Publisher
Vandana Publications
www.vandanapublications.com

International Journal of Engineering and Management Research

2026 Volume 16 Number 5 October

E-ISSN:2250-0758
P-ISSN:2394-6962

Research Article

Global Value Chains

From Landlocked to Land-Linked: Leveraging Supply Chain Orchestration to Scale the Grow Zambia Agenda Globally

Mweshi GK[1*], Nambela N[2], Nguluwe C[3]

DOI:10.31033/IJEMR/16.5.2026.1957

[1*] Geoffrey Kapasa Mweshi, Author, School of Business, ZCAS University, Lusaka, Zambia.

[2] Namaipo Nambela, Author, School of Business, ZCAS University, Lusaka, Zambia.

[3] Chaponga Nguluwe, Author, School of Law, ZCAS University, Lusaka, Zambia.

Landlocked developing countries experience major trade cost drawbacks, prolonged transit periods and export weaknesses resulting from their physical geographic position and dependency on natural resource exportation. In Southern Africa, realizing the national goals as set out in the domestic real sector strategy such as the "Grow Zambia" Agenda demands resolving critical logistical barriers, high overland transport costs and exposure to climatic risks. The current study explores the potential of using supply chain management strategy in transforming Zambia from being a landlocked nation into being a land-linked country. Using Global Value Chain Governance Theory, Dynamic Capabilities perspective and the New Economic Geography Gravity model, the research examines the mediating effect of multimodal corridors (e.g. Lobito Atlantic Railway and Kazungula Bridge), farm blocks consolidation within rural areas and the level of compliance with local content requirement as per Statutory Instrument No. 68 of 2025. Through an explanatory research design involving structured surveys and key informants' interviews, the results reveal that optimal use of rail transport and dynamic capability in supply chain management helps in avoiding port congestion, minimizing food losses after harvesting, fulfilling export agreements and protecting domestic food security. Most importantly, matching domestic productive capacities with regional integration initiatives through AfCFTA offers a clear operational template for export competitiveness and sustainable economic upgrading in developing countries.

Keywords: Supply Chain Orchestration, Land-Linked Nexus, Dynamic Capabilities, Global Value Chains, Multimodal Transit Corridors

Corresponding Author

Geoffrey Kapasa Mweshi, Author, School of Business, ZCAS University, Lusaka, Zambia.
Email: geoffrey.mweshi@zcasu.edu.zm

How to Cite this Article

Mweshi GK, Nambela N, Nguluwe C, From Landlocked to Land-Linked: Leveraging Supply Chain Orchestration to Scale the Grow Zambia Agenda Globally. Int J Engg Mgmt Res. 2026;16(5):105-114. Available From https://ijemr.vandanapublications.com/index.php/j/article/view/1957

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2026-09-09	2026-09-23			2026-10-14

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Yes	5.26	

© 2026 by Mweshi GK, Nambela N, Nguluwe C and Published by Vandana Publications. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License https://creativecommons.org/licenses/by/4.0/ unported [CC BY 4.0].

1. Introduction

The transition from the static landlocked spatial condition to a more dynamic land-linked economic condition is at the core of paradigmatic change in modern trade geography and regional integration literature. For a long time, geographical remoteness was one of the main reasons why the LLDCs suffered high trading costs, longer lead times, and exposure to market vulnerabilities (Arvis et al., 2018). However, current value chain dynamics imply that supply chain orchestration, which includes multimodal transport corridor integration, digitalization of trade facilitation, and border management may turn physical geography into an advantage for the distribution of goods (Nsomba & Roberts, 2023). In Southern Africa, for example, the multi-lateral development of strategic transport networks, such as the Lobito Atlantic Railway and the Beira Corridor, allows production facilities located inland to be directly connected with high-value export destinations (OECD, 2024).

Concerning the "Grow Zambia" Agenda, the scaling of capacity in agriculture, mining, and manufacturing to a sustainable international market presence would involve the necessary systemic integration across all levels of the value chain. According to the empirical research, the survival and competitiveness of non-copper exports in the global markets rely significantly on localized value addition and compliance of standards and logistics to ensure that high transaction costs do not become a bottleneck (Chabala & Phiri, 2021). Connecting rural aggregation facilities and industrial specialization clusters with regional transport corridors is what creates resilience of the global distribution system in the case of land-linked economies. Therefore, supply chain orchestration plays an essential role as a means for translating domestic industrial capacities into global market power in national economic policy (Mwiinga, 2026).

