade has been, for a long time, a key driver in building international relations thereby driving growth and development for the economies involved in mutual trade activities. Trade arrangements have also historically been recognised as key pillars informing global, sovereign and regional economic, monetary and fiscal policies. A key trade concept that has evolved over time is that of global value chains (GVCs) which UNCTAD (2013) loosely define as a practice whereby intermediate goods and services are traded in fragmented and internationally dispersed production processes traversing multiple geographical locations across the globe. Emanating from this similar trade model is the notion of regional value chains (RVCs) which, unlike GVCs, intentionally limits the value addition and production processes to a specific region thereby strengthening trade systems of that region. RVCs accentuate increased regional trade, regional investment and regional corporate ownership, are based on the logic that they can be utilised as a development tool to promote regional integration and therefore affirm increased market size and greater economies of scale as potential growth drivers (Paremoer, 2018).

RVCs in Africa stand to not only strengthen the continent's trading systems but can also be an effective mechanism to meet the demands of the ever-evolving trading landscape that is increasingly characterised by changes in technology, production methods, employment patterns, demand patterns, demographics, and climate (World Bank, 2019). To realise effective RVC systems, there is a need to increase the level of trade within the region. There has been much progress made over the years on regional trade within the continent which is encouraging. However, with limited value adding capacity, trade within the continent especially in value added, still remains extremely low. In exploring the role of trade policy in the advancement of regional trade, Slany (2007) substantiates this view citing that trade in value added products within the region is still by far the lowest in comparison to Asia and America, but the steady increase over recent years provides for an optimistic outlook on the rate and evolution of regional production networks within the continent. The figure below shows the trends in intra-African trade contribution to GDP over the recent years.

**Figure 1: Growth in share of intra-African trade in Africa's GDP, 1995-2015**

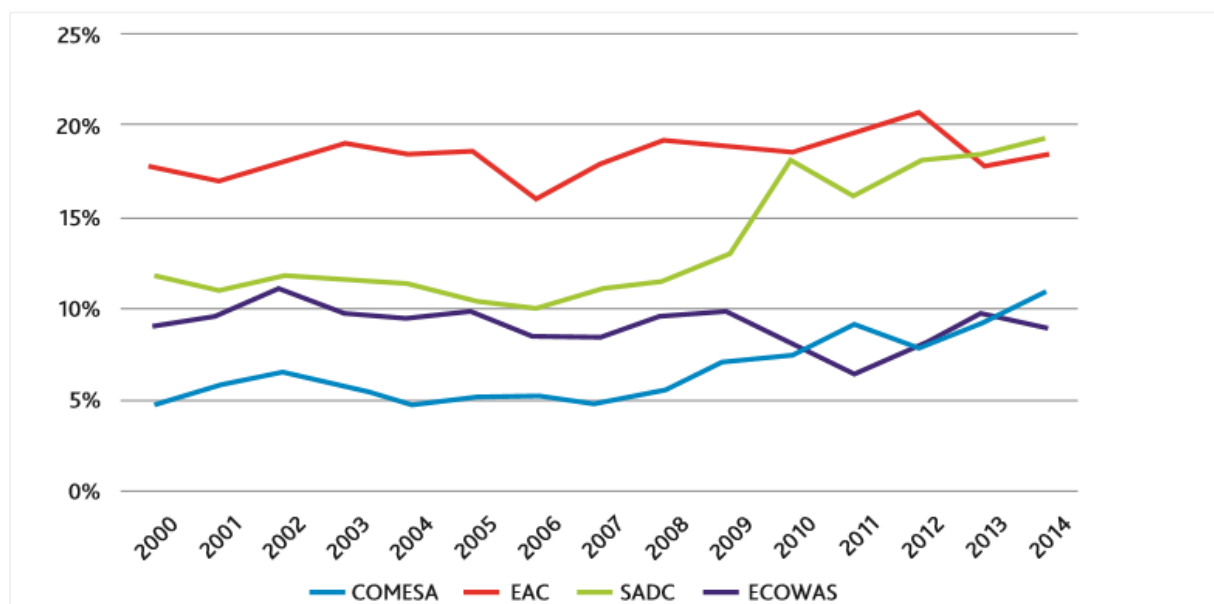


*Source:* (UNECA, AU & AfDB, 2017)

Bertelsmann-Scott and Chelsea (2017) indicate that in Southern Africa, two key actors are actively advancing the agenda for development and integration into RVCs for regional prosperity, namely the Southern African Development Community (SADC) and the South Africa Department of Trade and Industry (DTI). The authors highlight the prominence of the regional integration agenda in the SADC Regional Industrialisation Roadmap 2015-2063 which has ranked enhancement of RVCs high in its strategic policy objectives. The roadmap notes the beneficiation of the region's vast natural resources and the urgent need to integrate into regional and global value chains for industrialisation. However, intra-SADC trade has not increased significantly in recent years indicating that RVCs have not sufficiently gained traction (Bertelsmann-Scott & Chelsea, 2017).

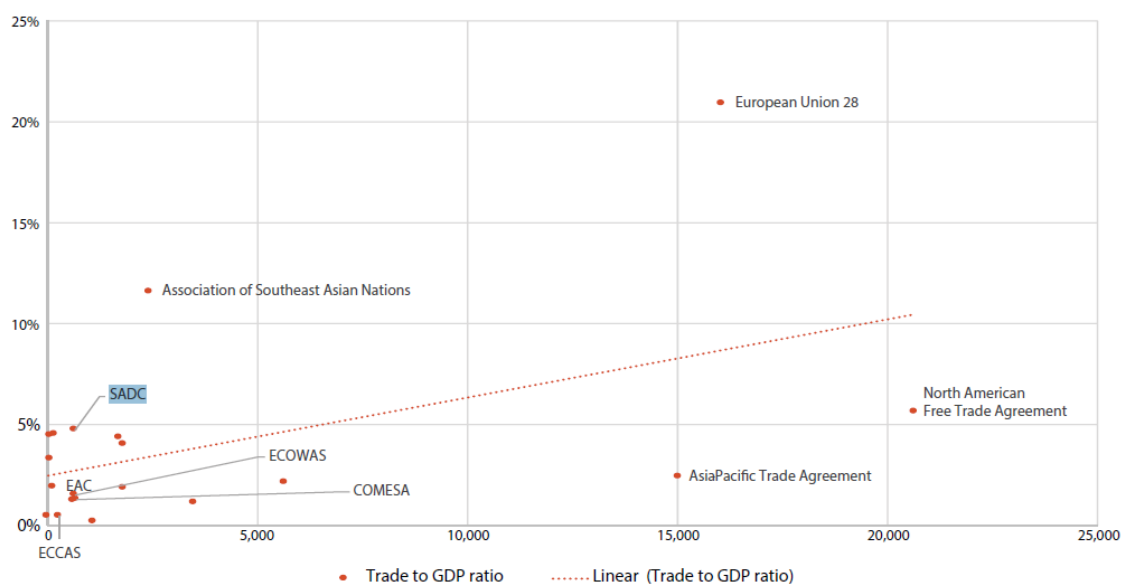
The focus on intra-trade within the REC is clearly evidenced in the level of intra-trade intensity when compared against the continent's top four RECs (Figure 2). The contribution of intra-SADC trade to the region's gross domestic product (GDP) also remains relatively low at just less than 5% as indicated in Figure 3 below. Interestingly, however, although the East African Community (EAC) shows the highest intra-trade intensity (Figure 2), the contribution of its intra-trade activity to GDP is lower than that of the SADC (Figure 3), thereby substantiating the view that the SADC REC is definitely a forerunner in driving regionalism as a core economic activity.

**Figure 2: Intra-trade intensity for select RECs – 2000-2014**



Source: (ICTSD, 2016)

**Figure 3: Intra-regional trade as a share of regional GDP plotted against GDP, 2015 (\$ Billion)**



Source: (UNECA, AU & AfDB, 2017)

Although the SADC REC has made much headway in regional integration and development of RVCs, there remains much opportunity to capitalise on coordinated regional efforts. The REC could benefit hugely from leveraging-off collective capacity, expediting economic growth and attainment of development goals such as the Sustainable Development Goals (SDGs) that will contribute to the welfare of SADC and the continent at large. Such efforts will

however, require brazen and tailored approaches to the unique challenges and opportunities alike of the African context. Policy makers and leaders should therefore pay closer attention to the all too familiar challenges of poor or lack of infrastructure, high cost of transportation, limited access to financing, restrictive government policies, lack of production efficiency, etc. that currently inhibit not just growth in regional trade but also participation in complex regional or global value chains (Bertelsmann-Scott & Chelsea, 2017).

This study therefore explores regional integration through RVCs as a driver of economic growth and development with the aim of exploring key determining factors that will allow the SADC region, thereby the African continent at large, to implement effective RVCs, drive regional integration and growth amidst the diverse challenges of the continent. The sections below will delve deeper into the research problem, the objectives of the study as well as provide an overview of the specific questions that this study seeks to explore.

## **1.2. Problem definition**

The concept of trade integration and its evolution to the framework of GVCs and RVCs has been a key focus over the past decades amidst the rising role of globalisation. World trade has been increasingly characterised by the fracturing of manufacturing and production processes, with goods and services produced in different geographical locations ultimately forming part of a single commodity, thereby recognising that specialisation in certain component parts of the whole has become more important than being able to produce an entire product (Bertelsmann-Scott & Chelsea, 2017). These developments are much welcomed even in the African context as more countries can therefore benefit from trade participation. There is, however, constant arguments on the adverse distributional impacts of participating in trade integration and value chain development where the benefits of such endeavours often do not flow equitably to participating countries. There are always winners and losers.

Although widely acknowledged that the regional trade integration agenda is critical and the potential development benefits compelling, the complexities associated with this agenda cannot be ignored. It is estimated that the continent's current trade intensity barely stands above 12%, a far cry from the envisaged target to boost intra-regional trade to 25% or more by 2022 (ICTSD, 2016). The cost of trade remains one of the biggest challenges in Africa. Brenton and Isik (2012) noted that the average cost of importing a container in Africa is about \$2,492 compared with \$935 in East Asia and the Pacific and \$1,488 in Latin America and the

Caribbean. The increasing trend of intra-regional trade, is dampened by its low contribution to total African trade estimated at circa 15%, compared with 68% in Europe and 58% in Asia (Fofack, 2018). There are often multiple barriers to intra-regional trade with Fofack (2018) asserting that in addition to nontariff barriers, the state of governance, the structure of production, the direction of trade inherited from the colonial model of resource extraction, and supply-side constraints still play a huge role in slowing down intra-regional trade.

African countries are characterised by low value adding and production capacity, with inclusivity into complex trade networks always a challenge for countries with low production capacity. Absorption into broader GVCs often leaves these countries on the lower end of the value adding process, thereby impairing the competitiveness of African value adding production processes in a global context. This translates into these countries being at the lower end in reaping the benefits, therefore in a GVC winners and losers' argument, the African continent becomes the losers. The continent's trade sector has not been able to keep abreast of the global market, thus regional focus is required that recognises the unique challenges of the continent and addresses the specific structural issues that lead to slow regional trade within smaller RECs such as SADC.

African markets are characterised by small to medium firms and it is critical to address capability gaps to ensure development of inclusive RVCs in the supply chain process. The economic contribution and developmental benefits of increased RTI and inclusive RVCs are inarguable; however, structural and African contextual issues cannot be ignored. Additionally, the vast diversity of economies across the continent, with varying levels of financial development, economic structures, soft and hard infrastructure make this agenda more complex. The SADC region particularly makes for an interesting study as previous attempts at integration of this REC have often borne much criticism levied on its inability to act on its mandate, its ineffectiveness in solving member state and continental challenges, as well as advancing the RECs development agenda.

This study therefore seeks to empirically explore the potential benefits of focusing on addressing the limitation of the region to reap the benefits of regional integration and RVCs which far outweigh the trade challenges that the continent faces. It seeks to identify the key determining factors that influence RTI, explores the relationship between RTI and the establishment and implementation of effective RVCs and lastly the relationship between RVCs

and by implication RTI on economic growth. The aim is to firstly acknowledge the limitations and challenges faced, and secondly illustrate empirically the multitude of opportunities that exist in driving the development agenda through focusing on strengthening RVCs. The study will thereby strive to amplify the need for government and business stakeholders to rally behind the regional integration and RVCs agenda. A focus on a smaller region like the SADC will allow for a more directed scope and will also illustrate how these benefits can be realised on a restricted regional area highlighting that, even at an REC level, benefits can be attained from leveraging off collective efforts and capabilities to fast track regional development of the continent and propel the AfCFTA agenda.

### **1.3. Statement of research objectives**

The key purpose of this study is to identify the key determining factors that drive RTI and through empirical analysis, test the relationship between strengthening value chains and RTI in the SADC region. The study will also explore the relationship between RVCs and economic growth and development, thereby justifying the efforts and focus required by African governments, business leaders and other key stakeholders in driving RTI and value chains development, through interventions such as directing investment into soft and hard infrastructure development, production capacity, enabling policies, etc. The study seeks to show that there should be a convergence between regional economic activities and social and economic development outcomes. The below main sub-objectives will be explored in the SADC regional context:

- Identify the economic factors that drive regional trade integration amongst the SADC countries.
- Examine the relationship between regional trade integration and the establishment of effective RVCs in SADC.
- Examine the relationship between effective RVCs and Economic Growth.

### **1.4. Hypotheses of the study**

To achieve the above stated objectives, the below hypothesis will be tested:

- a) H0: There is no effect of economic factors on regional trade integration amongst the SADC countries.

H<sub>1</sub>: There is an effect of economic factors on regional trade integration amongst the SADC countries.

b) H<sub>0</sub>: There is no relationship between establishment of effective regional value chains and the acceleration of regional trade integration.

H<sub>1</sub>: There is a relationship between establishment of effective regional value chains and the acceleration of regional trade integration.

c) H<sub>0</sub>: There is no relationship between effective regional value chains and economic growth

H<sub>1</sub>: There is a relationship between effective regional value chains and economic growth

### **1.5. Justification of study**

Discussions on regional integration are currently topical in the African context, as are those on how to speed up the rate of economic and social development in the continent. There is a general consensus that the unique challenges of the continent, and the urgent need to attain economic growth and development for Africa require specifically tailored solutions suited to the African context, hence should be Africa-led. Slowing intra-regional trade and other trade challenges have led to slow progress of the African regional integration agenda. Of even more concern is the slowing intra-trade trends within RECs such as the SADC region despite the demonstrated potential for regional trade integration and RVC's for economic growth in a number of empirical literary studies. Progressive trade concepts such as RVC trade therefore require key focus and support from all role players in the trade landscape. Such focus will assist in the improvement of the productive capacity of African countries and ensure relevance, a bigger participatory and beneficiation share in the global trade landscape.

This study will not only contribute to existing literature but will also amplify the urgent need for the SADC region and Africa as a whole to focus on soft and hard infrastructural issues that drive the successful establishment of RTI and effective RVCs. A number of studies have been conducted on regional integration and establishment of RVCs however, to the researcher's knowledge these studies have not extensively linked them to their potential and contribution in attaining economic and social development goals. Additionally, these studies often focus on RVCs in a specific sector, often the agricultural sector, therefore the observations and

recommendations provided are specific to that sector. Although there should certainly be focus on key economic sectors such as the agricultural sector, these approaches often overlook the broader opportunities available in other sectors that the region should exploit to keep abreast of global changes.

The study will attempt to bridge the literature gap by taking a holistic approach in exploring the key determining factors of regional trade integration, effective RVCs, and their contribution to economic growth in an effort to identify the winning formula that can be applied in the unique African context. The outcomes can therefore provide useful insights to trade policy makers, trade negotiators, business stakeholders, investors and other interested trade parties to take a progressive approach to regional integration and trade through the creation of conducive environments for the establishment of RVCs.

## **1.6. Organisation of study**

This study will be presented in five chapters set out as below:

Chapter 1: The first chapter introduces the study, giving an overview and background of trade, regional integration and the crucial role that regional value chains play in advancing the regional integration agenda as well speeding up the attainment of development outcomes for the country. The research problem, questions, objectives are outlined and an overview provided of the relevance and applicability of the study.

Chapter 2: The literature review focuses on work covered by previous researchers. In doing this review, a critical analysis of the different approaches, techniques, and tools that have been applied is provided. This section looks at similarities and differences between the perspectives or approaches by previous researchers and where an approach is adopted or disputed, the reasons are clearly stated.

Chapter 3: The research methodology provides an overview of the research design and outlines the methods and tools utilised for this analysis. It provides a clear definition of the data set used, the justification thereof, data collection and analysis process, setting the parameters for interpretation of the results which enable a discussion on the empirical finds. This section is therefore critical to ensure that the objectives of this study are achieved.

Chapter 4: This chapter provides a detailed evaluation, interpretation and discussion of the empirical results based on the parameters tested and techniques used. Confirmation is provided on acceptance or rejection of the null hypothesis' tests based on the defined rejection criteria in the previous chapter.

Chapter 5: The conclusion, which is the last chapter of this study, seeks to show a clear link between the purpose and intent of the study, the research process applied as well as a summary of the key findings. This chapter culminates in tangible recommendations to key stakeholders drawn from the findings, highlighting possible avenues for further research to address the limitations of this study.

## CHAPTER 2: LITERATURE REVIEW

*“The vision of the African Union is to become an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the international arena.”*

*African Union Agenda 2063,*  
(African Union, 2015, p.1).

### 2.1. Introduction

This section explores and analytically discusses existing literature on regional trade integration, implementation of RVCs, and their linkage to economic growth. It also includes an empirical analysis of the progress made thus far in the African context, and more specifically in SADC. It provides definitions of key terms ensuring alignment of the concepts for discussion. It also deliberates on key theories, assumptions, findings and conclusions based on different viewpoints on the subject matter as previously researched. It highlights common and contrasting views, literature gaps as well as literary progression over time, of the key concepts being explored.

### 2.2. Definition of terms and concepts

#### 2.2.1. Trade and regional integration

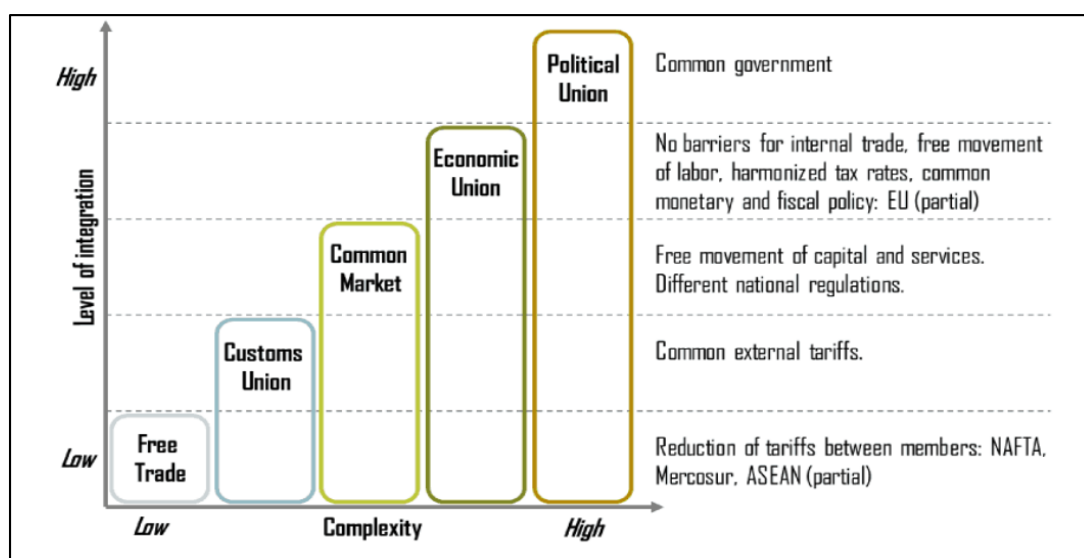
The African Development Bank (2018) defines regional integration as the process of states coming together, committing to agreements aimed at driving cooperation in areas of common interest and importance. They advance that as a process overseen by the governments of the specific states, it can take different forms depending on the objectives of the states that are involved, which could encompass a host of issues such as economic, political, monetary union, etc. goals and aspirations. Other than the soft infrastructural issues, there would be additional considerations including but not limited to geographical boundaries, institutional concerns such as the level of development of financial institutions, and infrastructural considerations.

