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## The Future of Logistics in Tanzania: Innovations and Developments

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### Abstract

*The logistics sector plays a pivotal role in facilitating economic growth and regional trade integration in Tanzania. Despite its strategic position as a gateway to East Africa, Tanzania faces persistent challenges in its logistics system, including infrastructure deficits, limited adoption of information and communication technology (ICT), and regulatory inefficiencies. This study employs a systematic literature review to analyze these challenges and identify actionable solutions. The findings reveal that poor road conditions, delays in railway development, and port inefficiencies significantly hinder logistics performance, increasing transport costs and delays. While Tanzania has made progress with initiatives like the Tanzania Customs Integrated System (TANCIS), the overall adoption of digital tools remains inadequate compared to regional competitors such as Rwanda and Kenya. Furthermore, regulatory inconsistencies and lengthy customs clearance processes exacerbate inefficiencies, undermining the country's competitiveness as a logistics hub. To address these issues, this study recommends accelerating infrastructure development, scaling up ICT adoption, strengthening public-private partnerships (PPPs), and streamlining regulatory frameworks to enhance logistics efficiency, reduce trade costs, and solidify its position as a regional logistics leader.*

**Key Words:** Logistics, infrastructure, ICT, public-private partnerships, regulatory frameworks, supply chain efficiency

### 1. Introduction

Logistics systems are critical for enabling economic development, enhancing trade facilitation, and integrating domestic and regional markets. For Tanzania, an East African nation with a strategic location, logistics holds the potential to transform its economy and foster regional integration. By connecting landlocked neighbors such as Rwanda, Uganda, Burundi, and the Democratic Republic of Congo (DRC) to global markets through key trade corridors like the Central Corridor and the Dar es Salaam Port, Tanzania plays a pivotal role in regional trade networks. These corridors are instrumental in reducing trade barriers, enhancing the movement of goods, and supporting industrialization (Lawrence and Mupa, 2024).

Despite its strategic advantages, Tanzania's logistics sector faces persistent challenges that undermine its efficiency and competitiveness. Studies have highlighted critical issues, including inadequate infrastructure, limited adoption of modern technologies, high transport costs, and regulatory inefficiencies (World Bank, 2021). For instance, transport costs in Tanzania are estimated at 40% of the value of goods, significantly higher than the global benchmark of 10–15%. These costs, coupled

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with delays in cargo handling at ports, lengthy customs clearance procedures, and inconsistent trade policies, reduce Tanzania's attractiveness as a regional logistics hub (Rashid et al., 2016).

This study examines the current state of logistics in Tanzania. It aims to synthesize theoretical, and empirical insights, providing actionable recommendations to address the critical gaps in the sector.

## **2. Literature Review**

### **2.1 Logistics Efficiency**

Logistics efficiency encompasses the ability to deliver goods and services at the right place, at the right time, and at the lowest possible cost while maintaining quality and reliability (Mentzer et al., 2001). Efficient logistics systems reduce lead times, optimize inventory levels, and enhance overall supply chain performance. For Tanzania, logistics efficiency is closely tied to reducing transport costs, improving infrastructure, and adopting modern technologies to facilitate smooth trade operations (World Bank, 2021).

### **2.2 Public-Private Partnerships (PPPs)**

PPPs are collaborative mechanisms through which governments and private entities jointly develop and manage infrastructure projects, often involving shared risks and rewards (AfDB, 2020). In the logistics sector, PPPs play a critical role in bridging funding gaps for projects such as port expansions, railway upgrades, and road rehabilitation. Successful PPPs not only accelerate infrastructure development but also improve operational efficiency through the application of private-sector expertise.

### **2.3 Information and Communication Technology (ICT)**

ICT refers to digital systems and tools used to enhance information flow, transparency, and automation in logistics operations. Examples include automated customs clearance systems, electronic cargo tracking, and blockchain-based solutions for secure documentation. Mwemezi and Huang (2022) assert that ICT adoption in logistics facilitates real-time tracking of shipments, reduces paperwork, and minimizes the risk of delays caused by manual errors.

### **2.4 Theory of the Study**

This study applies three theoretical frameworks to analyze logistics performance: Supply Chain Management (SCM) Theory, Systems Theory, and the Resource-Based View (RBV). These theories

provide complementary perspectives on the interconnected challenges and opportunities in Tanzania's logistics sector.

