

Establishing Strategic Regional Value Chains & Infrastructure in Africa for Sustainable Industrialization Advancement of Africa Free Trade Agreement & Brics

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Abstract

Creating regional value chains and infrastructure is essential for the advancement Africa Free Trade Agreement (AFCTA) and BRICS strategic objectives, this takes into perspective the preferential trade agreements, leveraging of investment leading to sustainable industrialization and economic growth. The potential to achieve the mentioned scenario is feasible taking into consideration the abundance of primary mineral resources in the continent accompanied by common market with a population of 1.2 billion and a GDP of \$ 2.3 trillion Creamer (2021); accompanying this approach is the emphasizing manufactured value added products and graduating away from export of primary products to tertiary as this will result in a high level of competitiveness and export driven economies impacting positively on nations balance of payments. This further complemented and advanced by African countries such as South Africa since 2010 and recently Ethiopia being members of BRICS; this forms part of emerging markets represents 42% of the world population and account for over 31% of the world's GDP. For economic and industrial policy around matters of preferential and free trade to transpire as well as sustainable industrialization entailing competitiveness, export driven economy, improved enterprise supply development, improved local content, employment creation and growth in sectors and economy it is essential that the Purchase Power Parity embraced by the International Comparisons Programme in integrated in the AFCTA and BRICS strategy towards regional value chains, as it objectively analyses the subject matter of free and preferential trade between nations leading to fairness and comparative advantage.

Keywords

Regional value chains, industrialization, Africa Free Trade Agreement, BRICS, Trade , investment, Manufacturing, localization , total quality management

Introduction

The Africa Free Trade Agreement and BRICS are key strategic partnerships for the African continent considering investment and export promotion, of which require the continents ability to be competitive and create regional value chains , from continental focus with AFCTA as a strategic role player, the following indicators are vital, population of 1,2 billion and a GPD of \$ 2.3 trillion, to complement this at a greater global sphere, the BRICS economic zone is inclusive of countries South Africa and Ethiopia and forms part of an emerging market representing 42% of the world population and 31% of the world's GDP. Considering the GDP and population and the strategic economic and industrial partnerships the continent has forged there is potential for the continent to advance an industrial and economic hub perpetuating into an export driven economy, provided the focus on import minimization strategies, as well as evidence based industrial development strategies. This will entail there is supporting critical infrastructure to enable the unlocking of economic potential, as well as industrial policies focusing on enabling trade policies, export promotion, and advancement of localization , import minimization strategies, advancing attraction of FDI and DDI through various incentives for manufacturing and industrialization, re-vitalization of industrial hubs, and advancement of special economic zones and all other complementing and enabling incentives for a climate conducive towards sustainable industrialization.

Creating regional value chains and infrastructure is essential for the advancement Africa Free Trade Agreement (AFCTA) and BRICS strategic objectives, this takes into perspective the preferential trade agreements,

leveraging of investment leading to sustainable industrialization and economic growth. The potential to achieve the mentioned scenario is feasible taking into consideration the abundance of primary mineral resources in the continent accompanied by common market with a population of 1.2 billion and a GDP of \$ 2.3 trillion Creamer (2021); accompanying this approach is the emphasizing manufactured value added products and graduating away from export of primary products to tertiary as this will result in a high level of competitiveness and export driven economies impacting positively on nations balance of payments. This further complemented and advanced by African countries such as South Africa since 2010 and recently Ethiopia being members of BRICS; this forms part of emerging markets represents 42% of the world population and account for over 31% of the world's GDP.

For economic and industrial policy around matters of preferential and free trade to transpire as well as sustainable industrialization entailing competitiveness, export driven economy, improved enterprise supply development, improved local content, employment creation and growth in sectors and economy it is essential that the Purchase Power Parity embraced by the International Comparisons Programme in integrated in the AFCTA and BRICS strategy towards regional value chains, as it objectively analyses the subject matter of free and preferential trade between nations leading to fairness and comparative advantage.

