IMPACT OF RISK ASSESSMENT TO SECURE CONSIGNMENT JOURNEY MANAGEMENT IN KENYA

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ABSTRACT

In developed countries like Germany and United States of America, securing consignment journeys has become a critical aspect of supply chain management, with increasing focus on risk assessment to enhance efficiency and security. Despite advancements in technology and best practices, challenges persist in ensuring end-to-end visibility, real-time monitoring, and secure handover processes at border crossings and customs checkpoints. The lack of standardized protocols and interoperable systems across jurisdictions hinder the seamless flow of goods, resulting in inefficiencies, disputes, and vulnerabilities in the transportation of consignments. In developing countries such as Pakistan, Nigeria, and South Africa, regional trade corridors face significant challenges, including inefficient border processes and a lack of standardization in customs practices. Risk assessments are often underutilized, leading to delays and increased costs. Kenya serves as an illustrative example within the East African region. The adoption of digital tools and integrated tracking systems has improved the efficiency of border clearance and transit management. However, gaps still exist in the use of risk assessment methodologies, which lead to inconsistencies in customs procedures and increased exposure to risks Transportation consignments across borders exposes them to various security risks due to road conditions, high-crime zones, and organized theft along vulnerable transit points such as overpasses, underpasses, and roundabouts. However, this study aimed to investigate the impact of risk assessment on securing consignment journey management in Kenya. The study was guided by the following objectives; to evaluate the effectiveness of risk assessment practices in securing consignment journeys within Kenya and to identify common risks associated with consignment journeys and analyze their impact on security and delivery outcomes. The study was anchored by Decision-making Theory and Risk Management Theory. A descriptive research design was utilized. The study targeted 1,500 registered logistics firms in Kenya as per Kenya National Bureau of Statistics (KNBS, 2022). A sample size of 200 logistics professionals was determined based on a confidence level of 95% and a margin of error of 5%. Data collection was primarily conducted using structured questionnaires. Data analysis was performed using statistical software such as SPSS (Statistical Package for the Social Sciences). The data were analyzed descriptively and inferentially. The results revealed that there is significant positive correlation ($r = 0.67$, $p < 0.01$) between the implementation of systematic risk assessments and reduced incidents of theft during consignment journeys. The findings revealed that common risks, including theft, road accidents, and corruption, substantially impacted operational efficiency. The study concluded that risk assessment practices enhanced the security of consignment journeys within Kenya. Through a systematic evaluation, it was established that firms implementing structured and methodical risk assessments experience a noticeable reduction in theft incidents and a decrease in delivery delays. The study recommended that logistics firms should prioritize the development and implementation of comprehensive risk assessment protocols that encompass all

stages of the consignment process. This includes regular risk reviews and updates to ensure relevance amidst evolving threats.

Key words: Risk Assessment, Securing Consignment Management.

INTRODUCTION

In today's landscape of global trade and intricate supply chains, securing the safe transportation of consignments has emerged as a critical priority for businesses, governments, and international organizations (Johnson & Lee, 2019). The United States and European countries use integrated electronic seals (e-seals) combined with GPS to prevent tampering and provide real-time consignment visibility. These technologies have improved compliance with international trade standards like the WTO (World Trade Organization) Trade Facilitation Agreement, reducing delays and mitigating risks associated with theft, smuggling, and tampering during transportation. For instance, in Germany, the use of automated risk profiling systems significantly enhances efficiency in customs clearance, reducing wait times while ensuring secure cargo movements (Smith & Brown, 2020).

The implementation of the Pakistan Single Window and e-tracking systems has been pivotal in improving transparency and mitigating risks during consignment movements (Ilyas, Jin & Ullah, 2024). However, the lack of advanced risk assessment technologies like AI-driven systems hampers optimal performance. Ghana has made notable progress by implementing the Integrated Customs Management System (ICUMS) to streamline border clearance and minimize risks associated with delays and tampering. E-locks and tracking systems have been adopted to secure consignment journeys, although challenges remain in consistent enforcement of these measures at all border points.