#### **2.4.1 Supply Chain Management (SCM) Theory**

Theory emphasizes the coordination and integration of activities across the supply chain to maximize efficiency and value creation. Mentzer et al. (2001) argue that a well-integrated supply chain ensures seamless information flow, reduces costs, and enhances service delivery. However, in Tanzania, fragmented coordination among stakeholders such as customs, transport providers, and port operators creates bottlenecks that lead to delays and inefficiencies. For instance, the lack of integration between the Tanzania Customs Integrated System (TANCIS) and private-sector logistics platforms limits real-time visibility across the supply chain. SCM Theory underscores the importance of adopting advanced digital tools and fostering collaboration among stakeholders to address these inefficiencies.

#### **2.4.2 Systems Theory**

The theory was introduced by Von Bertalanffy (1968), views logistics as a system of interconnected components where inefficiencies in one area can cascade and disrupt the entire supply chain. For example, delays at the Dar es Salaam Port not only increase shipping costs but also disrupt downstream activities such as inland transportation and warehousing. This interconnectedness highlights the need for a holistic approach to logistics improvements. Systems Theory suggests that addressing port congestion, improving road networks, and streamlining customs procedures must be undertaken concurrently to ensure overall system efficiency.

#### **2.4.3 Resource-Based View (RBV)**

The Resource-Based View (RBV), as proposed by Barney (1991), focuses on leveraging unique resources to gain competitive advantage. In the context of Tanzania, resources such as the Standard Gauge Railway (SGR), modernized ports, and ICT systems like TANCIS represent critical assets that can improve logistics performance. However, these resources remain underutilized due to funding challenges, operational inefficiencies, and limited stakeholder capacity. RBV emphasizes the strategic importance of optimizing these resources to improve logistics efficiency, reduce costs, and attract investment. For instance, fully operationalizing the SGR and integrating it with major trade corridors can enhance Tanzania's role as a logistics hub in East Africa.

These theories collectively highlight the importance of coordination, holistic improvements, and resource optimization in addressing Tanzania's logistics challenges. They provide a foundation for understanding the multidimensional nature of the sector and guiding interventions to enhance its efficiency and competitiveness.

## **2.5 Empirical Studies**

### **2.5.1 Infrastructure Gaps**

Infrastructure deficits are widely recognized as the primary barrier to logistics efficiency in Tanzania. The African Development Bank (2020) reports that 60% of the country's trade relies on road transport, yet over 30% of the road network is in poor condition. Poor road quality, particularly in rural areas, leads to high vehicle maintenance costs, increased transit times, and unreliable delivery schedules. Rail transport, which has the potential to alleviate pressure on road networks, remains underdeveloped despite ongoing investments in the Standard Gauge Railway (SGR). Delays in the SGR's construction and its limited integration with existing ports and trade corridors have constrained its impact on regional trade facilitation (World Bank, 2021).

Ports are another critical area of concern. The Dar es Salaam Port, which handles over 90% of Tanzania's international trade, suffers from congestion, inefficient operations, and outdated equipment. UNCTAD (2020) notes that the average dwell time for cargo at the port exceeds nine days, compared to the global benchmark of three days. Efforts to modernize the port, such as the Dar es Salaam Maritime Gateway Project, have introduced improvements, including expanded berths and automated systems. However, these upgrades have yet to fully address the growing demand for efficient cargo handling.

### **2.5.2 ICT Adoption**

The role of ICT in logistics is increasingly recognized as a critical factor for improving efficiency and transparency. Mwemezi and Huang (2022) found that while Tanzania has implemented systems such as the Tanzania Customs Integrated System (TANCIS), the overall adoption of ICT solutions remains limited. TANCIS has successfully reduced customs clearance times at the Dar es Salaam Port, but its lack of interoperability with private-sector logistics platforms hinders seamless information flow across the supply chain.

Comparative studies reveal significant gaps between Tanzania and regional competitors in ICT adoption. Rwanda's electronic single-window system, for instance, has reduced cargo clearance times by 40%, enabling faster movement of goods across borders (World Bank, 2021). Kenya has also made significant strides in integrating digital freight tracking systems, enhancing supply chain visibility and reducing the risk of cargo theft. Tanzania's slower adoption of these technologies highlights the need for a comprehensive ICT strategy to improve logistics performance.

