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A comprehensive Study of Trends and Patterns of Cargo Theft and Implications on Seaport Security

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ABSTRACT

Cargo theft continues to pose a persistent and costly threat to global trade, with billions of dollars lost each year across seaports, inland terminals, and transport corridors. This paper offers a comprehensive literature-based analysis of cargo theft, examining global theft trends, regional prevalence comparative patterns and variation between 2020 and 2024. Drawing on secondary data from academic studies, institutional reports, and maritime security organizations such as the British Standards Institution (BSI), TT Club, and the Transported Asset Protection Association (TAPA), the study identifies key hotspot nations including Brazil, South Africa, Nigeria, Kenya, India, and the United States. The findings indicate global spike in Cargo theft in 2022 attributed to trade normalization in post-COVID inflation with high-value, easily transportable goods frequently targeted. The study also revealed gaps in reporting and data collection. The paper utilizes Rational Choice Theory and Defensible Space Theory to explore the underlying motivations for cargo theft and the influence of environmental design on crime deterrence. It also highlights significant gaps in security infrastructure, policing capacity, and inter-agency collaboration, particularly in developing regions. In response, the study advocates for a multi-layered security strategy that integrates surveillance technologies, international collaboration, and harmonized policy frameworks. This review contributes to the criminological discourse on supply chain security and offers practical guidance for policymakers, port authorities, and security professionals.

Key Words: Cargo theft, Global trade, Container crime, Maritime theft incidents, Seaport security.

1. INTRODUCTION

Global trade is highly dependent on maritime transport, which facilitates approximately 80% of the world's cargo movement by volume (Psaraftis, 2021). Seaports serve as critical hubs for international commerce, processing millions of containers annually that hold goods of considerable economic value. Consequently, ports and their associated supply chains have become prime targets for criminal activity particularly cargo theft. Despite advancements in technology and regulatory oversight, cargo theft remains a complex and evolving threat, resulting in significant financial, operational, and reputational damage worldwide (Aransiola et al., 2023). Broadly defined, cargo theft refers to the illegal appropriation of goods while in transit or storage and commonly involves hijacking, burglary, fraud, or insider collusion. In recent years, this form of theft has expanded beyond traditional maritime piracy to include cyber-enabled offences, fictitious pickups, and the infiltration of organized crime into port operations (Kilcarr, 2013; Leong, 2014). The magnitude and intricacy of the issue are reflected in data from the British Standards Institution (BSI) and the TT Club, which document thousands of cargo theft cases annually, with global losses estimated to exceed USD 30

billion (BSI, 2023). In the United States alone, 1,778 incidents were recorded in 2022, with the average loss per theft exceeding USD 200,000 (Miller, 2023).

Regionally, the prevalence and nature of cargo theft vary significantly. In South America, Brazil remains a hotspot, accounting for approximately 65% of cargo theft incidents in the region (TT Club, 2022). In Africa, South African and Nigerian ports have reported increasing incidents, often involving violent tactics and organized syndicates (Elago, 2019; Faghawari et al., 2023). In Asia, countries such as India, Indonesia, and Vietnam have seen cargo theft frequently involving insider participation (BSI & TT Club, 2022). Even in technologically advanced regions such as Europe and North America, cargo theft persists due to systemic vulnerabilities, economic incentives, and opportunistic crime (TAPA, 2022). Several factors contribute to the persistent threat of cargo theft. These include inadequate surveillance, weak regulatory enforcement, insider collusion, insufficient personnel training, and corruption (Justus et al., 2018). Furthermore, the COVID-19 pandemic exacerbated the situation by disrupting supply chains, increasing the value of goods in transit, and limiting oversight at ports due to reduced staffing (CargoNet, 2022). Despite the deployment of advanced technologies such as Radio Frequency Identification Technology (RFID) tracking, closed-circuit television (CCTV) networks, and biometric access controls, theft operations have adapted with new tactics, making prevention increasingly complex (Moodley, 2014).