Tanzania has adopted e-tracking systems and a command center model similar to Uganda's, with a focus on leveraging regional frameworks to enhance risk assessment (Ejembi & Okafor, 2020). These systems have improved compliance with tax authorities and reduced cargo losses, though infrastructure challenges persist. A study by Adamu, Nwankwo and Olatunji (2019) reported that bureaucratic inefficiencies and corruption at customs can lead to significant delays and increased costs for businesses. Moreover, the lack of a robust risk assessment framework exacerbates these issues, leaving consignments vulnerable to theft and mismanagement.

Kenya, as a key player in regional trade, has made strides in adopting technology to secure consignments. The implementation of e-locks, which provide tamper-proof monitoring, and command centers for tracking convoy movements are notable advancements (Mwenda, 2022). However, challenges persist, particularly during border clearance with tax authorities. Inconsistent enforcement of regulations, coupled with limited coordination among

stakeholders, often results in delays and increased vulnerability to risks such as smuggling and cargo theft (Ochieng & Nyang'oro, 2021).

Transporting consignments often involves covering extensive distances, frequently crossing national borders. As a result, effective journey management is essential to ensuring the security of the goods (Kihoro & Muriithi, 2020). The complexities of this logistical operation necessitate comprehensive risk assessment strategies to navigate Kenyan roadways and mitigate potential threats during transit. A study by Kamau et al. (2020) emphasized that identifying high-risk zones along transit routes and implementing targeted security measures can significantly reduce theft risks and ensure safe deliveries. However, there are still gaps concerning specific risk assessment protocols for managing consignment journeys, particularly in border-to-border cargo transit, where coordination between local and international security measures is essential.

The importance of risk assessment in securing consignments was also highlighted by Otieno and Wanjiru (2021). Their research indicated that one of the key elements in ensuring consignment safety is analyzing vulnerabilities in the road network. They argued that incorporating route assessments based on historical crime data and real-time intelligence can help identify potential security breaches. Nevertheless, their study uncovered a gap in standardized procedures for integrating technology such as GPS tracking with human security interventions, thereby limiting the effectiveness of these risk assessments.

In Kenya, the situation reflects both the challenges present in regional contexts and the lessons from developed nations. The introduction of the Virtue Command Centre for monitoring convoy movements has revolutionized risk management in the country. This system facilitates real-time tracking and remote command center monitoring of consignment convoys, greatly improving the ability to anticipate, respond to, and mitigate potential risks (Nyang'oro, 2022). It allows for collaborative efforts among various stakeholders, including tax authorities, to streamline border clearance and enforce compliance, thereby reducing the risk associated with cargo movement.

Additionally, Mwangi and Kiprono (2022) conducted a recent study examining the impact of security seals and locks on cargo containers in Kenya. Their research underscored the importance of physical security features in preventing unauthorized access during transit. While these security measures proved effective in reducing tampering and theft, the success of seals and locks heavily relied on their integration with electronic monitoring systems. Mwangi and Kiprono (2022) also noted a lack of research regarding the optimal integration of physical and technological security, particularly concerning the role of GPS tracking in consignment journey management.

Driver training constitutes another critical aspect of secure journey management. Njuguna et al. (2023) studied the effect of driver behavior on the security of high-value consignments and found that drivers trained in road safety and defensive driving techniques are less likely to engage in risky behaviors, such as harsh braking or excessive idling. However, their study

identified a gap in research concerning the standardization of driver training, particularly in relation to high-risk routes and the varied traffic environments specific to Kenya's cargo transit network.

Moreover, Kipkorir and Cheruiyot (2019) explored the role of secure convoys and GPS systems in providing real-time location data, enabling constant monitoring of cargo consignments. Their findings demonstrated that having well-trained security personnel escort consignments is instrumental in deterring crime and enhancing security. Despite the effectiveness of these measures, Kipkorir and Cheruiyot (2019) highlighted the need for further research into the logistical challenges and costs associated with deploying secure convoys across international borders, particularly given that these costs can be prohibitive for smaller cargo firms.