The African Development Bank (2018) proceeds to argue that the premise of regional integration has been that it will facilitate structural transformation and accelerate economic and social development, allowing for the participating sovereign states in a regional bloc to increase their bargaining power in a globalised world. This is a rational argument as most countries forming a regional bloc would normally lack some degree of agency in a global context. In analysing trade and regional integration specifically in the African context, the AU, UNECA,

and AfDB (2016) corroborate this view, advancing that the main objective of pursuing trade and market integration is to boost trade and investments, highlighting that when trade flows are faster and more cost-effective, business and consumers in the region benefit as it creates employment, industrial linkages, economic diversification and structural transformation that, by extension, generate sustainable development on the continent.

Literature suggests that there is a hierarchical and sequential approach to achieving regional integration based on the degree of complexity involved in attaining full economic integration within a region. The stages in Figure 4 below, as articulated by Rodrigue (2017), are widely recognised by most researchers. The African Trade Policy Centre (2017), although in agreement with the stages involved, caution that since countries are free to negotiate regional economic agreements as they wish, in practice, formal agreements rarely fall neatly into the theoretically prescribed stages often leading to confusion in terminology and on the state of regional economic integration of a specific bloc. This proviso therefore suggests that these stages can and should be tailored to suit specific regional contexts which is a relevant argument for the African approach to regional integration.

**Figure 4: Levels/stages of integration**



*Source:* (Rodrigue, 2017)

DiCaprio, Santos, Paulino and Sokolova (2017), while in agreement with the generally agreed definitions and concepts of regional trade integration, stress the challenges of identifying, measuring and distinguishing types of regional integration arrangements. Their arguments stem

from the fact that other than the direct impacts on RTA members, such arrangements also impact countries outside of the RTA that have any existing trading relationships with RTA members. DiCaprio et al. (2017) therefore suggest that regional integration as a concept should further be decomposed to within-RTA and outside-RTA effects, which they refer to as internal regionalisation and exposure to regionalisation respectively. They propose that internal regionalisation is determined within a country or specific group of countries as a result of policies or agreements, while contrasting this to exposure to regionalisation which they argue ascertains the weighted regionalisation of the trading partners, or the third market effects. DiCaprio et al. (2017) as cited in UNCTAD (2018) conclude the effectiveness of both approaches as key attributes of RTA activity, of either the member country or by its trading partners. Collating of the information would however allow the effects of participation in globalisation policies to be measured barring the involvement of such engagement (DiCaprio et al., 2017).

### **2.2.2. Regional Economic Communities (RECs)**

In literature, RECs are seemingly predominantly a feature of the African continent, characterised by the grouping together of individual countries into smaller sub-regions. They are aimed at implementing strategic partnerships to achieve economic integration within the sub-regions at a faster pace where similar results at a continental level would not be as rapid. The African Development Bank (2018) posits that membership decisions to form or enter an REC are not random but based on many considerations. They note that in the world, the coming together of different sovereign states will be based on shared cultural, political, economic and societal values as well as shared history of association or cooperation (African Development Bank, 2018).

RECs have been defined as regional groupings of states, developed individually with differing roles and diverse structures depending on their purpose. They are considered the new order of driving regional prosperity especially in a fast globalising and social community, providing some level of agency to the participant countries. The African Union (2018) notes that in the African context, RECs are the basis for wider African integration, with a view to regional and eventually continental integration, increasingly involved in coordinating member states' interests in wider areas such as peace and security, development and governance. They

therefore serve as building blocks to a bigger strategic agenda of integration (African Union, 2018).

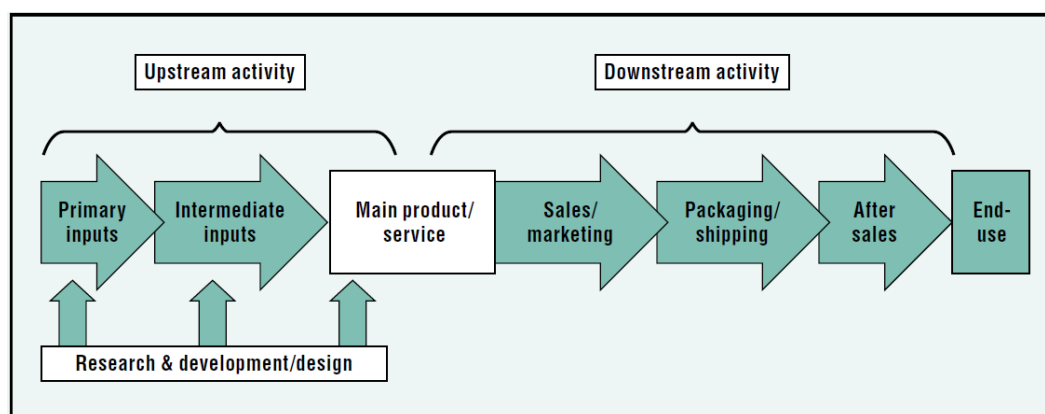
The African Union recognises eight RECs namely: Arab Maghreb Union (AMU), Common Market for Eastern and Southern Africa (COMESA), Community for Sahel-Saharan States (CEN-SAD), East Africa Community (EAC), Economic Community of Central Africa States (ECCAS), Intergovernmental Authority on Development (IGAD) and the Southern African Development Community (SADC) (African Development Bank, 2018). The relationship between the AU and the RECs is mandated by the Abuja Treaty and the AU Constitutive Act, and guided by the 2008 Protocol on Relations between the RECs and the AU; and the Memorandum of Understanding (MoU) on Cooperation in the Area of Peace and Security between the AU, RECs and the Coordinating Mechanisms of the Regional Standby Brigades of Eastern and Northern Africa (African Union, 2018).

### **2.2.3. Global value chains (GVCs) and regional value chains (RVCs)**

Over the past decade, trade stakeholders and practitioners have become increasingly attuned to the practice of GVCs, and more recently RVCs, as trade concepts and an avenue for fast tracking regional integration, economic growth and development. There is seemingly a uniform view of the definition of value chains, and their constitution.

Pieter van Dijk and Trienekens (2012), as cited in Kaplinsky and Morris (2012), define a value chain as the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. They add that value chains include various vertical and horizontal linkages to other value chains or intermediate goods and services, and are recognised for their ability to contribute towards pro-poor initiatives and facilitate better linkages of small businesses with the larger marketplace (Pieter van Dijk & Trienekens, 2012). Figure 5 below shows a generic value chain and flow of activities.

**Figure 5: Stages in a generic value chain**



*Source:* (AfDB; OECD & UNDP, 2014)

RVCs can be viewed as stemming from the concept of GVCs and therefore, there is often a superficial difference and blurred lines as to what constitutes a global value chain and a regional value chain. The distinguishing factor is seemingly the fact that regional value chains go over and above efficiency in production of goods and services in multiple locations, based on the production capacity of the involved countries. Instead they are intentional in the selection of participating countries, with these often linked to regional integration objectives, a defined regional area and not limited to trade and production objectives. Paremoer (2018) hypothesises that the trend of emergence of RVCs in Africa has partly been because historically, many African countries have been incorporated into GVCs at the low-skill and low-value parts of the chain where there are limited opportunities for upgrading into more complex technology-based and skill-intensive industries. They therefore suggest that RVCs have been a complementary development tool to both GVCs and national industrial policy.

### **2.3. Theoretical framework: Regional trade integration, value chains, economic growth and development**

#### **2.3.1. Orthodox theory of trade and regional integration**

In literature, David Ricardo is acknowledged for his early work of trade theory. The World Bank Group, OECD, UIBE, WTO and Ide-Jetro (2017) notes that since David Ricardo established the foundation of international trade theory two centuries ago, mainstream thought has hinged on three classic premises:

- The perfect competitiveness of markets with producers operating at constant returns to scale.

- Industries consist of homogeneous producers.
- Countries trade only final products with each product made using the production factors of only the exporting country.

This work has since evolved to other concepts of trade such as regional integration that have gained impetus over time.

Keane and Kennan (2015) suggest that the gaining of momentum of literature on regional integration can be widely attributed to the work of Jacob Viner dating back to the 1950s, whose premise was based on the trade-creating or trade-diverting effects of regional integration, noting that like any form of liberalisation, there are always intended and unintended effects. Viner argued that one of the outcomes of a regional trade agreement (RTA) is to allow the more efficient producers in the region to expand production (and reap economies of scale) to the advantage of consumers and the detriment of less competitive producers. Keane and Kennan (2015) as adopted from Viner (1950), referred to this as trade creation with trade diversion in contrast, suggesting this as a rational occurrence when the removal of tariffs within the region leads to goods that were previously imported from outside (from the cheapest global source) being replaced by more expensive goods produced inside the region. These would eventually be sold for less because of the elimination of import duty.

Barnekow and Kulkarni (2017) also recognise the work of Viner and are agreeable to the argument that not all trade agreements lead to higher economic welfare for the nations engaging in them. (Barnekow & Kulkarni, 2017), add that this is the premise which led to Viner's advancement of the concept of regional integration, which deepens the free trade agenda and promotes the ideas of countries cooperating beyond just trade, integrating to achieve development of the region through common rules, economic and political integration as well as common institutions. Literature widely recognises that Viner's theory was a linear approach based on the theory of comparative advantage developed by David Ricardo, with Viner arguing for the benefits of regional preference, asserting that this would lead to the improvement of the region rather than individual countries, with the precaution that this theory can work only if all the participating countries are equal.

Viner proposed a linear and sequential approach to regional integration, commencing with the member states adopting free trade areas, then customs unions, and then common markets (Ismail, 2017). Specifically, the stages proposed by Viner include first, preferential trading

arrangements, considered the simplest form of economic integration, where participating countries grant each other preferential access to each other's markets. The process would include reduction of tariffs for member states while maintaining original tariffs against other countries outside the agreement. The next stage is the formation of a free trade area involving elimination of tariffs and any other trade restrictions without harmonised trade policies (Ismail, 2017).

The following step would be the establishment of a common customs union. In this instance, a common external tariff on imports from non-members and no import tariffs between members would be implemented. Next, countries can have a common market allowing for free movement of factors of production including capital and labour among members. Additionally, countries achieve harmonisation of trading standards and practices to the extent of having a common trade policy towards third parties. The last stage would be an economic and monetary union where members further harmonise economic policies, including co-ordination of monetary and fiscal policies, and also transportation and competition policies. Economic or political integration is achieved with a political union being the ultimate stage of integration as members integrate economic and social policies, establish common institutions, judicial and legislative processes, including a common parliament (Ismail, 2017).

### **2.3.2. The heterodox criticism**

The traditional approach to regional integration was criticised by heterodox economists based on its shortcomings in addressing the contextual and practical implementation issues of developing economies especially in Africa. Criticisms of the theory stem from those of comparative advantage, the basis of the theory of regional integration which is argued to be conceptually, historically and ethically flawed. These arguments were made by amongst others, Joseph Stiglitz's and Erik Reinert.

Joseph Stiglitz's conceptual argument indicated that trade theory assumes perfect markets for risk and information and that local firms have capacity to supply, with workers on full employment; however, markets for risk and information are imperfect. There is also a lack of credit markets and supply capacity in developing countries (Ismail, 2017). This is particularly true for African markets and a linear approach to integration based on this assumption would fall short considering the lack of development in African markets that are characterised by information asymmetry and moral hazard.

The historical critique is based on the fact that history and context matters. Rich countries of today were previously less developed but have made progressive steps. The theory of infant industry promotion to development applies. Comparative advantage could be a function of lack of capacity that still needs to be developed (Ismail, 2017). Most developing countries, more so in Africa, are plagued by historical events – for example, apartheid in South Africa, the genocide in Rwanda, colonisation of most countries, to name a few. Such history becomes important when attempting to integrate countries with different historical backgrounds and different levels of development.

The ethical critique made by Erik Reinert is descriptive of many developing countries in Africa today. Reinert argued that many raw material producing countries with low value adding capability remain poor and ignorant as they do not realise the full value of their producing capability (Ismail, 2017). Value is often realised by countries that have production capability in the value chain and these grow richer while low value adding countries have diminishing returns and increasing costs. Most African countries export raw materials only to import their finished goods. The lack of production capacity by the region should be a key consideration of any integration efforts.

(Department of Trade and Industry: South Africa, 2017), argues that compensating the least developed countries in a regional integration arrangement would require a more equitable balance of the benefits of trade and regional integration, complemented by regional industrial development. Ismail (2017) further made the argument for a tailored approach to regional integration citing the inadequacy of a linear approach as it does not appropriately address and cater for the development conditions of African countries. He advanced an approach of “development integration”, highlighting the need for both macro and micro coordination in a multi-sectoral programme embracing production, infrastructure and trade (Ismail, 2017).

### **2.3.3. Developmental regionalism**

Soren (2018) ascribes developmental regionalism to a policy concept that first emerged in Latin America in the 1950s and 1960s, when the Economic Commission for Latin America and the Caribbean advocated restrictive import substitution in combination with redistributive measures among the regional countries. He indicates that developmental regionalism was expected to help third world countries through economies of scale in an integrated market in

certain segments of RVCs, increasing international competitiveness also within the region itself. They highlight that it was also a means to end the dependence on overseas manufactured inputs to production, thereby politically strengthening third world countries vis-à-vis the Global North. The term has evolved, more recently being attributed to implementation of structural policy programmes to reduce core-periphery disparities through a capacity-building process targeted at periphery states to help them engage in the regional economic dynamics.

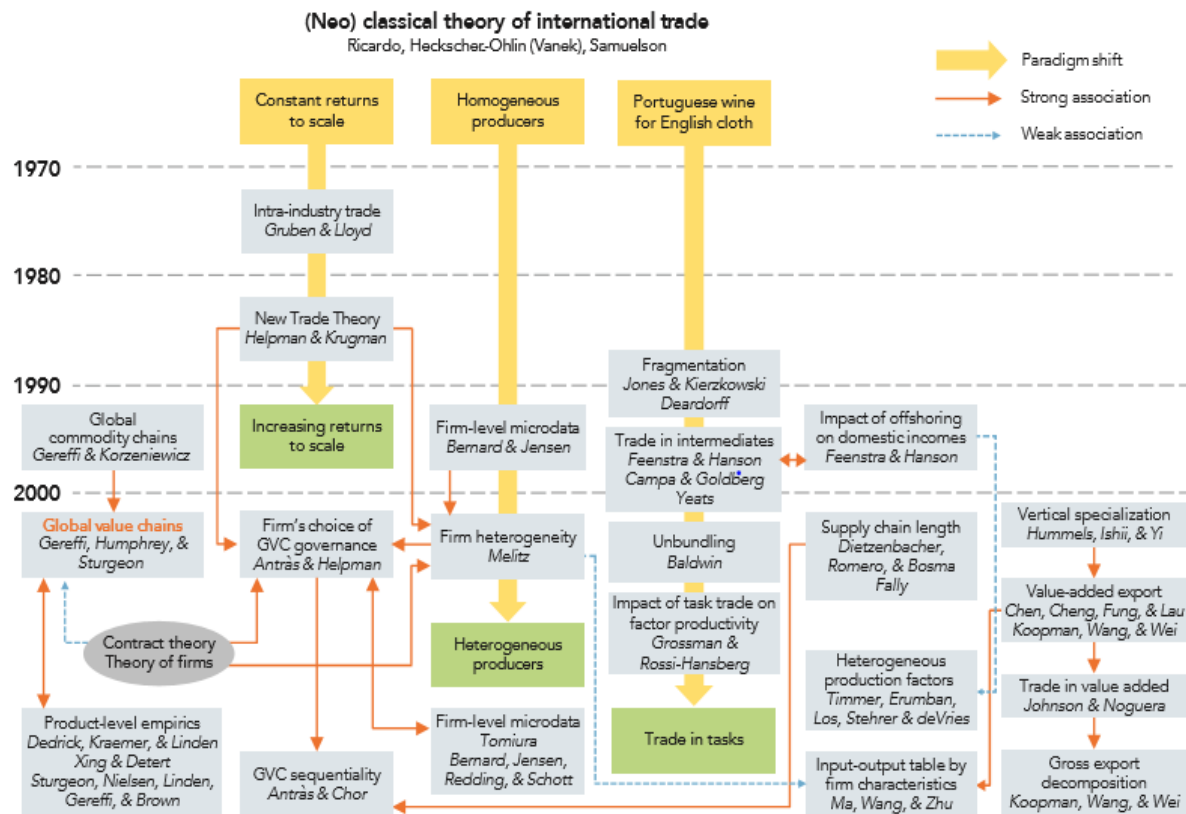
Developmental regionalism seemingly suggests a tailored approach to regionalism based on unique contexts as a way to yield mutually beneficial outcomes in the process of integration and development. By definition, it is the collaboration among countries in a broader range of areas than just trade and trade facilitation, including investment, research and development (UNCTAD, 2013). Adejumbi and Kreiter (2016) as cited in Ismail (2017) assert that the successful implementation of this theoretical approach should focus on six features:

1. A strong institutional architecture and capacity.
2. Clear articulation of goals, objectives, essence, nature, and direction of regional integration.
3. Peace and security as a composite.
4. Evolving complementary and symmetrical benefits for all member-states.
5. Articulation of regional public goods and development priorities necessary for facilitating economic transformation.
6. Evolving a bond of common regional citizenship and identity necessary for regional human capital mobilisation

#### **2.3.4. Vertical and horizontal theory of integration and value chains**

Value chains include various vertical and horizontal linkages to other value chains or intermediate goods and services, and are recognised for their ability to contribute towards pro-poor initiatives and facilitate better linkages of small businesses with the larger marketplace (Bertelsmann-Scott & Chelsea, 2017). López and Peter (2011) argue that the theory of vertical and horizontal value chains broadly refers to the concept of splitting up of production structures across national boundaries to gain cost advantages in production sequences, resulting in an increase in intermediate goods trade where value add is performed in different countries at different stages of the value chain. The World Bank Group et al. (2017) suggest that this theory of integration and value chains has evolved as per the diagram below.

**Figure 6: Genealogical map of analytical framework for global value chains**



**Source:** (World Bank Group, OECD, UIBE, WTO & Ide-Jetro, 2017)

Erik and Michelet (2016) affirm that horizontal coordination can refer both to coordination between actors operating at the same territorial scale and between sectors, stressing that the concept has prevailed as a result of the sustainable development discourse making the need for horizontal coordination obvious. They complement this theory, noting that it has attracted attention to the fact that independent and fragmented approaches to solving the economic, social and environmental challenges cannot be successful in generating prosperity and balanced development in the long-term. On the other hand, Erik and Michelet (2016) define vertical coordination as the promotion of efficiency and resilience in multi-tiered systems, a theory that can take a wide variety of forms. They indicate that it is the main concern of multilevel governance and management of a dynamic system of actors. This assertion highlights the importance of the consideration of vertical and horizontal theories in establishing value chains in an African context.

### **2.3.5. Convergence and divergence theory of regional integration and value chains**

Keane and Kennan (2015) highlight that literature on regional integration and trade has been informed by new developments within economic theory which recognises how forces of convergence and divergence can affect welfare gains and distributional effects of integration over time. They assert that such developments require recognition of forces such as agglomeration effects, that may foster economic convergence as well as divergence, which require consideration of the compensatory mechanisms that may be essential in managing the distribution of gains among RTA members, where weaker economies are likely to lose (e.g. greater cooperation in services, transit trade, investment, and regional infrastructure development).

