The Evolving Nature of Cargo Theft at Kilindini Harbour, Mombasa-Kenya Between the Year 2020 and 2024

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ABSTRACT

Cargo theft remains a persistent and complex challenge in global trade, inflicting significant economic losses and undermining supply chain security. Maritime trade constitute a critical backbone of Kenya's economy, the persistence of cargo theft undermines both port efficiency and regional commerce. A study was conducted to analyze seaport security measures in preventing cargo theft at Kilindini Harbour in Mombasa, Kenya. The primary data collected included responses on cases of cargo theft reported between 2020 and 2024. The study applied Rational Choice Theory (RCT) and Defensible Space Theory (DST) to examine the patterns, timing, and methods of cargo theft, including the types of goods most targeted and the operational tactics employed by offenders. This paper is a detailed explanation on the evolving nature of cargo theft at the seaport. The findings indicates that high-value and easily resalable goods such as electronics, pharmaceuticals, and automotive parts are the primary targets. Theft incidents are most common during late-night hours, weekends, and the rainy season period which is associated with reduced oversight. The modus operandi of cargo thieves ranges from tactics like identity fraud, fictitious pickups, and insider collusion which further complicate prevention efforts. The study concludes with practical recommendations to enhance port security, including improved surveillance, digital verification, staff vetting, and inter-agency coordination. These findings offer valuable insights for port authorities, policy makers, and security professionals seeking to reduce maritime cargo theft in East Africa. Additionally, offer insight into the criminological dynamics of maritime cargo theft and inform international security responses and policy. The study also underscores the need for harmonized global security standards, better data sharing, and integrated port security frameworks.

Keywords: Cargo Theft, Kilindini Harbour, Seaport Security, Criminology, Maritime Crime

INTRODUCTION

Cargo theft represents a growing security and economic concern in global trade, particularly in maritime transport, which accounts for over 80% of international cargo movement (UNCTAD, 2023). While cargo theft is a global phenomenon, developing economies often face more acute challenges due to infrastructure gaps, limited surveillance technologies, and institutional weaknesses. In Kenya, Kilindini Harbour in Mombasa County is not an exemption of these challenges. The port is the country's principal seaport that serves as a vital

gateway for imports and exports in East Africa. However, the port has experienced rising incidents of cargo theft that threaten supply chain integrity, national revenue, and investor confidence.

The nature of cargo theft has shifted from simple opportunistic theft to complex operations involving syndicates, insider collusion, forged documentation, and digital manipulation. Past reports have highlighted cases of containers disappearing during transshipment, customs clearance, or storage within port yards (Gumba, 2020). Despite measures such as installation of "closed-circuit television" (CCTV) and the introduction of electronic cargo tracking, criminal actors continue to exploit procedural loopholes and periods of low surveillance.

Globally, researchers have noted that the most targeted items in cargo theft include electronics, automotive parts, pharmaceuticals, and fast-moving consumer goods especially items that are easy to resell and hard to trace by the owners or the law enforcement authorities (BSI, 2023). These thefts occur more frequently during late-night hours, weekends, and festive seasons when port activities slow and are understaffed due to minimal activities. In this context, understanding the localized characteristics of cargo theft is vital for designing appropriate policy and operational responses.

This study seeks to analyze the evolving nature of cargo theft at Kilindini Harbour between 2020 and 2024 using primary data collected from stakeholders who are directly involved in port operations. The objective is to establish the categories of goods most affected, the methods employed by offenders, and the specific times and conditions under which thefts are most likely to occur. The study applies Rational Choice Theory to explain offender decision-making and Defensible Space Theory to interpret the role of environmental and spatial vulnerabilities in facilitating cargo theft. Through a criminological lens, this research contributes to the broader understanding of maritime crime and port security in Kenya and provides evidence-based recommendations for improving theft prevention at Mombasa Seaport.

LITERATURE REVIEW

Cargo theft has become a significant global issue within supply chain security, attracting growing academic and policy attention. It is characterized by the unlawful taking of goods in transit or storage and is often executed through burglary, hijacking, identity fraud, or insider collusion (Leong, 2014; Kilcarr, 2013). According to Clarke (1999), cargo theft is driven by the CRAVED model—goods that are Concealable, Removable, Available, Valuable, Enjoyable, and Disposable which makes certain commodities more attractive to criminals. International data underscores the evolving nature of this crime. In North America and Europe, tactics such as fictitious pickups and fraudulent carriers are increasingly prevalent (BSI, 2023). Conversely, in Africa and Latin America, the involvement of violent gangs and corrupt networks remains a common feature (Elago, 2019; Faghawari et al., 2023). In these regions, systemic vulnerabilities such as weak law enforcement, porous port facilities, and limited technological infrastructure are often exploited.

The British Standards Institution (2023) notes that globally, cargo theft causes losses exceeding USD 30 billion annually. High-value goods like electronics, automotive parts, pharmaceuticals, and consumables are consistently targeted. Similarly, a report by TT Club (2022) found that insider threats are increasing, particularly in developing countries, where internal actors often assist in the misdirection or illegal offloading of cargo. The United Nations Office on Drugs and Crime (UNODC, 2022) attributes rising cargo theft trends to global supply chain disruptions, inadequate customs enforcement, and limited maritime domain awareness. Furthermore, the COVID-19 pandemic contributed to heightened theft incidents due to workforce reductions, increased container dwell time, and constrained oversight.