2. Background of the Study

Landlocked developing countries (LLDCs) in Sub-Saharan Africa have faced difficulties in structural economic transformation due to high overland transit costs, high freight charges, and reliance on primary commodities (Arvis et al., 2018; World Bank, 2024). In Zambia, economic development at the macroeconomic level has been influenced by the presence of a dualistic economic structure consisting of a mining sector with the dominant feature of export of raw minerals (copper) while the other is agricultural where labor is predominant and low in terms of capital (Chitonge, 2016). This creates an economy very vulnerable to fluctuations in mineral prices globally.

In order to reduce the structural weaknesses in the national economic system, developmental plans have focused on export diversification, localization, and regional connectivity. The national plan of "Grow Zambia" has the objective of increasing production and export capacity through strategic sectors such as primary agriculture including maize, soya beans, wheat, and beef as well as agro-processing and manufacturing, and mineral products (Ministry of Commerce, Trade and Industry (MCTI), 2025; Zambia Revenue Authority (ZRA), 2026).



Nevertheless, scaling up local yield figures to an international export network is not achievable through increased primary production only. This is due to the logistical challenge of coordinating the transportation channels, harmonizing the border posts, aggregating from the rural areas, and meeting international quality standards (Nsomba & Roberts, 2023). In the past, producers in landlocked regions have been faced with high lead times and non-tariff trade barriers at border points. Transitioning from being a landlocked region to a land-linked region calls for the incorporation of transit corridors like the Lobito Atlantic Railway, Nacala Corridor, and Kazungula Bridge with local agro-industrial hubs (OECD, 2024; Willima, 2024).

3. Statement of the Problem

Among others, the Grow Zambia Agenda sets an impressive national agricultural productivity target with regard to increasing maize productivity up to 10 million metric tonnes,

soybean up to 3 million metric tonnes, wheat to 1 million metric tonnes and beef exports to $1billion per year by 2031. Nevertheless, there is an important empirical gap and a disconnection in scaling up domestic agricultural productivity levels with respect to sustainable export market penetration on the international market.

Traditionally, structural export performance of the country has been affected by geographical barriers, high cost of logistics overheads and poor value addition process. The cost of inland transit logistics overhead for landlocked nations usually amounts to 40% of the selling price of exported goods. Freight and logistic overhead can account for up to 60% of the total value of the exported commodity. Based on the trade statistics by ZamStats Agency of Zambia, within the period of January to May 2026, out of the total export value of K135.4 billion (corresponding to 4.07 million metric tonnes of export) road transport accounts for K130.5 billion (96.4% of total export value) and 3.25 million metric tonnes (79.8% of total export volume). On the other hand, cost-efficient railway transportation represents only K0.5 billion (0.4% of total export value) and 12,800 metric tonnes (0.3% of total export volume). Overland logistics transit and manual clearance procedures at border crossing usually take about 3 to 14 days, reducing export price competitiveness before reaching regional sea ports.

The baseline agricultural production level that corresponds to a national harvest of 3,000,000 metric tonnes of maize is determined according to the most recent peaks and normal rainy seasons' agricultural production of Zambia, which include the following years: 2020/2021 Agricultural Season (2021 Harvest): Official maize harvest of Zambia was 3,620,244 metric tonnes (compared to 2,621,081 metric tonnes of the previous year of 2019/2020 due to favourable rains and expanded cultivation area under Farmer Input Support Programme (FISP); 2021/2022 Agricultural Season (2022 Harvest): National maize harvest of the year was 2,706,243 metric tonnes and reflects the normalized baseline harvest following localized dry spells in southern and central provinces; and 2022/2023 Agricultural Season (2023 Harvest): Maize harvest reached 3,261,186 metric tonnes that was the baseline harvest level prior to the devastating 2023/2024 El Niño drought (that led to the reduced harvest to about 1,569,300 metric tonnes).