Velde (2011) noted that the benefits of regional integration may not be evenly spread amongst members of a region, therefore emphasising the importance of examining whether regional integration helps convergence amongst members and, if so, under what conditions and what aspects of regional integration. They found that smaller countries may have incentives to form a region in order to attract investment away from other members. With countries joining a regional bloc being at different economic and development levels, the convergence and divergence factors cannot be ignored, with Velde (2011) suggesting that the relative size of a country's economy within a region matters for attracting additional foreign direct investment (FDI), as does a central location in relation to the largest market. Keane and Kennan (2015) support this view, adding that although the inclusion of countries with vastly different static comparative advantages may help to promote more economic convergence than divergence, the gains may still be disproportionate thus these key considerations are critical in establishing strategic intra-regional trade networks through implementation of value chains.

### **2.3.6. Forward and backward theory of regional integration and value chains**

Another key concept of regional integration and value chains is that based on the theory of forward and backward integration, with UNECA (2015) indicating that Africa needs to focus on improving its backward integration, which is the share of value added embedded exports, thereby expanding value chain linkages to other areas of the economy. They assert that trade-integrated regions are more attractive, hence intra-regional trade in processed goods via RVCs is the first opportunity for African firms to seize.

For any particular country, especially developing states, linking into GVCs could either be done through forward linkages (where the country provides inputs into exports of other countries) or through backward linkages (where the country imports intermediate products to be used in its exports). Using this sequential production process definition of participation in GVCs, for a particular country this could be measured as a sum of 'foreign value added in its gross exports' (backward linkage or imports of foreign value added) and its 'domestic value added which goes into other countries' gross exports' (forward linkage of export of domestic value-added).

Backward integration refers to the share of imported value added that is embedded in a country's exports and entails the country's position within the value chain, while forward integration describes the exported domestic value added that is further exported by third countries (UNECA, 2015). Based on these definitions, in the case of Africa, backward integration should therefore be a key focus as countries with a high forward integration rate export a high amount of value added, which is often the case for exports of raw materials. This can be attributed to the inability to process goods within the country, therefore often negatively associated with a country's development (UNECA, 2015).

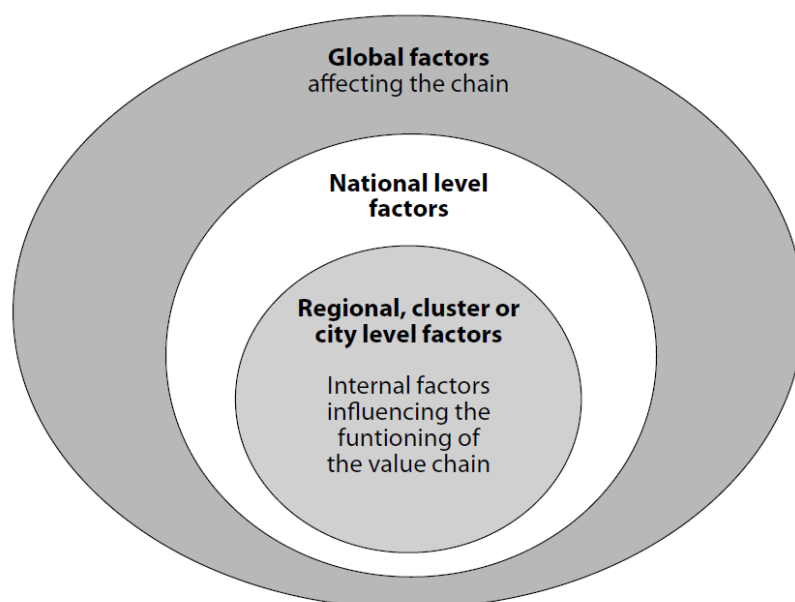
Banga (2013) agrees that exporters of primary products or commodities have naturally higher forward linkages as compared to backward linkages, as their exports are used as inputs in other countries' exports and therefore have low participation rates. However, Banga (2013) makes the interesting observation that forward linkages are much stronger than backward linkages in case of US, Japan and UK while China and Korea, on the other hand, have stronger backward linkages as compared to forward linkages. They assert that the net value added gains appear to be negative for these countries. They note that countries with higher backward linkages indicate negative net gains in terms of value added from value chains.

### **2.3.7. Factors affecting effective implementation of value chains**

Pieter van Dijk and Trienekens (2012) assert that the analysis of value chains can be assessed through global, macro, meso or micro factors, noting that a global focus considers the whole chain. Macro-level analysis refers to studying the chain at the national level. The meso usually refers to regional or city-level activities while the micro level focuses on the position of the (small-scale) producers in the chain. This inter-relation of factors is shown in the figure below. Pieter van Dijk and Trienekens (2012) also highlight a different dimension in analysing value

chain implementation and effectiveness, noting that external factors such as policies and differing national regulations, as well as internal factors to a value chain such as price, infrastructure, and country competitiveness are often key determining factors value chain discussions.

**Figure 7: Factors affecting value chain analysis**



*Source:* (Pieter van Dijk & Trienekens, 2012)

### **2.3.8. Advancing regional integration through global and regional value chains**

The trade integration, value chains and development nexus is widely recognised in literature as an important relational factor in driving development outcomes. However, it is also recognised that such outputs require intentional investment, policy changes, and capacity building in aspects of soft and hard infrastructure. Even with such efforts, it does not necessarily guarantee that the benefits flowing from value chains will be realised uniformly by all the regional participants. According to PESA (2016), cross-border value chains provide both potential benefits and risks for participating economies, with the development of GVCs often resulting in asymmetrical balance of power which tends to favour lead firms, largely due to the fact that there are few multinational corporations engaged in FDI whilst there is a plethora of sovereign governments competing to attract FDI.

Goger, Hull, Barrientos, Gereffi and Godfrey (2014), although in agreement that participation and upgrading of GVCs is seen as a promising approach for promoting development, found

that the relationship between insertion into value chains and development is not automatic and the outcomes can be very uneven. They highlight some of the adverse effects, noting that in many cases, economic growth has instead been achieved through a low-road development strategy, in which growth on the business side is associated with the erosion of social protections and rights, low wages for workers, declining market access and bargaining power for small businesses. The effectiveness of value chains is therefore highly dependent on the commitment by participating countries who often need to make a strategic choice to promote or not to promote participation in value chains, need to address policy matters to make value chains work for development and implement realistic value chain development paths for strategic positioning (UNCTAD, 2013).

The UNCTAD (2013) asserts that development contribution of value chains can be significant with a positive correlation realised between participation in value chains and growth rates of GDP per capita. They add that value chains have a direct economic impact on value added, jobs and income and can be an important avenue for developing countries to build productive capacity, including through technology dissemination and skill building, thus opening up opportunities for longer-term industrial upgrading. They, however, argue that the GDP contribution of GVCs can be limited if countries capture only a small share of the value added created in the chain, noting that often developing countries face the risk of remaining locked into relatively low value added activities.

Keane and Kennan (2015) advanced an argument for intra-regional value chains as a development driver, noting that some upgrading processes may be easier to achieve within intra-regional value chains, precisely because these markets are less dominated by a few lead firms compared to more tightly controlled global markets. They assert that although trading within GVCs may offer firms more competitive pressure to upgrade, the problem for new entrants within established markets is that these pressures may simply be too formidable for them to enter and join, as is often the case with African countries. They found that RVCs present opportunities for improving productivity both for domestic firms with export potential and those that produce goods predominantly demanded at the national and regional levels. Keane and Kennan (2015) also noted that regional markets are understood to provide the environment through which producers may learn and develop their productive capabilities and capacity before integrating with GVCs. They do, however, highlight that some countries (in particular the least developed) may have limited domestic capabilities that attract regional FDI

and situating this within an investment-led development strategy might in practice be the most viable strategy, at initial stages of economic development.

## **2.4. Empirical literature: Regional Integration in Africa**

### **2.4.1. Regionalism and value chains in the African context**

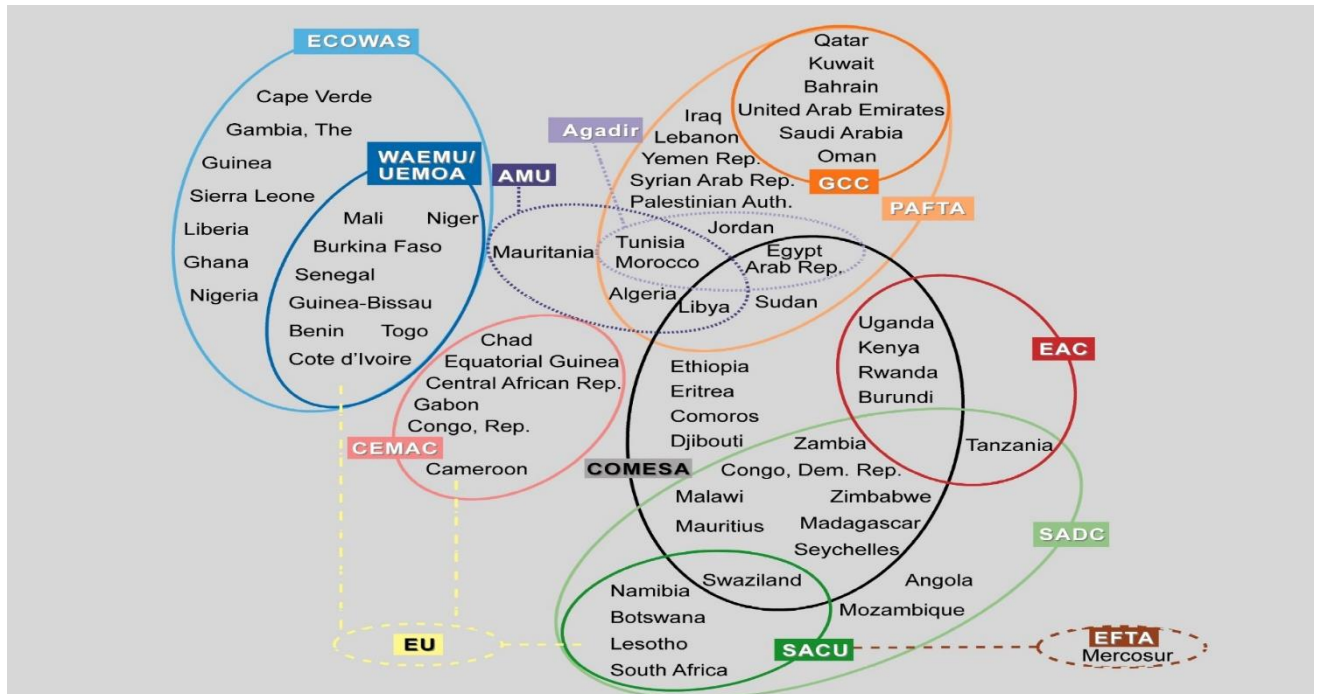
A number of efforts have been directed at regional trade integration, economic development and the establishment of value chains as a way of advancing integration efforts in the continent. (Kibret & Geda, 2008), posit that regional integration initiatives in Africa have a long history, dating back to the establishment of the South African Customs Union (SACU) in 1910 and the East African Community (EAC) in 1919. They note that all countries in Africa at the moment, are a member of at least one regional economic group. The multitude of regional agreements both in the continent and world- wide support the importance of regional integration in the economic agenda of continent with agreements at a regional level underway to create economic cooperation (and ultimately meaningful economic integration) among African countries at a continental level (Kibret & Geda, 2008).

There have been significant advances but the journey has not been without its fair share of challenges. It is widely recognised in literature that this agenda has been pioneered by the African Union and has been championed by a number of visionary leaders in the African continent. Ismail (2017) substantiates this view, noting that African unity and integration has been topical since the de-colonisation and independence of African States since the late 1950s, adding that it gave momentum to the leadership of Kwame Nkrumah, regarded as a champion of regional integration in Africa, who as early as 1958 called an “All Africa People’s Conference” to advance the vision of regional integration in Africa.

Further advances emanated from the seating of the Abuja conference of African countries that established the African Economic Community in 1991. The outcome of the conference was the Abuja treaty which clearly noted the agenda of regional integration as: “To promote economic, social and cultural development and the integration of African economies, in order to increase economic self-reliance and promote an endogenous and self-sustained development” (Sekyere, 2017, p. 3). The process of implementation has been slow and uneven across the continent due to many challenges facing the continent including low levels of growth, high levels of debt, political instability and lack of capacity (Ismail, 2017). Another key challenge in the continent

specifically in the establishment of effective RECs has been that of overlapping regional arrangements known as the African spaghetti bowl depicted in Figure 8 below. While Africa has made considerable progress in building an ambitious programme of action to integrate the continent, there are clearly competing paradigms for African economic integration (Ismail, 2017; Keane & Kennan, 2015).

**Figure 8: The African REC spaghetti bowl**



*Source:* (Sekyere, 2017)

Ismail (2017) argues that African countries will need to advance their regional integration in a pragmatic manner following a “development integration approach” that calls for African countries to coordinate the opening of markets to each other, while building industrial capabilities and developing cross-border infrastructure. They refer to this approach as a threefold strategy to regional integration, adding that it is more appropriate for Africa’s integration and development than previous approaches based on the Washington Consensus. An important driver that can yield these desired outputs of regional integration is the focus on the establishment of RVCs within RECs and within the continent to ensure competitiveness in the global economy.

#### **2.4.2. Challenges with Regional Integration in Africa**

The ICTSD (2016) attributes the key challenges with regional integration in the continent to the extreme complexities caused by the multiplication of processes. Specifically, they highlight that the African Growth Opportunity Act (AGOA) with the US, the Economic Partnership Agreements (EPAs) with the EU, the regional Tripartite Free Trade Area (TFTA) and the drive for a grand Continental Free Trade Area (CFTA) all have an impact on how each REC handles its integration agenda and priorities (ICTSD, 2016). Another view suggested by the ICTSD (2016) is that pursuing regional integration is often marred by many initiatives motivated more by political cooperation than by economic interest and trade, let alone sustainable development concerns. This is not surprising considering the political and economic issues faced by the continent. These very often render the integration agenda even more complicated compared to similar efforts by other regions of the world.

The process of integration hinges on strong participation and collaboration by all key stakeholders involved. Such efforts cannot be left only to government institutions to drive, as their effects and impacts are far reaching for any sovereign or region. The private sector has been largely absent with no specialised working groups within and outside of government in most countries to direct and monitor regional trade integration activities (ICTSD, 2016). Qobo (2007) supports this view, indicating the lack of focus by Africa's elites on the strategic goals of integration, rather citing their engagement of the wrong set of priorities with too little genuine commitment towards the goal of Africa's development. For regional integration in Africa to be a success, Africa's leaders will have to move beyond grand gestures and abstract visions. Qobo (2007) advances that Africa's challenges would require pragmatism and a sense of urgency in action with more focused and gradual steps that are carefully executed at the domestic level.

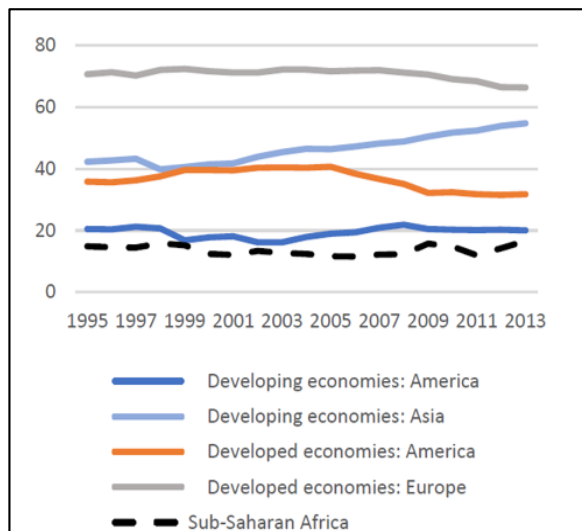
De Melo and Tsikata (2014) diversely argue that the challenges of regional integration in the continent can be largely ascribed to the lack of complementarities among partners with perceived limited observable value-add and diminishing returns significantly reducing the supply response to market-integration-oriented regional policies. De Melo and Tsikata (2014) also note that the linear approaches to regional integration pursued by African RECs to date have led to missed opportunities of capitalising on the diverse and unique African contexts is

solving for the integration of goods, labour, and capital markets, with the long term goal of attaining monetary and fiscal integration. Regionalism and RVCs in the SADC region

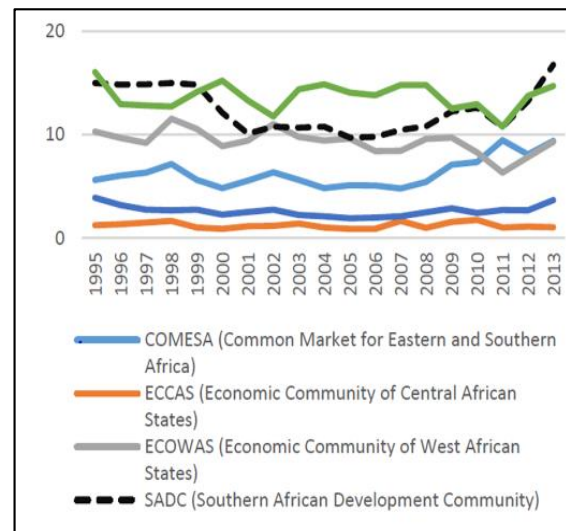
The SADC REC has been pivotal in the regionalism and RVC agenda in Southern Africa and the continent as a whole. Formed in 1980, the Department of Trade and Industry (2018) asserts that the current priority of the REC is to consolidate the SADC free trade agreement (FTA) which seeks to facilitate the accession of member states that are not yet participating in the SADC FTA, fully implement the FTA, focus on trade facilitation, address non-tariff barriers, simplify Rules of Origin, harmonise regional standards and technical regulations, and implement harmonised regional customs documentation and procedures. The SADC launched its Free Trade Area in 2008, which involved the elimination of tariffs and non-tariff barriers and implementation of the SADC trade facilitation initiatives, both soft and hard infrastructural issues, driven by the goal of transforming the region as the first choice for investment in the continent (UNECA, AU, AfDB, 2010).

The Department of Trade and Industry (2018) notes that the initial intent of SADC was to coordinate development projects in order to lessen economic dependence on the then apartheid South Africa with the main founding member states including Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. The REC has since grown to include countries such as Comoros, Democratic Republic of Congo (DRC), Madagascar, Mauritius, Seychelles, and South Africa. Although intra-regional trade in sub-Saharan Africa remains relatively low compared to other developing economic regions as depicted in Figure 9 below, intra-regional trade within the SADC REC has been steadily growing over the past decade with the region currently leading the pack as can be seen in Figure 10. Hartzenberg (2011) affirms this view, claiming that the SADC includes three of the top five most competitive countries in sub-Saharan Africa (South Africa, Mauritius and Botswana), making it the best performing REC overall.

**Figure 9: Intra-regional exports as a percent of total trade**



**Figure 10: Intra-regional exports by REC (%)**



*Source: Keane and Kennan (2015) as adapted from UNCTAD dataset on intra-regional trade.*

Hartzenberg (2011) highlights that the SADC engaged in cross-border, sector-specific projects such as regional development corridors; however, they adopted an explicit market integration agenda and are a good example of the linear model of integration in Africa. Hartzenberg (2011) asserts that the strategic plan for the REC articulates the roadmap for the SADC’s integration and provided for the establishment of a free trade agreement (FTA) by 2008, a customs union in 2010, a common market in 2015, monetary union in 2016 and the introduction of a single currency in 2018. Already this strategic plan has fallen short, with most of these timelines not met and discussions on a single currency only gaining momentum now in the REC. This concerning trend in the lack of or delay in implementation of key regional objectives elevates some of the challenges faced by the continent and negatively impacts on the rate of development of the region.

PESA (2016) asserts that the SADC provides a unique opportunity to coordinate cross-border production in a mutually beneficial way to benefit the region, noting that the emergence of the SADC Industrialization Strategy and Roadmap is the beginning of such an initiative to coordinate and consolidate regional industrial development needs of the SADC member states. They, however, argue that to effectively achieve the implementation of effective RVCs, the productive and trade capacity of key players in the region such as South Africa cannot be ignored, adding that South Africa contributed approximately 62.23% of the SADC regional gross domestic product over the two decades ending in 2015. PESA (2016), therefore finds that South Africa is the primary industrial base in the SADC due to its contribution to total SADC

output and trade, with the strongest potential to influence the development of regional value chains within the SADC.