In Kenya, cargo theft has emerged as a challenge particularly at the Kilindini Harbour, which serves as the principal port in East Africa. Studies have linked persistent cargo loss to corruption, collusion, poor container tracking, and lack of harmonized policies among security stakeholders (Gumba, 2020; Aransiola et al., 2023). For instance, incidents involving the disappearance of containers during customs verification and transshipment have been widely reported, raising concerns about internal complicity and documentation fraud. These findings are supported by criminological theories. Rational Choice Theory posits that offenders act after calculating the risks and benefits of committing a crime, often selecting targets based on perceived opportunity

and minimal likelihood of detection (Clarke & Cornish, 1986). Defensible Space Theory, on the other hand, suggests that the physical design and control of spaces such as surveillance, lighting, and territorial reinforcement can significantly deter or invite criminal behavior (Newman, 1972).

On the other hand, efforts to prevent cargo theft by international shipping lines companies, Maersk Line, Limited (MLL) company has significantly advanced cargo security through its Remote Container Management (RCM) system, a digital solution that equips refrigerated and dry containers with GPS and Internet of Things (IoT)-enabled sensors to track location and door status in real time. This system allows shippers to monitor their cargo's condition throughout the journey and receive alerts on potential security breaches or environmental deviations, which is particularly critical for high-value or sensitive goods like pharmaceuticals and perishables (Akhtar et al., 2023).

In addition, Hapag-Lloyd has enhanced cargo protection by equipping its entire container fleet operating from Mombasa with GPS trackers, enabling immediate alerts to local authorities in cases of bribes or ambush attacks along land routes, which is vital given the security challenges in the East African hinterland (Siegmund, 2024). Another company, Korea Marine Transport Container (KMTC), a South Korean feeder operator, began servicing the Port of Mombasa in January 2024 with its MV KMTC Hochiminh, a development that followed due diligence on the port's real-time operational efficiency and modern security handling systems—factors which contribute to improved cargo security (Major Reforms Aid KPA, 2025).

In summary, the literature illustrates that cargo theft is a complex, evolving phenomenon shaped by economic incentives, infrastructural weaknesses, governance challenges, and strategic offender behavior. These insights set the foundation for the empirical analysis of the Kilindini Harbour context presented in the results and discussion sections.

METHODOLOGY

This study employed a descriptive research design and relied on primary data to analyze the nature of cargo theft at Kilindini Harbour between 2020 and 2024. The research targeted respondents who were directly involved in or knowledgeable about port operations, including security personnel from the Kenya Ports Authority, Kenya Police Service officers stationed at the seaport, clearing and forwarding agents, and business operators within the port environment. The study utilized a structured questionnaire and an interview guide to collect both quantitative and qualitative data. The questionnaire contained both closed and open-ended questions that focused on the types of goods stolen, methods used in theft, timing of incidents, and seasonal or environmental factors that influence theft occurrence. The interview guide was used to gather deeper insights from selected key informants. The sample size was determined using purposive sampling, ensuring that only participants with direct experience or knowledge of cargo theft incidents were included. This non-probability sampling method was suitable given the specific nature of the phenomenon under investigation. A total of 204 respondents participated in the survey, while additional interviews were conducted with 10 key informants for contextual elaboration.

Data collected was analyzed using descriptive statistics such as frequencies and percentages. These was presented in tabular form to identify trends and patterns. Qualitative data from interviews were transcribed and thematically analyzed to complement the quantitative findings. The study also applied Rational Choice Theory and Defensible Space Theory as analytical lenses to interpret the behavior of offenders and the impact of the port environment on crime facilitation. Ethical considerations were upheld through voluntary participation, confidentiality assurance, and informed consent. The study did not involve any invasive procedures or collection of sensitive personal data and adhered to academic integrity and research ethics guidelines.

THE RESULTS AND DISCUSSION

Types of Cargos Mostly Stolen at the Seaport

The data in the table below pertains to respondents' perceptions of the types of goods and cargos most frequently targeted for theft at the Mombasa Seaport. This multiple-response variable aimed to identify the high-value and high-risk commodities susceptible to illicit activities.

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Table 1: Cargo Mostly Stolen at the Seaport

Types of Goods/ Cargos mostly stolen at the Seaport	Frequency	Percent of Cases
Electronics	151	74.0
Automotive products	137	67.2
Fuel	133	65.2
Pharmaceuticals	125	61.3
Food & beverages	124	60.8
Alcohol & tobacco	118	57.8
Jewelry & precious metal	117	57.4
Agricultural goods	113	55.4
Cosmetics	95	46.6
Art & Cultural artifacts	81	39.7
Construction materials	73	35.8
Beauty products	66	32.4
Clothing fashion & accessories	57	27.9

The results indicated that electronics were the most frequently stolen category of goods, reported by 151 (74.0%) respondents. Automotive products followed closely with 137 (67.2%) respondents, and fuel was also highly targeted, reported by 133 (65.2%) respondents. Other categories included pharmaceuticals with 125 (61.3%), food & beverages with 124 (60.8%), alcohol & tobacco with 118 (57.8%), and jewelry & precious metals with 117 (57.4%). Agricultural goods were reported by 113 (55.4%) respondents, while cosmetics 95 (46.6%), art & cultural artifacts 81 (39.7%), construction materials 73(35.8%), and beauty products 66 (32.4%) were also identified as targets, though less frequently. Clothing, fashion & accessories were the least frequently reported category at 57 (27.9%). The high percentages across multiple categories suggest a diverse range of attractive targets for thieves at the seaport.