### **2.5.3 Regulatory Inefficiencies**

Regulatory frameworks in Tanzania's logistics sector present significant barriers to efficiency. UNCTAD (2020) highlights that customs clearance procedures are lengthy and complex, often requiring excessive documentation and redundant inspections. These inefficiencies contribute to delays at ports and border crossings, increasing costs for businesses and reducing Tanzania's competitiveness as a regional trade hub.

Inconsistent enforcement of trade policies within the East African Community (EAC) further exacerbates regulatory challenges. The East African Logistics Performance Report (2020) notes that non-tariff barriers, such as discrepancies in tariff structures and inconsistent border procedures, undermine regional trade facilitation efforts. Harmonizing trade policies with EAC member states and streamlining customs procedures are essential for improving cross-border trade and enhancing Tanzania's role in the regional logistics network.

### **2.5.4 Role of Public-Private Partnerships (PPPs)**

PPPs have demonstrated their potential to address infrastructure funding gaps and accelerate project implementation. The World Bank (2021) highlights the success of the Dar es Salaam Maritime Gateway Project, which involved private sector participation in port modernization efforts. However, the overall utilization of PPPs in Tanzania remains limited. Challenges such as unclear regulatory frameworks, bureaucratic inefficiencies, and limited incentives for private sector participation hinder the scalability of PPPs in the logistics sector (AfDB, 2020).

## **2.6 Knowledge Gap**

Existing studies have identified infrastructure, ICT, and regulatory frameworks as critical factors influencing logistics performance. However, there is limited research on how these factors interact to

impact overall efficiency in Tanzania. Additionally, few studies provide comprehensive recommendations tailored to the country's unique challenges, such as its dependence on regional trade corridors.

### **3. Methods**

This study employs a systematic literature review (SLR) to analyze existing research on logistics in Tanzania. The SLR approach ensures a structured, comprehensive, and unbiased synthesis of relevant studies and industry reports. This method is particularly suited to identifying challenges, opportunities, and actionable recommendations by integrating findings from multiple sources.

The literature review process began with a search of peer-reviewed journals, industry reports, and policy documents. Academic databases such as ScienceDirect, Springer, and Wiley Online Library were used to access scholarly articles, while reports from organizations like the World Bank, African Development Bank (AfDB), and UNCTAD provided valuable insights into practical and policy-related aspects of logistics. Tanzanian government publications and East African Community (EAC) documents were also reviewed to understand national and regional policy frameworks affecting the sector.

The SLR ensures that the findings of this study are grounded in credible and diverse sources. By systematically analyzing the intersection of logistics infrastructure, ICT, and policy, the study provides actionable recommendations to improve Tanzania's logistics sector and enhance its role as a regional trade hub.

## **4. Findings and Discussion**

### **4.1 Infrastructure Deficiencies**

Infrastructure remains the most significant barrier to logistics efficiency in Tanzania. Poor road networks, characterized by potholes, narrow lanes, and inadequate maintenance, impede the timely movement of goods. For instance, the African Development Bank (2020) notes that transport costs for agricultural products increase by up to 30% due to delays caused by road conditions. Similarly, the railway sector is underperforming despite the potential offered by the Standard Gauge Railway (SGR). Delays in the construction of the SGR, coupled with limited integration into existing trade networks, reduce its immediate impact on regional trade facilitation (World Bank, 2021).

Ports also face critical challenges. The Dar es Salaam Port, which handles over 90% of Tanzania's international trade, suffers from congestion and limited cargo-handling capacity. UNCTAD (2020) highlights that delays at the port are caused by outdated equipment, inadequate berths, and insufficient storage facilities. While the Dar es Salaam Maritime Gateway Project has introduced some improvements, such as expanded berths and upgraded infrastructure, the port still lags behind competitors like Kenya's Mombasa Port in efficiency and reliability.

#### **4.2 ICT Gaps**

The limited adoption of information and communication technology (ICT) in Tanzania's logistics sector significantly undermines operational efficiency and transparency. Mwemezi and Huang (2022) argue that while systems like TANCIS have reduced customs clearance times, they lack integration with private-sector logistics platforms, leading to fragmented supply chain processes. This fragmentation increases lead times and reduces visibility for cargo movement, particularly along trade corridors.