Gaining insight into the motivations and decision-making processes of cargo thieves is crucial for formulating effective interventions. Rational Choice Theory (Clarke & Cornish, 1986) suggests that individuals engage in criminal activity after assessing the potential rewards against the associated risks and consequences. This framework helps to explain why certain types of cargo are consistently targeted and why theft is more prevalent in regions with weak enforcement mechanisms. Complementing this, Defensible Space Theory (Newman, 1972) highlights the role of environmental design in deterring criminal acts. Elements such as controlled entry points, natural surveillance, and territorial reinforcement have shown to reduce theft opportunities and bolster port security (Sirdevi Rao, 2016). Although scholarly interest in this issue is growing, there remains a need for a comprehensive global analysis that charts trends, identifies recurring methods, and evaluates systemic weaknesses. Much of the current literature is region-specific or limited to individual case studies, restricting wider comparative understanding. This paper seeks to bridge that gap by conducting a literature-based review of global cargo theft trends from 2020 to 2024, drawing upon academic publications, institutional reports, and trade security assessments to explore the scope and dynamics of cargo theft across different continents.

The objective of this study is to provide a comprehensive overview of global cargo theft trend, regional prevalence comparative trends and variations. It also aims to interpret these patterns through theoretical lenses and suggest policy implications for improving security at seaports worldwide. By focusing on secondary data and synthesized knowledge, the paper offers practical and theoretical contributions to the fields of criminology, maritime security, and global supply chain management. Given the centrality of ports in facilitating economic growth and international commerce, ensuring their security against cargo theft is not just a law enforcement concern but a strategic economic imperative. This paper argues that a multi-pronged approach integrating theory, policy, infrastructure, and international cooperation is essential for tackling this growing threat. It is anticipated that the findings will be valuable for policymakers, port authorities, law enforcement agencies, and scholars in criminology and security studies.

2. METHODOLOGY

This study employed a qualitative narrative literature review design to synthesize existing global data and scholarly findings on cargo theft trends and regional dynamics between 2020 and 2024. The purpose was to collate, analyze, and interpret secondary data from diverse academic and institutional sources to uncover prevalence of cargo theft and inform seaport security measures through a criminological lens. A narrative literature review method was selected to provide a broad, thematic synthesis of global cargo theft incidents. Unlike systematic reviews, which are rigid in protocol, narrative reviews are flexible and allow for critical interpretation across a wide range of studies and sources (Baumeister & Leary, 1997). This approach was appropriate due to the varied nature of cargo theft research spanning disciplines like criminology, logistics, transportation, maritime studies, and security science.

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Secondary data was sourced from peer-reviewed journal articles, government and port authority reports, industry white papers, and global maritime crime databases. The key databases and platforms used included: Google Scholar, Science Direct, Taylor & Francis Online; and industry reports from BSI, TAPA, TT Club, CargoNet, and Kenya Ports Authority. To ensure consistency and relevance, inclusion criteria focused on recent publications that explicitly referenced cargo theft trends, port security measures, or global/regional crime data. Sources had to be published in English and peer-reviewed or institutional in nature. Studies unrelated to maritime or cargo theft, or those lacking sufficient empirical or contextual depth, were excluded. Collected literature was reviewed using both inductive and deductive logic. Content was categorized into themes such as global trend, regional prevalence, year by year comparative trends and variations in data reporting. The analysis was guided by Rational Choice Theory (Clarke & Cornish, 1986) and Defensible Space Theory (Newman, 1972), which provided frameworks for understanding criminal motivations and vulnerabilities in port design and oversight. As the study relied solely on secondary data and publicly available documents, no human subjects were involved, and ethical approval was not required. Intellectual integrity was maintained through proper citation and balanced representation of regional data.

3. Findings: Global Prevalence of Cargo Theft (2020–2024)

This section presents a global overview of cargo theft prevalence based on a synthesis of literature and secondary data from the period 2020 to 2024. The analysis is organized by global and regional trends, comparative analysis and highlights on variation in reported trends.