The prevalence of electronics, automotive products, and fuel as the most commonly stolen goods is highly consistent with global cargo theft trends and the economic drivers of organized crime. High-value, easily re-saleable items such as electronics and automotive parts are perennial targets due to their liquidity on illicit markets (Ramirez & Gupta, 2024; Jouav, 2025). Fuel, due to its inherent value and susceptibility to siphoning or diversion is also a common target, particularly in regions with high energy costs (TT Club & BSI, 2024). The targeting of pharmaceuticals and food & beverages reflects their universal demand, potential for quick distribution, and sometimes, high value or critical need (Munich Re, 2025; SGS Kenya, 2022). This pattern aligns with intelligence reports that indicate criminals prioritize goods that offer high returns, are relatively easy to move, and face less stringent tracking measures in certain stages of the supply chain. The diverse array of stolen goods underscores the opportunistic and adaptive nature of cargo theft operations at a busy port like Mombasa.

For better understanding of which cargo types are particularly vulnerable, the key informant interviews offered specific insights, often highlighting the characteristics that make certain goods appealing targets. The observations from Clearing & Forwarding Agents, Kenya Ships Agents Association, Cargo Consolidators,

Kenya International Freight and Warehousing Association, and Liquid and Bulk Transporters Operators largely corroborated the survey findings while adding crucial details. Clearing Agent 1 identified motor vehicle parts as the most prone items to theft, noting that there were frequent cases of catalytic converters being stolen in the past. This directly aligns with the survey's finding that "automotive products are a highly targeted category.

Kenya Ships Agents Association (KSAA) representative highlighted a broader range of susceptible goods, emphasizing the nature of the cargo itself: The consolidated loose cargo nature make it an easy target for theft. Additionally, the targeted goods are electronics, textile, agricultural equipment and household equipment because some are small enough to sneak out and there is a ready market for the same if successfully stolen. This strongly resonates with the survey's top finding for electronics and reinforces the vulnerability of agricultural goods. The emphasis on loose or small enough to sneak out items provides a key characteristic that attracts thieves. Similarly, an agent from cargo consolidators, corroborated these findings, stating: Mostly the cargo affected by theft includes electronics, vehicle spare parts and food items like coffee and rice. This further confirms the prominence of electronics and vehicle spare parts automotive products while also identifying food items, which broadly falls under the survey's food & beverages and agricultural goods categories.

Kenya International Freight and Warehousing Association (KIFWA) representative also pointed to ease of concealment and market demand: Most affected cargo over the years have been textile, electronics and food stuffs because they can be easy to sneak out. This reiterates the vulnerability of electronics and food stuffs (food & beverages/agricultural goods) and aligns with Clearing Agent 2 who pointed about items being small enough to sneak out. The integration of quantitative survey results and qualitative key informant insights reveals a strong convergence on the types of cargo most frequently targeted for theft at Mombasa Seaport. The survey broadly identifies electronics, automotive products, and fuel as the top three perceived targets. This is significantly reinforced by the key informant interviews, where electronics, motor vehicle/vehicle spare parts, and food items/food stuffs are consistently highlighted. The mention of catalytic converters by Clearing Agent 1 provides a specific example within the broader automotive products category, demonstrating a particular vulnerability.

The qualitative data further enriches this understanding by explaining why these items are targets. Both Clearing Agent 2 and KIFWA representative explicitly state that items like electronics, textiles, and food stuffs are vulnerable because they are small enough to sneak out or easy to sneak out, and most importantly, there is a ready market for the same if successfully stolen. This highlights the dual factors of ease of concealment/removal and high market demand/liquidity as primary drivers of theft for these specific cargo types. While the survey shows a broad array of attractive targets, the key informants zero in on the most practical and profitable items from a thief's perspective. This integrated view provides a robust understanding of both the prevalence and underlying characteristics of high-risk cargo at the seaport.

Methods Employed to Steal Cargos at the Seaport

The data in the Table below pertains to the methods employed to steal cargos at the Mombasa Seaport, as gathered from a multiple-response question. This variable was included to identify the specific tactics utilized by perpetrators, thereby informing the development of targeted and effective counter-measures against cargo theft at Kilindini Harbour in Mombasa, Kenya (2020-2024). Respondents could indicate all methods they perceived as relevant.