The Africa Free Trade Agreement and BRICS trade agreements create the propensity for the member nations to capitalize on the benefits of trade such as the comparative and competitive advantage, re-industrializations, creation of regional value chains and improved infrastructure both inland and ports for purposes of improved travel and logistics and advancement of traditional to partnership approach in the goods and services reaching final destination and the deal facilitation involved being on real time, with less paper work involved and application of artificial intelligence and machine learning for the processing of transactions between supplier and customer.

This is AFCTA and objectives on trade that take into cognizant abundance of primary mineral resources in the continent accompanied by common market with a population of 1.2 billion and a GDP of \$ 2.3 trillion Creamer (2021), and from the BRICS angle emerging markets representing 42% of the world population and account for over 31% of the world's GDP. This from a mineral resource capacity, demographic and GDP perspective is very crucial and should be capitalized upon, more so taking into cognisnce the infrastructure drive and emphasis on the creation of regional value chains.

The one such illustration having a value-added substance to the advancement in industrialization through value added resources is Mintek acquisition of Amazemet in support of South Africa's additive manufacturing. The technology is expected to strengthen and bolster South Africa's mineral based and three-dimensional (3D) printing industries. The beauty of the technology lies in the ability to process any material ranging from alloys with low melting points to those with high melting thresholds, Moller (2023). It is further alluded that the beauty of the technology lies in its well alignment to the mineral processing and metallurgical research council goals of providing critical infrastructure for South Africa's industrial development.

The council's goal is well in line with creation competitive manufacturing and beneficiation in regional value chains, whereby a conducive environment is created for export driven economies are created as a result of manufacture of goods and services that are in demand because of their durability, quality and ability by suppliers to respond in real time to customer needs and expectations.

This should be further complemented by the ability by regional value chains relies in the pipeline progress enhancing the region's energy market capacity as well as other critical infrastructure. According to Liedtke (2024), gas is a key enabler for economic growth and social development in the Southern African region, this is considering the joint venture project between governments of South Africa and Mozambique represented by the South African Gas Development Company (iGas) and SASOL. The pipeline has been very instrumental in supplying both South Africa and Mozambique in energy turbulences such as power outages and loadshedding. This at a high level reflects on the beneficial change that integrated regional infrastructure accompanied by regional value chains in services and manufacturing can produce. The paper in the next phase will in detail discuss and analyze similar regional infrastructure and regional value chains projects impacting positively on the continents industrial and economic development.

2. Literature Review

2.1 Regional value chains as new pathways to development

Regional and global value chains in their nature, involve the 'unbundling' of factories across international borders so that individual tasks are performed in different countries, which enjoy competitive advantage in a specific activity. The African continent in the advancement of this theory of thought has initiated the Africa Free Trade Agreement and has become a strategic member of BRICS. In the South African context the Special Economic Zone fund has been created for the purposes of attracting domestic and foreign direct investment, this is through provision of incentives such as Preferential 15% Corporate Tax Businesses (prescribed in section 24(4) of the SEZ Act), building allowance, businesses employment tax incentive and the 12I Tax Allowance. The 12I Tax Incentive is designed to support Greenfield investments (i.e. new industrial projects that utilise only new and unused manufacturing assets), as well as Brownfield investments (i.e. expansions or upgrades of existing industrial projects) Thedtic, Online(2024). Considering the Africa Free Trade Agreement and the collaboration with Special Economic Zone policy the synergy effect lies in and the status of the negotiations and implementation of the agreement, benefits and export opportunities offered to investors and tenants, in terms of incentives, customs requirements, quality standards and export finance insurance solutions.

The Africa Free Trade Agreement and BRICS pact with the African countries will create a climate conducive and enabling environment towards predictability of market access and will enhance investor climate in Africa as well as offers new market access opportunities. It will also enhance intra-African trade through, progressive elimination of tariffs, rules to manage non-tariff barriers, facilitate cooperation on customs, trade facilitation and transit. The AfCFTA will also provide enhanced cooperation on technical barriers to trade and sanitary and phyto-sanitary measures, the successful implementation of AfCFTA is expected to lead to diversification of exports, increased productive capacity, acceleration of growth, increased investment, increased employment opportunities and incomes, as well as broadening economic inclusion, Thedtic, Online (2024).