Statement of the Problem

According to a report by the World Customs Organization (2020), about 20% of all consignments face customs inspections, leading to delays that have significant cost implications for businesses (World Customs Organization, 2020). Developed nations have begun leveraging advanced risk assessment techniques and technologies to mitigate these delays, enhance compliance, and secure their supply chains (Kumar & Singh, 2019).

In a regional context, countries like Pakistan, Nigeria, Ghana, Uganda, and Tanzania experience similar challenges, albeit with more pronounced inefficiencies and higher risks. For instance, in Nigeria, the inefficiencies linked to customs procedures often lead to prolonged border clearance times, significantly impacting the import/export landscape (Akinola & Ogundipe, 2021). Similarly, reports from Uganda and Tanzania indicate that inadequate risk assessment mechanisms during customs clearance expose businesses to potential losses due to theft, damage, or regulatory penalties (Mubiligi, Niyomugabo & Imena, 2020).

Security measures like consignment seals and elocks play a crucial role in safeguarding the cargo during transit. Furthermore, effective operations entail the deployment of well-trained security personnel for secure convoys, sophisticated vehicle GPS systems for real-time tracking, and skilled drivers who exhibit safe road behaviors by avoiding harsh braking and excessive idling to enhance security protocols (Jones & Wang, 2020). A research by Kim (2021) highlighted the correlation between the frequency of risk assessments conducted along transportation routes and the successful delivery of consignments. However, it also brought to light the absence of standardized protocols for risk assessment within the transportation sector, indicating a gap in regulatory frameworks governing consignment security measures and risk assessment practices. Similarly, the study by Brown and Garcia (2023) emphasized the importance of integrating emerging technologies, such as blockchain and IoT sensors, into risk assessment processes to enhance monitoring capabilities and improve response mechanisms to security threats during transit.

Moreover, Patel (2022) revealed the necessity of close coordination among government agencies, transport operators, security firms, and local communities to develop comprehensive

risk assessment strategies that address the evolving challenges in securing consignments on Kenyan roads. However, communication gaps and information asymmetries among stakeholders were identified as barriers to the seamless implementation of collaborative risk assessment initiatives in the transportation sector. Additionally, Chen and Lee (2019) shed light on the behavioral aspects of risk assessment in consignment journey management, emphasizing the need for tailored training programs to enhance drivers' risk awareness and decision-making skills on the road. This study aimed to determine the impact of risk assessment to secure consignment journey management in Kenya.

Objectives of the Study

The study was guided by the following objectives;

i. To evaluate the effectiveness of risk assessment practices in securing consignment journeys within Kenya.

ii. To identify common risks associated with consignment journeys and analyze their impact on security and delivery outcomes.

Significance of the Study

The findings of the study would be significance to various stakeholders, including the government of Kenya, cargo drivers, policy makers, and scholars. For the Government of Kenya, the insights gleaned from this study can inform policy frameworks aimed at enhancing border security and streamline tax administration processes. Through understanding the risks associated with border clearance and the effectiveness of various security systems such as seals, e-locks, and tracking technologies the government can allocate resources more efficiently to combat smuggling and tax evasion while fostering a conducive environment for legitimate trade and commerce.

For drivers and operators within the transport sector, the study provides crucial insights into the dynamics of risk assessment and its role in safeguarding their valuables. The study supports safer operational practices by equipping drivers with knowledge about potential risks and the measures to counteract them. This empowerment translates to heightened awareness and improved decision-making on the part of the drivers, ultimately leading to reduced incidents of hijacking, accident-related losses, and vehicle damage. Moreover, as drivers are often the first line of defense in journey management, effective training derived from the study's recommendations enhance their ability to navigate risks, thereby fostering a culture of safety within the industry.

Policymakers could utilize the findings to advocate for the integration of advanced risk assessment tools and technologies into regulatory frameworks. This could include the introduction of mandatory training for transport operators, investment in security infrastructure along critical transport routes, and the promotion of public-private partnerships to enhance overall security. Scholars and academicians stand to benefit significantly from this study as it contributes to the existing body of knowledge regarding risk management within the transportation sector, particularly in developing contexts like Kenya. The research provides a foundation for future studies that could explore the effectiveness of specific risk management

strategies or investigate the relationship between risk assessment and economic performance in trade logistics.

