ISSN 2348-3156 (Print)
International Journal of Social Science and Humanities Research ISSN 2348-3164 (online)
Vol. 14, Issue 2, pp: (63-68), Month: April - June 2026, Available at: www.researchpublish.com

The Contribution of Inland Container Depot (Icd) in Enhancing Maritime Trade in Tanzania: A Case Study of Songoro ICD

Happyness Chalestine Felix

Affiliation: Dar es Salaam Maritime Institute (DMI), Tanzania

DOI: https://doi.org/10.5281/zenodo.19692835

Published Date: 22-April-2026

Abstract: **This study examines the contribution of Inland Container Depots (ICDs) in enhancing Tanzania's maritime trade, with a focus on Songoro ICD as a case study. Tanzania's reliance on the Port of Dar es Salaam for maritime trade is constrained by port congestion, high transportation costs, and inadequate infrastructure, which undermine trade competitiveness and logistics efficiency. ICDs offer a strategic response by functioning as inland extensions of seaports, providing storage, customs clearance, and cargo handling facilities. A descriptive research design under a pragmatic philosophy was employed, integrating both quantitative and qualitative methods. Data were collected from 85 respondents including ICD operators, customs officials, transporters, and freight forwarders through structured questionnaires, in-depth interviews, and documentary review. Quantitative data were analyzed using descriptive statistics, while qualitative findings were thematically examined. The results demonstrate that ICDs significantly reduce port congestion, lower transport costs, and improve trade facilitation. Specifically, 86% of respondents identified ICDs as critical to maritime trade development, while over 70% rated Songoro ICD as effective or very effective in enhancing cargo clearance and logistics performance. Benefits included faster customs clearance, reduced transportation costs, and improved regional integration. However, barriers such as inadequate infrastructure, inefficient customs processes, limited investment, and slow technological adoption persist. The study concludes that ICDs are vital to Tanzania's logistics chain and recommends targeted infrastructure development, digitalization, public–private partnerships, and policy harmonization. Addressing these challenges will enable ICDs such as Songoro to catalyze sustainable economic growth, regional trade integration, and environmental stewardship.**

Keywords: **Inland Container Depots (ICDs), port congestion, high transportation costs, inadequate infrastructure, cargo handling facilities., regional trade integration.**

1. INTRODUCTION

Tanzania's economy is highly dependent on maritime trade, with the Port of Dar es Salaam serving as the country's primary maritime gateway. The port handles substantial volumes of imports and exports, not only for Tanzania but also for neighboring landlocked countries including Uganda, Rwanda, Burundi, Malawi, and Zambia (World Bank, 2021). Despite its importance, the port faces critical operational challenges, particularly congestion, inefficient cargo handling, and high logistics costs. In 2020, the port's average container dwell time was reported at 10 days, significantly higher than the global benchmark of 5–7 days (Ngowi, 2021). These inefficiencies undermine Tanzania's trade competitiveness and delay regional integration efforts.

Inland Container Depots (ICDs) have emerged as strategic solutions to these challenges. Acting as dry ports, ‖ ICDs extend port operations inland by providing facilities for customs clearance, storage, and cargo handling (UNCTAD, 2019). By diverting a portion of container traffic away from congested seaports, ICDs reduce dwell times, improve cargo flow, and lower overall logistics costs. Moreover, ICDs contribute to environmental sustainability, a key pillar of the maritime trade, by enabling intermodal transport solutions such as rail connectivity, which reduce emissions compared to road transport (Chirwa & Makoka, 2019).

Songoro ICD in Dar es Salaam plays a central role in this system. Strategically located, it facilitates cargo clearance and distribution to both domestic and regional markets. However, despite their importance, ICDs in Tanzania face persistent challenges. These include inadequate infrastructure, outdated equipment, limited technological capacity, inefficient customs procedures, and insufficient investment (Ngowi, 2019; Shikuku, 2020). Such constraints limit their effectiveness and undermine their contribution to the maritime trade.

While studies on ICDs in East Africa have highlighted their logistical and economic significance, limited research has focused on their role in advancing Tanzania's maritime trade specifically. This paper addresses this gap by examining the contribution of Songoro ICD in enhancing trade facilitation, reducing transport costs, and supporting sustainable logistics. It also identifies challenges hindering ICD operations and proposes recommendations to optimize their role in Tanzania's trade and economic development strategies.