2.2 Socio-Economic & Economic Prosperity in Africa Fostered by AFCTA & Regional Value Chains

According to (Makhubela. D, 2021 **Online**), Afcta is to cover 55 countries in the continent, hosting a population of 1,3 billion people and collectively with a GDP of \$ 3,4 trillion, the intention for the free market is to eliminate 90% of the tariffs on trade enabling an efficient free trade and regional integration, in terms of a World bank report it is anticipated that regional income will rise by 7% or by \$ 450 billion and furthermore creating a conducive climate for 30 million people to be alleviated out of extreme poverty by 2035 as the agreement facilitates for economic stimulus and feeding into growth and wages. This will further enhance intra-continental exports to increase by 81% and exports to non-African countries by 19%. As a result of this initiative it is estimated that export will be increased by \$ 560 billion and the largest contributor being manufacturing.

This envisaged vision to be realized is plausible provided more integrated regional infrastructure and collaborative industrial manufacturing projects such as is Mintek additive manufacturing project, with technologies potential to strengthen and bolster South Africa's mineral based and three-dimensional (3D) printing industries, this is well alignment to the mineral processing and metallurgical research council goals of providing critical infrastructure for South Africa's industrial development, additionally in line with the critical goal of creation of competitive manufacturing and beneficiation regional value chains Moller (2023). Furthermore, another project advancing this system thinking is the project between governments of South Africa and Mozambique represented by the South African Gas Development Company (iGas) and SASOL; with the aim of addressing the energy crisis and power outages impeding the level of economic and industrial activities, Liedtke (2024).

2.3 Competitive Excellence in Readily Made Goods for Export

According to Steyn(2020a), for Africa to benchmark with competitive economies it is essential that the following elements of competitive excellence are adopted into the manufacturing regional value chains; the sectors has got to comprehensively adopt a customer focused approach, emphasise on the provision of goods and services that customers want and ensure retention of the cliental market, these goods and services should result from carefully planned and executed transformation processes and the industries and sectors should instill the customer focus culture within the organization more so the employees engaged in the entire production and system value chains.

Additionally, to the competitiveness excellence approach the drivers of competitiveness should be embraced in the regional value chains; this entails a high focus on the extent of **productivity**; highlighting on the general ability to manufacture efficiently and effectively meeting the customer expectations and beyond, secondly the ability to integrate the **e-commerce** factor into the production lines, this is looking at the actual manufacturing and the final

transaction process performed as well as logistics within value chain, thirdly ensuring **order-fulfillment**, whereby customer needs dates and requirement drive processes , additionally manufacturing, distribution and transportation plans are intergrated. Fourthly, **teaming and partnering** becomes an essential, sequentially followed by outsourcing and finally the distinctive core competencies as well as human talent inclusive of leadership excellence are essential in achieving an overall competitiveness in industry. Having highlighted on competitiveness component relating to regional value chains the next phase of the paper is to discuss the quick response philosophy in relation to regional value chains.

2.4 Application of Quick Response Philosophy in Regional Value Chains

As the prevailing situation in Africa is and its common markets, the reality is non has a domestic market of sufficient scale to drive significant industrialization; the solution in this regard lies in the emergence of regional value chains engaged in the production of value added goods and service and trading in the global African market. This being a comprehensive solution should also be accompanied by the ability to apply the philosophy of quick response taking into cognizance the level of poor road, rail , port , telecommunication and other infrastructure enhancing the level of competitiveness in manufacturing value chains and export driven economies.