UNECA et al. (2010) notes that well-functioning value chains in the region will contribute significantly to improved access to markets, ensure competitiveness in global trade through integration of small and medium enterprises (SMEs) into GVCs as suppliers or major players, and can be utilised as instruments to improve quality and productivity as well as the cost efficiency of subsectors. They assert that promoting value chains spurs economic development and creates linkages and interaction among stakeholders, thus combining entrepreneurial development at the micro-level with institutional change at all levels. Paremoer (2018) concludes that a number of debates about the potential for RVCs in the SADC REC require measures to build wider and deeper markets for greater resilience against shocks, citing that greater integration of value chains across the SADC region will ensure the REC makes better use of regional resources. They add that this requires appropriate sets of policies within and across SADC countries as well as the incorporation of these into national and regional industrial development strategies, citing that the urgency of doing so cannot be overstated.

As is common across a number of RECs within and out the continent, the SADC suffers from scale asymmetries between participating countries, trade barriers including infant industry protection, and a lack of harmonisation in standards and labelling, and inadequate national and regional competition to stimulate technology upgrading and regional development (Ncube, Roberts, & Zangeni, 2017). Ncube et al. (2017) assert that coordinated RVC development would require the repeal of trade barriers and non-tariff barriers, and coordinated investment into the production capacity of participating member states of the SADC REC.

## **2.5. Summary**

This section of the study explored existing literature on the concepts of interest and analysis. Due to the topical nature of trade, regional integration, the changes in trends and relevance of RVCs to any economy and the global market, a lot of research has been conducted on these concepts from different dimensions and perspectives. Additionally, this is a dynamic area of research with recent knowledge contributions widely available. There is also seemingly common interpretation and understanding of terms. The reviewed literary work from previous researches, clearly shows the diverse approaches and considerations to regional integration suggesting that its implementation can similarly be tailored as is fitting for the African context.

The findings also highlight some of the key challenges faced by the continent, however these are by no means insurmountable and can be addressed with focused and brazen efforts by key stakeholders. The section below will delve deeper into the method of analysis that was applied to achieve the key objectives of this research.

## **CHAPTER 3: METHODOLOGY**

### **3.1. Introduction**

This section of the study provides an overview of the research methods, tools and techniques that were utilised for the analysis. More specifically, it clearly outlines the research design and justification thereof, clarifies the data sources and sets the criteria for the data types. It further outlines the different statistical and econometric models that were applied for the analysis, explain how these relate to the questions posed and achieving the stated objectives. Lastly, this section clearly provides a framework for the estimation approach providing an overview of how it was applied to test for robustness of the models used.

### **3.2. Research approach and design**

This research seeks to deduce empirically the key determining factors influencing regional trade integration in the SADC and ascertain whether there is a relationship between establishment of RVCs and regional trade integration. It further seeks to establish whether this relationship leads to economic growth in the short-term or long-term. A quantitative approach was therefore utilised to address these research objectives, with the intent of providing an evaluative and explanatory conclusion to the research findings. Panel data analysis is applied on trade related data specific to countries in the SADC region limited to the period 2000-2017, as defined in the sections below.

#### **3.2.1. Data sample, period of analysis and data sources**

Although the practice of international trade has been in effect for a long period of time, regional trade integration, GVCs and RVCs can be considered fairly new trade concepts that have only recently started to gain momentum in the global trade arena. Similarly, the SADCs key strategic objectives are only evolving now to focus on these theories post its establishment in 1980, therefore regional trade objectives are also relatively new in this REC. The data sample size and period of this study were therefore determined to take these key trends into consideration and ensure alignment to these limitations and new developments.

The SADC REC has 16 countries, with member states and joining dates shown in Table I below. For the purposes of this study, the scope was limited only to the first 13 countries as

they have been members for ten or more consecutive years, with uninterrupted membership status in the period under study. This ensured that intra-trade data amongst member states would be available for the period defined above. The study made use of annual intra-regional trade, secondary data sourced from a number of reliable international institutions that have a vested interest in economic activities such as trade activity on the globe. Specifically, the data sources included the World Bank, World Trade Organization (WTO), United Nations Conference on Trade and Development (UNCTAD), World Integrated Trade Solutions (WITS), World Economic Forum (WEF) Global Competitiveness Index, Centre d'Études Prospectives et d'Informations Internationales (CEPII) and SADC.

**Table I: List of countries in scope (SADC)**

COUNTRY	MEMBERSHIP DATE	IN/OUT OF SCOPE
<b>Angola</b>	1980 (Founding Member State)	In Scope
<b>Botswana</b>	1980 (Founding Member State)	In Scope
<b>Eswatini</b>	1980 (Founding Member State)	In Scope
<b>Lesotho</b>	1980 (Founding Member State)	In Scope
<b>Mozambique</b>	1980 (Founding Member State)	In Scope
<b>Malawi</b>	1980 (Founding Member State)	In Scope
<b>Tanzania</b>	1980 (Founding Member State)	In Scope
<b>Zambia</b>	1980 (Founding Member State)	In Scope
<b>Zimbabwe</b>	1980 (Founding Member State)	In Scope
<b>Namibia</b>	1990	In Scope
<b>South Africa</b>	1994	In Scope
<b>Mauritius</b>	1995	In Scope
<b>Democratic Republic of Congo</b>	1997	In Scope
<b>Seychelles</b>	1997-2004 then joined again in 2008.	Out of Scope
<b>Madagascar</b>	Suspension in 2009, reinstated in 2014	Out of Scope
<b>Comoros</b>	2017	Out of Scope

### 3.2.2. Empirical model

The study adopted a number of econometric trade analysis models that have been previously utilised in trade related research. This section outlines the different models applied and clearly articulates their purpose in achieving the objectives of the study. The definition of variables is provided in Table II below.

The first step in this analysis was to determine the key determinants of RTI. Allard et al. (2016), in endeavouring to determine trade integration in sub-Saharan Africa for a period of 20 years, applied a gravity model adopted from IMF's Direction of Trade Statistics (DOTS) database, to determine the underlying factors that drive trade integration and to estimate the order of

magnitude of the potential trade gap thereof. The use of this model was advocated for by Anukoonwattaka (2016), who notes that it is a very popular econometric model in international trade whose main comparative advantage lies in its ability to use real data to assess the sensitivity of trade flows with respect to policy factors of interest. This model is therefore appropriate for this analysis and was applied as per below:

**Equation 1: Determinants of regional trade integration amongst SADC countries**

$$\ln x_{Sadc,t} = \alpha_i + \beta_1 \ln(\text{Trade Openness}_{Sadc,t}) + \beta_2 \ln(\text{Distance}_{Sadc}) + \beta_3 \ln(\text{Infrastructure\_index}_{Sadc,t}) + \theta \beta_4 (\text{dummyCommon Currency}_{Sadc}) + \theta \beta_4 (\text{dummylandlocked}_{Sadc}) + \varepsilon_{Sadc,t} \quad (3.1)$$

Next, the relationship between effective RVCs and regional trade integration was explored. An extension of the gravity model was applied, however focusing on backward integration to determine the impact of trading in value added goods and services on the identified countries in the region. Allard et al. (2016) utilised this approach to estimate the increase/decrease in foreign value added (FVA) trade through regional integration noting that, while such changes would likely occur over time, they could bring the depth of integration of a region to levels in emerging markets thereby positioning the region well to participate in GVCs. Similarly, Slany (2007) assessed the role of structural factors in building African RVCs leading to their improvement of regional integration. The below model was adopted from the approaches by Allard et al. (2016) and Slany (2007):

**Equation 2: Relationship between RTI factors and effective RVCs**

$$\ln FVA_{Sadc,t} = \beta_0 + \beta_1 (GDP_{Sadc,t}) + \beta_2 (InWeightedMeanTariffs_{Sadc,t}) + \beta_3 (\ln x_{Sadc,t}) + \beta_4 (\text{Infrastructure\_index}_{Sadc,t}) + \theta \beta_6 (\text{dummylandlocked}_{Sadc}) + \theta_t + \varepsilon_{it} \quad (3.2)$$

Lastly, this analysis determined the relationship between RVCs and economic growth and development using GDP as a measure and an association of key RVC trade variables applied in a simple multiple regression model. In their study Imide and Eravwoke (2013) looked at the relationship between international trade and economic growth in Nigeria, using a simple model of GDP as a function of identified trade variables. This approach was adopted for this analysis as per the model below. This analysis extends the model by Imide and Eravwoke (2013) to

focus on outputs specific to established value chains amongst SADC member states. This provides a view of the contribution of trade based outcomes from RVCs on GDP, hence enabling the study to analyse and make inferences on the development impact of regional integration and effective RVCs, including a determination of short-term and long-term effects:

### Equation 3: Relationship between RVCs and economic growth

$$GDP_{Sadc,t} = \alpha_0 + \beta_1 Exp_{Sadc,t} + \beta_2 Impt_{Sadc,t} + \beta_3 Inf_{Sadc,t} + \beta_4 Exr_{Sadc,t} + \beta_5 FVA_{Sadc,t} + \beta_3 (In x_{Sadc,t}) + \mu_{Sadc,t}$$

(3.3)

#### 3.2.3. Definition and measurement of key variables

The different measures and indicators utilised in this study are outlined in the variables table to follow.

**Table II: List of variables**

Variable	Symbol	Measure	Description
<b>Regional Trade Integration</b>	$Ln x_{ijt}$	Exports from country $i$ to importing country $j$ in time $t$ .	Factor of trade between country $i$ and $j$ in time $t$ determined through measuring the level of exports from one country to the importing country at a particular time interval (Allard et al., 2016).
<b>Trade Openness</b>	<i>Trade Openness</i>	Export and import to GDP ratio.	Allard et al. (2016) noted that using export and import to trade ratio to measure trade openness helps in highlighting actual trade flows in sub-Saharan Africa. This was adopted to measure trade flows with the SADC.
<b>Distance</b>	<i>Distance</i>	Shortest distance in km's between country $i$ and $j$ .	Slany (2007) in their analysis determined the impact of distance on trade and found that there is negative effect of distance on exports, albeit smaller on value added exports than on gross exports. The impact was therefore tested for intra-regional trade in the SADC.
<b>Common Currency</b>	<i>DummyCommonCurrency</i>	A dummy variable was used, denoted as 1 if country $i$ and $j$ share a common currency and 0 if not.	Impact of countries having a common currency on their trade activity.
<b>Landlocked Country</b>	<i>Price/Km (in USD)</i>	The comparative cost of transporting goods between countries determined by dividing total cost of transportation by number of km's between markets.	Raballand (2003) notes that several studies find that due to the commodity structure of trade, crucial factors influence transport cost of trade for land-locked countries and thereby trade participation, such as the relative remoteness from major markets, the infrastructure level, the percentage of overland transport and the possibility of alternative transport routes. They add that the important factor in determining overall trade level is the inverse relationship between transport costs and the total value of goods transported, as the problem of a high transport cost ratio is acute in countries where raw materials are a substantial proportion of exports.
<b>Infrastructure</b>	<i>Infrastructure Index</i>	Quality of infrastructure on a scale of 1-7 as rated by the Global of Competitiveness Index.	Level of infrastructure based on the World Economic Forum's (WEF) Global Competitiveness Index.
<b>Regional Value Chains</b>	<i>FVA</i>	Regional trade within a value chain.	Imported foreign value added (FVA) from the region embedded in a country's exports to the region (Slany, 2007). This will measure backward integration used to determine FVA trade within value chains in the SADC as a share of total exports.
<b>Economic Growth</b>	<i>GDP</i>	Portion of country's GDP that can be directly attributed to intra-regional trade.	GDP was used as a measure of economic growth. The impact of RVC trade on economic growth was therefore correlated with the movements in GDP over the period of analysis.
<b>Weighted average applied tariff</b>	<i>ln WeightedMeanTariff</i>	Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country (Slany, 2007).	Adopted from Slany (2007) who noted that when producers face high tariffs on their exports, there is often a negative direct impact on their demand for FVA goods and utilised the World Bank-World Integrated Trade Solution (WITS) Trains database to measure country-specific tariffs on import and export weighted average of intra-regional bilateral trade.
<b>Exports</b>	<i>EXP</i>	Level of exports of a country at time $t$	This was applied to measure the level of exports from a participating country at a given year.
<b>Imports</b>	<i>IMPT</i>	Level of a country's imports at time $t$	This was applied to measure the level of imports from a participating country at a given year.
<b>Inflation Rate</b>	<i>INF</i>	Inflation rate of a country at time $t$	This is the effective inflation rate for a participating country for a given year.
<b>Exchange Rate</b>	<i>EXR</i>	Real exchange rate in USD of a country at time $t$	This is the real exchange rate for a participating country for a given year. The exchange rates were all standardised against the USD.

### 3.2.4. Estimation approach

The analysis in this study was based on the gravity model. Cheng and Wall (2005) assert that the gravity model of trade has been commonly used and recognised as a model for estimating the impact of a number of key policy issues in trade including but not limited to regional trading groups, monetary unions, political influences and trade biases. They add that typically – very often, in the case of regional integration – these variables and policy contributors are estimated deviations from normal trade activity trends predicted using the baseline gravity model. The study tested for robustness of the econometric models used as well as the analysis approach by applying panel data estimation tests, specifically: the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, the Wooldridge test to account for autocorrelation in panel data, as well as the Hausman test for fixed and random effect estimations.

Heteroscedasticity has been defined by Williams (2020) as the occurrence whereby the error terms do not have constant variance, recognising that the Breusch-Pagan test is a commonly used statistical test designed to detect any linear form of heteroscedasticity. Williams (2020) asserts that Breusch-Pagan/Cook-Weisberg tests the null hypothesis that the error variances are all equal. The alternative hypothesis would therefore be that the error variances are a multiplicative function of one or more variables. Williams (2020) offers that in STATA, which is the statistical model used in this study, the `Hetttest` function has the advantage of offering a number of ways to run the heteroscedasticity test, including testing for heteroscedasticity for a single variable in a model, multiple or all variables, or even variables that are not in the current model. The regression results discussed in the sections below therefore explore the `Hetttest` test output.

The models also account for autocorrelation using the Wooldridge test. Wooldridge (2002) notes that often in econometrics, having serial correlation in a model with lagged dependent variables may or may not cause the model estimators to be inconsistent, adding that it is often useful to have a simple way to detect serial correlation after estimation. Drukker (2003) suggests that since serial correlation in linear panel-data models would lead to biases in the standard errors, thereby producing skewed results, researchers need to identify serial correlation in the idiosyncratic error term in a panel-data model (Drukker, 2003). They propose that the Wooldridge (2002) test, which is appropriate for testing serial correlation in random-

or fixed-effects models, is particularly suitable as it can be applied under general conditions and is easy to implement (Drukker, 2003).

Westerlund and Wilhelmsson (2006) note that the gravity model has traditionally been estimated using cross-sectional data; however, they criticise its tendency to generate biased results due to heterogeneity of sampled countries not appropriately controlled for. They highlight that researchers have since turned towards panel data to mitigate against the gaps as it has the advantage of permitting for more general types of heterogeneity. Westerlund and Wilhelmsson (2006) therefore propose the practice of estimating the gravity model through a stepwise process of first making it linear by taking logarithms, followed by an estimation process through fixed or random effect estimations of the resulting log-linear model.

There are a number of specific country factors including but not limited to cultural, historical, and political factors that often remain unobserved and prove to be challenging in quantifying their impact on trade integration, hence the need to account appropriately for these added elements through the use of a simple fixed-effects model, making the assumption that there are fixed pair-specific factors that may be interrelated with bilateral trade (Cheng & Wall, 2005). The main purpose of adopting the fixed effects estimations in this study is to therefore control for heterogeneity which would be common in any analysis that considers factors or variables that impact bilateral country-pair outcomes such as trade effects. This approach is advocated for by Cheng and Wall (2005) who highlighted the importance of empirical implications of the fact that the gravity model is now commonly renowned as the baseline model for estimating the effects of regional global integration. Cheng and Wall (2005) evidenced in their study that the correct accounting for heterogeneity is critical to avoid the overestimation of the effects of integration on the volume of trade when estimating gravity models.

The random effects check was also performed as part of the robustness checks. Torres-Reyna (2007) contrasts the random effects to fixed effects model noting that it assumes the variation across entities to be random and uncorrelated with the predictor or independent variables included in the model (Torres-Reyna, 2007). The determination of the choice of estimators, based on the data characteristics, have therefore included a process of running both the fixed and random effects models as the former makes an assumption of homogeneity while the random effects model would allow for accounting for heterogeneity. Torres-Reyna (2007) suggests that to decide between fixed or random effects, a Hausman test can be conducted with

the null hypothesis assuming random effects to be the model of choice to test how uniquely errors are associated with the regressors.

## CHAPTER 4: DISCUSSION OF FINDINGS

### 4.1. Introduction

The findings of this study are discussed in this chapter, providing an overview of the results for the analysis which explored the key determinants of regional trade integration in the SADC, the relationship between regional trade integration and regional value chains, and lastly the impact of regional value chains on economic growth. A stepwise approach has been used in the analysis using data from 2000-2017, commencing with a descriptive analysis for the statistical indicators explored in the study. The descriptive statistics provided an overview of the central tendency for each indicator while the standard deviations indicate the dispersion of the data points as well as data outliers which are expected in many statistical analyses of this nature in the region, and are clearly evidenced in this study. Next, a trend analysis is explored as well as the pairwise correlations presented to establish if there are any associations between the dependent variables (economic growth, regional integration and regional value chains) and other economic and related factors in the study. Regression analysis is conducted thereafter for each model to determine relationships between dependent and independent variables with the data analysed using STATA.

### 4.2. Descriptive statistics

#### 4.2.1. Regional trade integration

In the study, regional trade integration has been equated as intra-regional exports less intra-regional trade imports at time  $t$  (2000-2017). The mean scores indicate that South Africa had the highest and positive mean score ( $M=9567$  units), much higher than the rest of the countries which mostly had a negative score except for Angola ( $M=294.5$  units), which was second highest followed by Tanzania ( $M=79.9$  units). The rest of the countries showed negative regional trade integration during the period.