Table 2: Methods used to Stealing of Cargo at the Seaport

How cargos are stolen at the seaport	Frequency	Percent of Cases
Identity theft	90	59.2%
Fictitious pickups	85	55.9%
Misdirected loading/fraudulent carriers	76	50.0%

This research findings showed that identity theft was the most frequently cited method of cargo theft, reported by 90 (59.2%) of the respondents. Fictitious pickups were also highly prevalent, indicated by 85 (55.9%) respondents. Following these, misdirected loading/fraudulent carriers were reported by 76 (50.0%) of the respondents. These findings highlight that deceptive and fraudulent methods are the primary means through which cargo theft is perpetrated at the seaport. These results are highly consistent with the findings of recent global studies on cargo crime, which increasingly emphasize the shift towards strategic, non-violent theft methods over traditional physical hijacking or forced entry.

Miller and White (2024) and Scott and Taylor (2023) note that criminals are leveraging sophisticated schemes involving identity fraud, falsified documentation, and impersonation to intercept legitimate shipments. The high incidence of identity theft and fictitious pickups at Mombasa Seaport aligns with a worldwide trend where criminals exploit vulnerabilities in administrative processes and information systems rather than relying solely on brute force (Rodriguez & Garcia, 2025). The involvement of misdirected loading or fraudulent carriers further underscores the reliance on deception, where legitimate logistical channels are manipulated to divert cargo. These findings imply that while physical security remains crucial, there is an urgent and perhaps even greater need for robust digital security, stringent verification protocols for carriers and drivers, and comprehensive training for port personnel on recognizing and counteracting sophisticated fraud. This suggests that the battle against cargo theft is increasingly becoming an intelligence and information security challenge. The prevalence of identity theft, fictitious pickups, and misdirected loading/fraudulent carriers as the primary methods of cargo theft at Mombasa Seaport signifies that the threat landscape at Kilindini Harbour is dominated by strategic and deceptive criminal tactics. This underscores the critical importance of investing in advanced verification systems, cyber security measures, and comprehensive training to enhance the port's resilience against these evolving forms of cargo theft.

For a more operational understanding of how these thefts occur, key informant interviews offered detailed insights into specific vulnerabilities within port processes and the tactics employed by perpetrators. While the survey emphasized broader fraudulent methods, the interviews illuminated the practical points of attack. Clearing Agent 1 highlighted critical junctures in the cargo handling process: Most cases occur during port cargo processes like 100% verification or inspection of cargo. Additionally the transshipment of cargo between the port and cargo holding facilities such as the container freight stations (CFSs) create a vulnerability to some extent too especially for items that have not been identified in the tally sheet. This pinpointing of verification or inspection processes and transshipment aligns with the idea of methods that might involve misdirection or manipulation of documents, such as identity theft or fraudulent carriers, where official processes are exploited. The vulnerability of undeclared items as discussed in an earlier section further underscores this point.

Clearing Agent 2 detailed a specific physical tampering method: Due to the risk of tampering with seals on cargo containers some perpetrators have been cutting the attaching bolts/hinges on the containers to gain access and replacing them after they have taken what they wanted. However, currently Mearsk shipping line has been able to redesign their cargo containers which have countered this vulnerability. This insight brings in the physical aspect of theft, specifically the circumvention of security measures, which could be part of broader fraudulent schemes or stand-alone opportunistic thefts. The mention of Maersk's counter-measures indicates an ongoing technological arms race against perpetrators.

In an interview with Liquid and Bulk Transporters Operators (LBTO), a transit driver further emphasized the collaborative nature of theft during handling: Cargo theft within the port is done through a collaboration of more than one perpetrator and the items to be stolen are mostly when handling the cargo like verification. This strongly reinforces Clearing Agent 1's point about verification as a vulnerability and links to the idea of collusion previously discussed when profiling perpetrators. Finally, KIFWA representative also elaborated on seal-related tactics: There have been cases of use of counterfeited cargo seals and tampering of seals to gain access into cargo containers by perpetrators to avoid detection. This directly supports Clearing Agent 2's observation regarding seal tampering and introduces the sophisticated tactic of using counterfeited cargo seals, which aligns perfectly with the survey's top findings on identity theft and fictitious pickups methods that rely on deception and masquerading as legitimate entities.

The quantitative and qualitative data reveals that cargo theft at Mombasa Seaport is perpetrated through a complex interplay of sophisticated fraudulent schemes and opportunistic exploitation of operational vulnerabilities. The survey results clearly highlight that deceptive methods such as identity theft, fictitious pickups, and fraudulent carriers are the most perceived primary means of theft. This suggests a significant portion of cargo crime relies on manipulating information and trust. The key informant interviews strongly corroborate and elaborate on these findings by identifying the specific operational contexts and physical tactics that enable such fraud. Vulnerabilities are acutely present during 100% verification or inspection of cargo and transshipment, as highlighted by Clearing Agent 1 and the LBTO- transit driver. This suggests that the fraudulent methods reported in the survey like identity theft and misdirected loading often capitalize on the inherent complexities and hand-off points within port processes.

Furthermore, the interviews reveal specific physical methods like cutting attaching bolts/hinges on containers and the use of counterfeited cargo seals or tampering of seals. These physical acts, as described by Clearing Agents 2 and KIFWA representative, can either be standalone incidents or, more likely, an integral part of larger fraudulent schemes where, for example, a counterfeit seal facilitates a fictitious pickup or misdirected loading. The emphasis on collaboration among perpetrators and LBTO- transit driver further suggests that these methods are often executed by organized groups. In essence, while the survey identifies what the main methods are fraudulent deception, the qualitative data from the interviews provides crucial insight into how and where these methods are executed within the port's operational environment, often by exploiting specific process vulnerabilities and employing physical or digital deceptive tools like counterfeit seals. This holistic view is vital for developing targeted security strategies that address both the digital and physical aspects of cargo theft.

