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Assessment of the Impact of Road Transport Infrastructure on Intra-African Trade Volumes Under African Continental Free Trade Area (2018–2024)

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Abstract
This study investigates the extent to which road transport infrastructure has influenced intra-African trade volumes under the African Continental Free Trade Area (AfCFTA) from 2018 to 2024. The work studied the Abidjan-Lagos corridor, Central corridor (Burundi, Rwanda, and DRCongo), and Northern corridor(Uganda, DRCongo, and South Sudan). Utilizing the Regional Integration Theory as a conceptual lens, the research hypothesizes that enhanced road networks infrastructure should improve trade flows across African States by reducing transit times, lowering costs and facilitating the efficient movement of goods and services. Secondary trade data was gathered from institutional reports from African development Bank, United Nations Economic Commission for Africa, Programme for infrastructure development in Africa, World Bank, Africa Union, Economic Community of West African States and a review of the transport corridors in Africa, highlighting a 7.3% increase in intra-African trade share during the period. Empirical evidence posits that countries with strategic improvement in road transport infrastructure, such as Kenya, Nigeria and South Africa, had higher intra-African trade growth relative to those with inadequate connectivity such as Rwanda, Guinea, Burundi, Madagascar, and the Gambia.The findings revealed that road transport infrastructure improvements, have reduced transport costs and boosted trade flows, although regional disparities and logistical constraints persist. The paper concludes with policy recommendations for harmonizing infrastructure investment with trade facilitation to fully actualise the objectives of AfCFTA.

Keywords: Road transportation, AfCFTA, intra-African trade, transport corridors, infrastructure development, regional integration, trade facilitation.

I. Introduction

The African Continental Free Trade Area (AfCFTA), initiated in 2018, aims to foster regional integration through trade liberalization and enhanced connectivity. One crucial enabler of this integration is road transport infrastructure, which links landlocked and coastal nations across the continent. Despite the recognized importance of trade connectivity, the role of road infrastructure in realizing AfCFTA objectives remains underexplored. This study addresses that gap by assessing the impact of road transportation infrastructure on intra-African trade volumes between 2018 and 2024.

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II. Background of the Study

The African Continental Free Trade Area (AfCFTA), which was created in 2018 and started operating in 2021, is a major effort to boost economic integration across Africa by creating a single market for goods and services among 54 of the 55 African Union member states (UNCTAD, 2023). The agreement aims to increase trade between African countries by up to 52% by removing tariffs on 90% of goods and reducing other trade barriers (World Bank, 2020). However, achieving these goals depends largely on the continent's ability to fix infrastructure problems, especially in road transportation.

Road transport is the main way goods are moved across Africa, making up over 80% of trade. This makes improving road infrastructure key to increasing trade within the continent (UNECA, 2023). Yet, many African countries still face issues such as poor road networks, lack of maintenance, high transportation costs, and delays at border crossings. These problems make it harder for goods and services to move smoothly, which limits the benefits of the AfCFTA (African Development Bank, 2023).

Some key transport corridors like the Northern Corridor in East Africa, the Abidjan-Lagos Corridor in West Africa, and the Trans-Kalahari Corridor in Southern Africa have seen major investments to improve roads and trade connections (TradeMark Africa, 2023). Programs like One-Stop Border Posts (OSBPs) are also being used to reduce delays and costs at borders. However, there are still big differences in the quality of infrastructure and how it is managed, which slows down the progress of the AfCFTA's goals (Olayemi & Nwokoye, 2022).

Infrastructure's importance in supporting economic growth is well-known. For example, a study by Ikegbunam, Okoye, Onyejegbu, and Ilo (2023) showed that technology infrastructure is important for improving business operations and linking economies. Similarly, transport infrastructure, especially roads, is vital for the AfCFTA to work, as it helps connect markets, lower trade costs, and allow goods and workers to move across borders.

Given how important road transportation is for trade in Africa and the goals of the AfCFTA, it's important to study how improvements in road infrastructure have affected trade between African countries from 2018 to 2024. Understanding this relationship will help policymakers, development partners, and investors make better decisions about how to invest in infrastructure to support trade across the continent.