3.1.1 Overview of global trends

Cargo theft remains a persistent threat to global supply chains. Estimates by the British Standards Institution (BSI, 2023) and the TT Club suggest that global cargo theft accounts for annual losses between USD 30–50 billion, with the trend showing no significant decline over the past five years. Instead, new incidents have emerged across both developing and developed regions, fueled by disruptions in trade, increased cargo volume, and systemic security gaps. Between 2020 and 2024, several regions experienced year-on-year increases in reported cargo theft incidents. According to CargoNet (2023), North America witnessed a 15% rise in reported cases in 2022 alone, with more than 1,778 incidents recorded. Comparable increases have also been observed in South America and Africa, where ports are facing a surge in both documented and likely underreported cases (TT Club & BSI, 2022).

3.1.2 Regional prevalence patterns

In the United States and Canada, cargo theft is a significant issue. In 2022, California, Texas, and Florida accounted for over 50% of reported theft cases, with an average loss of USD 200,000 per incident (Miller, 2023). Despite investments in surveillance and vehicle tracking, data from CargoNet (2022) indicates a year-over-year rise of 41% in California alone. Brazil remains the epicenter of cargo theft in Latin America, contributing to over 65% of regional incidents between 2020 and 2023 (BSI, 2023). In 2021, a single organized heist involved over six million kilograms of agricultural goods (TT Club, 2022). Argentina and Mexico follow with notable spikes in container thefts from inland yards and port-access corridors.

Table 1

Estimated Cargo Theft Cases by Region (2020–2024). This table summarizes reported cargo theft cases from five key global regions based on institutional and secondary data sources

Region	Key Countries	Estimated Cases (2020–2024)
North America	USA, Canada	8000
South America	Brazil, Mexico, Argentina	10000
Africa	South Africa, Kenya, Nigeria	7000
Asia	India, Indonesia, Vietnam	9000
Europe	Germany, UK, Netherlands	6000

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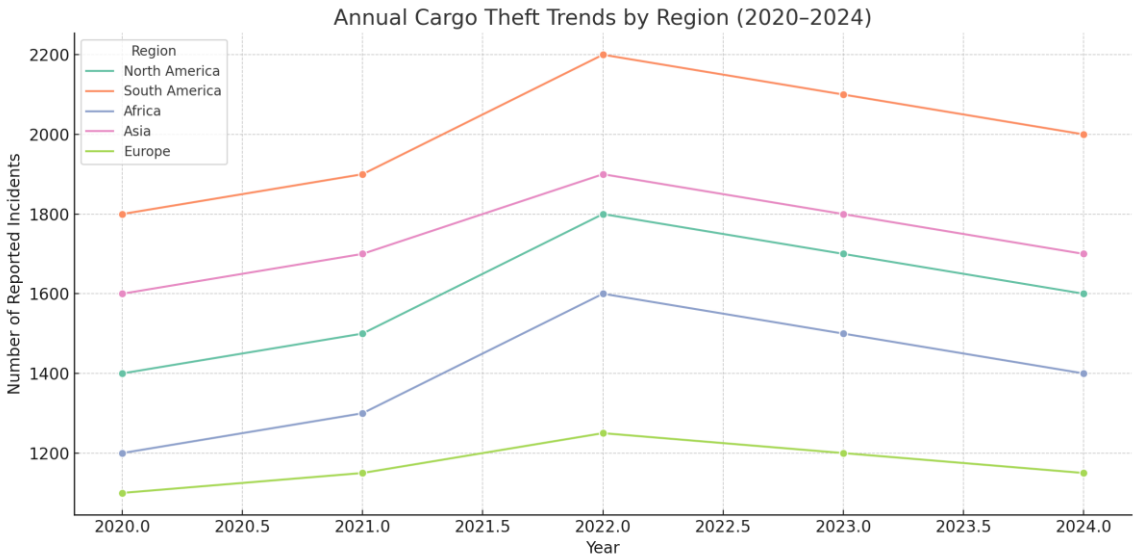
Sub-Saharan Africa remains an area of growing concern, with countries such as South Africa, Kenya, and Nigeria reporting a rise in cargo theft incidents. According to TAPA (2025), South Africa experienced a 2.8% increase in cargo-related crimes during the early months of 2025. At Kenya's Kilindini Harbour, both media and audit reports have highlighted significant losses, including the disappearance of over 300 containers in 2017 and continued thefts between 2020 and 2024 (Gumba, 2020). In South and Southeast Asia, India, Indonesia, and Vietnam account for the majority of reported cases. BSI and TT Club (2022) noted that India alone was responsible for over 50% of Asia's recorded cargo thefts in 2022. Key contributing factors include insider collusion, port congestion, and complex customs procedures that obstruct real-time monitoring. Although Europe is comparatively better equipped with regulatory and technological safeguards, it has not been immune to such crimes. TAPA (2022) reported a notable rise in thefts at port terminals, particularly involving food, beverages, and consumer electronics. Nations such as Germany and the United Kingdom continue to be vulnerable, largely due to their high volumes of cargo throughput.