Times When Cargo Theft Mostly Takes Place at the Seaport

The data in the table below pertains to respondents' perceptions regarding the times when cargo theft mostly takes place at the Mombasa Seaport. This variable was included to identify peak vulnerability periods, thereby enabling the optimization of security resource allocation and surveillance strategies at Kilindini Harbour in Mombasa, Kenya (2020-2024).

Table 3: Times When Cargo Theft Mostly Occur

Time its occurrence	Frequency	Percent
No specific time	30	14.8
Early night (7pm- 11:59pm)	25	12.3
Mid night (12:00am -12:59 am)	18	8.9
Late night (1am-3:59am)	86	42.4
Early morning (4 am-5:59am)	35	17.2
Morning (6am to 11:59 am)	9	4.4

The findings of this research indicated that late night (1 am - 3:59 am) was overwhelmingly identified as the most frequent period for cargo theft, reported by 86 (42.4%) respondents. Early morning (4 am - 5:59 am) followed with 35 (17.2%) respondents, suggesting a continued vulnerability into the pre-dawn hours. A notable proportion, 30 (14.8%) respondents, stated that there was No specific time, indicating a degree of unpredictability or continuous threat. Early night (7 pm - 11:59 pm) was reported by 25 (12.3%) respondents and mid-night (12:00 am - 12:59 am) by 18 (8.9%). Morning hours (6 am - 11:59 am) were perceived as the least frequent time for theft, reported by only 9 (4.4%) respondents. This suggests a clear temporal pattern with a concentration of incidents occurring in the latter half of the night. The identification of late night and early morning hours as the primary times for cargo theft at Mombasa Seaport signifies that these specific temporal

windows represent the highest risk periods within Kilindini Harbour, demanding intensified security focus. This finding provides actionable intelligence for optimizing security schedules, deploying technological solutions, and training personnel to specifically counteract nocturnal cargo theft attempts.

These results are consistent with the findings of various global studies on cargo theft and port security, which frequently highlight nighttime hours as periods of increased vulnerability. Researchers like Ekwall and Lantz (2013) found that cargo theft predominantly occurs between midnight and early morning, when operational activity is reduced, visibility is low, and security personnel might be fewer or less vigilant. Such periods provide criminals with extended windows of opportunity and reduced risk of detection (Azam & Khan, 2024; Davies & Thomas, 2023). The significant number of respondents indicating "No specific time" also suggests the adaptive nature of criminal elements, who may strike whenever an opportunity arises, irrespective of routine schedules. These findings underscore the critical importance of strengthening security measures during late night and early morning shifts. This implies a need for enhanced lighting, increased patrols, sophisticated surveillance technology with night vision capabilities, and potentially, modified staffing levels during these high-risk hours to mitigate vulnerabilities effectively. These results differ from a scenario where cargo theft might be evenly distributed throughout a 24-hour cycle, or predominantly occur during bustling daytime operations. The clear concentration during specific nocturnal hours points to strategic targeting by criminals who exploit the inherent operational quietness and reduced human presence of these periods.

To enrich this understanding of theft timing, key informant interviews provided additional insights, not only reinforcing the prevalence of night-time incidents but also introducing seasonal patterns and underlying reasons for these trends. LBTO- transit driver directly corroborated the survey's emphasis on night-time vulnerability, explaining that most incidents are likely to happen at night because that is when the port is generally operating with less number of staff. This expert observation provides a crucial explanation for the quantitative findings, attributing the higher frequency of theft during late night and early morning to reduced staffing and potentially lower surveillance during those hours. The Transit driver also introduced a seasonal dimension, suggesting incidents are more likely from August to December.

Adding to the seasonal context, KSAA representative specifically identified a peak period influenced by holiday activities: Most incidents occur during the month of December through January claiming the influence of the festive season having an influence on perpetrators actions. This highlights a specific window of heightened risk that correlates with increased cargo movement and potentially relaxed vigilance or increased opportunity during festive periods. The integration of quantitative and qualitative data reveals a clear pattern regarding the timing of cargo theft at Mombasa Seaport. The survey results conclusively identify late night (1 am - 3:59 am) and early morning (4 am - 5:59 am) as the periods of highest vulnerability, aligning with common criminal opportunism when activity might be lower. This quantitative finding is directly and powerfully explained by the Transit driver's qualitative insight that the port is generally operating with less number of staff" during night hours, creating ideal conditions for perpetrators.

Beyond the daily cycle, the key informant interviews introduced important seasonal trends. The LBTO- transit driver points to an increase from August to December, while KSAA representative specifically highlights December through January, attributing this to the festive season influencing perpetrator actions. This suggests that the confluence of reduced operational staff at night and increased activity/opportunity during holiday seasons creates periods of heightened risk for cargo theft. Therefore, while the perceived high frequency of theft is concentrated in the late night and early morning, these risks are likely exacerbated during the latter months of the year, particularly around festive periods. This integrated understanding is crucial for developing targeted security measures that consider both daily operational cycles and annual seasonal fluctuations.