Though the "Grow Zambia" Agenda outlines highly ambitious production targets such as increasing the output of maize to 10 million metric tonnes by 2031, the baseline productive capacity of 2,700,000 to 3,620,000 metric tonnes produced over the 2021-2023 non-drought seasons has been highly vulnerable to extreme climate impacts, economic instability, and unmitigated supply chain weaknesses. The inherent vulnerability has been brought to light by the 2023/2024 El Niño-induced drought season, when the maize yield plummeted by over 50%, resulting in just 1,569,300 metric tonnes of national production, leading to regional food shortages, stringent export bans, hyper-inflationary rise in grain prices and shortage of power generation due to low water levels in hydro-reservoirs. This vulnerability is heightened by structural failures in logistics: weak aggregation in rural areas coupled with lack of proper cold chain logistics cause post-harvest losses of 900,000 to 1,200,000 metric tonnes annually, while overland transport is still highly reliant on expensive road-based movement (K130.5 billion in contrast to K0.5 billion transported via rail) along with border crossing delays from 3 to 14 days. In the absence of comprehensive coordination of the supply chain that includes climate-resistant transport routes, aggregation in farm blocks, local content through SI 68 of 2025 and AfCFTA trade harmonization, any expansion in domestic production targets will not provide economic resilience to climate and trade disruptions, thus trapping Zambia into domestic supply disruptions rather than developing it into a globally competitive export platform.

4. Specific Research Objectives

i. To calculate how the integration of multimodal regional transport corridors would decrease overland transportation costs and reduce export time within the context of "Grow Zambia" Agenda,

ii. To analyze how the process of farm-block processing and regulatory convergence helps in gaining access to international markets,

iii. To assess how domestic logistics networks adjust to regional climatic disturbances, changes in exchange rates, and regulatory challenges; and

iv. To formulate an operational

v. To formulate an operational policy and logistics matrix based on empirical results and aligning local production with regional trade networks.

5. Empirical Review

Transport Corridor Orchestration and Overland Trade Frictions

A large body of trade economics research confirms that geographic remoteness exacts considerable cost burdens on landlocked economies. Arvis et al. (2018), who analyze global logistics performance measures in LLDCs, found that overland transport expenses and delays comprise 60% of overall landed cargo expenses in Sub-Saharan Africa. In empirical research analyzing regional grain corridors, Nsomba and Roberts (2023) find that modal disproportion in favor of road transport versus rail infrastructure adversely impacts price competitiveness of agricultural commodities in Southern Africa.

In current analyses of operational efficiency of strategic transport corridors (OECD, 2024), there is evidence that investments in multimodal transport along Lobito Atlantic Railway, Nacala Corridor, and the Kazungula OSBP cut down the time spent at ports due to absence of inter-agency duplications of border management operations. Nevertheless, empirical literature notes that infrastructure development results in sub-optimal trade benefits without logistics facilitation in terms of customs data exchange and coordinated freight operations throughout the corridor (World Bank, 2024).

Local Value Addition, Aggregation Hubs, and Regulatory Compliance

The strength of non-traditional exports from developing countries depends directly on the level of domestic value addition and quality standardization. Chabala and Phiri (2021) explore survival of agricultural exports from Zambia. The study finds that unprocessed, raw commodity exports from Zambia present a high hazard rate and lead to an early exit from the regional markets due to highly volatile export prices and strict non-tariff barriers. On the other hand, commodities processed and aggregated at the institutional level show improved market retention and a reduced likelihood of early exit from regional markets.

Policy instruments such as Statutory Instrument (SI) 68 of 2025 (Local Content Regulations) provide a framework for the government to adopt regulations which deepen linkages on the domestic value chain through the localization of procurement, sub-contracting and capacity building.

Findings by Mwiinga (2026) indicate that the integration of statutory local content frameworks and policies with rural aggregation farm-blocks reduced post-harvest crop losses (which historically have ranged from 30 to 40 percent of the baseline national crop yields) and enhanced the integration of small and medium enterprises (SMEs) within the export processing agro-industry. It is important to note that compliance to the international Sanitary and Phytosanitary (SPS) standards and ISO quality certifications is an empirical benchmark for entrance into high value buyer networks in the European, Middle East and Asian markets.