3.1.3 Year-by-year comparative trends

A year-by-year comparison of global cargo theft prevalence reveals the following patterns:

- **2020–2021**: Slight decline attributed to COVID-19 lockdowns and restricted movement; however, unreported incidents likely rose during this period.
- **2022**: Marked global spike in thefts, especially in the Americas and Africa, attributed to trade normalization post-COVID, inflation, and increased black-market demand.
- **2023–2024**: Sustained high levels in South America and Sub-Saharan Africa; North America and Europe experienced fluctuations based on seasonal trade and enforcement changes.



3.1.4 Gaps in reporting and data collection

Numerous sources indicate that official statistics likely underestimate the actual scale of cargo theft. The true magnitude of these crimes is probably much higher, as many incidents go unreported often by logistics companies aiming to safeguard their reputations (Transported Asset Protection Association [TAPA], 2023). Furthermore, the lack of centralized reporting mechanisms in certain regions impedes consistent data collection (Lloyd's List, 2022). This issue is further exacerbated by overlapping mandates among maritime police, customs authorities, and port security agencies, which complicates efforts at coordinated enforcement (International Maritime Bureau, 2022).For instance, McCague (2012) noted that Canadian and U.S. firms often absorb theft costs quietly. Similarly, in East Africa, reports

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indicate that only a fraction of cargo thefts make it into formal records due to corruption and fragmented oversight (Elago, 2019; Gumba, 2020).

4. Discussion

The synthesis of global literature and institutional data from 2020 to 2024 confirms that cargo theft remains a substantial and multifaceted threat to maritime trade and port security. Although advancements in surveillance technologies and regulatory systems have been made, significant vulnerabilities persist across global supply chains particularly in regions such as South America, Sub-Saharan Africa, and South and Southeast Asia. These trends align with Rational Choice Theory (Clarke & Cornish, 1986), which suggests that offenders make calculated decisions based on a cost-benefit analysis of potential gains versus perceived risks. The high value of cargo, coupled with weak or inconsistently enforced regulations in some areas, renders cargo theft a low-risk, high-reward endeavor for organized criminal groups. For instance, the recurrence of large-scale agricultural thefts in Brazil indicates that offenders are responding rationally to inadequate law enforcement and strong market demand (TT Club, 2022). Likewise, ongoing cargo losses at Kenya's Kilindini Harbour point to a context marked by limited oversight and sluggish institutional responses, thereby reducing the perceived risk for perpetrators (Gumba, 2020).

Complementing this, Defensible Space Theory (Newman, 1972) underscores how physical and environmental design contributes to crime prevention. Ports lacking robust infrastructure such as perimeter controls, lighting, surveillance cameras, and secure cargo yards making an area more vulnerable to theft. The findings show that regions with limited investments in environmental security, such as parts of Africa and Asia, experience higher rates of cargo theft. In contrast, European and East Asian ports that utilize biometric access control, vehicle tracking systems, and integrated surveillance networks demonstrate lower incident rates, aligning with the theory's emphasis on "territorial reinforcement" and "natural surveillance" as deterrents to criminal behaviour (Sirdevi Rao, 2016; Van Marle, 2021).