Day of the Week when Cargo Theft Takes Place

The data in the table below pertains to respondents' perceptions regarding the specific day of the week when cargo theft predominantly occurs at the Mombasa Seaport. This variable was included to identify cyclical vulnerabilities, thereby enabling the strategic deployment of security resources and personnel based on weekly patterns at Kilindini Harbour in Mombasa, Kenya.

Table 3: Days of the Week When Cargo Theft Occur

Day of the Week	Frequency	Percent
Monday	19	9.4
Tuesday	13	6.4
Wednesday	9	4.4
Friday	15	7.4
Saturday	69	34.0
Sunday	78	38.4

Results of this study revealed that weekends were perceived as the most frequent times for cargo theft, with Sunday reported by 78 (38.4%) respondents and Saturday by 69 (34.0%) respondents. Combined, these two days account for a substantial majority of the perceived theft incidents. Weekdays showed significantly lower frequencies: Monday was reported by 19 (9.4%) respondents, Friday by 15 (7.4%), Tuesday by 13 (6.4%), and Wednesday by a minimal 9 (4.4%). This distinct pattern highlights a strong concentration of cargo theft activity during the weekend period. The predominant identification of Saturday and Sunday as the most frequent days for cargo theft at Mombasa Seaport signifies that weekends represent a critical vulnerability period within Kilindini Harbour demanding a heightened and specific security focus. This finding provides actionable intelligence for optimizing security scheduling, especially concerning personnel deployment and surveillance measures, to specifically mitigate weekend cargo theft risks.

These results are aligned with the findings of various research bodies and industry reports on cargo crime, which frequently identify weekends and holidays as periods of heightened vulnerability for cargo theft. Experts such as CargoNet (2025) and analytics by BSI Consulting (2024) consistently show that cargo theft spikes over weekends and long holiday periods. This phenomenon is often attributed to reduced staffing levels at facilities, less operational activity, fewer personnel present for surveillance, and increased opportunities for unattended cargo (Pedigree Technologies, 2024; Travelers Insurance, 2023). Criminals exploit the diminished oversight and slower response times that characterize weekend operations.

The findings strongly suggest that the existing security framework at Mombasa Seaport faces significant challenges during non-weekday operations. This implies a critical need for enhanced weekend security protocols, including increased patrols, continuous monitoring of surveillance systems, and potentially dedicated rapid response teams to counteract the heightened risk during these periods. The relatively low reported theft on weekdays, particularly mid-week, further emphasizes that security measures during standard business hours might be more robust or that criminal activity shifts to exploit weekend weaknesses. These results differ significantly from a hypothetical scenario where cargo theft might be evenly distributed throughout the week, or even concentrated during busy weekday operations. The stark contrast between weekday and weekend theft frequency underscores the strategic targeting by criminals who capitalize on the known operational slowdowns and reduced human presence associated with weekends.

Month of the Year When Cargo Theft Mostly Take Place at the Seaport

The data in the table below pertains to respondents' perceptions regarding the specific month of the year when cargo theft predominantly occurs at the Mombasa Seaport. This variable was included to identify seasonal patterns of vulnerability, thereby enabling the strategic allocation of security resources and preventative measures based on annual trends.

Table 4: Month of the Year When Cargo Theft Occurs

The month of the year (Tick one only)	The month of the year (Tick one only)	Frequency	Percent
	February	6	3.0
	March	6	3.0
	April	8	3.9
	June	9	4.4
	July	1	0.5
	August	1	0.5
	September	6	3.0
	October	11	5.4
	November	35	17.2
	December	113	55.7

The study revealed a pronounced concentration of cargo theft incidents towards the end of the year. December was identified as the month with the highest frequency, reported by 113 (55.7%) respondents. November also showed a significant increase in perceived theft, with 35 (17.2%) respondents. October registered 11 (5.4%) respondents, indicating a gradual increase from earlier months. Conversely, other months reported much lower frequencies: June 9(4.4%), April 8 (3.9%), February 6(3.0%), March 6(3.0%), and September 6(3.0%). July and August were perceived as having the least theft activity, each reported by only 1 (0.5%) respondent. This clear pattern points to a strong seasonal influence on cargo theft at the seaport.

The predominant identification of December and November as the months with the highest frequency of cargo theft at Mombasa Seaport signifies that these months represent critical annual vulnerability periods within Kilindini Harbour, demanding specific and intensified security focus. This finding provides actionable intelligence for implementing seasonal security enhancements, resource allocation, and targeted preventative strategies to counteract peak-season cargo theft risks. These results are highly consistent with the findings of numerous international reports and analyses on cargo theft seasonality, which widely acknowledge a spike in incidents during the fourth quarter of the year, particularly November and December. Organizations like Risk Intelligence (2023) and reports by the British Standards Institution (BSI) consistently attribute this surge to the peak shipping season. This period, driven by global holidays such as Black Friday, Christmas, and New Year, involves a massive increase in freight volumes, particularly of high-value consumer goods like electronics, which create more opportunities for criminals (Overhaul, 2024; TAPA EMEA, 2022).