III. Theoretical Framework: Regional Integration Theory

3.1 Regional Integration

Theory provides a valuable analytical lens through which to examine the relationship between road transportation infrastructure and intra-African trade under the African Continental Free Trade Area (AfCFTA). Rooted in political economy and international relations, Regional Integration Theory explores how and why states come together to form regional blocs, reduce trade barriers, and harmonize policies to pursue collective economic and political goals (Balassa, 1961; Haas, 1958).

There are two main strands of regional integration theory relevant to this study: neo-functionalism and market integration theory.

3.1.1 Neo-functionalism

Neo-functionalism posits that regional integration begins with cooperation in limited functional areas (e.g., transportation or trade) and gradually leads to deeper integration in other sectors due to "spillover effects" (Haas, 1958). In the context of AfCFTA, improvements in road transportation infrastructure represent a functional integration measure that facilitates cross-border trade, which may subsequently lead to broader economic harmonization, institutional cooperation, and even political integration across Africa.

As road infrastructure improves through projects like the Abidjan-Lagos Corridor or the Northern Corridor it not only reduces trade costs and time but also necessitates cooperation in customs procedures, security coordination, and infrastructure policy among member states. These dynamics exemplify the spillover effects highlighted in neo-functionalist theory.

3.1.2 Market Integration Theory

Balassa's (1961) stages of economic integration—ranging from preferential trade areas to economic and political union—underscore the central role of infrastructure in achieving trade liberalization and market access. Market integration theory argues that infrastructure is a precondition for the smooth flow of goods and services across borders. Without sufficient transport infrastructure, tariff liberalization alone cannot lead to meaningful trade expansion.

Road transportation, therefore, is not a peripheral concern but a structural foundation for the operation of AfCFTA. According to this perspective, enhancing transport infrastructure enables more inclusive participation of landlocked and

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underdeveloped regions in regional value chains, promoting equitable growth.

3.2 Application of Regional Integration Theory to the Study

Applying regional integration theory to this study reveals how road transportation infrastructure functions as a catalyst for deeper economic ties under AfCFTA. It facilitates the movement of goods, reduces the economic distance between regions, and increases trade volumes all of which are prerequisites for integration. The theory also helps explain why countries that have heavily invested in cross-border road networks such as Kenya, South Africa, and Nigeria are better positioned to benefit from AfCFTA.

Moreover, as infrastructure development advances, it compels states to cooperate on related policy areas such as customs standardization, trade logistics, and infrastructure financing. This alignment of interests and institutions is consistent with the theory's prediction of functional spillover and deeper regionalism.

Finally, regional integration theory underscores the importance of policy harmonization in achieving infrastructural equity. Without coordinated continental and regional efforts, infrastructural disparities could exacerbate trade imbalances and undermine AfCFTA's objectives an outcome the theory predicts if integration is uneven or fragmented.

IV. Objectives of the study

To assess the impact of road transportation infrastructure on intra-African trade under AfCFTA between 2018 and 2024.

Specific Objectives:

- To examine changes in intra-African trade volumes related to road infrastructure improvements.
- To identify the most influential transport corridors and their effect on trade.
- To evaluate regional disparities in infrastructure development.

Research Questions:

- How has road transportation infrastructure influenced intra-African trade volumes since the inception of AfCFTA?
- What are the major corridors contributing to trade facilitation?
- What infrastructural challenges persist across regions?

V. Conceptual Literature Review

The conceptual framework guiding this study is rooted in the interplay between road transportation infrastructure and intra-African trade, as facilitated by the AfCFTA. Road transportation infrastructure refers to the physical systems such as highways, roads, and bridges that enable the movement of goods and services across geographic areas. It plays a crucial role in reducing trade costs, enhancing market access, and facilitating economic integration.

According to Rodrigue et al. (2020), efficient transportation infrastructure is a key determinant of trade competitiveness, especially in developing regions where logistics costs can constitute up to 60% of the final product price. In Africa, the predominance of road-based freight transport underscores the importance of maintaining quality road networks to support intra-regional commerce.