In contrast, Rwanda and Kenya have demonstrated the transformative potential of ICT in logistics. Rwanda's implementation of an electronic single-window system has reduced customs clearance times by 40%, enabling faster movement of goods across borders (World Bank, 2021). Similarly, Kenya's integration of digital freight tracking systems has enhanced supply chain transparency and reduced incidences of cargo theft. Tanzania's failure to replicate these successes reflects missed opportunities for leveraging ICT to improve logistics performance.

#### **4.3 Regulatory Inefficiencies**

Regulatory inefficiencies in Tanzania, particularly at ports and border crossings, remain a major obstacle to trade facilitation. According to UNCTAD (2020), customs clearance times at the Dar es Salaam Port average nine days, significantly exceeding global benchmarks of three days. These delays are attributed to excessive documentation requirements, redundant inspections, and limited automation of customs processes.

Inconsistent trade policies within the East African Community (EAC) further exacerbate challenges. The East African Logistics Performance Report (2020) highlights disparities in tariff structures and enforcement, which create uncertainty for businesses relying on regional trade routes. Efforts to



harmonize trade policies and reduce non-tariff barriers are critical for improving the competitiveness of Tanzania's logistics sector.

## 5. Summary

The logistics sector in Tanzania is central to the country's economic development and its integration into regional and global trade networks. However, this study has identified significant challenges that hinder the sector's efficiency and effectiveness. Infrastructure deficits remain the most critical issue, with poor road conditions, delayed railway projects, and limited port capacities significantly increasing transport costs and delays. The slow progress in completing the Standard Gauge Railway (SGR) and its lack of integration with key trade routes reduce its potential to facilitate faster and more reliable freight movement. Similarly, congestion and inefficiencies at the Dar es Salaam Port highlight the urgent need for modernization to meet growing demand.

Another key challenge is the limited adoption of information and communication technology (ICT) in logistics operations. Although systems such as the Tanzania Customs Integrated System (TANCIS) have been introduced, the lack of integration with other stakeholders, such as freight forwarders and private logistics companies, limits its overall impact. In comparison, regional competitors like Rwanda and Kenya have successfully implemented advanced ICT solutions, including electronic single-window systems and real-time cargo tracking platforms, which have significantly improved their logistics performance.

Regulatory inefficiencies and policy inconsistencies further undermine Tanzania's logistics competitiveness. Lengthy customs procedures, excessive documentation requirements, and inconsistent enforcement of trade policies create uncertainty and discourage investment in the sector. These challenges are compounded by the lack of harmonization of trade policies within the East African Community (EAC), which hinders cross-border trade and reduces the efficiency of regional trade corridors.

Despite these challenges, there are significant opportunities to transform Tanzania's logistics sector. Investments in infrastructure, particularly through public-private partnerships (PPPs), can address critical resource gaps and accelerate project implementation. Scaling up ICT adoption and streamlining regulatory frameworks can also enhance supply chain efficiency and transparency. By addressing these

issues comprehensively, Tanzania can position itself as a leading logistics hub in East Africa, reduce transport costs, and improve trade facilitation for both domestic and regional markets.

### **5.1 Implications**

The findings of this study underscore the critical role of logistics in Tanzania's economic development and regional trade integration. Addressing infrastructure deficiencies, enhancing ICT adoption, and streamlining regulatory frameworks are imperative for reducing transport costs, improving efficiency, and positioning Tanzania as a regional logistics hub. Furthermore, the study highlights the interconnected nature of logistics challenges, where inefficiencies in one component, such as ports, cascade through the entire supply chain, affecting transport, warehousing, and inventory management. The implications extend beyond the logistics sector, as improved logistics efficiency can boost Tanzania's export competitiveness, attract foreign direct investment, and accelerate industrialization. Regional integration efforts within the East African Community (EAC) also depend heavily on Tanzania's ability to facilitate seamless trade flows along its corridors. Failure to address these challenges risks marginalizing Tanzania in favor of more efficient regional competitors like Kenya and Rwanda.

### **5.2 Recommendations**

Addressing the challenges in Tanzania's logistics sector requires targeted interventions across infrastructure development, ICT adoption, public-private partnerships, and regulatory reforms. These recommendations are designed to enhance efficiency, reduce costs, and position Tanzania as a leading logistics hub in East Africa.