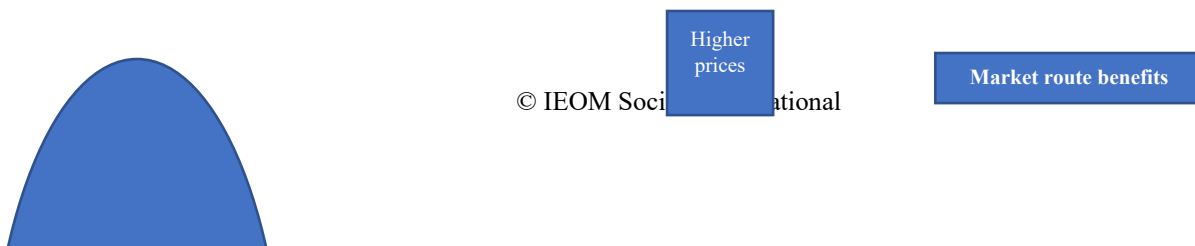
In ensuring the remedy to this challenge it is ideal that AFCTA in its approach of enabling efficient free trade the areas interlinked such as logistics and JIT (Just in time) are paid attention to, as quick response (QR) and JIT both rely on efficient IT (information technology) freight and distribution management (logistics). Subsequent to this factor it is essential that the technology and quick response be integrated into the manufacturing and export value chains ; whereby the universal product codes, scanning of equipment at the export one stops are deployed, sequentially there should be sufficient and efficient data communication hardware, as well as electronic data interchange software. This should also be accompanied by good human relationships and re-engineering processes at various critical points of the manufacturing and export value chains.

2.5 Application of Joint Improvement Tool in Regional Manufacturing Value Chains

The reality in the African continent is that the majority of the export market comprises of primary products and less of tertiary; South Africa which can be considered as the most industrialised country in the continent was recently ranked number 22 out of 38 countries in terms of global competitiveness ranking, this does not compare well in terms of the level of competitiveness; for Africa to advance in terms of being globally competitive it is essential that joint improvement tools be adopted across the industrial sectors; the following is a detailed approach on the application of this measure:

Joint Improvement Tools

Total Quality Management(TQM): The TQM dimension is a critical component for competitive manufacturing regional manufacturing value chains , as it extensively communicates to customer relationship management, relationship with suppliers, product design and transformation processes; to add more to this point the schematic diagram below highlights on the competitive benefits of TQM:



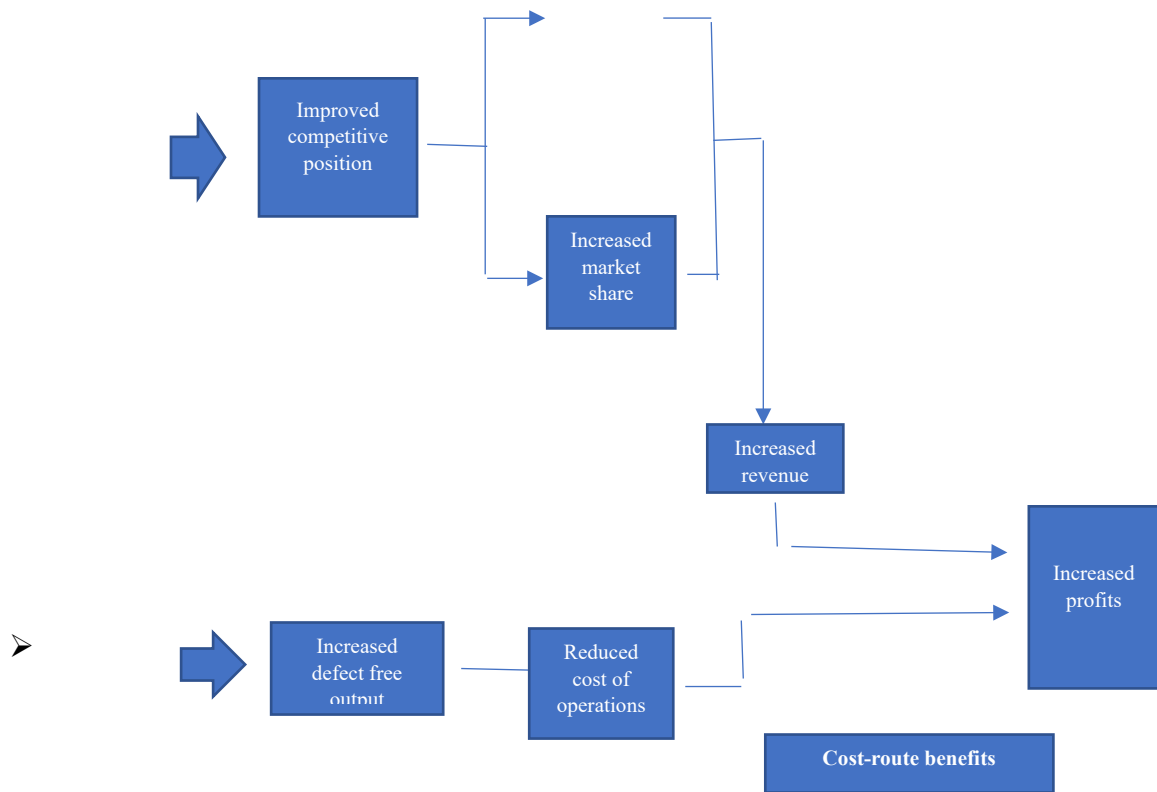


Figure 1. Competitive Benefits of TQM (Source: Adapted from Steyn, 2020b).

- **Just-in-time (JIT)**, this facilitates the processes enabling the procurement management systems to provide production lines with components as they need them.
- **Benchmarking**
- **Re-engineering**
- **Supplier Development**
- **Total Preventive Maintenance (TPM)**
- **Quick Response Programs:** This processes enhanced the production value chains through the application of emergency thinking, by putting teams into the right frame of mind; secondly, designing in a manner that process setups and change overs avoid non-value adding steps, thirdly, gearing towards preparation mode in terms and finally ensuring that the entire process reduces the time needed to serve customers.
- **Team creation & team building**

3. Methodology & Data collection

In this paper secondary data based on previous research was utilized on regional value chains , manufacturing and operations management in the African continent and data in the form of graphical and tabular representation under each theme was collected and analyzed for the purposes of studying the current situational analysis and subsequently developing a roadmap towards how the creation of value chains and critical infrastructure can create climate conducive towards sustainable industrialization in the continent.

4.1 Africa's interregional trade and regional value chain integration

Frank Hartwich and Christoph Hammer (2021), highlight on that the African continent is less integrated in international trade than other continents such as Europa, Asia or North America. This is constant with other analyses that confirm that Africa's growth in world trade has been limited. Afreximbank (2019), for example, finds that Africa only accounted for 2.6 per cent of global trade in 2018. Not only is Africa trading less with the world than other continents, most of the exports dominated by agriculture or low-tech manufactured goods while

the majority of imports seem to be food, coke, petrol, chemicals, machinery and vehicles. This clearly signal the need for African countries to intensify industrial policies and plans focusing on the advancement of primary to tertiary industrial economies, embracing the shift from the export of raw material to finished value added products. To advance this an incentive program should be attractive for local manufactures to innovate, process and product improve quality products readily made for export market.