In the context of AfCFTA, transportation infrastructure is conceptualized as both an enabler and a barrier to trade integration. The UNECA (2023) conceptualizes road infrastructure as part of a broader trade facilitation ecosystem that includes customs efficiency, harmonized standards, and logistical interoperability. Countries that invest in integrated road systems, border facilities, and digital infrastructure tend to achieve higher trade facilitation scores and benefit more from regional trade agreements.

The conceptual link between road infrastructure and trade is also framed within the theory of trade facilitation, which posits that improvements in infrastructure directly reduce transaction costs, thereby increasing trade volumes (Wilson et al., 2005). In this context, road infrastructure serves not only as a physical conduit for goods movement but also as a strategic asset that influences time, cost, and reliability of trade.

Moreover, the World Bank (2022) emphasizes that infrastructure deficits—such as poor road conditions, congestion, and lack of intermodal connectivity—pose serious constraints to the implementation of AfCFTA. These constraints create trade fragmentation and limit the full realization of the agreement's objectives, particularly for landlocked and low-income countries.

In a deferring view, Okoye, Kalu, & Okonkwo (2022) insists that getting assistance from world powers to improve infrastructure development in Africa in turns undermines the sovereignty of

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Africa States because of fact that the so called aids comes with conditionalities.

Again, Ilo, Ikegbunam, Okoye,& Onyejegbu (2023) and Idigo, (2019) holds that terrorism and insecurity are among the major causes of infrastructure deficits and underdevelopment in Africa which in turn negatively affects the facilitation of intra-African trade volumes.

But many of conceptual literatures actually underscores the critical role of road transportation infrastructure in achieving the economic aspirations of AfCFTA. It supports the hypothesis that improvements in this infrastructure segment significantly influence trade outcomes across the continent.

VI. Empirical Literature Review

Empirical studies have highlighted the significant role that road transportation infrastructure plays in shaping intra-African trade, particularly under the framework of AfCFTA. A growing body of research provides evidence that improving road networks can substantially reduce trade costs, improve transit times, and facilitate regional integration.

According to Foster and Briceño-Garmendia (2019), infrastructure deficits in Africa, especially in road transport, add approximately 30–40% to the costs of goods traded within the continent. These costs disproportionately affect landlocked countries, many of which depend heavily on road corridors to access seaports and regional markets. Enhancing road quality and connectivity has been shown to improve trade volumes and export diversification in countries such as Uganda, Zambia, and Ethiopia.

Mbaye and Gueye (2021) conducted a panel data analysis covering 20 African countries between 2005 and 2019 and found a statistically significant correlation between road density and intra-African trade flows. Their results suggest that a 10% increase in road infrastructure investment led to an approximate 6% increase in trade volumes, highlighting the infrastructure–trade nexus.

Similarly, Olayemi and Nwokoye (2022) explored the impact of regional insecurity and logistics disruptions on trade flows in West Africa. They found that poor road conditions and border delays in Nigeria, Benin, and Togo considerably hampered trade, with many exporters facing losses due to cargo delays. These challenges were shown to undermine the benefits of AfCFTA, especially in its early implementation stages.

TradeMark Africa (2023) evaluated the effectiveness of road corridor upgrades and One-Stop Border Posts (OSBPs) in East Africa. The study showed that transit times along the Northern Corridor (Mombasa-Kampala-Kigali) improved by over 40% between 2016 and 2022, with a parallel increase in trade volumes and customs revenues. These findings underscore the importance of coordinated infrastructure investment across countries.

Okoye et al. (2022) examined the broader geopolitical context of external interventions in African state security and sovereignty, indirectly stressing the need for self-reliance in infrastructure development. While their study focused on U.S. military assistance to Nigeria, it also highlighted how external dependence can compromise national capacity to manage internal logistics and security both essential components of effective trade facilitation.