The heightened pressure on logistics chains during these months can sometimes lead to security lapses, such as cargo being left unattended or expedited processes overriding strict security protocols. These findings indicate that Mombasa Seaport experiences a similar seasonal vulnerability observed globally. This implies a critical need for the port to implement heightened security alerts, increase surveillance, and deploy additional personnel during the peak shipping months of November and December. Proactive measures, such as enhanced vetting of carriers and drivers, and stricter control over loading and unloading procedures, become even more vital during this high-risk period to mitigate the increased threat effectively.

Season of the Year When Cargo Theft Mostly Occur

The data in the table below pertains to respondents' perceptions regarding the season of the year when cargo theft predominantly occurs at the Mombasa Seaport. This variable was included to identify broad seasonal patterns of vulnerability, thereby facilitating the macro-level planning of security measures and resource allocation at Kilindini Harbour in Mombasa, Kenya.

Table 5: Season of the year when cargo theft mostly occurs

Season of the year (Tick one only)		Frequency	Percent
	Rainy	135	66.2
	Dry	69	33.8

The findings of this research showed that the rainy season were overwhelmingly perceived as the period when cargo theft mostly occurs, reported by 135 (66.2%) respondents. In contrast, the dry season was reported by significantly fewer respondents, 69 (33.8%). This suggests a clear correlation between weather conditions, specifically the rainy season, and the perceived increase in cargo theft incidents at the port. These results are consistent with existing literature and anecdotal evidence concerning security challenges in various operational environments, particularly in regions prone to heavy rainfall. During the rainy season, factors such as reduced visibility for surveillance cameras, slippery surfaces affecting physical patrols, slower movement of goods, and general operational disruptions can create more opportunities for criminal activity (Buluttan, 2024; STG Logistics, 2024). Heavy rains can also lead to increased congestion and delays, causing cargo to remain static for longer periods in less secure areas, thereby increasing its vulnerability (Dimerco, 2021).

Furthermore, adverse weather can impact the efficiency of security personnel, making it harder for them to detect and respond to incidents effectively. To the researcher, these findings imply that the environmental conditions specific to the rainy season in Mombasa contribute significantly to the perceived risk of cargo theft. This highlights a critical need for port security strategies to be adapted and intensified during these months, focusing on enhanced surveillance technologies robust enough for poor visibility, improved physical security measures to counteract the impact of adverse weather, and perhaps adjusted staffing levels to maintain optimal vigilance despite challenging conditions. The predominant identification of the rainy season as the period when cargo theft mostly occurs at Mombasa Seaport signifies that this climatic period represents a significant vulnerability window within Kilindini Harbour, demanding a heightened and specifically tailored security focus. This finding provides crucial intelligence for tailoring seasonal security protocols, investing in weather-resistant surveillance infrastructure, and optimizing response mechanisms to counteract cargo theft effectively during adverse weather conditions.

CONCLUSION AND RECOMMENDATIONS

This study analyzed the nature of cargo theft at Kilindini Harbour, Mombasa, between 2020 and 2024, using primary data from stakeholders directly involved in port operations. The findings reveal that theft is driven by rational decision-making, poor surveillance, and systemic vulnerabilities. Frequently targeted goods include electronics, automotive parts, pharmaceuticals, and fuel—items that are highly marketable and portable. Most thefts occur during late-night hours, weekends, and the rainy season when oversight is reduced. Methods such as identity theft, fictitious pickups, and insider collusion point to organized and adaptive criminal operations.

From a theoretical perspective, the Rational Choice Theory helps explain the cost-benefit calculations that guide offender behavior, while the Defensible Space Theory emphasizes the impact of environmental design and spatial control on crime deterrence. Together, these frameworks highlight the strategic nature of cargo theft and underscore the importance of proactive interventions.

Based on the findings, this study proposes several strategic recommendations to mitigate cargo theft at Kilindini Harbour:

To begin with, there is a critical need to enhance the port's surveillance infrastructure. Existing CCTV systems should be expanded and upgraded to provide full coverage, especially during late-night and weekend hours when theft risk is highest. High-resolution, weather-resistant cameras with night vision capabilities should be prioritized to improve visibility during the rainy season.

Additionally, access control mechanisms must be modernized. The port should adopt biometric and digital verification systems to monitor personnel movements and restrict unauthorized access. Strengthening identity checks for all individuals involved in cargo handling including drivers, clearing agents, and security officers will help prevent impersonation and fictitious pickups.

Thorough staff vetting is equally important. Comprehensive background checks and regular audits should be institutionalized to detect and deter insider threats. Establishing whistleblower channels and incentivizing ethical behavior among port staff could also minimize internal collusion.

Moreover, the effectiveness of cargo tracking needs to be significantly enhanced. The adoption of RFID tracking technologies will provide constant visibility of container movements and enable immediate alerts in the event of route deviations or unauthorized stops. Specifically, technologies recommended include block chain tracking, real-time GPS monitoring, and biometric driver verification to combat identity-based fraud during transit.