LITERATURE REVIEW

A study by Mwangi and Nyaga (2020) utilized a cross-sectional research design to investigate risk assessment practices in the freight transport sector in Nairobi. The population consisted of logistics companies actively involved in transport operations, with a sample size of 100 firms selected through stratified random sampling. The findings indicated that the majority (approximately 76%) of respondents employed risk assessment tools to evaluate potential threats to their operations. Common risks identified included theft (63%), road accidents (59%), and delays due to traffic congestion (54%). The study concluded that effective risk assessment practices significantly correlate with improved security outcomes, as firms utilizing these practices reported fewer incidents of theft and delays compared to those that did not employ structured risk assessments.

Similarly, a study by Kamau et al. (2022) examined the impact of various risks on delivery outcomes, deploying a mixed-methods research design. The study surveyed 150 logistics professionals from various regions in Kenya using structured questionnaires complemented by in-depth interviews. The sample included both managers and operational staff from different levels of the transport industry. Key findings revealed that risks such as violent crime and deteriorating road infrastructure adversely affected delivery timeliness, leading to an average increase of 15% in delivery delays. The study indicated that risk assessment practices, particularly those that integrate geographic and demographic data, were essential for preemptively addressing potential delays and enhancing operational scheduling.

A research conducted by Mwita and Ochieng (2023) focused on analyzing the effectiveness of technology in risk assessment within the consignment journey management context. Using a descriptive research design, the researchers surveyed 120 logistics firms across major urban centers in Kenya. The sample size was determined based on convenience sampling due to the geographical spread of the companies. The findings highlighted that 70% of logistics operators used technology-driven solutions like GPS tracking and data analytics for risk assessment. These technologies allowed for real-time risk evaluation, which significantly reduced both theft and delays. The study concluded that technology plays a pivotal role in enhancing the effectiveness of risk assessment practices, ultimately resulting in improved security and timely delivery of consignments.

Okwiri et al. (2021) provided a comprehensive overview of risk factors affecting delivery in rural and urban contexts. The multi-case study employed purposive sampling to focus on 10 logistics firms with diverse operations across Kenya. The study highlighted specific risks, including environmental factors (flooding and poor road conditions) and socio-political issues (roadblock incidents) as prevalent challenges across different regions. The results revealed that such risks not only compromised the security of consignments but also heightened operational costs, affecting overall delivery outcomes. The study recommended that integrated risk

management strategies be developed, tailored to the unique challenges faced by logistics firms operating in varying regional contexts.

THEORETICAL FRAMEWORK

The study was anchored by Decision-making Theory and Risk Management Theory.

Decision-making Theory

Decision-making Theory was developed by Herbert A. Simon in 1978. According to Simon (1979), decision-making encompasses a series of steps including problem identification, alternative evaluation, choice selection, and subsequent evaluation of the outcomes. The theory is a framework that seeks to understand how individuals and groups make choices among various alternatives and the cognitive processes that underlie these decisions. Central to this theory is the notion that decision-making is not merely a random or intuitive act, but rather a structured process that can be analyzed and improved. This theory takes into account multiple dimensions, including rationality, bounded rationality, emotional influences, social contexts, and the effects of uncertainty.

In the context of securing consignments, transport managers and drivers are often required to assess various risks such as theft, road conditions, and political instability when making routing and operational decisions (Dreyer *et al*., 2021). Effective risk assessment provides critical inputs for these decision-making processes, enabling stakeholders to weigh potential risks against the benefits of different routes and strategies. The theory emphasizes the importance of collaborative approaches and information sharing among diverse actors involved in consignment journey management in Kenya. Through effective communication, coordination, and cooperation, decision-makers can leverage collective intelligence, expertise, and resources to address evolving risks, emerging threats, and operational challenges that may arise during border clearances, transit, or delivery stages.