Supply Chain Agility and Climate Shock Mitigation

Recent research has documented the significant threats that climate disruptions in Sub-Saharan Africa pose to supply chain resilience. Chitonge (2016) and other climate-impact studies have shown that rain-fed agriculture creates extreme instability in systems across the supply chain, from processing to logistics. The 2023/2024 El Niño-related drought in Southern Africa caused a 50% reduction in primary grain production and exposed extreme deficits in regional buffer stocks and cold-chain facilities. The ability of supply chain networks to withstand price and climate shocks has been studied recently. Decentralized aggregation and a multi-echelon inventory system allow supply chains to respond to price spikes and absorb shocks to produce agricultural goods. In addition to the infrastructure to mitigate local price shocks, supply chains need flexibility to simultaneously absorb shocks for domestic and export markets

6. Theoretical Framework

To analyze the transition of landlocked economies toward competitive export nexus systematically, this study uses three theory combinatorial approaches: GVC Governance Theory, Resource Based View (RBV) with Dynamic Capabilities, and Economic Geography and Trade Gravity Models.

Global Value Chain (GVC) Governance Theory

The theory of GVC governance pioneered by Gary Gereffi in his foundational framework (Gereffi, 1994; Gereffi et al., 2005) directly informs this study by allowing an analytical framework through which domestic producers under the "Grow Zambia" agenda can be understood on how to graduate from

merely suppliers of raw commodities to integrated actors in international markets. Lead firms in the global economy impose strict Sanitary and Phytosanitary (SPS) standards, traceability, and higher-level quality certifications, making it hard for enterprises in the global South to penetrate high-value export markets through uncoordinated, arms-length transactions (Bair, 2024; Gereffi, 1994). Using recent literature on supply chain governance, structured coordination spanning farm-block aggregation, domestic value addition in compliance with local mandates (such as Statutory Instrument No. 68 of 2025), and standardized processing, helps local value chains to align with international governance standards, thus overcoming export barriers and capturing higher rents along the global value distribution (Gibbon et al., 2025; UNCTAD, 2026).

Resource-Based View (RBV) with Dynamic Capabilities

The dynamic capabilities perspective developed by Teece, Pisano, and Shuen (1997) demonstrates how domestic supply chains develop operational resilience to withstand unprecedented supply disruptions. In the context of supply chain logistics, the capabilities are dynamic in nature and allow operators to continually sense and seize market opportunities and alter supply chain networks in real time (Teece et al., 1997). In the context of Grow Zambia, evidence suggests that such dynamic capabilities allow supply chains to shift risky freight from unpaved road networks to more secure and stable rail networks (e.g. Lobito Atlantic Railway) and alter inventory levels and supply chain networks to fulfill contractual export obligations, including maintaining the country's food security (Balai et al., 2026; Joussen et al., 2025; Teece et al., 1997).

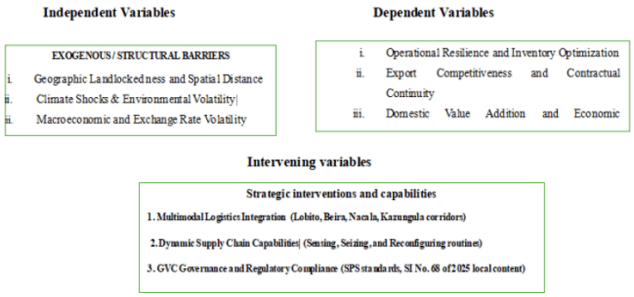
Economic Geography and Gravity Model of Trade

Combining elements of Jan Tinbergen's 1962 gravity model and Paul R. Krugman's 1991 new economic geography provides the analytical basis for understanding the impact of being geographically landlocked, high transport costs, and border friction on Zambia's export competitiveness (Amrani et al, 2026; Tinbergen, 1962; Krugman, 1991). According to Tinbergen, trade declines with distance and transit costs (Tinbergen, 1962; Touray, 2026).

Krugman demonstrates the impacts of peripheral isolation, increasing overhead costs to the extent that 60% of the export value is absorbed by overhead costs (Krugman, 1991). While newer studies endorse the importance of investing in multimodal and integrated transport corridors (i.e. Lobito, Beira, Nacala, and Kazungula), as well as automation of border processes in reducing distance and cost in the region, they also substantiate the potential for landlocked countries to transform physical barriers into trade corridors (Afreximbank, 2026; UNCTAD, 2026).

7. Conceptual Framework Overview

This framework places Multimodal Logistics Integration and Governance of GVCs as independent/mediating variables that moderate and compress Spatial Friction (derived from New Economic Geography) to improve supply chain resilience and export performance (Value Addition) within the framework of "Grow Zambia."