Beyond direct trade-related infrastructure, researchers have also examined the broader influence of physical and digital infrastructure on regional economic activities. For example, Ikegbunam, Okoye, Onyejegbu, and Ilo (2023) explored how digital infrastructure, particularly internet access, influences business operations in Nigeria. While their focus was on information and communication technology (ICT), their findings reinforce a broader conclusion: that infrastructure whether digital or physical is a fundamental driver of business efficiency, market expansion, and regional economic integration. This conclusion is transferrable to road transportation, as enhanced infrastructure networks enable smoother logistics, faster transaction processing, and increased participation in cross-border trade.

These empirical findings collectively affirm that improvements in road infrastructure not only facilitate movement of goods but also enhance trade efficiency, reduce non-tariff barriers, and support regional trade agreements like AfCFTA.

VII. Methodology

This study employs a mixed-methods research design that integrates both quantitative and qualitative approaches to provide a comprehensive assessment of the impact of road transportation infrastructure on intra-African trade volumes under the AfCFTA between 2018 and 2024.

7.1 Research Design

A longitudinal design is utilized to track changes over time, capturing the dynamics of infrastructure development and trade flows across selected African regions. This design is appropriate given the temporal dimension of AfCFTA implementation and infrastructure upgrades (Creswell & Plano Clark, 2018).

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7.2 Data Sources

Secondary data were collected from reputable sources including the African Development Bank, United Nations Economic Commission for Africa (UNECA), World Bank, TradeMark Africa, and national transport and trade ministries. These datasets include trade volume statistics, logistics performance indices, road condition reports, and policy documents from 2018 to 2024.

7.3 Sampling and Region Selection

A purposive sampling method was used to select key trade corridors such as the Northern Corridor (Kenya, Uganda, Rwanda), the Abidjan-Lagos Corridor (Nigeria, Ghana, Côte d'Ivoire), and the Trans-Kalahari Corridor (Namibia, Botswana, South Africa). These corridors represent diverse infrastructural conditions and levels of trade integration.

7.4 Data Collection Techniques

Quantitative data were obtained from databases and reports, while qualitative data were collected through content analysis of policy documents/reports from institutions such as AU, ECOWAS, UNECA, AfCFTA, PIDA, World Bank,UNCTAD, AfDBetc. and published studies. Where possible, stakeholder reports from trade and transport authorities were consulted to validate findings (Yin, 2018).

7.5 Method of Data Analysis

This study adopted a qualitative research approach to explore the extent to which road transportation infrastructure has influenced intra-African trade under AfCFTA from 2018-2024. Qualitative method enables researchers to interpret non-numeric data such as policy reports expert interviews, trade agreement and institutional publications within the broader socio-economic and political integration (Creswell & Poth, 2018).

VIII. Data Analysis and Discussion

8.1. Trade Volume Trends Data from United Nations Conference on Trade and Development (UNCTAD, 2023a) reported that global trade contracted in 2023, with a notable decline in the value of traded goods. Despite this contraction in value, trade volume remained relatively stable, indicating resilient global demand, partly buoyed by a weaker U.S. dollar in the second half of the year.

Intra-African trade continues to reflect untapped potential, comprising only about 16% of total African exports, significantly lower than intra-regional trade in Europe and Asia (UNCTAD, 2023b). The African Continental Free Trade Area (AfCFTA) is anticipated to improve these figures by reducing tariff and non-tariff barriers. However, realizing this benefit requires coordinated investment in transport infrastructure, including road systems, which are vital for moving goods across landlocked and coastal nations.

Sectoral analysis reveals a declining trend in services trade in Sub-Saharan Africa. The region's share of Africa's services exports fell from 60% in 2016–2017 to 50% in 2023 (UNCTAD, 2023c). This decline highlights the need for infrastructure development to support service delivery across borders, especially in digital and logistics services.

Moreover, Foreign Direct Investment (FDI) inflows into Africa decreased by 3% in 2023, totaling $53 billion, with project finance deals falling drastically by 50% (UNCTAD, 2023d). This downturn in project finance, especially in infrastructure and renewable energy, has implications for trade connectivity. For example, fewer investments in road projects can stall the regional supply chain progress AfCFTA aims to achieve.

