

Assessing Cargo-Theft Prevention Measures and Their Influence on Trade Performance at Dar es Salaam Port, Tanzania

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Received 28-08-2025

Revised 19-09-2025

Accepted 25-09-2025

Published 27-09-2025



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Abstract:

This study assesses whether cargo-theft-prevention practices strengthen trade performance at Dar es Salaam Port. Adopting a convergent mixed-methods design, we surveyed 80 security officers, customs staff and terminal operators (20 Likert items, $\alpha = .83-.89$) and conducted semi-structured interviews with 11 senior stakeholders. Quantitatively, descriptive means for CCTV coverage ($M = 3.86$) and anti-theft protocols ($M = 3.58$) exceeded the midpoint, and cargo-theft-prevention efficacy correlated strongly with a composite Trade Performance Index (TPI) ($r = .62, p < .01$). Multiple regression confirmed prevention as a positive predictor of trade performance ($\beta = 0.28, p < .001$), explaining 38 % of TPI variance. Qualitative thematic analysis revealed four vulnerabilities technology gaps, corruption and accountability deficits, siloed coordination and skills shortfalls that dilute deterrence during CCTV downtimes or fragmented inter-agency responses. Integrating the strands shows that security hardware boosts throughput only when reliability and governance are assured. The findings advance deterrence and supply-chain-resilience theory in an East-African context and recommend redundant surveillance grids, unified command dashboards, and ethics-plus-analytics training to convert security spending into sustained trade gains.

Keywords: Cargo Theft Prevention, Trade Performance, Maritime Security, Dar Es Salaam Port

Introduction:

Global maritime ports function as pivotal nodes in the architecture of international trade, facilitating the movement of goods between producers and consumers while underpinning economic growth (Notteboom & Rodrigue, 2020). Among these, Dar es Salaam Port stands out as Tanzania's primary gateway, handling over 90 % of the country's seaborne cargo and serving as a critical transshipment hub for inland nations (Tanzania Ports Authority, 2024). Despite substantial investments in infrastructure and personnel, the

port continues to grapple with cargo-theft incidents—averaging nearly twenty documented cases per month which undermine importer confidence and inflate insurance premiums (Mhando & Semboja, 2023).

Contemporary port security doctrine emphasizes a layered deterrence approach, combining physical barriers, procedural controls, and technological surveillance to raise the perceived cost of offending (UNCTAD, 2019). Physical measures such as perimeter fencing and controlled gate

access create initial checkpoints, while tamper-evident seals and manual patrols introduce additional hurdles. Technological enhancements most notably closed-circuit television (CCTV) networks extend the surveillance perimeter, enabling remote monitoring and post-incident investigation (Moore & Schönherr, 2021).

Yet the security landscape is rapidly evolving in response to increasingly sophisticated concealment tactics. Innovations such as multi-material 3-D-printed inserts and foil-lined cavities can evade legacy X-ray scanners, demanding the integration of artificial intelligence-driven analytics and multi-energy imaging to detect subtle anomalies (Cao & Zheng, 2024). This technological arms race compels port authorities to continually upgrade detection systems or risk ceding security advantages to criminal networks that exploit outdated equipment.

Security measures, however, are not without operational costs. Rigorous inspection protocols can extend container dwell times, disrupt logistics schedules, and increase handling fees factors that may dissuade shippers who prioritize speed and predictability (Slack et al., 2017). Conversely, ports that achieve a reliable balance between stringent security and efficient processing often attract higher cargo volumes, as importers value consistent throughput and reduced disruption risk (Mensah & Boateng, 2023).

Although previous research in Tanzania has illuminated smuggling patterns and regulatory compliance challenges (Eliakunda et al., 2022), there remains a paucity of empirical evidence linking anti-theft interventions directly to trade-performance metrics. This study addresses that gap by assessing the effectiveness of cargo-theft prevention measures at Dar es Salaam Port and examining their influence on a composite Trade Performance Index. Through a convergent mixed-methods design integrating quantitative survey data with qualitative stakeholder interviews the research aims to provide actionable insights for calibrating security investments to optimize both protection and port competitiveness.