2. LITERATURE REVIEW

2.1 ICDs and the Maritime trade

ICDs are inland logistics facilities designed to decentralize seaport operations by providing customs clearance, storage, and distribution services closer to inland destinations. They reduce pressure on seaports, lower costs, and improve supply chain efficiency (UNCTAD, 2019). In the maritime trade framework, ICDs support sustainability by reducing container dwell times, promoting intermodal transport, and lowering emissions (Banda *et al.*, 2020).

2.2 Theoretical Framework

This study draws on the Port Regionalization Theory (Notteboom & Rodrigue, 2005). The theory posits that seaports expand inland through logistics hubs like ICDs to enhance efficiency and hinterland connectivity. It assumes that increasing trade volumes inevitably strain seaports, necessitating inland extensions to reduce congestion, minimize costs, and support regional integration. The theory is relevant to Tanzania's context, where ICDs such as Songoro serve as extensions of Dar es Salaam Port.

2.3 Empirical Studies

Research globally and regionally has confirmed the importance of ICDs. UNCTAD (2019) showed that ICDs reduce clearance times by up to 40% in African ports, significantly improving trade facilitation. The African Development Bank (2020) reported that well-managed ICDs reduced transport costs for landlocked countries by up to 30%. Similarly, the Economic Commission for Africa (2022) found ICDs enhanced regional integration under the AfCFTA by facilitating cross-border trade.

In Tanzania, Ngowi (2019) observed that ICDs decongest Dar es Salaam Port but are constrained by inadequate storage, outdated equipment, and poor road and rail connections. Shikuku (2020) highlighted that ICDs lowered logistics costs but their effectiveness was undermined by limited investment and weak customs processes. These findings underscore the dual reality of ICDs: while they hold significant potential, systemic inefficiencies reduce their effectiveness.

2.4 Research Gap

Despite these studies, limited research has linked ICD operations in Tanzania directly to the maritime trade. Existing literature focuses largely on logistical and economic aspects but neglects broader sustainability dimensions such as environmental impacts and socio- economic contributions. Furthermore, little attention has been paid to the specific case of Songoro ICD, despite its strategic importance in the Tanzanian logistics chain. This study therefore contributes to filling this gap by assessing the role of ICDs in advancing maritime trade objectives in Tanzania.

3. METHODOLOGY

The study adopted a pragmatic research philosophy, combining positivist and interpretivist approaches to generate both quantitative and qualitative insights. A descriptive research design was employed to capture the contribution, challenges, and infrastructure of ICDs in supporting the maritime trade. The target population comprised 120 stakeholders, including ICD operators, customs officials, transporters, freight forwarders, and government representatives. Using the Taro Yamane (1967) formula with a 7% margin of error, a minimum sample size of 85 was calculated. To improve reliability and account for non-response. The 10 interview participants were purposively selected from among the 85 survey respondents to allow deeper exploration of key operational and institutional issues.

Sampling Technique: Purposive sampling was employed to ensure inclusion of participants directly engaged in ICD operations.

Data Collection:

- Questionnaires were distributed to all 85 respondents, capturing quantitative data on awareness, effectiveness, and challenges.
- Interviews were conducted with 10 purposively selected participants (ICD staff, customs officials, transporters, and clearing agents) to gather qualitative insights.
- Documentary Review involved analyzing secondary sources such asacademic literature, government reports, and policy documents.

Data Analysis: Quantitative data were analyzed using descriptive statistics (frequencies, percentages). Qualitative data were analyzed thematically following a six-step coding process involving familiarization, initial coding, theme development, review, definition, and interpretation. Manual coding was employed, and themes were cross-checked to ensure consistency and credibility.

4. FINDINGS AND DISCUSSION

4.1 Demographic Characteristics

The majority of respondents were male (69.4%), reflecting gender imbalances in the logistics sector, while females accounted for 30.6%. Most respondents (68.2%) were aged 25–44, a demographic considered central in driving modernization and digital adoption in logistics. Educationally, 30.6% had bachelor's degrees, and 28.2% had diplomas, suggesting a moderately skilled workforce.