Recent advancements in decision-making theory emphasize the role of heuristics mental shortcuts that simplify complex problem-solving processes. Mwangi, Otiso and Ngoya (2023) proposed that individuals often rely on intuitive judgment, which, while efficient, can lead to biases and errors under risk. In transport sector, drivers and logistics managers often operate under high-pressure conditions, making quick decisions that could significantly impact the safety and timeliness of consignment delivery. Understanding how biases such as the availability heuristic (relying on immediate examples that come to mind) influence these decisions is crucial. Recent studies suggest that by integrating structured risk assessment methodologies, stakeholders minimize the reliance on heuristics and improve the quality of their decision-making (Martinez *et al*., 2022).

Moreover, the application of theory in this context highlights the importance of a systematic approach to evaluating risks and implementing appropriate mitigation strategies. For instance, the implementation of advanced risk assessment tools and technologies such as Geographic Information Systems (GIS) and real-time data analytics enhanced decision-making capabilities by providing timely and accurate information about potential risks along transport routes (Katz

& Pedersen, 2020). By using these tools, transport companies can better manage uncertainties, thereby securing consignment journeys across complex and varied landscapes. This integration of technology into risk assessment underscores the significance of informed decision-making and its impact on the overall safety and efficiency of the transport sector.

Risk Management Theory

Risk Management Theory was introduced and advanced by David, (1997). The theory provides a framework through which risk may be identified, assessed, prioritized followed by coordination measures for minimizing, monitoring and control of the effects of the risks. This theory focuses on the process of identifying, assessing, and prioritizing risks followed by the coordinated application of resources to minimize, control, and monitor the impact of unforeseen events (Tummala & Schoenherr, 2020). This theory seeks to provide a systematic approach to managing uncertainty, particularly in contexts where unpredictable factors could jeopardize organizational objectives or the safety and security of stakeholders. The fundamental premise of Risk Management Theory is that while threats and uncertainties are inherent in any endeavor, effective risk management significantly mitigate adverse outcomes and enhance decision-making processes.

The theory posits that organizations make more informed decisions by thoroughly analyzing potential risks and implementing strategies to minimize their impacts (Fan & Stevenson, 2018). In the context of managing consignment journeys, this theory advocates for a proactive approach, where stakeholders, including transport companies and regulatory authorities, assess the likelihood and consequences of various risks associated with border clearance, such as theft, delays, and regulatory compliance issues.

In the Kenyan transport sector, where issues such as theft, traffic accidents, and adverse weather conditions pose significant threats, effective risk management is paramount to ensuring the safety and reliability of consignment deliveries (Omondi *et al*., 2021). Incorporating risk assessment into consignment journey management allows transportation companies to systematically evaluate potential risks and develop strategies to mitigate them. According to Koga *et al.* (2021), conducting thorough risk assessments enables organizations to identify their vulnerabilities and tailor their operational procedures accordingly. For instance, logistics companies in Kenya employ tools such as risk matrices or qualitative risk assessment techniques to categorize and prioritize risks associated with specific routes. Transport managers make informed decisions about route planning, vehicle security measures, and driver training programs, thereby enhancing overall safety and efficiency.

The adoption of real-time monitoring systems, including GPS and telematics, allows for continuous risk assessment throughout the consignment journey (Munyiri *et al*., 2023). These technologies support dynamic risk management by providing immediate feedback about evolving conditions, such as traffic patterns or emerging security threats. Logistics managers adjust their strategies in real time, ultimately reducing the likelihood of disruptions and losses during transportation (Harrison *et al*., 2022).

Moreover, risk management theory highlights the importance of a proactive approach to security rather than a purely reactive one. This is particularly relevant where unpredictable challenges necessitate a responsive and adaptable risk management framework (Gathuru & Chumba, 2020). Collaboration among stakeholders including government agencies, transport operators, and law enforcement further enhance the effectiveness of risk management initiatives, ensuring that all parties are aligned in their efforts to secure consignment journeys. Through systematic risk identification and assessment, the integration of technology, and a proactive stance toward risk mitigation, transport operators enhance the safety and efficiency of their operations, ultimately contributing to the overall stability of the logistics sector.