2. Literature Review:

2.1 Theoretical foundations

Deterrence theory, first articulated by Beccaria (1764/2017), frames cargo theft as a rational act that can be discouraged when the certainty, severity, and celerity of punishment are credibly signaled. In the port environment, overt measures CCTV towers, roaming patrols, and surprise inspections elevate perceived detection risk and thereby shift offenders' cost-benefit calculus. Situational Crime Prevention (SCP) refines this logic by focusing on *opportunity structures*: it recommends target-hardening (e.g., tamper-evident electronic seals), access restriction, and surveillance to "design out" theft at each nodal point in the supply chain (Clarke, 1997).

Supply-chain-resilience theory offers a complementary lens, arguing that in volatile trade networks, security only adds value when paired with reliability the ability of ports to sustain predictable transit times despite shocks (Sheffi, 2025). Recent OECD policy reviews underscore that *agility* (quick rerouting) and *visibility* (real-time tracking) outperform raw speed when theft risks surge. Together, the three frameworks indicate that optimal port-security strategy must (i) raise perceived detection, (ii) remove easy opportunities, and (iii) preserve schedule integrity, thereby transforming security investments into competitive advantage.

2.2 Technology-Enabled Deterrence

A growing empirical record shows that data-rich, visibly deployed technologies yield measurable crime-control dividends. Across eleven European container hubs, Moore and Schönherr (2021) found a 23 % decline in pilferage after full-yard CCTV integration, while in West Africa, GPS-linked electronic seals with geo-fenced alerts halved diversion attempts on the Lagos-Kano corridor (Oladapo et al., 2022). These gains mirror broader trends reported in CargoNet's 2025 risk bulletin, which documents a 27 % year-on-year rise in North-American cargo theft and a parallel surge in AI-assisted video analytics, drone patrols, and IoT sensor suites.

Yet the deterrent power of hardware is not uniform. Comparative trials show that multi-energy X-ray scanners augmented with AI contour analysis improve anomaly detection by 18–25 % over legacy single-energy units (Cao & Zheng, 2024). Nevertheless, returns plateau when devices operate in isolation. Without shared dashboards, alerts linger unverified, and officers cannot link suspicious scans to gate-pass anomalies, leaving systemic vulnerabilities unaddressed.

2.3 Procedural and Governance Integration

Recent scholarship pivots from “more gadgets” to smarter governance. In a 34-port cross-country survey, Zhang et al. (2023) found *no significant interdiction gains* where state-of-the-art scanners lacked real-time data exchange among customs, police, immigration, and terminal operators. Conversely, Southeast-Asian pilots of unified command centres digital hubs fusing CCTV, AIS, scanner, and manifest data report 30 % higher detection rates and 20 % fewer redundant inspections (Ho et al., 2020).

Such findings echo risk-assessment audits under the ISPS Code, where ports often score worst on *procedural domains* (“document only”) rather than physical defences. Effective governance therefore requires clear legal mandates, joint standard-operating procedures, and interoperable ICT platforms so that alerts trigger coordinated, time-bound responses. Integration, not instrumentation, emerges as the critical multiplier of technological deterrence.

2.4 Security, Reliability and Trade Performance

Port-performance literature cautions that aggressive security, if poorly calibrated, can erode schedule integrity and thus competitiveness. Slack et al. (2017) demonstrate that shippers privilege *predictability* stable dwell times and minimal damage over headline speed. Ibeh (2025) quantifies this trade-off: West-African gateways practicing moderate, risk-based inspections but consistent clearance protocols attracted 18 % greater annual throughput than “faster-on-paper” peers hampered by ad-hoc checks and stoppages.

At the macro level, UNCTAD’s 2025 Review of Maritime Transport warns that sudden inspection surges or congestion episodes can erode carrier confidence, triggering costly route diversions. The emerging consensus is that risk-segmented, intelligence-led screening rather than blanket or sporadic checks reconciles theft deterrence with throughput optimization. In short, *reliability* mediates the security–efficiency nexus: ports that maintain stable cycle times while deterring theft strengthen their position in global supply chains.

2.5 Sub-Saharan and Tanzanian Context

Empirical work on African ports remains sparse and largely qualitative. Mhando and Semboja (2023) document chronic vulnerabilities at Dar es Salaam patchy CCTV coverage, manual seal checks, and fragmented oversight but stop short of linking these gaps to quantifiable trade outcomes. Regional studies likewise note isolated technology deployments with limited procedural integration, reflecting budget constraints and multi-agency turf tensions.

