

# Analysis of the Transportation Infrastructure in Sierra Leone and its Impact on Local Commodities into the Market

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**Abstract:-** Transportation infrastructure plays a crucial role in the economic development and growth of nations, facilitating trade and investment opportunities by enabling the movement of people, services, and goods across markets and regions. However, developing countries such as Sierra Leone face significant challenges in providing suitable transportation infrastructure to support logistics management. Inadequate upkeep, financial constraints, and limited access to technology hinder the development of transportation infrastructure in Sierra Leone. Consequently, logistics management, which involves the planning, implementation, and control of the movement of goods and services, is adversely affected, leading to delayed deliveries, increased costs, and decreased competitiveness in the global market. This study aims to analyze the state of transportation infrastructure in Sierra Leone and its impact on local commodities. To assess the impact of transportation infrastructure on local commodity supply in Sierra Leone, a qualitative approach was employed. The findings from the study reveal that poor transportation infrastructure particularly limited cold storage facilities along transportation routes can lead to the spoilage of perishable goods such as fruits and vegetables. The findings were supported by four important recommendations: investment in road maintenance and expansion, modernisation of port facilities, development of intermodal transportation hubs, and the promotion of public-private partnerships.

**Keywords:-** *Transportation Infrastructure, Sierra Leone, Local Commodities, Market.*

## I. INTRODUCTION

Sierra Leone, a country blessed with abundant agricultural land and mineral resources, struggles to translate this potential into economic prosperity. A critical constraint hindering this progress is the nation's underdeveloped transportation infrastructure (World Bank, 2023). This analysis delves into the complex relationship between Sierra Leone's transportation network and the movement of local commodities to markets. It sheds light on how a deficient system acts as a bottleneck, hindering the ability of farmers

and producers to get their goods to consumers (Fofana et al., 2013).

The analysis focuses on the limitations of the current infrastructure, exploring how poor road conditions, limited railway access, and underutilized waterways restrict the flow of goods. These limitations lead to increased spoilage of perishable agricultural products, particularly fruits and vegetables (Jones & Sanyang, 2008). Additionally, the high cost of transportation due to inefficient logistics and reliance on informal carriers like motorbike taxis ("okadas") reduces profit margins for producers and discourages agricultural investment (World Bank, 2023). This ultimately contributes to food insecurity in certain regions, limiting access to diverse and affordable food options. The impact extends beyond agriculture. Sierra Leone's mining sector, a significant source of potential revenue, is similarly hampered by the lack of efficient transportation infrastructure. The inability to move extracted minerals to processing facilities and export hubs hinders the sector's contribution to national development (Amin et al., 2019).

## II. LITERATURE REVIEW

### A. Transportation

Transportation is an essential element of logistics that refers to the movement of goods and products from one location to another. According to Mangan et al. (2016), transportation is the process of physically moving goods from the place of origin to the place of destination, involving various modes such as road, rail, sea, and air. In logistics, transportation plays a critical role in ensuring the smooth flow of goods along the supply chain. It helps to connect suppliers, manufacturers, distributors, and customers, enabling them to exchange goods and materials efficiently (Christopher, 2016). Transportation also involves various activities such as route planning, vehicle scheduling, load optimization, and delivery tracking, which are crucial for ensuring the timely and cost-effective delivery of goods (Coyle et al., 2017).

### B. Modes of Transportation

There are several modes of transportation used in logistics, including road, rail, sea, and air. Each mode of transportation has its advantages and disadvantages, and selecting the appropriate mode depends on various factors such as the distance, the nature of the goods, and the delivery time (Coyle et al., 2017).

### C. Importance of Effective Transportation System

Transportation is a crucial element of logistics management, as it involves the physical movement of goods and services from the point of origin to the point of consumption. The importance of transportation in logistics can be explained by the following points:

- Linking suppliers and customers: Transportation enables the movement of goods from suppliers to manufacturers and then to customers. Without transportation, supply chains would not function as they would be unable to deliver goods to customers (Council of Supply Chain Management Professionals, 2013).
- Meeting customer needs: Transportation plays a critical role in meeting customer needs by ensuring timely delivery of goods to the desired location. This is important for businesses that operate in competitive markets where customers demand quick and reliable delivery (Christopher, 2016).
- Reducing costs: Effective transportation planning can help reduce transportation costs by optimizing delivery routes, consolidating shipments, and reducing the time spent in transit. This, in turn, can help businesses improve their profit margins (Bowersox et al., 2013).
- Managing inventory: Transportation is also important in inventory management as it helps businesses move inventory from one location to another, enabling them to manage their inventory levels effectively (Council of Supply Chain Management Professionals, 2013).
- Supporting global trade: Transportation is critical to global trade, as it enables the movement of goods across borders. Without transportation, businesses would be unable to access global markets, limiting their growth potential (Christopher, 2016).

### D. Types of Transportation Infrastructure in Sierra Leone

Sierra Leone has a diverse range of transportation infrastructure that plays a crucial role in facilitating the movement of goods and people across the country.