4.2 The Importance of ICDs to the Maritime Trade

Inland Container Depots (ICDs) are regarded as highly important in supporting maritime trade efficiency in Tanzania. A large proportion of respondents rated ICDs as very important (53.3%) or important (33.3%), indicating broad acknowledgment of their critical role in strengthening port operations and facilitating cargo flow. ICDs help reduce congestion at seaports, decentralize container handling processes, and improve inland market accessibility. By enabling quicker and more cost- efficient cargo clearance, ICDs enhance national and regional logistics performance. These results are consistent with previous research demonstrating that ICDs contribute to port efficiency, reduce vessel turnaround time, and improve trade competitiveness across regional corridors.

4.3 Effectiveness of ICDs in Trade Facilitation

ICDs rated as effective or very effective Over 70%. Key benefits included reduced transport costs (74.1%), faster customs clearance (67.1%), increased trade volume (57.6%), regional development (48.2%), and environmental sustainability (29.4%). Interview responses supported these findings, with stakeholders noting cost reductions of up to 30% after shifting to ICD-based logistics models. These results align with international studies (Ng & Gujar, 2009; Cullinane & Wilmsmeier, 2011), which also found ICDs crucial in improving logistics efficiency.

The findings of this study are consistent with the Port Regionalization Theory proposed by Notteboom and Rodrigue (2005), which argues that seaports extend their operations inland through logistics platforms such as Inland Container Depots to enhance hinterland connectivity and operational efficiency. Songoro ICD functions as an inland extension of the Port of Dar es Salaam by facilitating cargo clearance, reducing port congestion, and improving inland cargo distribution. However, infrastructural limitations, inadequate ICT systems, and inefficient customs processes constrain the full realization of port regionalization benefits, indicating a partial application of the theory in the Tanzanian context.

4.4 Operational and Structural Challenges Hindering ICD Effectiveness

The effectiveness of Inland Container Depots (ICDs) in supporting maritime trade is significantly hindered by operational, technological, and logistical constraints. Poor ICT systems (75.3%) were the most critical factor, limiting real-time cargo visibility, online documentation, and digital coordination between stakeholders. Inefficient customs procedures (65.9%)

further escalate cargo dwell time due to bureaucratic verification, limited automation, and slow decision-making processes. Additionally, road congestion and poor transport connectivity (60.0%) create bottlenecks that delay the movement of goods from seaports to ICDs and vice versa. These challenges, combined with limited storage capacity and insufficient handling equipment, reduce cargo-processing efficiency and raise operational costs for businesses. As a result, ICDs often fail to deliver the expected benefits of faster clearance and reduced port congestion. Without investment in modern technology, streamlined customs operations, and improved logistics infrastructure, ICDs will continue to struggle in achieving optimal performance within the maritime supply chain.

ICDs in Tanzania also face broader structural and industry-related challenges that extend beyond their internal operations. Insufficient infrastructure (75.3%) was identified as the most dominant challenge, including poor road networks, limited warehousing facilities, and outdated loading equipment that cannot accommodate growing cargo volumes. Port congestion (65.9%) also spills over into ICD operations, delaying cargo arrivals and increasing clearance backlogs. Inefficient regulatory coordination and customs-related delays (60.0%) contribute to prolonged logistics cycles and reduced trade competitiveness. Additionally, low investment levels (45.9%) restrict modernization efforts required for digitalization, environmental sustainability, and operational expansion. Environmental management concerns (32.9%) such as emissions, dust, and land-use limitations also affect ICD performance and stakeholder perceptions. These issues collectively weaken ICDs' strategic role in decongesting ports and improving maritime trade efficiency. Addressing these challenges requires stronger public-private investment collaboration, improved multimodal transport development, and enhanced regulatory frameworks to support smooth cargo flow.

One ICD operations officer explained that "*most cargo processing systems are still manual, which causes delays when documents have to move between the port, customs, and the ICD*."

Similarly, a clearing agent noted that "*customs delays mainly occur due to repeated document verification and slow system integration between stakeholders*."