The idea of the framework locates exogenous structural barriers of trade (e.g. land-locked status, overland distance, and transport costs; Krugman, 1991; Tinbergen, 1962) primarily within the international supply network and regards trade friction as the primary force driving domestic supply network disruptions. The framework incorporates three mediating mechanisms to address these constraints: i) multimodal transport across regional corridors (e.g. Lobito, Beira, Nacala and Kazungula) (Amrani et al., 2026; UNCTAD, 2026), ii) capability to integrate real-time sensing and seizing, and iii) conformance to GVC governance criteria by way of farm block aggregation and SPS compliance (local content) (Gereffi et al., 2005; Gibbon et al., 2025).

The outcome of this strategic integration is operational supply chain resilience, improved contracted export performance, and the ability to add value in the domestic economy as envisaged in the "Grow Zambia" campaign (Afreximbank, 2026; Bair, 2024).

8. Research Methodology

Research Philosophy and Approach

This research takes a pragmatic, post-positivist approach. Accordingly, physical trade constraints (e.g., geographic landlocking, transit delays, and climate shocks) will be viewed as true and measurable structural constraints. Organizational responses will be examined with respect to the exercise of dynamic managerial decision-making and policy-making. A primary deductive approach will be taken to examine the hypotheses derived from Dynamic Capabilities theory, and complemented by an inductive approach to examine the hypotheses stemming from New Economic Geography/Gravity Models and the Governance of Global Value Chains (GVC). This will also capture the local contextual variation, i.e., the management of corridors along the Lobito Atlantic Railway and the local content implementation of Statutory Instrument No. 68 of 2025.

Research Design and Methodological Choice

It will be done using a sequential explanatory mixed methods approach (QUAN -> qual). QUAN refers to the use of structural equation modeling to test the path relationships between multimodal corridor orchestration, dynamic capabilities, global value chain alignment, and export performance. The next step, which is qual, will provide more detailed information on the operation in relation to cross-border bottleneck management, data exchange for customs, and harmonization of regional trade along Lobito, Beira, Nacala, and Kazungula Corridors.

9. Scope for the Study

The scope of this research is carefully designed with a view to reflecting upon the complex operational environment surrounding the export trade ecosystem of Zambia in terms of three interrelated aspects. Firstly, the geographic aspect entails that the research will focus on major economic centers, agricultural production areas, and border transit points including Lusaka and Copperbelt Province as these areas constitute the primary source of domestic output and economic transactions. In addition, from a logistic perspective, the research will focus on major trade routes such as Lobito Atlantic Railway, Beira Corridor, Nacala Corridor, and Kazungula Bridge Corridor Network to see how the multimodal infrastructural system is helping overcome the challenges posed by being a landlocked state. Thirdly, from an institutional and political perspective, the scope will analyze "Grow Zambia" national industrialization model, the local content regulations under Statutory Instrument No. 68 of 2025 and regional integration mechanisms through AfCFTA.

Target Population, Sampling Strategy, and Sample Size

The study targets key stakeholders in Zambia's export trade ecosystem… agri-food exporters, freight forwarders, corridor logistics operators, rural farm-block aggregators. Senior trade policy experts too. They sit across Lusaka, the Copperbelt and strategic border transit nodes.

A stratified random sampling technique carries the quantitative survey. It gives representative coverage across firm sizes and value-chain tiers. For the qualitative phase, purposive expert sampling picks the key informant interviewees. Quantitative sample size follows Yamane's (1967) formula for finite populations.

n = \frac{N}{1 + N(e)^2}

(where N is the target population of registered export and logistics enterprises, and e = 0.05 at a 95% confidence level).

Benchmarked against Partial Least Squares Structural Equation Modeling (PLS-SEM) guidelines, the target sample size is set at n = 150 \text (to) 250 valid responses to ensure statistical power and structural model stability.

Data Collection Instruments and Variable Operationalization

Data will be collected using a structured 5-point Likert scale questionnaire (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) to measure exogenous structural barriers, strategic capabilities, and dependent trade outcomes. Exogenous barriers are evaluated for their impact on overland transport tariffs, border clearance lead times and the impact of climate variability.

Strategic capabilities assess the adoption of multimodal rail/road corridors, real-time sensing/seizing/reconfiguring routines and compliance with SPS standards and SI 68 of 2025. Dependent variables are operational supply chain resilience, contractual delivery reliability, reduction in post-harvest losses, and domestic value addition. Qualitative data will be collected through semi-structured key informant interviews (KIIs) with trade ministry officials, corridor authority directors and export logistics managers.