Firstly, infrastructure development must be prioritized to address critical deficiencies in road networks, railway systems, and port capacities. The rehabilitation of major trade corridors, such as the Central Corridor, is essential to improving road transport efficiency, particularly in rural areas where poor road conditions increase transport costs and delay goods delivery. Similarly, the completion and integration of the Standard Gauge Railway (SGR) with key trade routes and ports should be expedited to reduce reliance on road transport and facilitate faster, more cost-effective movement of goods. Modernizing the Dar es Salaam Port is equally vital; this includes expanding berths, upgrading cargo-handling equipment, and enhancing storage facilities to reduce congestion and improve turnaround times.

Secondly, the adoption of information and communication technology (ICT) in logistics should be scaled up to enhance operational efficiency and transparency. Advanced digital tools, such as real-time cargo tracking, blockchain for secure documentation, and Internet of Things (IoT) solutions for monitoring shipments, can transform Tanzania's supply chain processes. Training programs for customs officials, logistics providers, and freight forwarders are necessary to ensure the effective use of these technologies. Additionally, Tanzania can benefit from replicating best practices from regional leaders like Rwanda and Kenya, which have successfully implemented electronic single-window systems and digital freight tracking platforms to streamline operations and reduce delays.

Thirdly, public-private partnerships (PPPs) should be strengthened to mobilize resources for large-scale logistics projects. Clear and consistent policies are needed to attract private sector investment, particularly in areas such as port expansions, road rehabilitation, and logistics parks. Offering incentives such as tax breaks, predictable revenue-sharing models, and government guarantees can further encourage private sector participation. Expanding the scope of PPPs beyond port projects to include road and rail infrastructure development will help address resource constraints and accelerate project implementation.

Finally, regulatory reforms are critical for improving logistics efficiency and trade facilitation. Simplifying customs clearance procedures by reducing documentation requirements and automating inspections will significantly reduce delays at ports and border crossings. Harmonizing trade policies with East African Community (EAC) member states can eliminate non-tariff barriers and create a seamless regional trade environment. Moreover, ensuring policy stability and consistent enforcement of regulations will build confidence among logistics stakeholders and international investors, fostering long-term growth in the sector.

### **5.3 Future Research Directions**

The study reveals gaps in understanding the broader impacts of logistics inefficiencies on Tanzania's economy. Future research could focus on: The economic benefits of emerging technologies such as blockchain and artificial intelligence in logistics. Comparative analyses of logistics systems across East African countries to identify replicable best practices. The socioeconomic impacts of improved logistics on rural communities, particularly for agricultural value chains.

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<https://uonjournals.uonbi.ac.ke/ojs/index.php/adfj/article/view/2686/2154>, and  
*the Influence of Participative Leadership Style on Organizational Performance: A Case Study of The Central Corridor Transit Transport Facilitation Agency in Tanzania:*  
<https://www.ajol.info/index.php/pajbm/article/view/285368>

Mr. Okandju is CCTTFA Senior official serving as the Executive Secretary of the Central Corridor Transit Transport Facilitation Agency (CCTTFA) since April 2022. In this role, OKANDJU leads the Intergovernmental Agency whose mission is to coordinate member states' efforts in ensuring effective coordination and cooperation in the management of transit transport and trade along the Central Corridor.

The Central Corridor is a vital transportation route that connects the Port of Dar es Salaam to member states (*the Republic of Burundi, the Democratic Republic of Congo, the Republic of Rwanda, the United Republic of Tanzania, the Republic of Uganda, Republic of Malawi and Republic of Zambia*) through multimodal transport modes of road, rail, airways, pipeline and inland waterways.

Okandju brings a wealth of experience in his PHD studies related to his position, having been actively involved with CCTTFA since 2017. He has successfully spearheaded transformative regional and national transport and trade programs, engaged in sector policy dialogues, and initiated impactful projects.

CCTTFA is charged with the mandate of promoting the optimal utilization of the Central Corridor, encouraging the maintenance, upgrading, improvement and development of infrastructure and supporting service facilities at ports, rail, lakes, roads, land border posts and along the arteries of the corridor to meet the needs and requirements of all stakeholders, ensuring open competition and reduce the cost of transit transport for land-locked member states.