RESEARCH METHODOLOGY

Research Design

A descriptive research design was utilized for this study to systematically collect and analyze data regarding the effectiveness of risk assessment practices in the Kenyan logistics sector. This approach is suitable as it allows for a comprehensive evaluation of existing conditions, providing a detailed portrait of how risk assessment influences security and delivery performance in consignment journeys (Creswell & Creswell, 2017). The descriptive design enables the exploration of participants' perceptions, experiences, and practices within their operational contexts, allowing for the identification of common themes and relationships among various factors affecting journey management (Babbie, 2020).

Target Population

The target population for this study consisted of logistics companies operating throughout Kenya, specifically those involved in freight transport and consignment management. This population encompasses a diverse group of stakeholders, including logistics managers, transport coordinators, and operational staff directly engaged in journey management processes. According to the Kenya National Bureau of Statistics (KNBS, 2022), there were over 1,500 registered logistics firms in Kenya, which form the basis for the sample selection in this study. By focusing on these players, the study aims to gather insights from a representative cross-section of the logistics sector.

Sampling Techniques and Sample Size

To ensure a representative sample, the study employed a stratified sampling technique, dividing the population into subgroups based on factors such as firm size, geographic location, and operational scope. This approach facilitates the inclusive consideration of various perspectives within the logistics sector (Etikan *et al*., 2016). A sample size of 200 logistics professionals was determined based on a confidence level of 95% and a margin of error of 5%. This sample size was deemed sufficient to provide reliable data while ensuring diversity in responses, enabling in-depth analysis of risk assessment practices and their impact on consignment journey security.

Research Instruments

Data collection was primarily conducted using structured questionnaires designed to elicit specific information regarding risk assessment practices, perceived risks, and the associated impacts on delivery outcomes. The questionnaires comprised both closed-ended and Likert scale questions to facilitate quantitative analysis while allowing for nuanced responses on participants' experiences (Carmines & Zeller, 2019). Prior to the main data collection, a pilot test was conducted with 30 logistics professionals to assess the clarity and relevance of the questions, leading to necessary adjustments for enhanced reliability and validity of the instrument (Dillman *et al*., 2017).

Data Analysis

Data analysis was performed using statistical software such as SPSS (Statistical Package for the Social Sciences). Descriptive statistics were utilized to summarize the demographic characteristics of respondents and the frequency of various risk assessment practices. Furthermore, inferential statistics, such as correlation and regression analyses, were conducted to explore the relationships between risk assessment practices and key delivery outcomes, including security incidents and timeliness of deliveries. The analysis aimed to quantify the impact of these practices on consignment journey management, providing insights that could inform policy and operational enhancements within the logistics sector in Kenya.

FINDINGS AND DISCUSSIONS

Effectiveness of risk assessment practices

The study found that 78% of respondents reported using formal risk assessment practices in their operations, which is consistent with the findings of Mwangi and Nyaga (2020), who noted that structured risk assessments correlate with improved operational security. Utilizing a Pearson correlation coefficient, a significant positive correlation ($r = 0.67$, $p < 0.01$) was identified between the implementation of systematic risk assessments and reduced incidents of theft during consignment journeys. This finding suggests that companies employing formalized risk evaluation methods are more likely to experience lower theft rates, reinforcing the importance of risk management strategies in safeguarding assets (Kamau *et al.,* 2022).

Common risks associated with consignment journeys

The identification of common risks revealed that 61% of participants indicated theft as the most significant threat to consignment security, followed by road accidents (57%) and corruption-related delays (53%). The use of structured questionnaires allowed for quantitative metrics to be developed, with respondents rating these risks on a scale from 1 to 5. Subsequent analysis using descriptive statistics showed an average risk rating of 4.2 for theft (SD = 0.86) underscores the critical nature of this risk (Okwiri *et al*., 2021). When considering the implications of these risks, regression analysis indicated that each unit increase in the perception of risk related to theft corresponded to a 15% increase in the likelihood of delayed deliveries ($\beta = 0.15$, $p < 0.01$). This finding aligns with those of Mwita and Ochieng (2023), who observed that firms identifying significant security risks often face major delivery disruptions.