The above data underscores that for AfCFTA to reach its full potential, investment in road transportation infrastructure is critical. Efficient road networks are essential for reducing intra-African trade costs, improving time to market, and facilitating broader regional integration (UNCTAD, 2023b).

UNCTAD (2023) reveals that intra-African trade increased from 15.0% in 2018 to 22.3% in 2024, marking a significant growth of 7.3 percentage points. This surge aligns with key road infrastructure investments during the same period, particularly in East, West, and Southern Africa. Projects such as the Lagos-Abidjan Corridor and the Central Corridor in Tanzania have improved road access and cargo transit reliability.

8.2. Infrastructure and Trade Facilitation

Infrastructure development, particularly in the road transportation sector, is central to the successful implementation of trade facilitation measures under the African Continental Free Trade Area (AfCFTA). Efficient physical infrastructure reduces logistics costs, enhances supply chain reliability, and increases access to regional markets—factors that are indispensable for boosting intra-African trade.

The World Bank (2020) emphasizes that poor infrastructure remains a critical bottleneck for African economies, with transportation costs among the highest in the world. In landlocked African countries, transport expenses can account for over 70% of the total cost of traded goods. In contrast, well-developed road corridors and efficient customs

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procedures significantly lower trade costs and increase competitiveness (World Bank, 2020).

According to UNECA (2021), inadequate road connectivity, especially between African borders, leads to significant delays and inefficiencies. Border crossing times, especially along key corridors like the Trans-African Highway, often exceed 24 hours, undermining just-in-time delivery and perishable goods trade. The establishment of One-Stop Border Posts (OSBPs) and the integration of digital customs systems have proven effective in reducing border wait times by over 50% in East African countries such as Kenya, Rwanda, and Uganda (TradeMark Africa, 2022).

Infrastructure not only supports physical movement of goods but also plays a role in harmonizing trade facilitation policies. The World Trade Organization's Trade Facilitation Agreement (TFA), ratified by many African nations, outlines commitments for improving transparency, customs cooperation, and documentation processes. However, these policy tools are limited without adequate road infrastructure to support actual movement and delivery of goods (WTO, 2022).

Furthermore, empirical findings show that countries investing in road modernization and maintenance report higher intra-regional trade volumes. For example, a study by Mbaye and Gueye (2021) found that a 10% improvement in road infrastructure quality correlates with a 5–7% increase in regional trade flows. These findings underscore the importance of integrating infrastructure development with trade facilitation strategies.

In the context of AfCFTA, infrastructural disparities between countries pose a challenge to equitable benefits. Without a concerted effort to upgrade underdeveloped road networks in Central and West Africa, trade benefits will remain unevenly distributed, thereby hampering the broader objectives of economic integration and poverty reduction (UNCTAD, 2023).

The correlation between infrastructure and trade facilitation is evident in the improvements seen in logistics performance and clearance efficiency. According to the World Bank (2022), the Logistics Performance Index scores of countries like Kenya, Rwanda, and Côte d'Ivoire improved by an average of 12% between 2018 and 2023. These gains are largely attributed to better road surfaces, reduced checkpoints, and implementation of One-Stop Border Posts (OSBPs), which have reduced border clearance times by more than 50% in many locations (TradeMark Africa, 2023).

8.3. Cost and Time Efficiency

Freight costs per ton-kilometer decreased by 10–15% in major trading corridors, as reported by the African Development Bank (2023). The Mombasa-Kampala corridor, for instance, saw the average transport time for goods reduce from 10 days in 2018 to 6 days by 2023. These improvements have been vital in making intra-African trade more competitive, especially for small and medium-sized enterprises (SMEs) dealing in perishable goods and time-sensitive cargo.

8.5 Influential Transport Corridors and Their Effect on Trade under AfCFTA

Transport corridors play a pivotal role in facilitating intra-African trade by connecting landlocked regions to seaports, reducing transit times, and lowering trade costs. Under the African Continental Free Trade Area (AfCFTA), the development and enhancement of major road transport corridors are crucial to achieving the agreement's objective of boosting regional trade.