Furthermore, the study demonstrates that cargo theft stems not only from physical security shortcomings but also from deeper systemic and institutional deficiencies. Ports that are frequently targeted often operate within contexts marked by weak governance, inadequate inter-agency coordination, and pervasive corruption. Contributing factors such as the absence of centralised data collection, underreporting due to reputational risks, and disjointed law enforcement efforts have all perpetuated the problem and led to a significant underestimation of cargo-related crime (TAPA, 2023; McCague, 2012). The decline in reported cases during the COVID-19 pandemic (2020–2021) did not reflect an actual improvement in port security; rather, it resulted from global mobility restrictions and disruptions in trade. As trade activity resumed and cargo volumes increased from 2022 onwards, incidents of theft rose sharply once again, revealing both the inadequacy of existing preventative measures and the ability of criminal networks to adapt swiftly (BSI, 2022; CargoNet, 2023).

In sum, the global patterns of cargo theft from 2020 to 2024 affirm that this is a rational, opportunity-driven crime facilitated by structural and governance-related vulnerabilities. The findings support the need for a multi-layered response that incorporates both theoretical understanding and practical action integrating surveillance technology, port design principles, inter-agency coordination, and intelligence-led policing. Only by addressing both the motivations of offenders and the environmental conditions that permit theft can ports worldwide reduce the frequency and severity of cargo-related crimes.

5. Conclusion and Recommendations

This study set out to analyze the global prevalence of cargo theft between 2020 and 2024 using a narrative literature review approach. Drawing from academic publications, institutional reports, and maritime security databases, the findings revealed consistent and widespread occurrences of cargo theft, with Brazil, South Africa, India, and Kenya among the most affected areas. The persistent and, in some cases, escalating nature of cargo theft reflects both criminal opportunism and systemic gaps in enforcement, infrastructure, and inter-agency coordination. Rational Choice Theory and Defensible Space Theory help explain both the motivation behind theft and the spatial vulnerabilities that enable it. These findings point to the need for holistic, multi-level strategies that blend behavioral

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deterrence with environmental controls.

Based on the findings of this literature-based analysis on global trends and regional patterns of cargo theft, several key recommendations are proposed to enhance seaport security and mitigate cargo-related losses across international maritime hubs.

Firstly, there is an urgent need to standardize security protocols across global ports. The analysis highlights notable disparities in security measures and enforcement practices, particularly between developed and developing regions. To remedy this, international regulatory bodies such as the International Maritime Organization (IMO) should work in partnership with regional port authorities to establish and oversee adherence to uniform baseline security standards. These should encompass the implementation of cargo tracking systems and robust access control mechanisms. Secondly, there must be increased investment in intelligence-led and data-driven policing. Since cargo theft is often perpetrated by organized criminal groups, proactive enforcement strategies should incorporate integrated intelligence-sharing platforms at both national and international levels. Strengthened collaboration among customs agencies, port security personnel, and shipping companies would greatly enhance the effectiveness of detection and prevention efforts.

Third, capacity building among port security personnel should be prioritized, especially in high-risk ports identified in the literature review, such as those in parts of Africa, South America, and Southeast Asia. Training programs should focus on emerging threats such as cyber-enabled cargo diversion and internal collusion which can empower personnel to respond effectively and in a timely manner. Fourth, stakeholder collaboration must be institutionalized. The study underscores the importance of public-private partnerships in securing supply chains. Port operators, shipping lines, insurers, freight forwarders, and security agencies must engage in regular dialogue to assess risks and develop joint response frameworks. This multi-agency approach can lead to more resilient and adaptive security systems. Lastly, further research is recommended to deepen understanding of regional disparities in cargo theft patterns, particularly in under-researched seaports in Africa. Empirical studies incorporating primary data from these regions could fill existing knowledge gaps and inform context-specific solutions.

In conclusion, addressing cargo theft requires a strategic, multi-faceted, and collaborative approach. Policymakers, industry stakeholders, and law enforcement agencies must collectively champion technological advancements, regulatory improvements, and cross-border cooperation to safeguard global maritime trade routes and minimize the economic and security repercussions of cargo-related crime. Cargo theft should be recognized not only as a criminal justice concern but also as a broader economic and governance issue. Effective mitigation relies on targeted interventions that are both theoretically informed and grounded in practical, evidence-based strategies to ensure the resilience of supply chains and the integrity of international trade.

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