Impact of risk assessment on delivery outcomes

Furthermore, the data revealed a troubling pattern regarding delivery outcomes, with 65% of respondents experiencing delays attributed to risk factors. Correlation analysis indicated a strong negative correlation (r = -0.58, p < 0.01) between the robustness of risk assessment practices and the frequency of delivery delays. Firms that conducted thorough risk assessments were less likely to experience delays caused by environmental and logistical challenges. The study's findings support the assertion that effective risk assessment directly influences the consistency and reliability of delivery timelines, as highlighted by Kamau et al. (2022), who emphasized that infrastructure preparedness informed by risk assessments dramatically improves service delivery.

Integrating technology in risk assessment practices

Notably, 70% of firms employing technological solutions for risk assessments reported a marked decrease in both theft and delays. Analysis revealed a significant correlation (r = -0.62, p < 0.01) between the use of technology (GPS tracking and data analytics) and the reduction of risks during consignment journeys. Specifically, the firms utilizing technology reported a 30% reduction in theft incidents compared to firms relying on non-technological means (Mwita & Ochieng, 2023). This evidence reinforces the position taken by Okwiri *et al.* (2021), which posited that integrating technology into risk management is essential for modern logistics operations, enabling firms to respond proactively to potential risks.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study concluded that risk assessment practices enhanced the security of consignment journeys within Kenya. Through a systematic evaluation, it was established that firms implementing structured and methodical risk assessments experience a noticeable reduction in theft incidents and a decrease in delivery delays. Specifically, statistical analyses revealed robust correlations between formalized risk assessment practices and improved delivery outcomes, such as on-time deliveries and lower instances of theft. Common risks, including theft, road accidents, and corruption, substantially impacted operational efficiency; however, the presence of comprehensive risk management strategies helped mitigate these threats. Furthermore, the integration of technology in risk assessments was identified as a decisive factor in securing consignments, offering logistical firms an edge in monitoring and responding to potential risks in real-time.

Recommendations

Based on the findings, several recommendations were made:

  i.   Logistics firms should prioritize the development and implementation of comprehensive risk assessment protocols that encompass all stages of the consignment process. This includes regular risk reviews and updates to ensure relevance amidst evolving threats.

  ii.   Firms are encouraged to invest in technological solutions such as GPS tracking, data analytics, and other digital tools that bolster real-time risk management. These

technologies significantly enhance the effectiveness of risk assessments and streamline security measures during consignment journeys.

iii. Continuous training programs should be implemented for employees involved in logistics and risk management. Educating personnel on identifying potential risks and responding effectively improve the overall security of consignment journeys.

iv. Collaboration among logistics firms, government agencies, and law enforcement is essential. Establishing partnerships facilitate information sharing regarding emerging risks and enhance collective responses to security threats.

v. Engaging well-established private security firms can enhance consignment monitoring capabilities and enable real-time crisis management and intervention in the event of a severe emergency. These security professionals bring specialized skills, advanced technologies, and an understanding of risk management that is critical in identifying and mitigating potential threats to consignment.

vi. Finally, regular audits of risk assessment practices should be institutionalized to evaluate their effectiveness continuously. Incorporating feedback from these audits may help organizations refine their risk management strategies, thus adapting to new challenges that may arise in the logistics environment.

REFERENCES

Adamu, M., Nwankwo, E., & Olatunji, O. (2019). Customs and border management: a factor of international trade quality? *African Journal of Economic and Management Studies*, 10(3), 345-360.

Babbie, E. R. (2020). *The Practice of Social Research* (14th ed.). Cengage Learning.

Brown, A., & Garcia, C. (2023). Enhancing Consignment Security Through Emerging Technologies: A Study on Blockchain and IoT Integration. *Transportation Research, 15*(3), 217-231.

Carmines, E. G., & Zeller, R. A. (2019). *Reliability and Validity Assessment*. Sage Publications.

Chen, L., & Lee, S. (2019). Behavioral Insights in Risk Assessment for Consignment Journey Management: A Driver Training Perspective. *Journal of Transportation Psychology, 8*(2), 95-108.

Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2017). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (4th ed.). Wiley.

Dreyer, H., Korpela, J., & Halldórsson, Á. (2021). Decision-making under uncertainty in logistics: A systematic review. *International Journal of Physical Distribution & Logistics Management*, 51(6), 601-625.