This study addresses the gap by quantitatively modelling how theft-prevention efficacy influences a composite Trade Performance Index (TPI) at Tanzania’s principal gateway. By fusing deterrence, SCP, and resilience constructs, it tests whether investments in integrated security yield statistically significant gains in container dwell time stability, damage incidence, and throughput growth. The findings will inform policymakers seeking to convert security budgets into sustained trade competitiveness while aligning with OECD calls to treat security and facilitation as a *single optimization problem*.

3. Methodology:

3.1 Research Design:

This study employed a convergent mixed-methods design in which quantitative and qualitative strands were executed concurrently, accorded equal analytical weight, and merged at the interpretation stage (Creswell & Plano Clark, 2018). Running the two strands in parallel allowed the researchers to capture statistical regularities in

port-security performance while simultaneously uncovering the operational subtleties that numbers alone can obscure. A joint display matrix was later used to juxtapose statistical effect sizes with corroborating or contradicting interview excerpts, enabling the derivation of “meta-inferences” that neither strand could produce in isolation.

A pragmatic paradigm underpinned the design: methodological choices were judged by their utility in answering the central question *How do cargo-theft prevention measures influence the Trade Performance Index (TPI) at Dar es Salaam Port?* The convergent model thus ensured that empirical regularities (e.g., regression coefficients) were immediately scrutinized against lived experiences (e.g., security-manager narratives), enhancing both explanatory power and policy relevance.

3.2 Quantitative Strand:

Sampling and Instrumentation. A purposive sample of 80 practitioners port-security officers, customs inspectors, and terminal supervisors completed a 30-item questionnaire: twenty five-point Likert statements captured perceptions of deterrence tools, procedural integration, and perceived cargo-theft frequency, while ten items profiled respondents’ demographic and job characteristics. The instrument was vetted by three maritime-security experts for content validity and pilot-tested with ten officers outside the final sample, prompting minor wording refinements.

Reliability and Analysis. Cronbach’s alpha values ranged from 0.83 to 0.89 across four subscales (technology, governance, human capital, and facilitation), surpassing the 0.70 acceptability benchmark and confirming internal consistency. Data were entered into SPSS v28 where descriptive statistics provided baseline means and dispersions, Pearson correlations mapped bivariate relationships, and a hierarchical multiple-regression model estimated the unique and combined contributions of prevention measures to the composite TPI (constructed from dwell-time stability, damage incidence, and throughput growth indicators). Multicollinearity diagnostics

(VIF < 2.5) and residual-normality tests verified the robustness of the regression results.

3.3 Qualitative Strand:

Participants and Data Collection. Eleven high-level informants were purposefully selected to maximise positional diversity: The Tanzania Ports Authority (TPA) Security Manager, Marine Police Commander, Head of Naval Operations, two senior customs officers, two shipping-line agents, and four terminal-operations supervisors. Semi-structured interviews averaging 55 minutes were conducted in English and Kiswahili, audio-recorded with permission, and transcribed verbatim within 48 hours to retain contextual nuances.

Analysis Procedure. Transcripts were imported into NVivo 14 and analyzed using Braun and Clarke’s (2006) six-phase thematic protocol familiarization, initial coding, theme generation, theme review, definition, and reporting. An inductive–deductive coding frame was applied: a priori nodes mirrored the questionnaire’s four subscales, while open coding allowed emergent concepts to surface. Two analysts independently coded 20 % of the transcripts, achieving a Cohen’s κ of 0.82; discrepancies were resolved through discussion. Four dominant themes crystallized *technology gaps*, *corruption/accountability deficits*, *siloed coordination*, and *skills shortfalls* each richly illustrated by verbatim quotations.

3.4 Integration and Meta-Inference

Following separate analyses, quantitative effect sizes and qualitative themes were merged through a joint display table that aligned regression predictors with thematic evidence. Convergence was observed where high standardized β -weights for “procedural integration” coincided with interview narratives about fragmented inter-agency coordination; divergence surfaced where strong technology coefficients contrasted with interviewees’ scepticism of “gadget-focused” strategies. Through this dialectic, the researchers generated meta-inferences e.g., sophisticated scanners raise detection odds only when

corruption controls are simultaneously reinforced thus achieving the explanatory depth sought by convergent designs.

Triangulation extended beyond cross-strand comparison. Within-method corroboration included cross-checking questionnaire responses against port-incident logs and verifying interview

claims with secondary documents (e.g., ISPS audit reports). This multi-angle validation enhanced internal validity and mitigated single-source bias.