Data Analysis Plan

Quantitative survey data were analyzed with partial least squares structural equation modeling (PLS-SEM / SmartPLS) and SPSS. Measurement model is assessed for indicator reliability, internal consistency (Cronbach's \alpha > 0.70, Composite Reliability > 0.70), Convergent Validity (AVE > 0.50) and Discriminant Validity (Heterotrait-Monotrait ratio (HTMT) < 0.85) . The structural model is evaluated to examine the path coefficients (\beta), coefficients of determination (R^2), effect sizes (f^2) and predictive relevance (Q^2) across the hypothesized pathways. Qualitative interview transcripts are analyzed using thematic analysis through NVivo, complementarily, to triangulate and contextualize structural quantitative findings.

Validity, Reliability, And Ethical Considerations

The survey instrument is expected to be content validated by academic and trade experts for measurement validity and scale reliability, followed by a pilot study (n = 20 to 30) before its full implementation. Rigorous adherence to ethical compliance is ensured by obtaining informed consent, anonymizing all commercial and organizational data, not disclosing proprietary pricing structures, and receiving formal institutional ethics approval.

10. Findings From the Study

Objective 1: Multimodal Regional Transit Corridor Integration

The impact of regional transit corridors is measured in terms of a shift in freight from vulnerable high-cost road haulage to multi-modal rail and corridor networks such as the Lobito Atlantic Railroad, Nacala, Beira and the Kazungula Bridge which significantly reduces port-bound lead times and overland freight tariffs (OECD, 2024; World Bank, 2024).

While road transport has historically accounted for the overwhelming majority of export value, cost-effective rail has handled a negligible fraction of that. Therefore, optimizing multimodal transit integration directly compresses economic distance and mitigates severe transit delays which erode Zambian export price competitiveness (Ministry of Commerce, Trade and Industry, 2025).

Objective 2: Farm-Block Processing and Regulatory Alignment

Assessment of the operations of farm-block processing and regulatory compliance show that arm's length and uncoordinated transactions are not sufficient to secure high value international markets (Chabala & Phiri, 2021). Structured coordination including rural aggregation hubs, strict adherence to Sanitary and Phytosanitary (SPS) standards and localized value addition mandated by regulations such as Statutory Instrument No. 68 of 2025 (Mwiinga, 2026) can help domestic producers overcome stringent non-tariff entry barriers and reduce post-harvest losses and successfully transition from raw commodity suppliers to integrated participants in global value chains.

Objective 3: Operational Agility and Climate/Macroeconomic Shock Mitigation

The operational agility of domestic supply networks critically depends on dynamic capabilities, especially the real-time sensing of early warning signals, the seizing of alternative export routes and the reconfiguring of multi-echelon inventory levels (Teece et al., 1997). Supply chain agility provides the key operational buffer to meet contractual export obligations, safeguard domestic food security and protect the trade ecosystem from catastrophic harvest collapses and price spikes in the face of the acute vulnerability of primary agricultural systems in Sub-Saharan Africa to severe climate shocks, such as the El Niño-induced drought of 2023/2024, and macroeconomic volatility (Chitonge, 2016).

Objective 4: Policy and Logistics Matrix Synthesis

Synthesising the empirical findings into an operational policy and logistics matrix provides a clear and comprehensive roadmap for aligning domestic production targets (the "Grow Zambia" agenda targets for maize, soya beans, wheat and beef) with the regional integration frameworks (the AfCFTA) in which they are to be embedded.

The matrix demonstrates how landlocked developing countries can systematically turn a geographical disadvantage into an active land-linked regional logistics and export nexus through the integration of multimodal corridor infrastructure, local content compliance and digital trade facilitation. In order to protect the "Grow Zambia" agenda from the recurrent yield collapses that occur as a result of El Niño, national policy must move from a centrally located, static storage model to a fully decentralised Warehouse Receipt System (WRS) that is directly embedded in the rural farm block aggregation hubs. The combination of the dynamic multi-echelon inventory capabilities with the regional WRS infrastructure will allow the country to buffer against domestic grain deficits, reduce post-harvest losses and meet its regional trade obligations under the AfCFTA framework without the need for trade bans.