8.5.1. Northern Corridor

The Northern Corridor, which links the Port of Mombasa in Kenya to landlocked countries such as Uganda, Rwanda, Burundi, South Sudan, and the Democratic Republic of Congo, is among the most active trade routes in East Africa. According to TradeMark Africa (2022), investments in road upgrades, One-Stop Border Posts (OSBPs), and logistics hubs along the corridor have led to a 47% reduction in transit time between Mombasa and Kampala between 2016 and 2022. This has significantly increased cargo throughput and customs revenue collection, enhancing trade flow efficiency under AfCFTA.

8.5.2. Central Corridor

Stretching from the Port of Dar es Salaam in Tanzania through to Burundi, Rwanda, and the eastern part of the DRC, the Central Corridor is a key alternative to the Northern Corridor. While still less developed, the Central Corridor has seen growing investments aimed at reducing congestion and delays. Improved road connectivity and digital customs systems have boosted its competitiveness and contributed to increased trade volumes, especially in agricultural and manufactured goods (UNECA, 2021).

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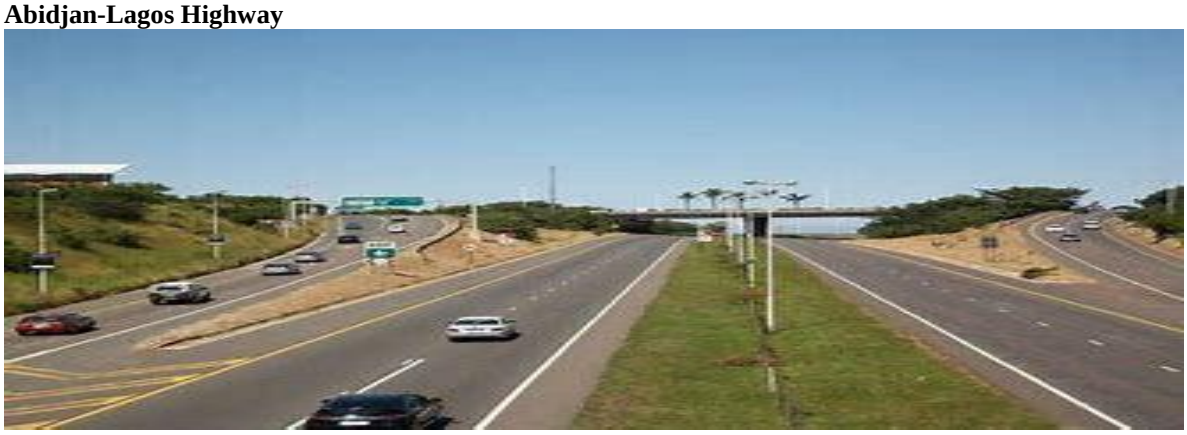
8.5.3. Abidjan–Lagos Corridor
Abidjan-Lagos Highway



Source: Infrastructure and Urban Development Department, 2023

Bamenda-Enugu-Cross-River-bridge

Source: Infrastructure and Urban Development Department, 2023

This West African corridor runs through Côte d'Ivoire, Ghana, Togo, Benin, and Nigeria, covering approximately 1,000 km. It is one of the most densely populated and economically active regions in Africa. According to the African Development Bank (AfDB, 2020), the corridor facilitates over 70% of West Africa's trade and has the potential to become a model for cross-border cooperation. Investments in expressway upgrades and the harmonization of border procedures have enhanced mobility, improved security, and stimulated commerce among member states.

4. North–South Corridor
Zambia-Botswana-Zimbabwe-Namibia

Source: Infrastructure and Urban Development Department, 2023

Spanning from the port of Durban in South Africa through Zimbabwe, Zambia, and up to the DRC, the North–South Corridor is critical for Southern African trade. Supported by the Programme for Infrastructure Development in Africa (PIDA), this corridor has been a focal point for regional