Results and Findings:

4.1 Quantitative Results

4.1.1 Descriptive Statistics

Table 1. Descriptive Statistics for Perceived Effectiveness of Cargo-Theft-Prevention Measures (N = 80)

Variable	N	Mean (M)	SD	Scale Mid-Point	Interpretation
CCTV coverage	80	3.86	0.91	3.00	Perceived <i>effective</i>
Anti-theft protocols	80	3.58	0.88	3.00	Perceived <i>effective</i>

The descriptive results in Table 1 show that respondents regard both CCTV coverage and formal anti-theft protocols as generally effective safeguards. The mean score for CCTV coverage (M = 3.86, SD = 0.91) sits well above the neutral midpoint of the five-point Likert scale, indicating solid agreement that visible surveillance deters opportunistic theft. Likewise, anti-theft procedural protocols record a favorable mean of 3.58 (SD = 0.88), though the slightly lower value suggests room for procedural tightening or more consistent enforcement relative to the hardware solution. Standard deviations under 1.0 for both variables reveal a fairly tight clustering of opinions, implying a shared perception across departments and seniority levels that these measures work.

Interpreting the scores in operational terms, the higher rating for CCTV coverage underscores its

prominence as the “front-line” deterrent: cameras provide an immediate visual signal of oversight, which respondents perceive as more reliable than paperwork-based controls. Nevertheless, the favorable but not maximal rating for protocols highlights a crucial nuance: formal rules and checklists are necessary complements to technology, but their impact depends on strict, continuous adherence. Taken together, these descriptive statistics confirm that the port has established a solid baseline of preventive capability; yet the measures’ non-ceiling means signal latent opportunities to enhance reliability (e.g., reducing CCTV downtime) and tighten procedural compliance to further elevate the Trade Performance Index.

4.1.2 Bivariate Association:

Table 2. Pearson Correlation Matrix Between Cargo-Theft-Prevention Efficacy and the Trade Performance Index (TPI) (N = 80)

	Cargo-Theft Prevention	Trade Performance Index (TPI)
Cargo-Theft Prevention	1.00	0.62
Trade Performance Index	0.62	1.00

Source: Field Data (2025)

The correlation matrix in Table 4.2 reports a strong, positive relationship ($r = 0.62, p < .01$)

between the composite Cargo-Theft-Prevention score and the Trade Performance Index. Because

the coefficient exceeds the conventional “strong” threshold of 0.60, it implies that ports perceived to invest more effectively in preventative measures such as CCTV surveillance, electronic seals, and rigorous access protocols also tend to register higher throughput reliability, shorter dwell times, and fewer damage claims captured in the TPI. In practical terms, an increase of one standard deviation in prevention efficacy is associated with just over three-fifths of a standard-deviation gain in trade performance, suggesting that security and facilitation are mutually reinforcing rather than mutually constraining objectives.

The statistical significance ($p < .01$) confirms that this association is unlikely to have arisen by

chance in the present sample. Moreover, the squared correlation ($r^2 \approx 0.38$) indicates that roughly 38 % of the variance in the TPI can be explained by differences in prevention efficacy alone an impressive proportion for a single predictor in complex port environments where myriad operational factors coexist. This finding sets the stage for the subsequent regression analysis, which tests whether the security–performance link holds after accounting for role, tenure, and shift pattern, and underscores the strategic payoff of further strengthening integrated, technology-enabled deterrence systems.

4.1.3 Regression Analysis

Table 3. Hierarchical Multiple-Regression Model Predicting the Trade Performance Index (TPI) from Cargo-Theft-Prevention Efficacy (N = 80)

Predictor	β (Std.)	SE	t	p
Cargo-Theft Prevention	0.28	0.07	4.00	< .001

Source: Field Data (2025)

4.2 Qualitative Findings:

The interviews paint a vivid picture of why the survey scores, while positive, fall short of perfection. Respondents repeatedly praised CCTV as an effective front-line deterrent yet warned that a single camera outage instantly creates exploitable “dark corridors.” As the TPA Security Manager put it, “Our cameras catch most pilferage attempts, but when one line goes down thieves exploit the blind spots.” This fragility explains the high but not ceiling-level mean (3.86): officers trust the technology’s deterrent power, but its reliability remains suspect. Downtime, in other words, is the latent risk embedded within the port’s most valued security asset.