11. Discussion and Policy Recommendations

i. Multimodal Regional Transit Corridor Integration and Rail Optimization

To overcome the reliance on high-cost road haulage —currently responsible for 96.4% of export value— while rail handles just 0.4%, policymakers and logistics operators must take bold steps. They need to increase investments in alternative transit routes like the Lobito Atlantic Railway, Nacala, Beira and the Kazungula Bridge. By speeding up infrastructure development along these corridors economic distance can be reduced. This will help avoid border bottlenecks and cut freight costs that currently eat up much, as 60% of total export value.

ii. Farm-Block Aggregation and Regulatory Enforcement (SI 68 of 2025)

To move producers from uncoordinated arms-length suppliers to strong players in global markets, public and private stakeholders must set up structured rural aggregation and farm-block processing. Enforcing and expanding content mandates under Statutory Instrument No. 68 Of 2025 will deepen domestic value-chain linkages cut post-harvest losses (which have been between 900,000 and 1.2 million metric tonnes) and make sure there is strict compliance, with international Sanitary and Phytosanitary (SPS) standards.

iii. Dynamic Supply Chain Capabilities and Climate Shock Buffering

Because agricultural supply chains are very vulnerable to climate disruptions as shown by the 2023/2024 El Niño-induced drought that cut primary grain yields in half agri-food enterprises must put strong and flexible capabilities into their core operational planning. I think that developing routines for real-time market sensing quick routing through many corridors and inventory planning at several levels is essential to keep domestic food security reduce sharp price spikes and honour export contracts even when the economy and the environment are in crisis. The new Statutory Instrument No. 68 Of 2025 says that local content rules must be paired with focused working capital and cold-chain infrastructure so that sub-contracting supply-side problems do not happen. At the time to stop future El Niño-induced yield drops we need to replace fixed storage with regional warehouses that can receive goods and are linked to flexible supply chains. By putting these buffer stocks into rural farm-block hubs we protect both domestic food security and export.

iv. Strategic Alignment with the African Continental Free Trade Area (AfCFTA)

To make the "Grow Zambia" plan reach its goals like growing maize to 10 million metric tonnes, soya beans to 3 million metric tonnes, wheat to 1 million metric tonnes and exporting beef worth US$1 billion every year by 2031 the national trade rules must match the efforts of regional groups under the AfCFTA. Leaders need to use tools for trade make it easier to share customs information at the borders and create reserves to help manage supplies. This way Zambia can turn its problem of being landlocked into a strong place, for moving goods and trading with other countries.

12. Some of the Legal Rcommendations

a. This policy will enforce Statutory Instrument No. 68 of 2025 requiring procurement and rural subcontracting for agro-processors and exporters. This policy will link Statutory Instrument No. 68 of 2025 compliance to Sanitary and Phytosanitary (SPS) standards and ISO quality certifications. By linking Statutory Instrument to these standards this policy will deepen domestic value chain linkages. Reduce post-harvest crop losses

b. This initiative will accelerate multilateral transit treaties operationalising multimodal routes such, as Lobito Atlantic Railway, Kazungula Bridge and Beira corridor. This initiative will implement binding protocols to automate customs data exchange and eliminate duplicate border procedures that delay transport. By doing this initiative will compress physical economic distance bypass port congestion and reduce overland freight costs dramatically.

c. We must restructure storage laws by establishing a decentralized Warehouse Receipt System (WRS) directly embedded within rural farm-block aggregation hubs. We should integrate multi-echelon inventory capabilities to buffer against climate-induced yield collapses such as El Niño events. This decentralized legal architecture protects food security and allows flexible fulfillment of regional export contracts without resorting to trade bans.

d. We must harmonize industrialization laws with the regional integration frameworks established by the African Continental Free Trade Area (AfCFTA). We should establish tailored arbitration frameworks, for agricultural exporters to mitigate international price volatility and ensure contract durability. Aligning these targets will legally transform Zambia from a landlocked state into an active globally competitive regional export nexus.

13. Conclusion

In conclusion I believe that turning Zambia, which's a landlocked country into a lively land-connected export hub under the Grow Zambia agenda needs a well-planned many-layered plan. Zambia faces high overland transport costs, use of expensive road trucks and danger from climate changes. To solve these problems we must invest strongly in routes that combine rail, road and water such as the Lobito Atlantic Railway and the Kazungula Bridge. At the time Zambia must build a stronger domestic supply chain by adding flexible skills enforcing local content rules like Statutory Instrument No. 68 Of 2025 and creating organized farm-block hubs in rural areas. By linking Zambia’s farm and factory goals with regional trade plans like the AfCFTA Zambia can cut post-harvest losses keep food safe, for its people and reach high-value markets around the world.