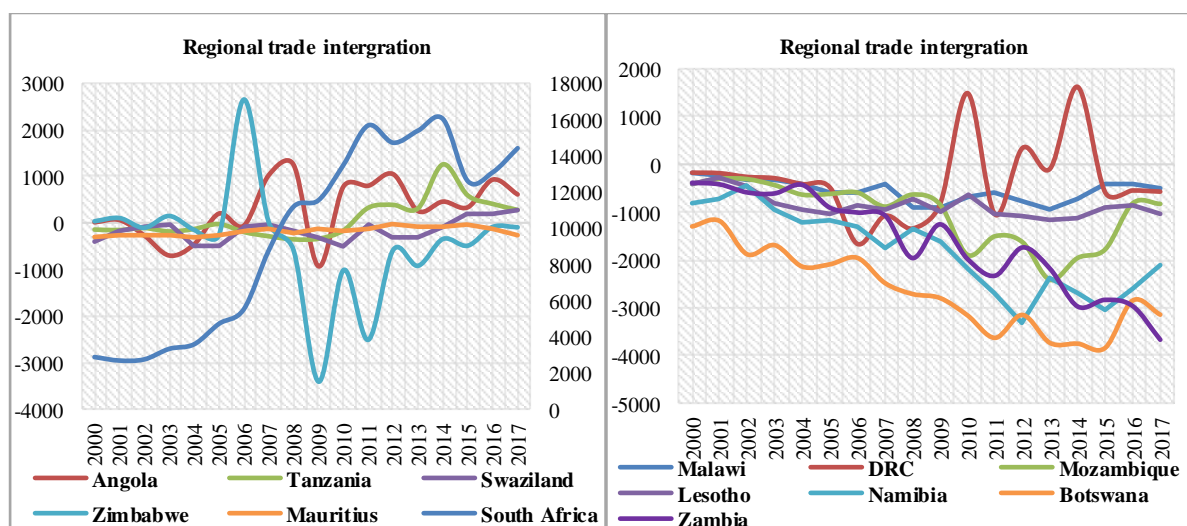
**Table III: Descriptive statistics: Regional trade integration (RTI)**

Country	Mean	Median	Std Dev	Max	Min	Skew
South Africa	9567.12	11356.26	5202.30	16020.39	2678.09	-0.24
Angola	294.50	293.20	626.85	1244.22	-933.23	-0.36
Tanzania	79.98	-122.46	412.89	1255.00	-355.45	1.45
Swaziland	-152.82	-126.95	237.94	274.00	-506.29	0.21
Zimbabwe	-424.16	-206.40	1208.26	2648.17	-3410.89	-0.24
Mauritius	-184.17	-163.50	91.03	-27.00	-304.00	0.19
Malawi	-549.70	-535.50	229.37	-179.95	-943.46	-0.28
DRC	-339.85	-447.01	841.31	1622.00	-1664.56	1.09
Mozambique	-1027.09	-822.00	655.09	-301.70	-2418.23	-0.80
Lesotho	-851.39	-916.25	257.31	-276.68	-1162.42	1.02
Namibia	-1797.39	-1692.23	863.43	-442.16	-3318.52	-0.17
Botswana	-2640.72	-2756.52	846.16	-1185.46	-3843.00	0.17
Zambia	-1629.13	-1497.77	1035.45	-385.30	-3672.00	-0.43
<b>Overall</b>	<b>345.18</b>	<b>2362.87</b>	<b>12507.39</b>	<b>20265.53</b>	<b>-19853.96</b>	<b>1.61</b>

Source: Candidate's estimate from research data

Figure 11 indicates a steady trend in regional trade integration for the highlighted countries from 2000-2005, which increased exponentially from 2006 through to 2012 where high fluctuations can also be observed in this period. The exponential growth seems to gradually taper off with where the values temporarily decreased in 2012, thereafter increasing for most countries from 2014-2017. There was a steep decline in the regional trade integration in South Africa between end of 2014 and 2015, before it picked up in 2016 to the end of the period under observation. 2017. Angola had the second relatively highest values in RTI, with a generally steady increasing trend over the study period, and a marked steep decline in 2008/9 before increasing again towards 2017. Tanzania had negative RTI from 2000 until 2010, when the values became positive towards 2017.

**Figure 11: Regional trade integration data distribution**



Source: Candidate's design from research data

Swaziland had negative RTI from 2000 till 2014 before realising positive RTI in 2015, 2016 and 2017. Zimbabwe had positive RTI in 2000 and 2001, and in 2006 and 2007 (record high). The country experienced mostly negative values over the study period except in the four years where positive effects were realised. Mauritius experienced negative RTI thorough the study period.

Notably, Malawi had relatively high RTI values (although negative), while DRC experienced sudden positive RTI trends between 2010 and 2014. Mozambique and Lesotho experienced negative RTI throughout the study period, but higher than Namibia, Zambia and Botswana (lowest) and which also experienced negative RTI and had the three lowest RTI values in the region which seem to be further declining. Notably, Mozambique RTI had been declining over the years but took a different direction in 2013 and has been improving steeply until 2017.

#### 4.2.2. Trade openness

This trade openness indicator, measured as export and import ration to GDP, has been observed over the period to explore the actual trade flows in the region. Table IV shows a summary of the data observed across the sample over the study period. The mean scores indicate that Angola had the highest and positive mean score (M=0.31 units), and significantly the highest positive value with the only other positive value being for Botswana (M=0.01), although a very low value.

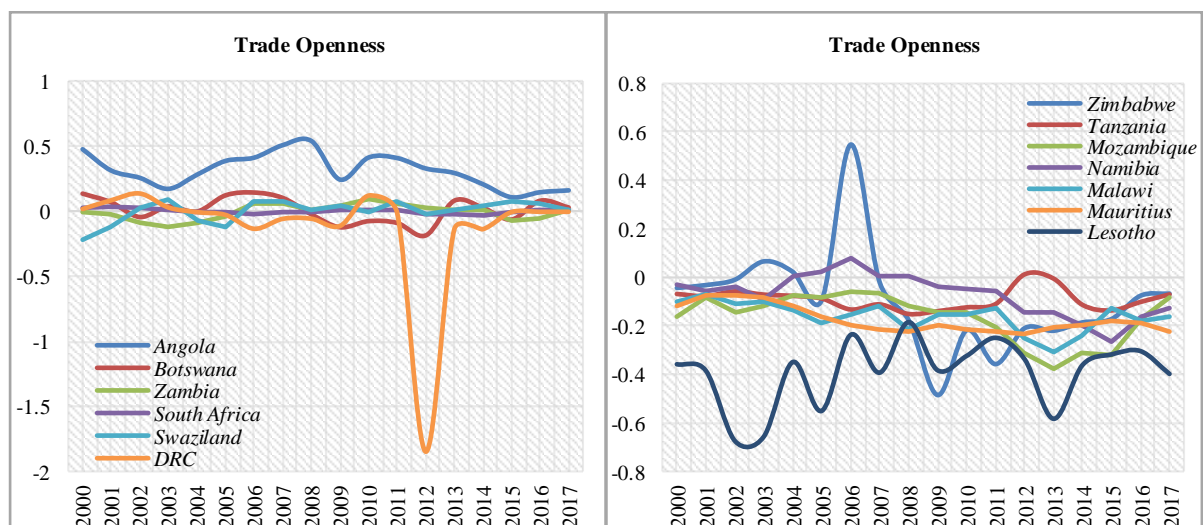
**Table IV: Descriptive statistics – trade openness**

Country	Mean	Median	Std Dev	Max	Min	Skew
Angola	0.31	0.30	0.13	0.54	0.11	0.13
Botswana	0.01	0.03	0.09	0.14	-0.19	-0.43
Zambia	-0.01	0.00	0.06	0.09	-0.12	-0.31
South Africa	0.00	0.00	0.02	0.03	-0.03	0.00
Swaziland	0.00	0.01	0.08	0.09	-0.22	-1.28
DRC	-0.12	-0.01	0.44	0.14	-1.85	-4.00
Zimbabwe	-0.10	-0.08	0.21	0.55	-0.49	1.34
Tanzania	-0.09	-0.09	0.04	0.01	-0.15	0.89
Mozambique	-0.17	-0.14	0.10	-0.06	-0.38	-0.96
Namibia	-0.07	-0.05	0.09	0.08	-0.26	-0.49
Malawi	-0.16	-0.15	0.06	-0.07	-0.31	-0.92
Mauritius	-0.17	-0.19	0.06	-0.07	-0.23	0.88
Lesotho	-0.39	-0.36	0.14	-0.18	-0.67	-0.89
<b>Overall</b>	<b>-0.96</b>	<b>-0.73</b>	<b>1.52</b>	<b>1.29</b>	<b>-4.79</b>	<b>-6.04</b>

*Source: Candidate's estimate from research data*

As can be observed in Table IV and Figure 12 below, average trade openness was mostly negative between 2000 and 2017, except for Angola (M=0.31; SD=0.13) and Botswana (M=0.01; SD=0.10). These results suggest that these two countries had trade openness which was positive and attractive due to their comparative advantages of being on the coast for Angola and shorter distance to coastal areas for Botswana. Surprisingly, however, and possibly contrary to the suggestion of coastal and distance comparative advantages, South Africa's trade openness was not clearly positive or negative and therefore observed as constant over the study period. A similar trend can be observed for Zambia and Swaziland which also had constant growth (almost no growth) throughout the study period. The DRC had a constant and steady trade openness trend over the time period except in 2012 where there was a drastic decrease indicating a possible outlier.

**Figure 12: Trade openness data distribution**



*Source: Candidate's design from research data*

Figure 12 also indicates that Lesotho had the lowest trade openness (export and import to GDP ratio) in the region, with up and down cyclical trends between 2000 and 2017. Namibia and Tanzania, although with negative trade openness had relatively better values compared to all countries depicted in this graph, Zimbabwe and Tanzania followed while Malawi, Mauritius and Mozambique were negative and among the lowest in trade openness.

#### **4.2.3. Regional value chains (FVA)**

Table V shows the descriptive statistics for the regional value chains indicator which has been observed through the level of foreign value added trade within the region at time  $t$  (2000-2017). The mean scores indicate that South Africa had the highest and positive mean score

(M=13,954,202.3 units), much higher than the other sampled countries. Although positive, the rest of the countries showed significantly lower values than South Africa which seemingly contributes the circa 76% of the regions FVA trade.

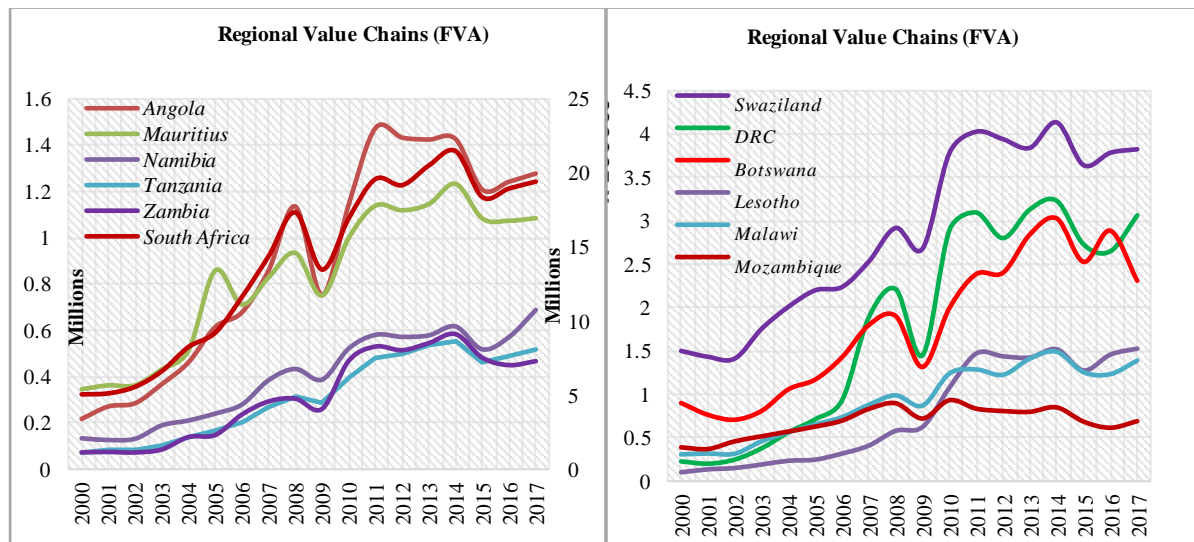
**Table V: Descriptive statistics – regional value chains**

Country	Mean	Median	Std Dev	Max	Min	Skew
South Africa	13,954,202.3	15671675.0	5919131.	21478650.0	5055402.00	-0.39
Angola	904,305.62	997485.65	454023.15	1474503.00	217566.90	-0.24
Mauritius	832,375.72	896854.80	308835.53	1233299.00	345761.70	-0.50
Namibia	398,179.98	410283.45	191271.26	688506.80	126423.00	-0.17
Tanzania	314,708.57	303658.85	180802.22	553534.90	71894.76	-0.07
Zambia	318,445.85	299130.55	187882.13	583836.00	72696.47	-0.07
Swaziland	287,055.96	279999.75	100730.03	413554.10	141341.10	-0.17
DRC	180,142.72	205227.00	119041.83	323128.40	20182.16	-0.21
Botswana	179,159.89	185194.50	79288.83	302771.40	70855.68	0.08
Lesotho	78,921.06	60368.42	58591.09	152855.70	10297.68	0.17
Malawi	92,487.13	93572.03	41177.49	149230.60	30966.20	-0.27
Mozambique	68,430.95	69513.63	17049.21	93354.41	37112.65	-0.45
<b>Overall</b>	<b>17,608,415.75</b>	<b>19,472,963.63</b>	<b>7,657,823.77</b>	<b>27,447,224.31</b>	<b>6,200,500.30</b>	<b>-2.29</b>

*Source: Candidate's estimate from research data*

The lowest average FVA values were in Mozambique, followed by Malawi and Lesotho. The second highest FVA was in Angola, followed by Mauritius, and twice or three times less in Namibia, Tanzania, and Zambia. Swaziland, Botswana, and DRC which had lower FVA but relatively higher than in Lesotho, Malawi and Mozambique. Figure 13 indicates that generally regional value chains steadily increased in all countries over the study period. South Africa, Angola and Mauritius had similar patterns of FVA in the study period; a steep increase between 2000 and 2008 and a drop in 2009 in the three countries before rising sharply in 2010/2011. Angola reached a record peak in 2011, while South Africa and Mauritius reached record peaks in 2014. The three countries saw a drop in FVA towards 2015 and an improvement in 2016 and 2017.

**Figure 13: FVA data distribution**



Notes: \*Right axis = South Africa only.  
 Source: Candidate's design from research data

Swaziland, DRC and Botswana also had a similar pattern of an increase from 2000 and sudden decline in 2009 before picking up in 2010 and steadily increasing through 2011/12 and 2014 before declining in 2015. In 2016 Botswana, FVA dropped while in Swaziland and DRC it picked up towards 2017. The three countries with the lowest FVA had relatively slow growth in FVA from 2000-2008 before dropping in 2009, slightly increasing in 2010 towards 2014, dropping slightly again in 2015, and then picking up in 2016 and 2017.

#### 4.2.4. Economic Growth

The level of economic growth was analysed over the period through observation of the GDP trends during the period under study. The mean scores indicate that South Africa had the highest mean score (M=281,183.28 units), also significantly higher than the rest of the countries.

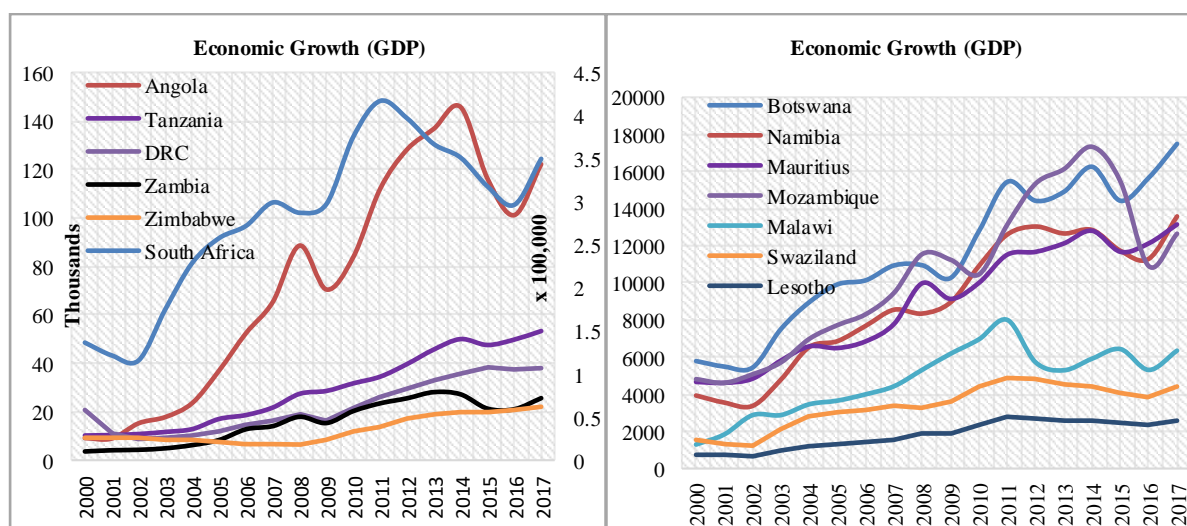
**Table VI: Descriptive statistics – economic growth**

Country	Mean	Median	Std. Dev	Max	Min
South Africa	281,183.28	296774.86	93332.36	416878	115748.1
Angola	74,107.09	77107.33	47342.33	145668	8931.06
Tanzania	28,953.84	27981.50	15591.91	53281	10182.08
DRC	21,974.55	19780.99	10730.36	37981	8733.15
Zambia	15,771.36	16619.00	8771.09	28076	3600.40
Zimbabwe	12,515.77	9479.52	5596.75	22041	6450.55
Botswana	11,486.60	10941.53	3879.65	17486	5439.97
Namibia	8957.87	8753.62	3535.03	13579	3374.25
Mauritius	8989.93	9559.50	3043.76	13146	4613.55
Mozambique	10,383.00	10678.74	4091.68	17327	4613.57
Malawi	4773.47	5300.00	1833.01	8004.79	1291.00
Swaziland	3386.86	3486.12	1182.41	4830	1228.97
Lesotho	1828.42	1876.50	753.58	2787	659.30
<b>Overall</b>	<b>484,312.04</b>	<b>498,339.21</b>	<b>199,683.92</b>	<b>781,084.79</b>	<b>174,865.95</b>

Source: Candidate's estimate from research data

South Africa's GDP consisted of more than half of the region's total GDP, followed by Angola which had four times less than South Africa's GDP. Tanzania is third and DRC fourth in terms of average GDP; their averages were three and four times less than that of Angola respectively. Zambia, Zimbabwe, Botswana and Mozambique had the next level of economic growth with the poorest country in terms of GDP being Lesotho, followed by Swaziland, Malawi and Mauritius.

**Figure 14: GDP data distribution**



Notes: \*Right axis = South Africa only.

Source: Candidates design from research data

In Figure 14 above, South Africa and Angola had similar trends in terms of economic growth during the 2000-2017 period. GDP increased steeply for both countries between 2001 and 2007, dropping sharply in 2008 and picking up in 2009. The GDP for South Africa increased from 2009 to 2011 (record high) before steeply declining in 2012 towards 2016 and picking up in 2017. GDP for Angola steeply increased after 2009 and had a record high in 2014 before a steep decline towards 2016 and picking up in 2017. Tanzania, DRC Zambia and lastly Zimbabwe had lower GDPs compared to South Africa and Angola and had steady increase over years. The figure also shows that Botswana and Mozambique had relatively higher GDPs compared to Namibia, Mauritius, Malawi, Swaziland, and Lesotho. The GDPs for all these countries saw a sudden decline in 2008 before increasing again towards 2015/16. Notably, there was a record high for Mozambique in 2015 before a sharp drop towards 2016/17, while Botswana also saw a record high in 2014 followed by a decline in 2015 and a rise in 2016/17.

#### 4.2.5. Exports

The level of exports of the SADC countries over time has been observed as per Table VII below. Consistent with most variables, South Africa emerges as having the highest mean score (M=68,895.73 units), also much higher than the rest of the countries with Angola (M=36,814.50 units) only exporting about half of South Africa's export value based on mean score.