Human-factor weaknesses compound these technical gaps. Several interviewees acknowledged that corruption can override even sophisticated scanners: “If a guard pockets a bribe, the best scanner won’t stop a box going missing,” admitted the Marine Police Chief. Equally damaging is siloed coordination. A

Terminal Supervisor recalled a flagged container that “sat uninspected for six hours because customs and police were on different radio channels.” Such governance failures nullify the speed advantages promised by automated detection, turning cutting-edge hardware into a passive archive of incidents rather than an active shield against them.

Taken together, the narratives explain why cargo-theft-prevention efficacy, though a statistically significant predictor of trade performance ($\beta = 0.28$), still accounts for only 38 percent of TPI variance. Technology must be paired with system redundancy, anti-corruption safeguards, unified command platforms, and analytics training to unlock its full effect. Until those organizational and skills gaps are closed, the port will continue to reap strong but ultimately partial returns on its security investments, leaving untapped potential for both deterrence and trade competitiveness.

4.3 Integrated Interpretation:

The convergence of statistical and narrative evidence makes one point unequivocal: deterrence

already pays measurable dividends. A standardized beta of $\beta = 0.28$ confirms that every one-unit rise in the perceived effectiveness of prevention tools chiefly CCTV coverage and formal anti-theft protocols translates into a meaningful uplift in the Trade Performance Index. In practical terms, the existing security architecture is doing more than simply protecting cargo; it is shaving hours off dwell times, reducing damage claims, and signaling reliability to shippers who prize schedule integrity.

Yet the same data signal untapped capacity. An R^2 of .38 means that 62 percent of the variance in trade performance remains unexplained, and the interview narratives tell us why. Technology falters when a camera goes offline; intelligence evaporates when agencies speak on different radio channels; deterrence crumbles when a single corrupt guard overrides scanner alerts. In short, the port's performance curve is limited not by the absence of tools but by gaps in *uptime*, *integrity*, and *coordination*. These weakest links dilute the otherwise strong relationship between prevention efficacy and throughput reliability.

Closing that gap requires integrated, systems-level upgrades. Redundant camera grids and automated health checks will keep surveillance intact even during equipment failure. A unified command dashboard pushing real-time alerts concurrently to customs, police, and terminal control would collapse response times from hours to minutes. Finally, targeted ethics training and analytics upskilling can harden the human layer against corruption and misinterpretation. Bottom line: security and competitiveness are not trade-offs but twin outcomes of the same investment; only when prevention technology is reliable, reciprocally visible, and ethically managed will the port convert capital outlay into sustained, compounding trade gains.

5. Discussion:

The quantitative analysis leaves little doubt that effective cargo-theft-prevention systems deliver real economic dividends. A standardized beta of 0.28 and a strong bivariate correlation substantiate

the core premise of deterrence and situational-crime-prevention theories: when offenders perceive a high probability of detection, they are less likely to strike, and trade flows benefit accordingly. In operational terms, heightened surveillance and tamper-evident protocols translate into shorter dwell times, fewer claims, and more predictable vessel turnaround outcomes that underpin the composite Trade Performance Index. These results mirror global evidence from European and West-African ports, where enhanced CCTV coverage and electronic seals have lowered pilferage rates, reduced cargo insurance premiums, and boosted shipper confidence (Moore & Schönherr, 2021; Oladapo et al., 2022).

Yet the mixed-methods design reveals that *effectiveness is fragile*. Interviewees pointed to legacy scanners dating back to 2014, recurring CCTV downtimes, and fragmented radio networks that stall coordinated responses. These human-and-technical bottlenecks echo Zhang et al.'s (2023) cross-country finding that hardware alone cannot guarantee lasting deterrence; only sustained maintenance and real-time information-fusion keep a security perimeter intact. The present study extends that insight by empirically demonstrating, for the first time in an East-African gateway, that equipment reliability not just equipment presence is a statistically significant driver of trade performance. Ports seeking to optimize both security and facilitation must therefore treat *uptime* as a key performance indicator alongside throughput and berth utilization.

A second contribution lies in reframing the security–efficiency debate. Conventional wisdom casts inspection regimes as potential choke points, but our data suggest that *well-calibrated, integrated* prevention systems actually *accelerate* trade by lowering uncertainty. This supports emerging supply-chain-resilience frameworks, which argue that reliability and the confidence it engenders in carriers matters more than raw speed in volatile markets. Investments that couple redundant camera grids with unified command

dashboards thus deliver a double dividend: they deter theft *and* anchor schedule integrity, positioning the port as a dependable node in global logistics chains.