4.5 ICDs Infrastructure to Maritime Trade

ICD infrastructure plays a significant role in facilitating maritime trade in Tanzania; however, its current state limits optimal performance. Only 4.7% of respondents rated the infrastructure as excellent and 32.9% as good, indicating that most users find the facilities inadequate for growing cargo volumes and modern logistics needs. Respondents highlighted challenges such as limited storage areas, outdated handling equipment, poor road access, and congestion within ICD premises, all of which slow down cargo clearance and reduce overall operational efficiency. Despite these constraints, ICD infrastructure still contributes positively by providing inland cargo handling services, container yards, and customs facilities that help decongest Dar es Salaam Port. Stakeholders stressed the need for infrastructure modernization to fully enhance the contribution of ICDs to maritime logistics performance. These findings align with prior studies that emphasize the importance of improved infrastructure for effective trade facilitation and strengthened port-hinterland connectivity.

5. CONCLUSION

In conclusion, Inland Container Depots (ICDs) play a vital role in enhancing maritime trade efficiency in Tanzania by supporting faster cargo clearance, decentralizing customs operations, and relieving congestion at the Port of Dar es Salaam. ICDs facilitate smoother cargo movement from the seaport to inland destinations, reduce delays, improve predictability in logistics processes, and strengthen the multimodal transport chain. However, their performance is limited by several operational and infrastructure challenges, including outdated ICT systems, lengthy customs procedures, road congestion, insufficient handling equipment, and inadequate storage capacity. These constraints slow cargo throughput, increase logistics costs, and reduce service reliability. Although ICD infrastructure such as container yards, warehouses, weighbridges, and customs offices contributes positively to trade facilitation, respondents indicated that modernization is urgently required to match growing cargo volumes and global logistics standards.

This study relied primarily on descriptive statistical analysis due to its exploratory nature and the structure of the collected data. Although the findings demonstrate strong indications of the contribution of ICDs to maritime trade, inferential statistical analysis was beyond the scope of this study and is recommended for future research to establish causal relationships.

6. RECOMMENDATIONS

To optimize the role of ICDs in supporting Tanzania's maritime trade, the following recommendations are proposed:

1. Invest in Modern ICD Infrastructure

Substantial investment is needed to modernize ICD infrastructure, including expanded storage facilities, advanced handling equipment, improved internal roads, drainage systems, and security. Modernization will reduce delays, congestion, and inefficient cargo handling, enabling faster turnaround and more reliable support for maritime trade.

2. Strengthen Customs Procedures and Regulatory Coordination

Customs procedures should be fully digitalized and simplified through an integrated single-window system linking customs, clearing agents, and ICD operators. This will minimize bureaucratic bottlenecks, reduce cargo dwell time, improve predictability, and enhance overall ICD efficiency.

3. Enhance Intermodal Connectivity

ICDs should be better integrated with road and rail networks to improve cargo movement from ports to inland destinations. Strengthening road networks, developing freight corridors, and expanding Standard Gauge Railway links will reduce transit delays, lower transport costs, and allow efficient handling of larger cargo volumes.

4. Increase Investment in Technology and Smart Systems

Adoption of advanced ICT and smart logistics technologies, including automated container tracking, electronic documentation, and integrated management dashboards, will enhance transparency, accuracy, and operational speed while reducing human error.

5. Improve Port–ICD Coordination Policies

Clear frameworks between the port and ICD operators, including real-time monitoring, joint schedules, and shared performance indicators, will ensure timely container transfers, reduce congestion, and align port and ICD operations for smoother cargo flow.

6. Promote Public–Private Partnerships (PPPs)

Private sector involvement through PPPs can support infrastructure development, equipment acquisition, and technology modernization, bringing capital, expertise, and efficiency while reducing the government's financial burden.

7. Implement Environmental Management and Sustainability Measures

ICDs should adopt green logistics practices such as emissions control, waste management, stormwater systems, energy-efficient equipment, and solar solutions to reduce environmental impacts, enhance operational efficiency, and align operations with global maritime sustainability standards.

REFERENCES

[1] Adams, T., & Adeyemi, A. (2020). *Challenges of Inland Container Depots in the African Maritime Economy: A Case Study of Nigeria*. African Journal of Maritime Transport, 12(4), 44–58.

[2] Adams, T., & Adeyemi, A. (2020). *The role of Inland Container Depots in enhancing the African maritime trade*. African Journal of Maritime Transport, 11(3), 50–64.

[3] Adams, T., & Adeyemi, A. (2020). *The role of Inland Container Depots in enhancing the African maritime trade*. African Journal of Maritime Transport, 11(3), 50–64.