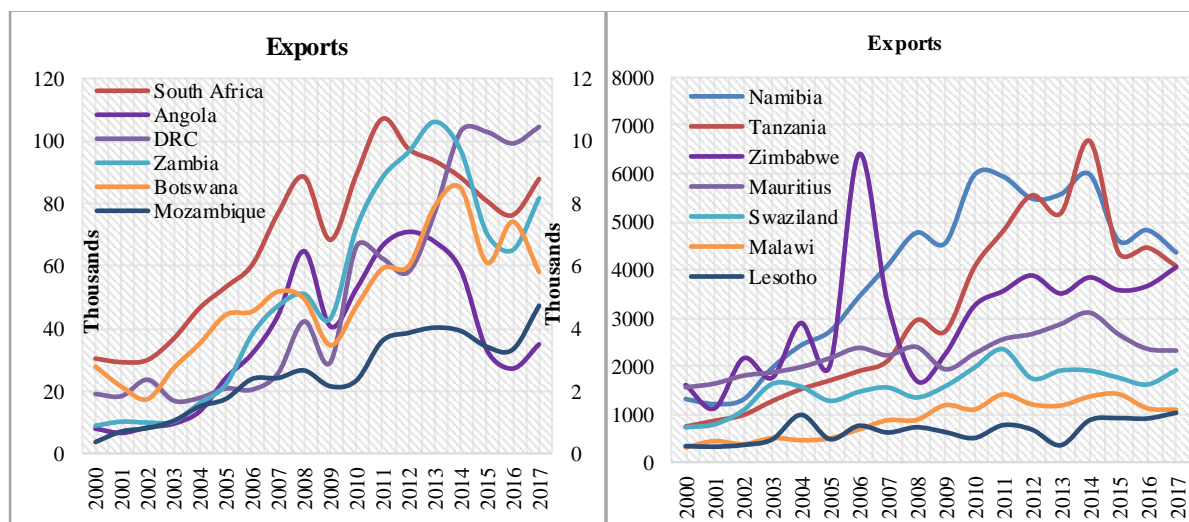
**Table VII: Descriptive statistics – exports**

Country	Mean	Median	Std Dev	Max	Min
South Africa	68,895.73	76565.89	25543.91	107033.91	29184.92
Angola	36,814.50	33976.50	22642.96	70863.08	6534.32
DRC	5038.40	3566.03	3414.24	10445.00	1686.03
Zambia	5185.24	4909.29	3397.73	10606.85	887.57
Botswana	4875.16	4823.85	1939.13	8482.89	1737.31
Mozambique	2497.93	2396.63	1292.11	4725.00	363.96
Namibia	3917.94	4457.86	1698.56	5984.14	1208.29
Tanzania	3105.28	2836.70	1827.22	6679.62	742.22
Zimbabwe	3029.17	3276.90	1251.50	6399.24	1120.05
Mauritius	2261.92	2285.77	420.16	3108.79	1556.82
Swaziland	1564.22	1597.84	411.96	2349.23	726.41
Malawi	893.11	985.51	385.27	1417.00	308.27
Lesotho	650.79	652.68	234.93	1028.00	322.25
<b>Overall</b>	<b>138,729.39</b>	<b>142,331.45</b>	<b>64,459.68</b>	<b>239,122.75</b>	<b>46,378.42</b>

*Source: Candidate's estimate from research data*

South Africa constituted almost half (49%) of the total exports in the region while Angola constituted of a quarter of the exports of the region during the period 2000-2017, together accounting for about three quarters of the exports in the region. DRC, Zambia and Botswana were next with less than 5% of export contribution in the region. Malawi and Lesotho had the least shares in terms of net exports to the region, while Mozambique, Namibia, Tanzania, Zimbabwe, Mauritius and Swaziland contributed between 1% and 2% of exports to the region.

**Figure 15: Exports data distribution**



*Source: Candidate's design from research data*

Figure 15 above shows that exports for South Africa and Angola followed a similar pattern; they increased steeply from 2000-2007 and dropped in 2008 before increasing in 2009 towards 2011 where these reached a record high. The exports for the region have been declining since 2012 through 2015 and 2016 before picking up in the 2016/17 period. DRC had an inconsistent pattern of lows (2009, 2012, 2016) and highs (2008, 2011, 2014) with an increasing pattern over the years, while Zambia had an increasing export pattern with a 2009 and 2015/16 lows and record high in 2013/14. Botswana saw an overall increasing pattern with a record low in 2008 and record high in 2013/14 while Mozambique had a steady increasing pattern with a low in 2009/10 and thereafter steady increase up to 2015/16 before rising again.

Exports in Namibia have been seemingly increasing steadily over the years, with a slight decrease in 2008/9, rising again towards 2010/11 before steadily decreasing towards 2013. These exports decreased sharply in 2014 towards 2015/16 and 2017. Tanzania had an increasing steady flow of exports over time, with a dip in 2008/9 and reaching a record high in 2013/14 before drastically declining in 2015 towards 2016 and 2017. Zimbabwe exports values

were inconstant over time with short-term ups and downs and an extreme record high in 2006/7 before drastically decreasing towards 2008. The exports then increased slowly towards 2012/13 through 2014/15 and 2016/17. Mauritius, Swaziland, Malawi, and Lesotho also experienced fluctuations over the years with slow increase in exports over the years.

#### 4.2.6. Imports

Predictably, the highest intra-regional imports time  $t$  (2000-2017) indicate that South Africa had the highest mean score (M=69930.19 units), significantly higher than the rest of the countries. This equates to 53% of the overall intra-regional imports. Angola was the second highest, however, at less than a third of South Africa's import score (21%) contributing only 11% to the overall intra-regional imports.

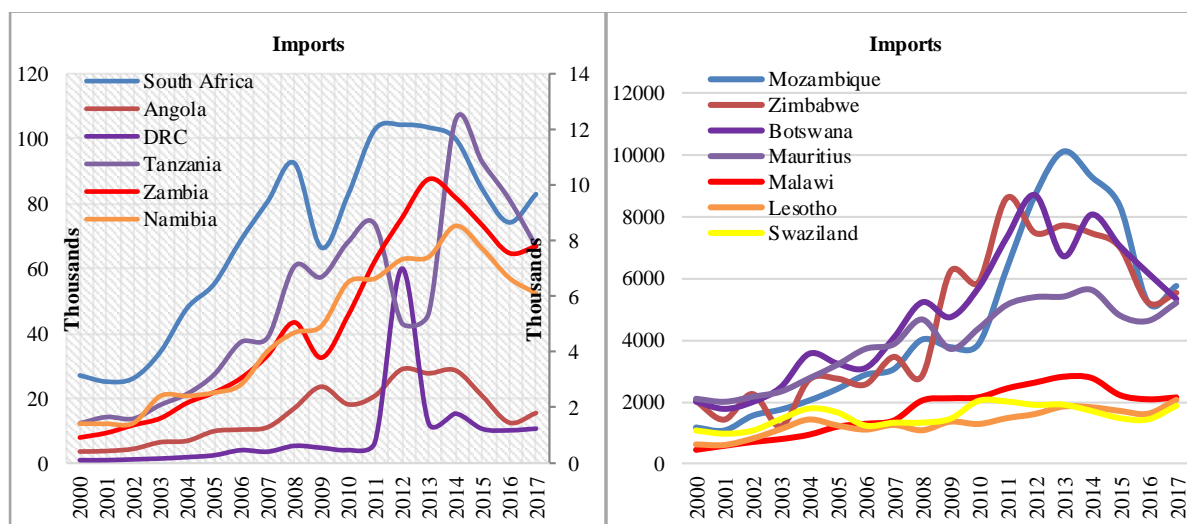
Similar to the export trends, South Africa accounted for at least half of the region's total imports share, while Angola accounted for at least a tenth (10%) of the imports. DRC and Tanzania accounted for 6% and 4% of imports respectively while Zambia, Namibia, Mozambique, Zimbabwe, Botswana and Mauritius accounted for less than 4% of total regional imports. Swaziland had the least contribution in terms of regional imports, followed by Lesotho and Malawi, which accounted for less than 2% of the regional total within the study period.

**Table VIII: Descriptive statistics – imports**

Country	Mean	Median	Std Dev	Max	Min
South Africa	69930.19	77408.80	27892.82	104267.57	25110.74
Angola	14987.14	13988.50	8640.07	28916.33	3586.62
DRC	8660.04	4392.52	13531.11	59974.00	932.01
Tanzania	5694.10	5213.00	3341.51	12327.36	1433.74
Zambia	5031.55	4469.34	3178.43	10210.80	923.31
Namibia	4722.93	4811.57	2451.20	8531.09	1416.87
Mozambique	4509.56	3813.94	2945.50	10099.13	1063.41
Zimbabwe	4565.79	4330.09	2457.56	8595.59	1196.11
Botswana	4838.26	4974.54	2192.40	8688.49	1764.49
Mauritius	3941.82	4112.45	1260.53	5617.99	1993.12
Malawi	1698.79	2053.80	791.55	2805.08	437.86
Lesotho	1326.76	1311.17	410.73	2059.00	593.93
Swaziland	1528.58	1454.33	336.98	2023.29	960.77
<b>Overall</b>	<b>131435.51</b>	<b>132334.05</b>	<b>69430.39</b>	<b>264115.72</b>	<b>41412.98</b>

*Source: Candidate's estimate from research data*

**Figure 16: Imports data distribution**



Notes: \*left axis = South Africa and Angola.  
 Source: Candidate's design from research data

Also consistent with exports trends, imports have been generally increasing over time for all countries with a decline in the 2008 and 2009 period. South Africa imports drastically increased between 2000 and 2007, dropped in 2008 and increased again in 2009 towards 2012 before stabilising towards 2014. The imports dropped in 2015 to 2016/17. Angola imports rose steadily until 2009, dropped in 2010 before increasing again in 2011 towards 2014 and dropping again in 2015/16 and 2017. DRC imports were almost trendless, steady and consistent values until 2011 before an uncharacteristic drastic increase in 2012 and back to a steady consistent trend between 2013 and 2017. Tanzania had an increasing trend over the years until 2011 and 2012 when imports dropped drastically before another drastic increase again in 2013 towards 2015 (record high) followed by a steep drop towards 2016 and 2017. Zambia and Namibia had increasing trends in imports with a drop in 2008 and followed by an upward steep slope reaching record highs in 2013 (Zambia) and 2014 (Namibia) and followed by a drop in 2014/15 towards 2016 and 2017.

Mozambique, Zimbabwe, Mauritius and Botswana experienced similar import trends since 2000, steadily increasing to 2007/8 with a temporal drop around 2008/9 before increasing again to reach record peaks in 2011 (Zimbabwe), 2012 (Botswana), 2013 (Mozambique), and 2014 (Mauritius). Malawi, Lesotho and Swaziland had steady flat slopes in terms of annual import increase with record peaks around 2014 and decline between 2015 and 2017.

#### 4.2.7. Inflation rate

Table IX indicates that Angola (M=23.0 units), followed by Malawi (M=15.8 units), Zambia (M=13.5 units) and the DRC (M=10.5 units) had the highest values for average inflation rate between 2000 and 2017. Tanzania, Botswana, Swaziland and Lesotho had average inflation rates around 7.0. Mauritius had the lowest inflation rate in the study period, followed by South Africa and Namibia. In Figure 17 below, inflation rates for Malawi and DRC have intermittent short-term up and downward trends while Zambia seems to have been steady over time and decreasing in 2016. Angola had an inflation rate that was high between 2000 and 2003, but drastically dropped in 2004 through 2005 and 2006 to reach a record low in 2007. This inflation rate continued steadily from 2008 through 2012 up to 2014 before sharply rising in 2015 and 2016.

**Table IX: Descriptive statistics – inflation rate**

Country	Mean	Median	Std Dev	Max	Min
Angola	23.01	13.48	23.28	98.22	7.28
Malawi	15.83	14.36	7.35	29.58	7.41
Zambia	13.54	11.55	6.45	26.03	6.43
DRC	10.51	9.72	8.98	31.52	0.74
Tanzania	7.40	6.03	3.23	16.00	4.74
Botswana	7.21	7.31	2.68	12.70	2.81
Swaziland	7.17	6.16	2.73	12.66	3.45
Lesotho	6.54	5.69	7.92	33.81	-9.62
Namibia	5.83	5.60	1.92	9.45	2.28
South Africa	5.41	5.69	2.43	10.06	-0.69
Mauritius	4.75	4.06	2.50	9.73	0.98
<b>Overall</b>	<b>107.2</b>	<b>89.65</b>	<b>69.47</b>	<b>289.76</b>	<b>25.81</b>

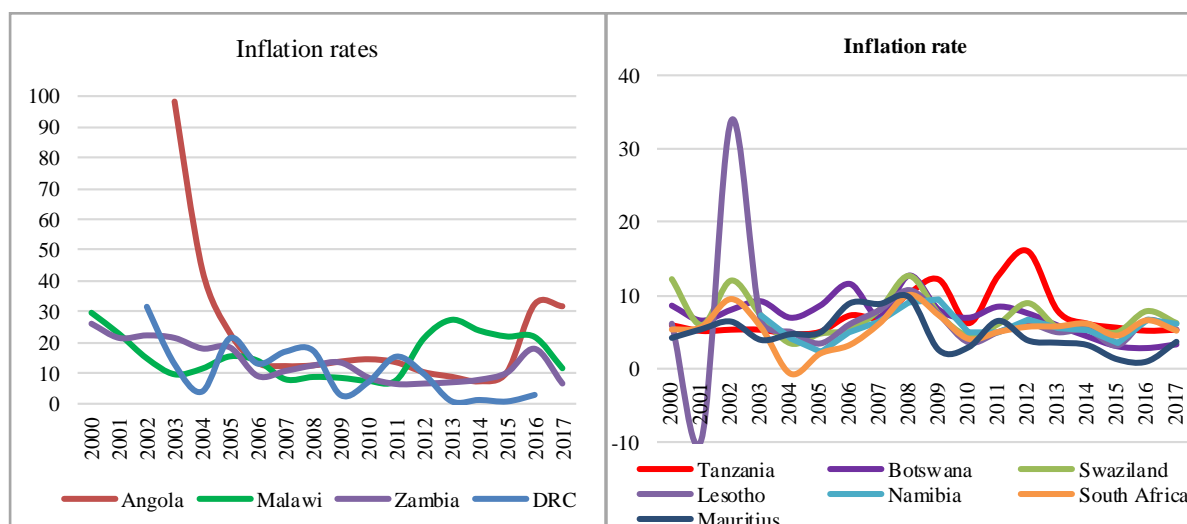
Notes: \*Extreme outlier data for DRC and Angola (2001/3) was excluded.

*Source: Candidate's estimate from research data*

Lesotho had inflation rates that were unstable in the earlier years, dropping to a negative between 2000 and 2001, and drastically climbing to a record high before drastically dropping again to the period average of between 5% and 10%. Tanzania had a steady pattern over the study period with a notable drop in 2010 and an increase in 2011/12 before decreasing again in 2013/14 and a steady trend up to 2017. South Africa's inflation has been steady between 4% and 7% except in 2008 when it reached a record high of 10%. The rest of the countries (Namibia, Mauritius, Swaziland, Botswana) had similar patterns with steady increases in inflation rates in 2004, rising again towards 2008 (peak) before dropping in 2009 until 2017.

Inflation data for Zimbabwe presented significant sporadic trends and has been excluded from the above view as a significant outlier.

**Figure 17: Inflation rates data distribution**



*Source: Candidate's design from research data*

#### 4.2.8. Exchange rate

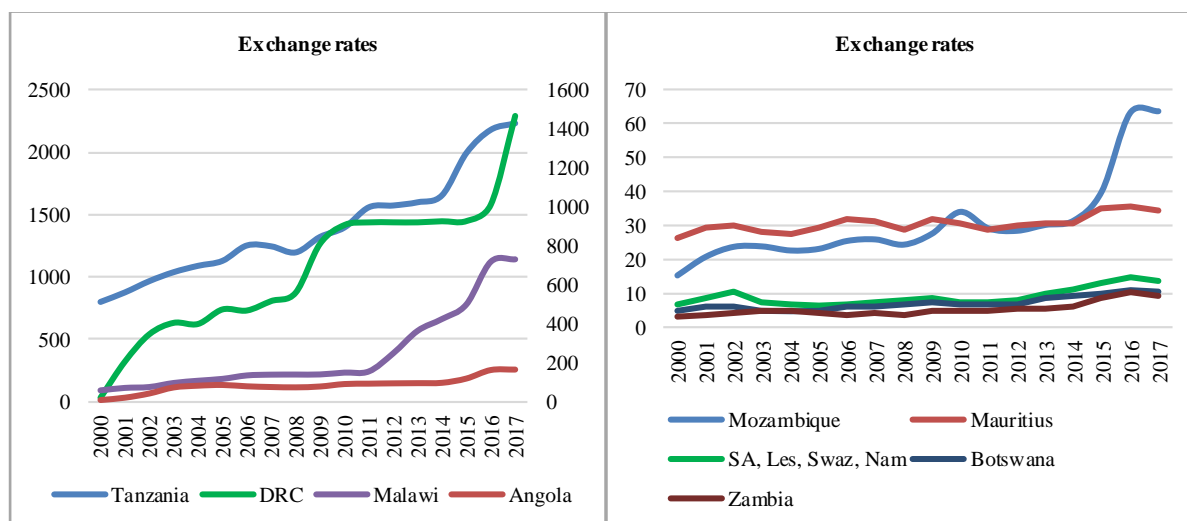
Tanzania had the highest average exchange rate in the region between 2000 and 2017 at (M=1393.70 units), followed by DRC (M=1393.70 units), and Malawi (M=243.56 units). This was followed by Angola, Mozambique and Mauritius while the lowest average exchange rates were in Zambia, Botswana, and the South Africa cluster that includes Lesotho, Swaziland and Namibia.

**Table X: Descriptive statistics – exchange rate**

Country	Mean	Median	Std Dev	Max	Min
Tanzania	1393.70	1286.11	421.02	2228.86	800.41
DRC	677.68	684.54	354.50	1464.42	21.82
Malawi	243.56	140.84	214.33	730.27	59.54
Angola	86.56	85.35	39.19	165.92	10.04
Mauritius	30.53	30.34	2.56	35.54	26.25
Mozambique	30.64	26.68	13.06	63.58	15.23
SA, Les, Swaz, Nam	8.95	8.24	2.52	14.71	6.36
Botswana	7.07	6.81	1.92	10.90	4.69
Zambia	5.35	4.79	2.06	10.31	3.11
<b>Overall</b>	<b>2484.04</b>	<b>2273.7</b>	<b>1051.16</b>	<b>4724.51</b>	<b>947.45</b>

*Source: Candidate's estimate from research data*

**Figure 18: Exchange rate data distribution**



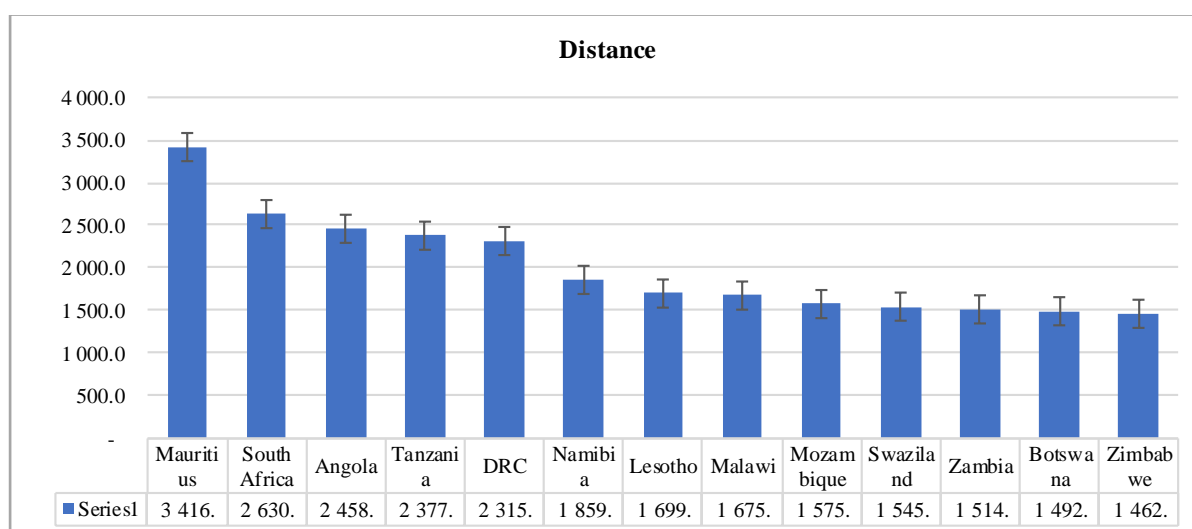
*Source: Candidate's design from research data*

Figure 18 indicates that Tanzania and the DRC had steadily increasing trends over time, highest in the region and reaching record high in 2016/17. Malawi had a steady exchange rate until 2011 when it skyrocketed until 2016/17. Angola had a steady inflation rate over the years, with no steep fluctuations until 2017. Noticeable is the steady increase in the Mozambique exchange rate, with a short-term slight increase in 2010. The exchange rate continued to increase steadily from 2011 and 2014, before escalating in 2015 and 2016 (record high). The rest of the countries had steady exchange rates over the study period with slight increases in 2016/17. Similar to inflation rate data, the analysis of this indicator for Zimbabwe has been excluded due to the inconsistency and sporadic behaviour of the data.