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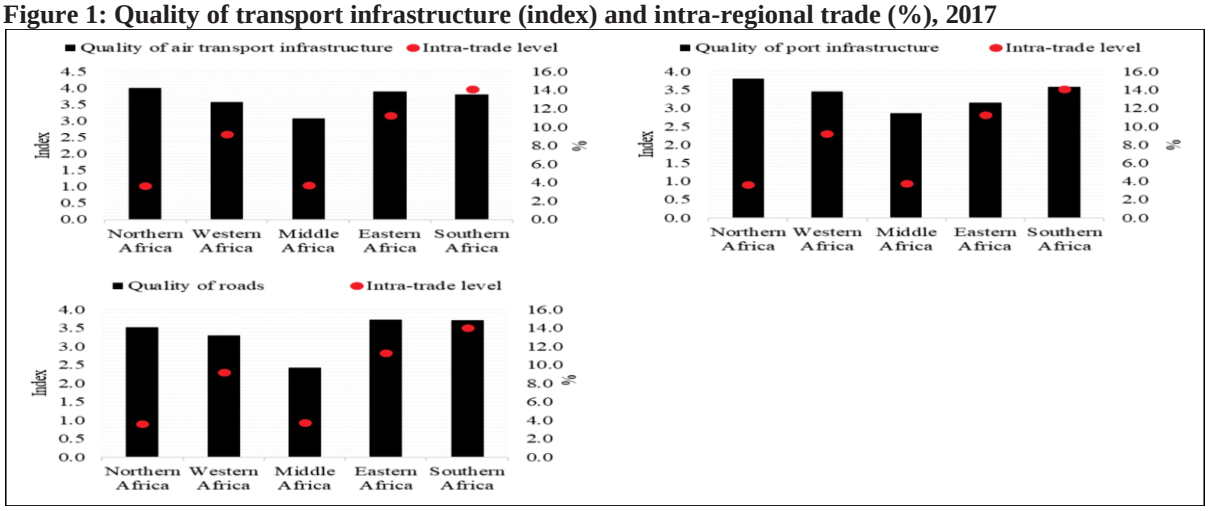
infrastructure initiatives aimed at reducing trade bottlenecks and stimulating industrial exports (PIDA, 2020). A study by Mthembu and Tondani (2021) found that improvements along this corridor have contributed to a 30% increase in trade volumes among SADC countries between 2015 and 2022.

Figure 1: Quality of transport infrastructure (index) and intra-regional trade (%), 2017



Source:UNCTADandGlobalcompetitivenessdatabase(WorldEconomicForum) as as cited in Takpara, M.M., Nkemgha, G.Z. Zouri, S., Kebalo, L. (2024). Transportinfrastructureandintra-Africantrade:Anewempiricalevidence. Policy Research Working Paper Series, APRWPS/2024/11.

8.6. Disparities and Barriers

While the improvements are notable some areas of the region, disparities remain. For instance, the Central African countries, particularly the Democratic Republic of Congo (DRC) and Chad, continue to suffer from poor road conditions, which limit their participation in regional trade (World Bank, 2023). Moreover, insecurity in the Sahel region and bureaucratic delays in customs clearance hinder the efficient use of otherwise improved road networks (Olayemi & Nwokoye, 2022).

8.7. Synthesis of Findings

The analysis confirms that road transportation infrastructure is a key enabler of trade integration in Africa. The increase in trade flows, reduction in logistics costs, and improvements in corridor performance collectively demonstrate that targeted infrastructure development contributes to the success of AfCFTA. Nonetheless, sustained investment, security stabilization, and policy harmonization are essential for long-term impact and inclusivity across all African regions.

9. Policy Recommendations

Based on the findings of this study, which emphasize the significant influence of road transportation infrastructure on intra-African trade performance under AfCFTA, the following targeted recommendations are raised:

- Prioritize Investment in Strategic Road Corridors

African governments, in collaboration with the African Union and regional economic communities (RECs), should prioritize investment in critical trade corridors such as the Northern Corridor, Abidjan-Lagos Corridor, and North–South Corridor. These routes serve as high-impact arteries for regional commerce and require continuous upgrades, maintenance, and expansion to meet rising trade demands.

- Leverage Public–Private Partnerships (PPPs) for Infrastructure Financing

Given the limited fiscal space in many African countries, PPPs should be actively pursued to bridge the road infrastructure financing gap. Governments should provide regulatory clarity and incentives to attract private investment in transport infrastructure development, ensuring cost recovery mechanisms that balance investor returns with public affordability.