Crucially, inter-agency collaboration must be intensified. The Kenya Ports Authority, police, customs, and private security firms should develop shared intelligence platforms and engage in coordinated patrols, inspections, and investigations. Joint Operation Command Centre can bridge communication gaps and foster a more unified response to organized cargo theft.

Finally, the use of predictive analytics and data-driven decision-making should be institutionalized. Analyzing historical theft data to forecast high-risk periods such as late nights, weekends, festive seasons, and the rainy months will allow for smarter deployment of personnel and resources. The port management should integrate predictive policing models to proactively deter theft rather than respond reactively.

In conclusion, while cargo theft at Mombasa Seaport is a complex challenge, it is not insurmountable. A multi-pronged approach combining technology, procedural reform, institutional accountability, and coordinated enforcement offers a practical pathway toward improved cargo security and enhanced port efficiency.

REFERENCES

1. Akhtar, M., Azam, M., & Jiang, M. (2023). Remote container management: Enhancing global supply chain visibility. Sustainability, 15(9), 7305. https://doi.org/10.3390/su15097305
2. Aransiola, J., Okoro, O., & Tunde, A. (2023). Port security and maritime crime in West Africa: Emerging trends and response strategies. African Journal of Criminology and Justice Studies, 16(1), 45–60.
3. Azam, S., & Khan, A. (2024). Crime pattern recognition in transport corridors. Journal of Maritime Risk and Security, 9(2), 78–94.
4. British Standards Institution. (2023). Global supply chain intelligence: Cargo theft annual report. BSI Group.
5. CargoNet. (2025). 2025 cargo theft trends analysis. FreightWatch International.
6. Clarke, R. V. (1999). Hot products: Understanding, anticipating and reducing demand for stolen goods. Home Office.
7. Clarke, R. V., & Cornish, D. B. (1986). The reasoning criminal: Rational choice perspectives on offending. Springer-Verlag.
8. Davies, M., & Thomas, E. (2023). Nighttime theft and transport vulnerabilities. Global Journal of Transportation Security, 12(3), 56–72.
9. Dimerco. (2021). Logistics in challenging weather: Risks and responses. Dimerco Express Group.
10. Ekwall, D., & Lantz, B. (2013). Cargo theft: Modus operandi and preventive measures. Journal of Transportation Security, 6(3), 123–137.

11. Elago, A. (2019). Maritime insecurity and port vulnerability in West and East Africa. Journal of Maritime Affairs, 8(2), 129–141.
12. Faghawari, T., Odafe, K., & Chima, E. (2023). Organized cargo theft and port operations in Nigeria. International Review of Law and Criminology, 11(2), 87–102.
13. Gumba, D. (2020). Corruption at the port of Mombasa: Drivers and impact on regional trade. Institute for Security Studies.
14. Jouav, L. (2025). Drone surveillance in seaport cargo protection. Tech & Security in Logistics, 10(1), 21–35.
15. Kilcarr, S. (2013). High-tech heists: Cargo theft's evolving threat. Fleet Owner Magazine. https://www.fleetowner.com
16. Leong, A. V. M. (2014). The disruption of international organized crime: An analysis of legal and non-legal strategies. Routledge.
17. Major Reforms Aid KPA in Cementing Growth of Transit Cargo. (2025). FREIGHT LOGISTICS MAGAZINE.
18. Miller, T., & White, J. (2024). Cybercrime meets logistics: Identity theft in cargo operations. Journal of Global Crime Trends, 15(1), 88–105.
19. Munich Re. (2025). Emerging risks in pharmaceutical transport. Munich Reinsurance Company.
20. Newman, O. (1972). Defensible space: Crime prevention through urban design. Macmillan.
21. Overhaul. (2024). Holiday season cargo theft trends: Q4 Intelligence Brief. Overhaul Risk Management.
22. Pedigree Technologies. (2024). Weekend vulnerabilities in cargo logistics. PedigreeTech Reports.
23. Ramirez, M., & Gupta, R. (2024). Mapping theft risk by commodity type. Global Trade Security Journal, 7(1), 22–40.
24. Rodriguez, J., & Garcia, L. (2025). Cargo theft in developing economies: Patterns and prevention strategies. Journal of International Trade Security, 14(1), 33–52.
25. Scott, H., & Taylor, B. (2023). Fictitious pickups and the future of cargo crime. Transport Crime Intelligence Quarterly, 6(4), 13–29.
26. SGS Kenya. (2022). Food security and logistics: A risk-based approach. SGS Group Publications.
27. Siegmund, H. (2024, December 15). Hapag-Lloyd eyes African landlocked countries. CargoForwarder Global.
28. STG Logistics. (2024). Rainy season impact on supply chain security. STG Industry Insights.
29. TAPA EMEA. (2022). Annual cargo theft incident report. Transported Asset Protection Association.
30. Travelers Insurance. (2023). Holiday season cargo claims analysis. Travelers Risk Division.
31. TT Club & BSI. (2024). Cargo theft report: Emerging risks and prevention. TT Club and British Standards Institution.
32. United Nations Conference on Trade and Development (UNCTAD). (2023). Review of maritime transport 2023. United Nations Publications.
33. United Nations Office on Drugs and Crime (UNODC). (2022).Transnational organized crime threat assessment: Maritime crime focus. UNODC.