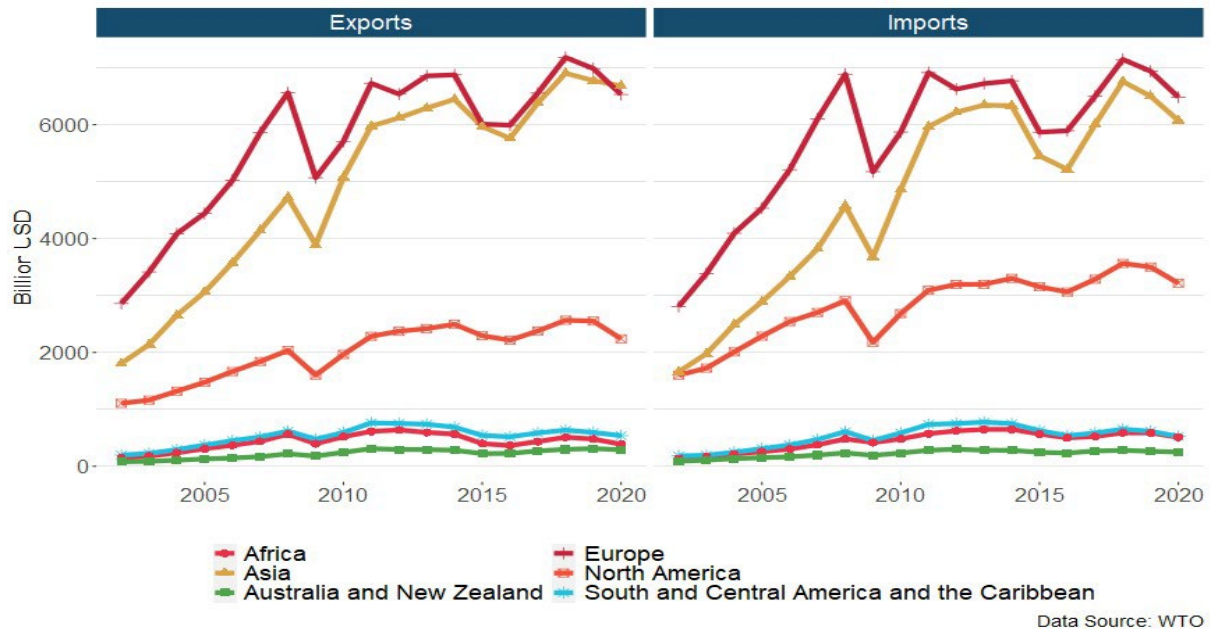


Figure 2. World merchandise trade of continents (Source: OECD).

4.2 Data representation and analysis on Intra & Extra continental trade

The graphical representation also find that extra-African trade dominates total trade; in 2019, intra-African exports accounted for only 16 per cent of total exports, while imports only accounted for 12 per cent of total imports. At this low level, trade between African economies is likely to be insufficient to further accelerate economic growth. Considering this data representation it confirms the need for emphasizing the need for the development of regional value chains, which according to OECD(2021) ,reflects the African continent accounts for only 2.7% of global value chains, in comparison to Latin America's 26.4% and 42.9% in developing Asia. Africa is mentioned to be largely an a marginal actor in both global and regional value chains internationally only having a 1.7% participation rate.

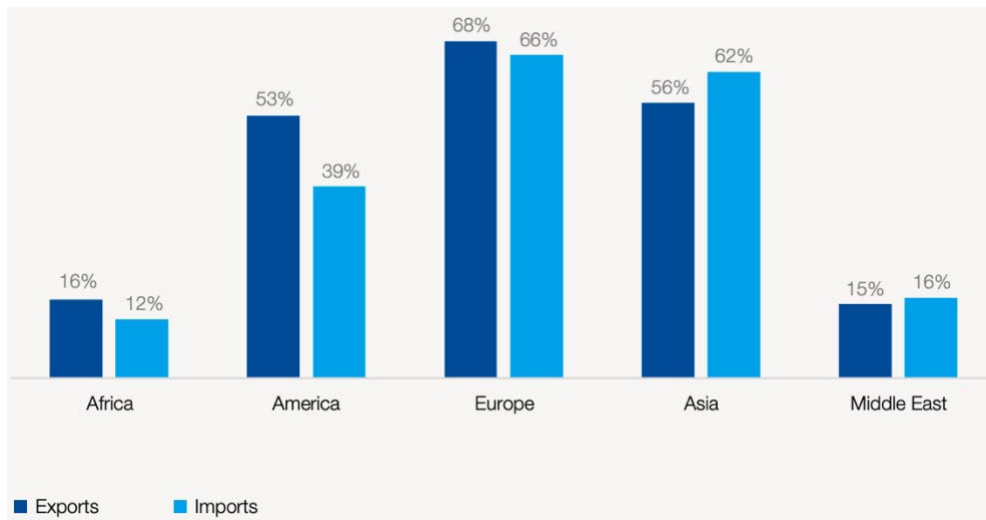


Figure 3. Intra-continental trade as % of total trade with the world, 2019 (Source: OECD).

4.3 Data representation on Africa regional trade

The tabular representation below provides continental trade data for the different regions in the African continent, in terms of exports within the region and exports with the rest of the world including within the continent as well as imports within the regions and imports external to the region. In terms of the data representation, there is a clear demonstration that Africa also lags behind much of the world in terms of the integration of its regional economic communities, including the Economic Community of West African States (ECOWAS), the East African Community (EAC), the Southern African Development Community (SADC), the Economic Community of Central African States (ECCAS) and the Arab Maghreb Union (AMU/UMA). This indeed reflects the need for the creation of regional value chains whereby unbundling of factories across international borders so that individual tasks are performed in different countries, which enjoy competitive advantage in a specific activity.