#### 4.2.9. Distance

The graph below shows the average distance per country in relation to the rest of the countries in the REC. Mauritius had the greatest distance in terms of trade in the region, followed by South Africa, Angola and Tanzania. Zambia, Botswana and Zimbabwe had the least average distances in relation to the countries under observation. Interestingly, countries with the highest average distance are countries that are not landlocked, with those with the lower end of the average distances spectrum mostly landlocked. There also seems to be high variances in average distances for countries with high average distance, however, the discrepancies decrease as the average distances decrease with countries in the middle (Namibia, Malawi, Mozambique and Swaziland) to the end of the spectrum with small insignificant differences.

**Figure 19: Distance data distribution**



*Source: Candidate's design from research data*

#### 4.2.10. Common currency and landlocked indicators

Table XI shows a summary of the common currency and landlocked indicators explored in the study. Of the countries in the REC, four countries namely Lesotho, Namibia, South Africa, and Swaziland had common currency (the Rand). Although these countries do have their own officially recognised currencies, their currencies are also pegged to the Rand and most use it as a recognised transacting currency outside of their formal currencies. Six of the countries, on the other hand, are landlocked with these countries observed as mostly having the lowest trading volumes in the REC in terms of import and export values.

**Table XI: Descriptive statistics – common currency and landlocked indicators**

Country	Common currency	Landlocked
Angola	-	-
Botswana	-	X
DRC	-	-
Lesotho	X	X
Malawi	-	X
Mauritius	-	-
Mozambique	-	-
Namibia	X	-
South Africa	X	-
Swaziland	X	X
Tanzania	-	-
Zambia	-	X
Zimbabwe	-	X
Total	4.00	6.00

*Source: Candidate's estimate from research data*

### **4.3. Data transformation**

One of the assumptions for most parametric tests to be considered reliable for statistical analysis is that the data utilised is approximately normally distributed (Saunders, Lewis, & Thornhill, 2007). The descriptive tables for each of the indicators above show that the data has very large standard deviations, and extreme skewness signifying that the data largely deviates from normality. As is the norm in such cases, as supported by Feng et al. (2014) who highlighted that when the distribution of the continuous data is non-normal, transformations of data are applied to make the data as "normal" as possible to increase the legitimacy of the associated statistical analyses.

The outliers in the data distribution have been addressed through winsorization of the data which Reifman and Keyton (2010) attest to as one of the successful methods of handling the problem of outliers in a distribution of data. They note that through this method, one converts the value(s) of data points that are outlying high to the value of the highest data point not considered to be an outlier, adding that the advantage of this method is its ability to preserve the data distribution between the highest (or lowest) values in a distribution, whilst safeguarding against undesirable effects of extreme outliers (Reifman & Keyton, 2010). Based on the outcomes from the diagnostic analysis performed above which highlighted apparent outliers which can be attributed to the general faulty data recording in the region as well as intermittent economic occurrences leading to the generation of extreme values, the winsorization approach was therefore adopted for this study. This allowed for inferential analysis for the following statistical tests to satisfy the underlying assumption of the use of normal data in parametric statistical analysis.

### **4.4. Panel data – regression analysis**

The results from the three estimated regression equations (models 1 to 3) are analysed and discussed as per the sections below. Diagnostic tests were conducted for all the models using the fixed effects model (FEM) and the random effects model (REM) as well as testing for the presence of multicollinearity between the variables.

#### 4.4.1. Model 1: Determinants of regional trade integration amongst SADC countries

The first model of this study sought to identify the determinants of regional trade integration in the SADC REC from a list of key exploratory variables that impact regional trade activities. The correlation and model estimation results are depicted in Tables XII and XIII.

##### *Correlation analysis*

The possible linear associations between the variables were explored and the table below shows the correlation analysis for the variables explored in the first model.

**Table XII: Correlation analysis – model 1**

	1	2	3	4	5	6
<b>1.Regional trade integration</b>	1					
<b>2.Trade openness</b>	0.224***	1				
<b>3.Distance</b>	0.468***	0.0947	1			
<b>4.Common currency</b>	0.305***	-0.143**	-0.079	1		
<b>5.Landlocked country</b>	-0.350***	-0.184***	-0.708***	0.051	1	
<b>6.Infrastructure</b>	0.227***	0.045	0.482***	0.446***	-0.362***	1

Notes:\*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

*Source: Candidate's estimate from research data*

The results indicate a varying trend in the existence, significance and direction (+/-) of the relationships between the dependant variable (RTI) and independent variables as well as between the exploratory/independent variables themselves. Interestingly, there seems to be, on average, positive associations between the dependant variable and independent variables with the only negative association observed with landlocked countries with a pairwise correlation coefficient of -0.350. The highest positive association observed with the dependant variable is with distance (0.468,  $p < 0.01$ ), with other high pairwise associations observed between infrastructure and distance (0.482,  $p < 0.01$ ) as well as infrastructure and common currency (0.446,  $p < 0.01$ ). Mostly negative association can be seen with the landlocked variable with trade openness indicating correlation coefficient of (-0.184,  $p < 0.01$ ), distance (-0.708,  $p < 0.01$ ) and infrastructure (-0.362,  $p < 0.01$ ). The high correlation between landlocked and distance is indicative of multicollinearity between the variables and has been addressed through stepwise estimation in the regression model. Landlocked is only positively correlated with common currency although the association is weak (0.051,  $p < 0.01$ ). Trade openness seemingly has weak and insignificant associations with all the variables.

### ***Regression results***

Table XIII shows the regression output for the first model. Because of the high correlation coefficient between distance and landlocked (-0.708,  $p < 0.01$ ) as evidenced in Table XII above, the regression model estimation below, accounts for this multicollinearity through a stepwise estimation of the regression equation. The first output (Model 1) in Table XIII includes distance as an explanatory variable without landlocked, while the second output (Model 2) shows the inclusion of landlocked as the explanatory variable with distance excluded. While these variables can be considered closely related as often when a country is landlocked, the infrastructure to access such a country becomes even more critical to enable accessibility and effective trade. In this analysis however, the two variables are not considered substitutes but rather as complementary variables in trade analysis, hence the adoption of the stepwise estimation approach rather than excluding one of the variables.

The model estimation resulted in coefficients of determinations of approximately 46% and 29% for Models 1 and 2 respectively. This implies that when considering the countries' heterogeneity effects, 46% and 29% of overall variation of the SADC nation's RTI is explained by the explored variables while 54% and 71% are explained by unaccounted factors in the model. Consequently, the fixed effects model is not appropriate in explaining the variation of RTI in the SADC region with an indication that other variables other than those included will add value to explaining the RTI trends for SADC countries. The autoregressive coefficient (AR) was observed to be insignificant at 0.597 or 59%, suggesting that there is no serial order correlation in the model. Additionally, the test for heteroscedasticity shows that the p-value is not significant in model 1 (37%) but significant in model 2 (74%).

The Hausman test was conducted to determine the best fit estimation model between the fixed and random effects model. Essentially, the Hausman specification test was utilised to detect whether the predictor variables are endogenous in the regression model. The null hypothesis assumed that the preferred model is random effects with the alternate hypothesis being that the model is fixed effects to test for correlation between the unique errors and the regressors in the model (Glen, 2017). As shown in Table XIII, the explanatory capacity of the RTI model is detected using the Wald Test which showed the probability value significant. Deductively, since the overall Wald Test is significant, this implies that r-squared does not equal zero, and

the relationship between the dependant variable (RTI) and the independent variables is statistically significant.

**Table XIII: Regression Model 1 – output**

Dependent variable: Regional trade integration				
	Model 1		Model 2	
	REM		REM	
	Coef.	z	Coef.	z
<b>Constant</b>	-1.334** (0.571)	-2.34	-0.032 (0.294)	-0.11
<b>Trade openness</b>	0.342*** (0.028)	12.39	0.342*** (0.028)	12.39
<b>Distance</b>	0.001** (0.000)	2.11		
<b>Landlocked country</b>			-0.404 (0.351)	-1.15
<b>Common currency</b>	0.551* (0.330)	1.67	0.513 (0.381)	1.35
<b>Infrastructure</b>	-0.028 (0.048)	-0.6	-0.022 (0.048)	-0.46
Wald $\chi^2(4)$	160.74		157.4	
Prob > $\chi^2$	0.000		0.0000	
R-Squared	0.4548		0.2899	
AR(1): F	0.597		0.597	
Prob > F	0.4577		0.4577	
Hetest $\chi^2$	37.12		74.24	
Prob > $\chi^2$	0.000		0.000	
Hausman $\chi^2$	0.51		0.21	
Prob > $\chi^2$	0.7745		0.8993	
Countries	13		13	
Observations	139		139	

Notes: Hetest denotes the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity; AR (1) denotes Wooldridge test for autocorrelation in panel data; Hausman denotes the test for RE versus FE. \*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

*Source: Candidate's estimate from research data*

The results show a positive relationship between trade openness (TO) and RTI ( $\beta=0.342$ ,  $p<0.01$ ) at 1% significance level for both model 1 and 2. The results suggest that a unit increase in trade openness is likely to improve RTI by as much as 0.342 times with results significant at 1%. This reflects new and improved trade partnerships hence improving the export and import flows and their ratio to GDP of the individual countries in the REC as a result of increased intra-regional trade demand. This would lead to budding trade relations amongst the countries as a collective, thereby positively impacting the level of trade integration in the

region. These findings are consistent with the causality test performed by Agbetsiafa (2020), who found a positive impact of promoting exports and imports of intermediate goods, capital, improving the infrastructure, human capital, and institutional quality, highlighting the need to address shortcomings in the regional financial system and thereby affecting regional trade-growth dynamics favourably to contribute to sustainable economic growth.

Similarly, the results show that RTI is sensitive to common currency with positive significant relationships observed for model 1 ( $\beta=0.551$ ,  $p<0.10$ ) and model 2 ( $\beta=0.513$ ,  $p<0.10$ ). Both models predict that a unit increase in common currency is likely to improve/increase RTI by as much as 0.55%, statistically significant at 10%. Consistent with the findings of this study, He, Zhang and Zhu (2019) found that currency integration enhances RTI trade, however, they note that the currency-trade-integration relationship varies with a few key RTI characteristics. Some of characteristics mentioned by He et al. (2019) included the number of member countries, differences in economic development among member countries, and trade and financial openness amongst others.

There is a significant positive relationship between RTI and distance in that an increase distance by 1 km will result in a corresponding increase of RTI by 0.001% with the relationship significant at 5%. These results are seemingly inconsistent with most existing trade related literature which finds that although this variable should have a significant relationship to trade integration, an increase in average distance should lead to higher costs of trade and thereby lead to a decrease in intra-regional trade thereby having a negative impact of RTI. Additionally, the value of 0.001% seemingly understates the impact of this relationship. Khosla (2014) found that a 1% increase in the distance between two countries would decrease the volume of trade by 0.87% for exports and 0.83% for imports. Khosla (2014), however, added that in some instances, larger distances relative to all other countries in an identified group could have the opposite effect of increased bilateral trade between two countries due to a lack of alternative trading partners. This is also the case when countries have preferential trading arrangements as is often the case within a REC, therefore supporting the findings of this study. UNCTAD (2012) notes that the impact of geographical distance in Africa can be observed as being more prominent, driven by the low volumes of trade amongst African countries. (UNCTAD, 2012), quote that intra-African trade was 10% of Africa's total trade in 2009, much lower than its trade position with other developing country regions such as America (22%) and Asia (50%). UNCTAD (2012) also found Africa's trade pattern to be amongst widely dispersed countries

as opposed to other regions where countries trade more with their neighbours. The model predicts a negative relationship between RTI and landlocked nations, implying that if a country is landlocked this will correspond to a decrease of RTI by 0.4%, however finding the results insignificant. This implies that landlocked nations have higher trading costs than coastal countries, thus landlocked nations often do not have comparative advantage in those products that use raw materials from abroad (United Nations Development Programme, 2011). Allard et al. (2016) highlighted that landlocked countries often remain more closed economies with exports contributing a low percentage to the country's GDP and they still struggle to increase trade integration, especially due to by poor transportation infrastructure and limited interest from emerging markets.

Infrastructure is negatively related to RTI with a coefficient of (-0.028) for model 1 and (-0.022) for model 2, however this relationship is not significant for either model. The direction of this relationship is in line with Moisé and Sorescu (2015) who found that there was a negative relationship between investment in physical infrastructure and trade integration in South Asia and Latin America and the Caribbean (LAC). Moisé and Sorescu (2015) also found that regardless of infrastructural investment in South Asia and LAC, they were found to display poor regional trade. The quality of infrastructure does however enhance trade and therefore countries driving trade integration should invest in boosting trade infrastructure, hence the researcher's expectations would be that this would be a significant relationship.

#### **4.4.2. Model 2: Regional trade integration and RVCs**

The second model explored the relationship between regional trade integration and RVCs. The correlation and model estimation results are depicted in Tables XIV and XV below.

##### ***Correlation analysis***

Table XIV shows the correlation among the explored variables in the second model, for the period under study. The highest positive correlation can be observed between RVCs and economic growth (GDP) with a pairwise correlation coefficient (0.955). This implies that an increase in regional value chains in the SADC region will explain an increase in economic growth. The least pairwise correlation is found between tariffs and RVCs with the coefficient negative and insignificant at -0.011. The only other negative correlation is found between the infrastructure and tariff variables (-0.439,  $p < 0.01$ ) although seemingly significant. RVC is

positively and significantly correlated with all the variables at 1% significance level with the exception of tariffs. Strong associations can also be observed between RVCs and RTI at (0.845,  $p < 0.01$ ) as well as economic growth and RTI (0.839,  $p < 0.01$ ) with the latter necessitating a stepwise estimation approach due to the existence of multicollinearity. Infrastructure relatively weakly positively relates to RVC at (0.447,  $p < 0.01$ ). The relationships between these variables were explored and discussed based on the regression output below.

**Table XIV: Correlation analysis – model 2**

	1	2	3	4	5
1.Regional value chains	1				
2.Economic growth	0.955***	1			
3. Tariff	-0.011	0.0359	1		
4.Regional trade integration	0.845***	0.839***	0.145**	1	
5. Infrastructure	0.447***	0.319***	-0.439***	0.227***	1

Notes: \*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

*Source: Candidates estimate from research data.*

### **Regression results**

Table XV presents the results of relation between RTI and RVC in the SADC. As shown in Table XIV (correlation matrix), there is a high correlation coefficient between RTI and economic growth (0.839,  $p < 0.01$ ), indicating the existence of multicollinearity. The regression model estimation below therefore accounts for this multicollinearity through a stepwise estimation of the regression equation. The first output (model 1) includes economic growth as an explanatory variable excluding RTI and the second output (model 2) shows the inclusion of RTI, however excluding economic growth. Rationally, these variables would be closely related as often economic growth can be considered as an output of increased RTI and vice versa. The two variables are however in no way substitutes, with different factors contributing to the performance trends of these variables outside of their linkages. The approach adopted is therefore the stepwise estimation approach rather than excluding one of the variables.

The coefficient of determinations for fixed effects is 28% for model 1 and 6% for model 2 indicating that when observing heterogeneity effects, 28% of the overall variation of the SADC countries RVCs in model 1 and 6% in model 2 are explained by variables under observation while 72% and 94% respectively are explained by unaccounted factors. Consequently, the fixed effects model is weak in explaining the variation of RVCs in the SADC region and clearly variables other than those included would add value in explaining the RVC trends for SADC

countries. Similar to the first model, autoregressive coefficients (AR) are significant (1187 units for model 1 and 2097 units for model 2), implying that there is a serial order correlation in the model. The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity shows that the p-values of 30% for model 1 and 14% for model 2 are not significant which shows that there is no homogeneity in the model. The Hausman test was conducted to determine the best fit estimation model between the fixed and random effects model. The explanatory capacity of the RVC model is detected using the F Test which shows that the probability value for the F Test is significant at all levels, implying that r-squared does not equal zero, and that the relationship between the model dependant and independent variables is statistically significant.

**Table XV: Regression model 2 – output**

<b>Dependent variable: Regional value chains</b>				
	<b>FEM (Model 1)</b>		<b>FEM (Model 2)</b>	
	<i>Coef.</i>	<i>t</i>	<i>Coef.</i>	<i>t</i>
<b>Constant</b>	0.170*** (0.064)	2.65	0.213*** (0.073)	2.92
Economic growth	0.224*** (0.037)	6.07		
Regional trade integration			0.011 (0.029)	0.39
Weighted average applied tariff	-0.009 (0.007)	-1.39	-0.009 (0.008)	-1.12
Infrastructure	-0.057*** (0.021)	-2.73	-0.066*** (0.024)	-2.79
F(3,123)	15.85		2.81	
Prob > F	0.000		0.042	
R-Squared	0.2788		0.0642	
AR(1): F	1187.595		2097.422	
Prob > F	0.0000		0.0000	
Hettest $\chi^2$	30.32		14.31	
Prob > $\chi^2$	0.0000		0.0002	
Hausman $\chi^2$	90.644		48.864	
Prob > $\chi^2$	0.0000		0.0000	
Countries	13		13	
Observations	139		139	

Notes: Hettest denotes the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity; AR(1) denotes Wooldridge test for autocorrelation in panel data; Hausman denotes the test for RE versus FE. \*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

**Source:** Candidate's estimate from research data

The model shows a positive and significant relationship between economic growth denoted through GDP and the dependent variable RVC ( $\beta=0.224$ ,  $p<0.01$ ) meaning that a unit increase in GDP is likely to positively impact RVC by as much as 0.22 times. Dollar and Aart (2002)

found that increases in trade volumes through RVC can be considered as emanating from positive growth rates in GDP. The co-movement between RVC and GDP can be considered a two-way movement. Countries with a higher GDP have a higher affinity for trade and the ability to participate in complex trade linkages such as RVCs outside the simplified import/export trade relationships. In this instance, the results can be explained through the findings of DeSoyres and Gaillard (2019) who found that RVC trade is significantly linked to GDP correlation, either directly through bilateral trade, or indirectly when two countries trade with similar partners. DeSoyres and Gaillard (2019) noted that this trade network effect is often significant for all income group countries driven by the additional channel of economic activity through which GDP fluctuations propagate as trade linkages become more synchronised with trade focused on inputs as well, rather than final goods only.

The model also indicates a positive relationship between RTI and RVCs, with a coefficient value of 0.011 albeit insignificant. The results suggest that a unit increase in RTI is likely to positively impact RVC by as much as 1.1%. Barring the insignificance of the relationship which is not consistent with literature, the positive relationships can be considered rational as trade linkages established through regional trade agreements are likely to enhance the participation of said countries of the RTA in RVC engagement as the soft and hard structural issues are already mostly catered for. Ramdoo (2014) made this link noting that for RECs to maximise the benefits and minimise the risks associated with value chains, they should focus on enhanced synergies between trade and investment policies. Particularly, they should implement strategies that stimulate product value chains, refine industrial development policies in addition to the embedment of good RVC frameworks. Ramdoo (2014) therefore found that regional trade integration can be a powerful multi-dimensional process leading to effective RVCs, one that can lead to coordination, cooperation and convergence efforts around projects of common interest, with the realisation of its potential dependant on the political and socio-economic realities of the member countries. These findings were corroborated in a study by the International Monetary Fund (IMF) who confirm the positive nexus between RTI and RVC in an empirical analysis case of Sub-Saharan Africa (Allard et al., 2016).