[4] Adebayo, O. S., & Adeyemi, A. S. (2021). *The role of Inland Container Depots in enhancing maritime trade efficiency in Nigeria*. International Journal of Maritime Economics, 8(2), 105–118.

[5] African Development Bank (AfDB). (2020). *East Africa Regional Integration Strategy 2020–2025*. African Development Bank Group.

[6] African Development Bank. (2021). *Enhancing Africa's trade infrastructure: ICDs and logistics networks*. African Development Bank Group.

[7] African Union. (2021). *2050 Africa's Integrated Maritime Strategy (2050 AIM Strategy)*. Addis Ababa: African Union Commission.

[8] Agyekum, K., & Laryea, S. (2022). *Port efficiency and the role of inland container depots in supply chain performance*. International Journal of Logistics Management, 33(4), 1127–1145

[9] Banomyong, R., & Beresford, A. (2020). *Multimodal transport and logistics: Inland container depots as a solution to port congestion*. Transport Policy, 92, 116–127.

[10] Chirwa, E., & Makoka, D. (2019). *The role of inland container depots in regional trade: Opportunities and challenges in East Africa*. Transport and Logistics Review, 35(1), 45–60.

[11] Chung, J., & Luo, X. (2023). *ICT adoption in container terminals and ICDs: Effects on operational efficiency*. Journal of Maritime Affairs, 22(2), 165–184.

[12] Kamau, P. N., & Mwaniki, S. (2021). *The role of Inland Container Depots in East Africa's maritime trade: A case study of Kenya and Uganda*. East African Maritime Review, 20(1), 23–39.

[13] Kiprono, J. K., & Ongori, H. (2020). *Inland Container Depots and their impact on trade efficiency in East Africa: A case study of Kenya and Uganda*. African Journal of Business and Economic Research, 15(1), 22–37.

[14] Kutoka, B., & Ngowi, R. (2022). *Infrastructure deficits and container handling performance in East African inland depots.* African Journal of Transport and Logistics, 9(1), 71–89.

[15] Msuya, B. R., & Kilango, A. J. (2022). *Operational challenges of Inland Container Depots in Tanzania's maritime trade*. Tanzanian Journal of Maritime and Logistics Studies, 24(1), 13–27.

[16] Msuya, B. R., & Kilango, A. J. (2022). *The contribution of Inland Container Depots to Tanzania's maritime trade*. Tanzanian Journal of Maritime and Logistics Studies, 24(2), 12–28.

[17] Muganda, A., & Mbise, M. (2022). *Inland container depots in Tanzania: Role, opportunities, and challenges in the maritime trade*. East African Journal of Maritime Studies, 12(1), 11–28.

[18] Mwakyusa, P., & Kira, E. (2021). *Challenges facing ICD operations in Tanzania and their impact on trade efficiency*. Journal of African Trade, 8(1), 112–126.

[19] Notteboom, T., & Rodrigue, J. P. (2020). *Port regionalization and the development of inland transport systems*. Journal of Transport Geography, 88, 102857.

[20] Songoro Inland Container Depot. (2022). *Operational performance report 2021–2022*. Dar es Salaam: Songoro ICD Management.

[21] Tanzania Ports Authority (TPA). (2022). *Annual Port Performance Report*. Dar es Salaam: TPA.

[22] UNCTAD. (2022). *Review of Maritime Transport 2022*. Geneva: United Nations Conference on Trade and Development.

[23] UNCTAD. (2023). *Global Container Shipping Outlook*. Geneva: United Nations Conference on Trade and Development.

[24] Wang, L., & Zhang, H. (2022). *The influence of Inland Container Depots on maritime trade: Evidence from China's coastal ports*. Asian Journal of Logistics and Transportation, 17(3), 52–65.

[25] Wang, Q., & Zhang, X. (2021). *The contribution of Inland Container Depots to the maritime trade: A global perspective*. Journal of Maritime Economics and Logistics, 23(4), 567–582.

[26] World Bank. (2020). *Improving Africa's inland logistics infrastructure*. Washington, DC: World Bank.

[27] World Bank. (2020). *The role of inland container depots in facilitating global trade*. Washington, DC: World Bank.