This study underscores the centrality of the *human layer*. Corruption and skills shortfalls can negate millions of dollars in hardware investment; ethics training, stringent audit trails, and analytics upskilling are therefore essential complements to capital expenditure. Future research should examine the cost-benefit dynamics of such soft-capability upgrades and explore longitudinal data to track whether improved reliability metrics persist once human-factor interventions are in place. In the meantime, policymakers can draw a clear lesson: security technology must be maintained, integrated, and ethically operated to unlock its full potential as a catalyst for trade competitiveness.

6. Conclusion:

In sum, this study demonstrates that Dar es Salaam Port's cargo-theft-prevention systems anchored in CCTV surveillance, sealing protocols, and formal inspections already confer a measurable competitive edge, with prevention efficacy explaining a substantial share of trade-performance variance; yet their full potential remains unrealized due to technology downtimes, fragmented inter-agency coordination, corruption risks, and skills gaps. By integrating deterrence, situational crime-prevention, and supply-chain-resilience theories in a convergent mixed-methods design, the research provides the first empirical evidence in an East-African context that equipment *reliability* and procedural *integration* are as critical as equipment presence. The findings confirm that security and facilitation are complementary, not conflicting, objectives: investments in redundant surveillance grids, unified command dashboards, and ethics-plus-analytics training can simultaneously harden the port against theft and boost schedule integrity thereby strengthening Tanzania's position in global logistics networks and offering a replicable

blueprint for similarly situated developing-country gateways.

References:

1. Beccaria, C. (2017). *On Crimes and Punishments* (E. Levi, Trans.). Hackett Publishing. (Original work published 1764)
2. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
3. Cao, X., & Zheng, Y. (2024). Intelligent customs: AI-enhanced image analytics for concealment detection. *Journal of Port Security Technology*, 12(1), 45–61.
4. Clarke, R. V. (1997). *Situational Crime Prevention: Successful Case Studies* (2nd ed.). Harrow and Heston.
5. Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.
6. Eliakunda, L., et al. (2022). Smuggling patterns at Dar es Salaam Port: Regulatory perspectives. *Maritime Policy & Management*, 49(4), 501–519.
7. Fisher, J., & Corbett, J. (2021). Deterrence dynamics in containerized trade. *International Journal of Port Security*, 9(3), 97–116.
8. Ho, W., Keong, C. C., & Tan, J. (2020). Integrated command centres in Southeast Asian ports: Impact on detection efficiency. *Asian Journal of Maritime Affairs*, 15(2), 203–220.
9. International Trade Administration. (2025). *East Africa maritime security brief: Technology and policy trends*.
10. U.S. Department of Commerce. Ibeh, K. (2025). Reliability vs. speed: Trade performance in West African ports. *African Journal of Transport Studies*, 7(1), 22–38.

11. Mensah, S., & Boateng, P. (2023). Balancing security and efficiency: Evidence from Ghanaian ports. *Journal of Customs and Trade*, 5(4), 121–145.
12. Mhando, Y., & Semboja, H. (2023). Cargo theft and trade: A Tanzanian case study. *Tanzania Journal of Maritime Studies*, 8(1), 67–84.
13. Moore, A., & Schönherr, K. (2021). CCTV deterrence in European container ports. *European Maritime Security Review*, 4(2), 78–94.
14. Notteboom, T., & Rodrigue, J.-P. (2020). The geography of maritime transport. *Routledge Handbook of Maritime Logistics*, 15–31.
15. Oladapo, S., Oluwole, B., & Ayodele, T. (2022). Electronic seals and GPS tracking in Nigerian ports. *Journal of African Supply Chain Management*, 3(2), 60–77.
16. Slack, B., Wang, J. J., & Comtois, C. (2017). Container shipping and trade facilitation: Reliability matters. *Maritime Economics & Logistics*, 19(3), 364–382.
17. Tashakkori, A., & Teddlie, C. (2010). *SAGE Handbook of Mixed Methods in Social & Behavioral Research* (2nd ed.). Sage Publications.
18. Tanzania Ports Authority. (2024). *Annual performance report 2023*. TPA Publications. UNCTAD. (2019). *Review of maritime transport 2019*.
19. United Nations Conference on Trade and Development. U.S. Customs and Border Protection. (2025). *Risk-based targeting modernization: Annual report*. U.S. Department of Homeland Security.
20. Zhang, L., Huang, Y., & Li, Q. (2023). Bridging technology and governance in port security. *Journal of Maritime Policy*, 11(1), 15–33.