The infrastructure variable was reintroduced in this model and the results indicate a negative but significant relationship with the dependant variable for both model 1 ( $\beta=-0.057$ ,  $p<0.01$ ) and model 2 ( $\beta=-0.066$ ,  $p<0.01$ ). The results suggest that a unit increase in infrastructure is likely to negatively impact RVCs which is contrary to most literary findings. UNCTAD (2013),

as an example, found that infrastructure development is critical to generating value chains delivering growth, reducing poverty, and addressing broader development goals. Key to effective value chains is the right infrastructure for sustained networks that can enable easy transportation of inputs and outputs between countries. Dollar (2017) substantiates this view based on their findings where they used a centrality indicator of sampled countries' role in value chains plotted against the World Bank's Logistics Performance Indicator which showed clear relationships between better logistics performance measured through infrastructure quality and deeper involvement in value chains noting that no countries' with poor logistics performance are central to value chains. Dollar (2017) therefore concluded that for countries that want to get more involved in value chains, amongst other factors, infrastructure improvement should be an obvious place to invest in.

The weighted average applied tariffs variable is seemingly not a significant factor determining RVCs based on the model predictions. This is inconsistent with literature as low tariff costs are often associated with improved trade relations and thereby the ability to increase trade through fragmented RVC processes could negatively impact trade from a cost aggregation perspective. Consistent with this theory, OECD, WTO, and UNCTAD (2013) note the adverse impact of tariffs due to their cumulative nature during intermediate good trade activity across multiple regions especially when particular processing regimes such as duty drawback systems are not in place. Downstream firms are therefore highly impacted by cost of importing inputs only to again face tariffs on the full value of their exports, added to this, the impact of the price of the finished goods that are borne by their customers, thereby dampening demand and affecting production and investment at all stages of a value chain (OECD et al., 2013).

#### **4.4.3. Model 3: Relationship between RVCs and economic growth.**

The last model in this study estimated the relationship between RVCs and economic growth. To enhance the explanatory capacity of the model, other economic related control variables are added into the model.

##### ***Correlation analysis***

Table XVI shows the correlation amongst the model 3 variables explored. Positive and relatively high correlations can be observed amongst most of the variables with exceptions being the inflation rate and exchange rate variables which show weak and mostly negative associations with other variables. The highest correlations with the dependant variable are

observed with imports and RVCs which have pairwise correlation coefficients of 0.961 and 0.955 respectively, both significant at 1%. The least pairwise correlation with the dependant variable is found between exchange rates and imports with both negative and insignificant pairwise coefficients of -0.1061 and -0.049 respectively. The above variables are explored further and discussed in the regression model below.

**Table XVI: Correlation analysis – model 3**

	1	2	3	4	5	6	7
1. Economic growth	1						
2. Regional value chains	0.955***	1					
3. Regional trade integration	0.839***	0.845***	1				
4. Exports	0.932***	0.837***	0.743***	1			
5. Imports	0.961***	0.942***	0.792***	0.890***	1		
6. Inflation rate	-0.1061	-0.165**	-0.051	-0.048	-0.157**	1	
7. Exchange rate	-0.049	-0.133**	0.067	-0.118*	-0.049	0.002	1

Notes: \*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

Source: Candidate's estimate from research data

### ***Regression results***

Table XVI shows high correlation coefficients between a number of variable pairs, namely, RTI and RVCs (0.845,  $p < 0.01$ ), RVCs and imports (0.942,  $p < 0.01$ ), RVCs and exports (0.837,  $p < 0.01$ ), as well as exports and imports (0.890,  $p < 0.01$ ). The regression model estimation below accounts for this multicollinearity through a stepwise estimation of the regression equation, by controlling for and introducing different explanatory variables in each step. The first output includes RVCs while excluding RTI, imports and exports. The second output introduces RTIs while excluding RVCs. The third shows the inclusion of exports only from the above list of variables and, lastly, imports are introduced with the exclusion of RTI, RVCs and exports. The significant collinearity between these variables can be rationally explained through the fact that these are economic activity data flows that are highly complementary and, in some instances, even overlapping. For example, one of the challenges that is often recognised in regional trade and RVC data analysis is the double capturing of data between different flows i.e. imports, exports and RVCs. When analysing RVCs and RTI data, the one naturally impacts the other and it often is very difficult to discount the one when analysing the

other. These variables should, however, never be confused for direct substitutes hence the inclusion of each variable through a stepwise analysis in this study.

The coefficient of determinations for fixed effects is 72% for model 1, 37% for model 2, 61% for model 3 and 73% for model 4. This means that if we consider the countries' heterogeneity effects (72%, 37%, 61% and 73% for model 1-4 respectively) of overall variation of the dependant variable can be explained by variables in question. On the other hand, 28%, 63%, 39% and 27% for the models respectively are explained by unaccounted factors. Consequently, the fixed effects model is strong in explaining the variation of economic growth in the SADC region for models 1, 3 and 4 only. The autoregressive coefficient (78%) is significant, implying serial order correlation for model 1, and not as significant for model 2 (37%), model 3 (20%) and model 4 (45%). The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was conducted to test that the error variances are all equal versus the alternative, that the error variances are a multiplicative function of one or more variables i.e. homoscedasticity (Williams, 2020). The heteroscedasticity test shows that the p-value of 0.2873 or 28% for model 1, 44% for model 2 and 0% for both models 3 and 4, is not significant which shows that there is no homogeneity in the model. A test for the best fit model for the estimation between fixed and random effects was conducted using the Hausman test to check whether the predictor variables are endogenous in the regression model (Glen, 2017). The fixed effects model is confirmed as the appropriate model for model 1, 3 and 4. The explanatory capacity of the model is detected using F-test which is significant at all levels implying that r-squared does not equal zero, and the relationship between the model-independent variables and GDP growth rate as a dependent variable is statistically significant.

Table XVII indicates that there was a positive significant relationship between RVCs and the dependent variable economic growth ( $\beta=1.204$ ,  $p<0.01$ ), where results were significant at 1% level. The results suggest that a unit increase in regional value chains is likely to positively impact economic growth by as much as 1.204 times. Participation in value chains increases the production capacity of participating countries which therefore has a positive impact on a country's or region's economic output measured through GDP. Sachs and Warner (1995) found that countries with more value chains with the world economy have recorded above-average rates of economic growth while Dollar and Kraay (2002) found that increases in trade volumes through regional value chain have had a positive impact on growth rates. Borin and Mancini (2019), although substantiating these findings, found that it is difficult to quantify the true value of the impact of RVC participation on GDP, as FVA components are often also recorded in the trade flows of the country, meaning

that there is always the risk of double counted GDP in exports, cautioning that FVA goods should only be accounted for once in trade flows in order to avoid double counting of the same production in trade. Borin and Mancini (2019) therefore proposed a new toolkit for value added accounting of trade flows at the aggregate, bilateral, and sectoral levels to be adopted when examining an extensive set of empirical questions in an attempt to accurately quantify share of trade related to GVCs and its contribution to a country's GDP.

**Table XVII: Regression model 3 – output**

<b>Dependent variable: Economic growth</b>				
	<b>FEM (Model 1)</b>	<b>FEM (Model 2)</b>	<b>FEM (Model 3)</b>	<b>FEM (Model 4)</b>
	<i>Coef.</i>	<i>Coef.</i>	<i>Coef.</i>	<i>Coef.</i>
<b>Constant</b>	-0.006 (0.020)	-0.026 (0.032)	-0.023 (0.023)	0.045** (0.020)
Regional value chains	1.204*** (0.058)			
Regional trade integration		0.699*** (0.093)		
Imports			0.655*** (0.041)	
Exports				0.680*** (0.032)
Inflation rate	-0.468*** (0.103)	-0.727*** (0.164)	-0.184 (0.124)	0.296*** (0.110)
Exchange rate	0.056 (0.077)	0.021 (0.124)	-0.191** (0.093)	0.096 (0.076)
F(3,187)	162.72	25.62	99.39	168.89
Prob > F	0.000	0.000	0.000	0.000
R-Squared	0.723	0.2913	0.6146	0.7304
AR(1): F	78.113	36.648	20.454	44.571
Prob > F	0.000	0.0001	0.0009	0.000
Hetttest $\chi^2$	1.13	0.61	451.93	486.27
Prob > $\chi^2$	0.2873	0.4354	0.000	0.000
Hausman $\chi^2$	93.81	9.75	127.77	12.87
Prob > $\chi^2$	0.000	0.0208	0.000	0.0049
Countries	12	12	12	12
Observations	202	202	202	202

Notes: Hetttest denotes the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity; AR(1) denotes Wooldridge test for autocorrelation in panel data; Hausman denotes the test for RE versus FE. \*\*\*, \*\* and \* denotes significance at 1%, 5% and 10% respectively.

**Source:** Candidate's estimate from research data

There is a highly significant positive effect of RTI on GDP growth in that an improvement in RTI by 1% will correspond to an increase of GDP by 0.68%. The results are significant at 1% significance level. Vamkakidis (1998) explains this relationship noting that regional integration improves the economies of countries involved due to the relationships built between small and

closed economies with large and open economies leading to faster growth. They add that the level of development of neighbouring economies, especially when they are open, has significant positive spill-over effects into the region, suggesting that trade agreements between developing countries and large and more developed countries may lead to faster growth of the individual economies and the region as a whole. Vamvakidis (1998) adds that, given the removal of trade barriers by the participating countries, if an RTA increases the openness of the large and more developed economies toward less developed member countries, it will promote their growth. Rationally, the model predicts positive significant relationships between exports ( $\beta=0.680$ ,  $p<0.01$ ), imports ( $\beta=0.655$ ,  $p<0.01$ ), and the economic growth, as results were significant at 1% level. The results suggest that a unit increase in exports and imports were likely to positively impact GDP by as much as 0.68 and 0.655 times respectively. This suggests that, should countries diversify outside of the normal mainstream trading into activities such as RVC trade, this would allow for specialisation and therefore more focused production activity to potentially increase their trade activity to positively impact economic growth and development. Such trade would also require investment into key trade facilitation infrastructure, is employment creating, and allows for economic advancement which all drive economic growth and development.

There is a highly significant negative relationship between GDP growth and inflation rate in that an increase average price by 1% will correspond to a decrease of GDP by 0.47%, 72%, 18% and 30% for models 1-4 respectively. Exchange rate, on the other hand, shows a positive albeit insignificant relationship with economic growth at ( $\beta=0.05$ ) for model 1, 2 and 4 and a negative significant relationship for model 2 (-0.191), with a 5% significance level. These indicators mostly highlight country effects that should be considered when analysing the impact of RVC trade as macro and micro economic factors are widely highlighted in literature as key influences that could either drive or impede the impact of RVC trade on economic growth.

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1. Introduction**

This last section of this paper is critical in bringing together all the key elements that have been discussed in this study. The section seeks to show a clear link between the purpose and intent of the study, the literary and theoretical findings that support the study as well as summarise the research process applied. The discussion then points out the key findings of the study clearly highlighting the significance of this study. This chapter also draws the reader to some of the limitations of this study and culminates in a discussion on some of the tangible recommendations to policy makers and other key stakeholders, accentuating some of the possible avenues for further research to possibly address the limitations of this study.

### **5.2. Summary and conclusions**

The African continent as a whole is in the midst of an exciting period where the vision and goals of regional trade integration are, for the first time in history, actually palpable with the signing and ratification of the Africa Continental Free Trade Agreement. To fully benefit from the implications of this agreement, the continent cannot afford to continue to pursue traditional approaches that do not allow African countries a seat and a voice in the global trade landscape. This especially considering that the global trade landscape is now characterised by the participation in complex trading networks such as global value chains, to reap the benefits of comparative advantage. Due to some of the challenges that the continent faces, however, the key focus should be to first improve regional trade integration through regional value chains that will capacitate the region to take part and participate in broader global value chains.

This study therefore sought to understand the key factors that drive Regional Trade Integration (RTI) in Africa through investigating these factors for one of the continent's RECs i.e. the SADC. Additionally, the relationship between RTI and RVCs was explored as well as the contribution of both RTI and RVCs to economic growth which would be the ultimate measure to justify the focus on these trade elements. Panel data for 13 of the 16 SADC countries was analysed for a number of exploratory variables for the period of 2000-2017, using STATA v15 as a statistical software. Only 13 countries were chosen due to their longstanding and consistent membership within SADC during the period of investigation. Descriptive statistical analysis was performed on the data which displayed significant outliers and the lack of normal

distribution of data which necessitated the transformation of the data. The study then employed a number of statistical analysis tools, namely, the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, the Wooldridge test to account for autocorrelation in panel data, as well as the Hausman test for best fit model between fixed and random effect estimations.

In analysing the determinants of RTI, the study observes that of the control variables included in the model – trade openness, common currency, and distance – have significant positive relationships with RTI, consistent with literature with the exception of distance. Elements of landlocked and infrastructure are both found to have negative insignificant relationships with RTI. The findings on the impact of trade openness are consistent with Zahonongo (2017) and Allard et al. (2016) who both found through empirical evidence that greater trade openness attracts new and diverse trade partnerships, thereby leading to more opportunities for regional trade integration. Similarly, Allard et al. (2016) highlights the advantages of a common currency in regional trade integration, noting the high transaction costs of currency exchanges during trade transactions, thereby suggesting that monetary or currency union discussions in the region should gain more traction to complement regional trade integration efforts. The findings on the relationship between RTI and distance, although seemingly inconsistent with literature, are justified by Khosla (2014). Landlocked and infrastructure variables are found to have a negative relationship with RTI which is consistent with literature, although both variables were not significant in this analysis. The importance and necessary investment required for both these variables should however not be downplayed especially since a number of countries in the REC and in the region are landlocked with poor infrastructure plaguing the continent, yet both contribute significantly to accessibility and ease of trade.

The second model in the analysis found that a positive significant relationship exists between RVCs and economic growth. These findings are supported by Abdoulganiour, Sarpong, Ouedraogo, Hassan and Onumah (2018) who add that nations must develop strategies to raise international trade or adopt policies to reinforce RVCs to move from discontinuous to sustained growth. A positive relationship between RVCs and RTI trade was found. This result is in line with UNCTAD (2013), which concluded that RVCs are considered as an important step towards greater integration into global value chains. The relationship is however found to be insignificant. The negative relationship between RVCs and infrastructure was unexpected as the latter is pivotal to RVC activity and requires huge investments for the effectiveness of value chains, therefore

addressing the bottlenecks in infrastructure is a necessary condition to participate in and reap the benefits of value chains.

Lastly the study explored the impact of RVCs on economic growth with the addition of a number of control variables including RTI, to enhance the explanatory capability of the model. In line with expectations for this model, positive significant relationships were identified between economic growth and the control variables RVCs, RTI, imports and exports. The contribution of RVCs and RTI to economic growth and development of the region cannot be overstated. Very little benefits are realised when African countries trade outside of the continental borders, with countries in the lower end considered as just a drop in the vast global trading landscape. RVCs and RTIs, however, have the potential to capacitate these countries, leading to self-sufficiency and a substantial list of other benefits for the region. Expectedly, RVCs would improve import and export activity therefore positively impacting economic growth. The relationship between economic growth and inflation rate (negative relationship) as well as exchange rates (insignificant positive relationship) were also in line with expectations. High prices increase the cost of commodities and hence the affinity for trade as export and import costs increase. The impact of exchange rates, on the other hand, is highly dependent on the ability of productive firms to absorb currency fluctuations and since this study did not explore firm specific variables, the impact of exchange rates is difficult to quantify at a macro-level.

### **5.3. Policy implications of the findings**

Given the above findings, there is undoubtedly increased focus required and much work to be done to ensure the advancement of RTI and RVCs within the SADC and the continent as a whole. A number of opportunities exist amidst the challenges, heightening the need for proactive policy changes by policy makers as well as the broadening of the key focus for businesses to a more regional and global context rather than the traditional local trading context.

Firstly, it is important to ensure that the same negative inconsistent distributional impacts of GVCs are not simply transported to a regional context. This is always a possibility in an REC like SADC where countries like South Africa and Angola already dominate economic activity of the REC while the contribution of countries like Malawi, Lesotho and Zimbabwe are seemingly insignificant. This void in resource availability could easily lead to these countries

not enjoying the benefits of RTI and RVCs due to lack of production capacity. As such, RTI and RVC policies should ensure that these countries are capacitated in the short term to reap the benefits in the long term. Some of the policy considerations should include the popular global practices of Technical Trade Assistance (TTA) and Aid for Trade from countries such as South Africa so that the benefits of trade are not skewed towards developed countries only.

Secondly, RECs and the continent at large should recognise RTI and RVCs as a strategic agenda that requires brazen and deliberate actions that should not be pursued passively. From a country perspective, the lower trade participant's small to medium firms should be supported to avoid the asymmetrical balance of power that tends to favour lead firms with the necessary investment capital and who often constitute multinational corporations with sources of foreign direct investment (PESA, 2016). Policy makers should therefore ensure that they consider RTI and RVCs as a strategic choice to promote participation with policies geared towards firm level development and implementation of realistic value chain development paths for strategic positioning (UNCTAD, 2013). Additionally, investment into infrastructure development should be considered as an absolute necessity.

Lastly, discussions on a monetary union have long been at play in the continent and this is one way to reduce the high transactional costs associated with trade activity. UNCTAD (2013) suggested that bold plans are required towards the establishment of monetary unions as part of a broader effort to promote regional trade and integration, implying that a monetary unions will contribute to stimulating trade and strengthen efforts to improve infrastructure, develop productive capacities, and enhance implementation of regional trade agreements. African governments should therefore expedite the attainment of this goal starting at a REC level such as the SADC.

This research has been motivated by the plethora of opportunities that exist for the continent in realising collective growth and development amidst challenging economic downturn conditions, where a unified regional integration approach to the region's perceived challenges will yield shared benefits for all.

#### **5.4. Limitations of the study**

As with any research, there are a number of limitations that the researcher experienced in this study:

- RVCs are a fairly new concept that has gained momentum in the last decade. As such, there have been gaps in the accurate capturing of RVC related trade activity. Data accessibility, integrity and quality therefore proved to be a challenge especially with the study based on African countries that already have challenges of soft infrastructural and institutional issues including but not limited to poor data capturing and quality data for analysis.
- Closely linked to the challenges of data integrity and the contemporary nature of the focus on RVCs and RTI, the correct and accurate models of recording and accounting for these trade activities in macro-economic data still proves to be a challenge and therefore often the risk of double counting in these variables cannot be absolved.
- End to end value chains are still difficult to identify, as is making the appropriate linkages to a specific region or country due to the spill-over effects of trade to neighbouring countries outside of the region under investigation. Additionally, analysis of RVCs has proven that it is not uncommon to find that some or other part of a process is external to the value chain and therefore, there are hardly ever any pure value chains that do not overlap. Although this challenge is not unique to the SADC region or to Africa, it is accentuated by the poor quality of trade data.

#### **5.5. Recommendations for future research**

The study has only but scratched the surface of the innumerable research opportunities on RTI and RVCs. Moreover, because of the topical nature of these concepts, any further research would contribute greatly to their advancement especially for the region. Below are some of the opportunities that exist for future researchers;

- This study focused on the impact of RTI and RVCs at a macro-level, however there is definitely merit in conducting micro-level analysis based on the contribution of these factors on specific industries as this cannot be considered as a one-size-fits-all approach to trade integration. Some industries may respond to RVC establishment more than others. Inversely, an industry level analysis could also highlight new opportunities that could benefit from RVCs and RTI. Ancharaz (2015), as an example, found that Africa

is not fully exploring the RVC potential, with the continent dominated by commodity value chains and very little in the additive forms of value chains such as agro-processing and service industries.

- The study did not unpack in detail the measuring of RTI and RVCs, as well as the different models that can be used to enhance measuring these variables. These should be explored in detail as they present an opportunity for new spheres of trade research and new quantitative models that are specific to measurement of such trade.
- The study can and should be replicated for other RECs and the continent at large as it is quite critical that policy makers and governments are aware of the opportunities that exist through RTI and RVCs. Furthermore, the socialisation of these concepts is required as they contribute significantly to economies and sovereign states. The uniqueness of different RECs should also not be ignored but rather amplified as it will lead to the development of customised regional trade solutions that are best suited and benefit the specific REC.

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