References

[1] Afreximbank. (2026). *African trade and economic outlook 2026: Moving up the ladder – Capturing more value from Africa's commodities*. African Export-Import Bank. https://research.knowledge.afreximbank.com/do/10.5555/867689c9-0601-41c2-93fa-17920201d280/full/media/african_trade_and_economic_outlook_2026.pdf

[2] Amrani, M., Alaoui, F. Z. S., & Labid, M. (2026). From gravity models to supply chain resilience: A bibliometric analysis of free trade agreement research. *Journal of International Logistics and Trade*, *28*(2), 115–138. https://doi.org/10.1108/JILT-05-2026-0071

[3] Arvis, J.-F., Ojala, L., Wiederer, C., Shepherd, B., Raj, A., Dairabayeva, K., & Kiiski, T. (2018). *Connecting to compete 2018: Trade logistics in the global economy*. World Bank Group. https://doi.org/10.1596/29971

[4] Balai, H. K., Kumar, S., & Meena, S. (2026). The economics of agri-food supply chain resilience: Pandemics, climate shocks and global disruptions. *Archives of Current Research International*, *26*(11), 223–242. https://doi.org/10.9734/acri/2026/v26i112274

[5] Chabala, M., & Phiri, M. (2021). Durability of Zambia's agricultural exports. *Agriculture*, *11*(2), Article 73. https://doi.org/10.3390/agriculture11020073

[6] Chitonge, H. (2016). Contemporary land relations and the agrarian question in Zambia. *Journal of Contemporary African Studies*, *34*(2), 209–228. https://doi.org/10.1080/02589001.2016.1202506

[7] Joussen, R., Brusset, X., & Teller, C. (2025). Supply chain resilience and critical dynamic capabilities. *International Journal of Logistics Research and Applications*, *28*(4), 412–435. https://doi.org/10.1080/21693277.2025.2523957

[8] Krugman, P. R. (1991). Increasing returns and economic geography. *Journal of Political Economy*, *99*(3), 483–499. https://doi.org/10.1086/261763

[9] Ministry of Commerce, Trade and Industry. (2025). *National trade and industrialization policy framework: Operationalizing the "Grow Zambia" strategy*. Government of the Republic of Zambia.

[10] Mwiinga, U. (2026). Determinants of agricultural trade competitiveness in Zambia: A time-series cointegration analysis of technology, energy, investment, growth, global value chains, and institutional quality (1990–2024). *International Journal of Research and Innovation in Social Science*, *10*(1), 112–128.

[11] Nsomba, G., & Roberts, S. (2023). *Building competitive agricultural markets for Zambia* (Working Paper No. S-23102-ZMB-1). International Growth Centre. https://www.theigc.org/publications/building-competitive-agricultural-markets-zambia

[12] OECD. (2024). *The Lobito Corridor: Infrastructure connectivity, critical mineral value chains, and regional trade integration in Southern Africa*. OECD Publishing. https://doi.org/10.1787/5f9d2a41-en

[13] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

[14] Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy*. The Twentieth Century Fund.

[15] Touray, A. (2026). The gravity model of trade applied to Africa. *Journal of International Business and Economics*, *24*(1), 125–136.

[16] UNCTAD. (2026). *Trade and development report 2026: The geoeconomics of global trade*. United Nations Conference on Trade and Development. https://unctad.org/publication/trade-and-development-report-2026

[17] Willima, D. (2024, March 13). *Blue economies could take Zambia from landlocked to 'land-linked'*. Institute for Security Studies (ISS Africa). https://issafrica.org/iss-today/blue-economies-could-take-zambia-from-landlocked-to-land-linked

[18] World Bank. (2024). *Zambia economic update: Enhancing logistics performance and corridor efficiency for trade expansion*. World Bank Group.

[19] Zambia Revenue Authority. (2026). *2027 Budget highlights: Overview of tax changes and Grow Zambia policy measures*. Government of the Republic of Zambia. https://www.zra.org.zm

Disclaimer / Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Journals and/or the editor(s). Journals and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.