#### ➤ Road Infrastructure

Roads are the backbone of Sierra Leone's transportation system, accounting for an estimated 85% of all traffic movement. The country boasts a network of roughly 11,700 kilometers of roads, with the Sierra Leone Roads Authority (SLRA) managing the national road system. However, a significant challenge lies in the limited number of paved roads. Only around 904 kilometers are paved, hindering efficiency in many areas, particularly rural ones. Additionally,

the condition of bridges presents another major obstacle. A crucial route connecting Freetown to the Eastern and Southern Provinces exemplifies this issue, where a broken bridge renders parts of the road unusable.

#### ➤ Railway Infrastructure

While Sierra Leone once had a more extensive railway system, its current use is limited. This restricts the role of railways in moving goods and people across the country.

#### ➤ Maritime and Port Infrastructure

The country has one port the Queen Elizabeth II Quay in Freetown, which serves as a major gateway for maritime trade. The port handles various commodities and plays a vital role in the import and export activities of the country.

#### ➤ Aviation Infrastructure

Freetown International Airport serves as the primary international air hub for Sierra Leone. It facilitates the movement of people and cargo to and from the country. Plans for a new airport at Mamamah were unfortunately canceled. The focus now lies on potential improvements at the existing Freetown airport to manage the anticipated rise in future air traffic.

#### ➤ Waterways

Inland waterways, such as rivers, offer some transportation options within Sierra Leone. However, their significance pales in comparison to the dominance of roads. Ports, especially the Port of Freetown, play a critical role in international trade. The government acknowledges the need to expand capacity at the port to accommodate future growth.

### E. The Significance of Effective Transportation Infrastructure in a Country

Effective transportation infrastructure can have a significant impact on a country's economy, society, and environment. The following are some of the impacts of effective transportation infrastructure:

#### ➤ Economic Development

Effective transportation infrastructure can enhance economic development by facilitating the movement of goods and services, connecting businesses and markets, and supporting trade (Kuziemko et al., 2018). It can also create jobs, increase productivity, and promote economic growth (Ozawa, 2016).

#### ➤ Improved Access to Services

Effective transportation infrastructure can improve access to essential services such as healthcare, education, and social services by providing better mobility options to people in remote or underserved areas (Kuziemko et al., 2018).

➤ *Reduced Traffic Congestion and Accidents*

Effective transportation infrastructure can reduce traffic congestion, which can save time and fuel costs and improve air quality (Bose, 2015). It can also help reduce the number of accidents on roads and highways, leading to improved safety for drivers and pedestrians.

➤ *Environmental Sustainability*

Effective transportation infrastructure can promote environmental sustainability by promoting the use of public transport, walking, and cycling, which can reduce greenhouse gas emissions and improve air quality (Ozawa, 2016).

➤ *Regional Integration*

Effective transportation infrastructure can promote regional integration by linking neighboring countries and regions, facilitating the movement of goods and people, and promoting economic cooperation (Kuziemko et al., 2018).

*F. Overview of Sierra Leone's Transportation Infrastructure*

Sierra Leone's transportation infrastructure is characterized by a limited and underdeveloped network of roads, railways, and airports. The country has a total road network of approximately 11,700 kilometers, of which only about 15% are paved, and the rest are dirt roads, making transportation difficult, especially during the rainy season (World Bank, 2021).

The railway system in Sierra Leone is outdated and no longer operational, with the last train running in 1974 (CIA, 2021). As a result, road transportation is the primary mode of transportation for goods and people. However, the country lacks adequate public transportation services, with most people relying on private taxis, motorbikes, and buses to get around (World Bank, 2021).

The country has one international airport, the Freetown International Airport, which is located in Lungi, across the Sierra Leone River from Freetown. The airport has a single runway and limited infrastructure, with only a few airlines operating regular flights to and from the airport (CIA, 2021).

In recent years, the government of Sierra Leone has undertaken huge efforts to improve the country's transportation infrastructure. For example, the government embarked on a program to rehabilitate and upgrade key road networks, such as the Lumley-Tokeh Road and the Masiaka-Bo Road (African Development Bank, 2021). The government also initiated plans to upgrade the Freetown International Airport and construct (World Bank, 2021).

A major challenge faced by Sierra Leone's transportation infrastructure is the limited access to sea transport. Despite having a coastline of about 402 km, the country has only one major port, the Queen Elizabeth II Quay, which is located in Freetown. The port's limited capacity and inadequate facilities

have resulted in congestion and delays in cargo handling (African Development Bank, 2021). In addition, the country's transportation infrastructure is also vulnerable to natural disasters such as floods and landslides, which can disrupt road transportation and cause significant damage to the road network (World Bank, 2021).

*G. Impact of Transportation Infrastructure on Local Commodity Supply*

Transportation infrastructure plays a crucial role in shaping the local supply of commodities in Sierra Leone, impacting factors like availability, affordability, and variety. Its impact can be viewed from both positive and negative standpoints of view;

➤ *Positive Impacts*

• *Enhanced Accessibility*

Efficient transportation networks, particularly well-maintained roads and bridges, connect producers in rural areas to local markets and distribution centers. This improved accessibility allows farmers and other producers to get their goods to consumers more easily, increasing the availability of local commodities in the market.