- Harmonize Regional Transport and Trade Facilitation Policies

Inconsistencies in axle load limits, customs documentation, and transit procedures across borders remain significant non-tariff barriers. AfCFTA implementation should be complemented by harmonized transport regulations across RECs, including joint customs inspections and shared digital tracking systems to reduce delays and improve efficiency.

- Strengthen Institutional and Governance Frameworks

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Institutional bottlenecks such as corruption, weak regulatory oversight, and lack of inter-agency coordination hinder the optimal use of road infrastructure. Governments should establish strong transport sector regulatory bodies, improve transparency in project procurement, and develop capacity-building programs to enhance institutional effectiveness.

- Develop and Modernize One-Stop Border Posts (OSBPs)

The expansion of OSBPs has already shown measurable benefits in East Africa. These should be replicated continent-wide, especially along high-traffic routes, to streamline border clearance, reduce dwell times, and minimize transaction costs. Investments should also be made in integrating these posts with digital customs and logistics platforms.

- Adopt Smart Transportation Technologies

Digital innovations, including satellite navigation systems, real-time cargo tracking, and road asset management tools, should be adopted to increase the efficiency of road usage and improve trade logistics. These technologies can reduce freight theft, monitor vehicle performance, and provide data-driven insights for infrastructure planning.

- Promote Inclusive Infrastructure Development

Special attention should be given to improving connectivity for landlocked and least developed countries, which often face disproportionate transport costs. Equitable investment strategies that ensure even the marginal regions benefit from AfCFTA will help prevent regional disparities and promote inclusive growth.

- Monitor and Evaluate Trade and Infrastructure Performance

African countries should establish standardized frameworks to monitor and evaluate the effectiveness of infrastructure investments in relation to trade outcomes. Institutions such as UNECA, UNCTAD, and Afreximbank can support countries in developing metrics to assess road quality, corridor efficiency, and trade growth under AfCFTA.

These recommendations are intended to guide policymakers, regional bodies, and development partners Africa towards harnessing the full potential of road transportation infrastructure to unlock sustained trade growth and economic integration across Africa.

10. Conclusion

The research underscores the vital role of road transportation infrastructure in advancing the goals of the African Continental Free Trade Area (AfCFTA) between 2018 and 2024. As the backbone of intra-African connectivity, road networks serve not only as conduits for goods and services but also as enablers of regional integration, economic diversification, and trade competitiveness.

Empirical findings reveal a positive correlation between improved road infrastructure and increased intra-African trade volumes. Countries that invested in major transport corridors—such as the Northern Corridor, Abidjan-Lagos Corridor, and North–South Corridor—recorded measurable improvements in trade flow efficiency, customs revenue, and cross-border mobility. These developments support the regional integration theory, which posits that the removal of physical and regulatory barriers among member states leads to deeper economic cooperation and shared prosperity.

However, the study also highlights disparities in infrastructure quality and investment across different African regions, which risk undermining the full potential of AfCFTA. Landlocked and least developed countries continue to face significant trade constraints due to poor road quality, bureaucratic border procedures, and lack of logistics hubs. This unequal access to infrastructure can deepen economic imbalances if not addressed through coordinated continental strategies.

Furthermore, while progress has been made in harmonizing trade policies and reducing tariffs under AfCFTA, these efforts must be complemented by investments in physical infrastructure to unlock real economic benefits. Trade facilitation measures—such as One-Stop Border Posts, digital customs systems, and cross-border road improvements—must be scaled across the continent to ensure that all member states can participate effectively in regional trade.

In conclusion, road transportation infrastructure is not merely a supporting factor but a foundational pillar for AfCFTA's success. Policymakers, development partners, and regional bodies must prioritize sustainable infrastructure financing, regional planning, and institutional reforms to realize a truly integrated African market. The findings from this study provide a compelling case for renewed focus on infrastructure-led development as a catalyst for continental trade growth and economic transformation.

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