Trade group	Exports		Imports	
	Intra-group	Rest of the world (incl. other African regions)	Intra-group	Rest of the world (incl. other African regions)
ECCAS	1.12%	98.88%	0.81%	99.19%
ECOWAS	8.01%	91.99%	6.35%	93.65%
SADC	29.24%	70.76%	18.94%	81.06%
EAC	26.17%	73.83%	7.06%	92.94%
AMU	1.27%	98.73%	0.73%	99.27%

Note: Based on UN COMTRADE HS. Trade groups are either defined based on the African Union or the Regional Economic Communities. Rwanda and Tanzania are both part of two economic communities. For this table, they are counted towards both.

Figure 3. Intra-continental trade as % of total trade with the world, 2019 (Source: OECD).

5. Conclusion

Clearly the inception and conceptualization of AFCTA and participation in BRICS is a step in the right direction for the African continent, more so taking into cognizant the projected benefits to be realized in terms of the improvement in the standard of living whereby 30 million people will be removed out of abject poverty by 2035, furthermore on the trade side of the equation removal of trade barriers as well as implementation of regional economic integration regional income to rise by \$ 450 billion, exports rise by 81% within the continent and 19% for non-African countries, and finally manufacturing being the largest contributor towards exports \$ 560 billion increase to be realized. Furthermore, participation in BRICS a right directive if utilized optimally; considering that this forms part of emerging markets represents 42% of the world population and account for over 31% of the world's GDP. This initiative to be realized however requires an emergent change in terms of industries and sector approach towards productivity and competitiveness; sound productivity and quality enhancement tools such as competitive excellence, quick response philosophy and joint improvement tools relating to the final manufactured goods for consumption have to be incorporated into the regional manufacturing value chains; integral to this is robust rail, telecommunication, road and ports infrastructure supported by incentives such as the special economic zone and other economic and industrial economic incentives for attracting domestic and foreign direct investment.

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Biographies

Thakaramahlaha Lehohla holds a PhD in Operations & Quality Management, Master's Degree, Post-Graduate Diploma, Advanced Diploma and Advanced Certificate in Project & Programme Management all obtained from Cranefield College of Project & Programme Management. Furthermore, holds a Bachelor of Commerce from the University of Pretoria. The Master's degree dissertation was based on the environment within the Manufacturing Competitiveness Enhancement Programme; which was a flagship programme at the Department of Trade and Industry meant to protect and develop industrialisation during turbulent economic period, as well as advance global competitiveness, skills development, export promotion and employment in the manufacturing industry. The topic of dissertation was "Applying Project and Programme Management Principles to the Manufacturing Competitiveness Enhancement Programme. The researcher has been employed by the department for the past eight years, serving as a deputy director. The Ph.D qualification enrolment was with the School of Engineering and Built Environment, under the faculty of Quality and Operations Management. The researcher's topic for thesis was "Developing Project, Programme and Operations Management Methodologies for Sustainable Industrialisation In South Africa". His interests include Industrial and Economic development research, with focus of integrating the project and operations management body of knowledge

Pule Kholopane holds Master's Degree in Industrial Engineering and Operations Management and several Diplomas from different institutions i.e. Economics (Turin; Italy), Production Management (PMI), Communications (Wits), Industrial Relations (Wits) and Management (Wits). He obtained his PhD degree in Engineering Management from the University of Johannesburg. Prof. Kholopane was a part-time lecturer at the Production Management Institute (PMI) and later joined the Vaal University of Technology as Head of Department and Senior Lecturer in the department of Industrial Engineering and Operations Management before joining the University of Johannesburg as a Senior Lecturer. He is a supervisor and coordinator of the M. Tech Quality and Operations Management program at the Institute and is currently the Head of the Department (HOD) and Associate Professor in Quality and Operations Management.