• *Reduced Transportation Costs*

Well-developed infrastructure lowers transportation costs for both producers and consumers. Efficient roads reduce fuel consumption and wear and tear on vehicles, making it cheaper for producers to move their goods. Consumers also benefit from lower transportation costs reflected in more affordable local produce.

• *Wider Market Reach*

Improved transportation infrastructure allows producers to reach a wider customer base. They can now transport their goods to markets further away, expanding their sales opportunities and potentially increasing their income. This can lead to a greater variety of local products available in different regions.

➤ *Negative Impacts*

• *Perishable Goods*

Poor infrastructure, particularly limited cold storage facilities along transportation routes, can lead to spoilage of perishable goods, such as fruits and vegetables. This reduces the availability of these commodities and potentially increases their price due to scarcity.

• *Price Fluctuations*

Unreliable transportation networks can disrupt the flow of goods, leading to price fluctuations for local commodities. For example, a damaged bridge on a key route could cause temporary shortages of certain products, driving up their prices.

### III. METHODOLOGY

To assess the impact of transportation infrastructure on local commodity supply in Sierra Leone, a qualitative approach was employed. Data was collected from various sources including government reports, academic literature, and international organizations such as the World Bank and the African Development Bank. Information on the volume of local commodity production and distribution was analyzed to understand the scale of the market and its dependence on transportation networks. Case studies were conducted to examine specific instances of how transportation infrastructure limitations affect the supply of local commodities. Thematic analysis was performed on qualitative data obtained from interviews and surveys to identify recurring patterns and themes related to transportation challenges.

### IV. DISCUSSION/FINDINGS

The findings of this study underscore the critical role of transportation infrastructure in shaping the local commodity supply in Sierra Leone. The presence of well-maintained roads and bridges enhances accessibility for producers in rural areas, enabling them to transport their goods to local markets more efficiently. This increased accessibility contributes to the availability of local commodities in the market, meeting the demand of consumers. Efficient transportation networks lead to reduced transportation costs for both producers and consumers. Lower costs translate to more affordable local produce, making it accessible to a wider population and potentially increasing consumption. Improved transportation infrastructure enables producers to reach distant markets, expanding their customer base and sales opportunities. This not only benefits producers by increasing their income but also diversifies the range of local products available to consumers. However, challenges such as inadequate cold storage facilities along transportation routes pose a significant risk to perishable goods, leading to spoilage and reduced availability in the market. Price fluctuations may occur due to disruptions in transportation networks, impacting the affordability of local commodities.

### V. RECOMMENDATIONS

The following recommendations have been suggested that can enhance the transportation infrastructure of Sierra Leone and unlock the potential for local commodities to reach markets more efficiently, thereby stimulating economic growth and improving livelihoods for local producers.

**Investment in Road Maintenance and Expansion:** Prioritise funding and resources for the maintenance and expansion of existing road networks, especially in rural areas where agricultural products are produced. This will improve accessibility and reduce transportation costs for local producers.

**Modernisation of Port Facilities:** Upgrade port facilities and equipment to increase efficiency in handling and processing goods. This includes investing in containerisation, modern cranes, and automated systems to expedite the movement of commodities through ports.

**Development of Intermodal Transportation Hubs:** Establishing intermodal transportation hubs that can integrate road, rail, and maritime transport modes to facilitate the seamless movement of goods across different transportation networks. These hubs can serve as distribution centers for local commodities.

**Promotion of Public-Private Partnerships (PPPs):** To encourage collaboration between the government and private sector to invest in transportation infrastructure projects. PPPs can leverage private sector expertise and investment capital to develop and maintain transportation networks efficiently.

### VI. CONCLUSION

Sierra Leone's economic potential hinges on the efficient movement of goods from farms and production centers to markets. This qualitative research explored the impact of transportation infrastructure on local commodities, revealing a complex interplay between road conditions, logistics, and market access. The research identified limitations in transportation infrastructure as a key bottleneck. Poor road conditions, inadequate storage facilities, and unreliable transportation options significantly increase the cost and time it takes to bring goods to market. This not only discourages farmers but also limits the variety and quality of local produce available to consumers. The ripple effects impact local economic activity, reducing income generation for producers and potentially hindering consumer access to affordable, fresh food. However, the research also highlighted the resilience and resourcefulness of Sierra Leoneans. Local communities have developed strategies to cope with infrastructure limitations, showcasing a strong desire to connect to markets. The findings of this article will offer valuable insights for policymakers and development practitioners. By prioritising investments in transportation infrastructure, particularly in rural areas, the government can create a more enabling environment for local producers. Improved roads, reliable transportation, and readily accessible storage facilities can significantly reduce transportation costs and time. This can incentivise farmers, increase the variety and quality of local goods reaching markets, and ultimately contribute to a more vibrant local economy in Sierra Leone.

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