Ejembi, M., & Okafor, U. (2020). The application of electronic locks and seals in cargo security. *International Journal of Logistics Research and Applications*, 23(2), 128-145.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4.

Fan, Y., & Stevenson, M. (2018). A review of supply chain risk management: definition, theory, and research agenda. *International journal of physical distribution & logistics management*, *48*(3), 205-230.

Gathuru, E., & Chumba, B. (2020). Proactive risk management strategies in the transportation industry: Case studies from Kenya. *Journal of Risk and Financial Management*, 13(8), 183.

Harrison, R., Goh, M., & Chen, C. (2022). Real-time monitoring in logistics: Enhancing risk management and operational efficiency. *International Journal of Logistics Research and Applications*, 1-19.

Ilyas, M., Jin, Z., & Ullah, I. (2024). Optimizing Logistics and Transportation Locations in the China–Pakistan Economic Corridor: A Strategic Risk Assessment. *Applied Sciences*, *14*(5), 1738.

Johnson, S., & Lee, K. (2019). Predictive analytics and risk management in supply chain logistics. *Journal of Business Logistics*, 40(2), 103-114.

Jones, R., & Wang, Q. (2020). Secure Convoy Operations: Best Practices and Challenges in Consignment Journey Management. *International Journal of Logistics Studies, 5*(1), 45-59.

Kamau, J., Mwangi, A., & Ochieng, M. (2022). Analyzing the impact of risks on delivery outcomes in the Kenyan logistics sector. *Journal of Transportation Systems Engineering and Management*, 12(3), 143-156.

Kamau, J., W., Wainaina, P., & Njuguna, M. (2020). Effectiveness of road risk assessments in securing cargo consignments in East Africa. *African Journal of Transport and Logistics*, 5(3), 112-128.

Katz, K., & Pedersen, K. (2020). Leveraging technology for improved decision-making in logistics. *Journal of Business Logistics*, 41(3), 300-313.

Kenya National Bureau of Statistics (KNBS). (2022). *Economic Survey 2022*. Government Printer.

Kihoro, J. M., & Muriithi, J. (2020). Evaluating the Impact of Transportation Management on the Logistics Industry in Kenya. *East African Journal of Business Management, 2*(1), 34-47.

Kim, H. (2021). Frequency of Risk Assessments and Consignment Deliveries: An Empirical Study in Kenya. *Journal of Transportation Security, 12*(4), 321-335.

Kipkorir, K., & Cheruiyot, S. (2019). Role of convoy security and GPS monitoring in cargo transit security in Kenya. *East African Journal of Supply Chain Management*, 7(1), 56-71.

Koga, K., Mehta, R., & Kihoro, J. (2021). Evaluating risks in the transport sector: A case study of Kenya. *Operations Research Perspectives*, 8, 100199.

Martinez, M., Guerrero, A., & León, J. (2022). The impact of heuristic biases on logistics decision-making. *Logistics*, 6(2), 25.

Munyiri, E., Mwangi, J., & Warutere, S. (2023). Exploring the role of technology in enhancing risk assessment and management in Kenyan logistics. *African Journal of Supply Chain Management*, 12(1), 45-62.

Mwangi, J., & Kiprono, T. (2022). Physical security measures in the consignment sector: An evaluation of seals and lock systems. *International Journal of Supply Chain Security*, 6(4), 132-147.

Mwangi, J., & Nyaga, J. (2020). The role of risk assessment practices in enhancing security in freight transport: Evidence from Nairobi. *African Journal of Business Management*, 14(6), 187-195.

Mwangi, V., Otiso, L., & Ngoya, I. (2023). The role of technology in enhancing risk management in Kenyan logistics. *African Journal of Supply Chain Management*, 12(1), 45-62.

Mwenda, G. (2022). Customs compliance and its implications in Kenya: A review of supply chain security measures. *East African Journal of Business and Management Studies*, 6(1), 50-67.

Mwita, J., & Ochieng, L. (2023). Leveraging technology for risk assessment in consignment journey management: A Kenyan perspective. *International Journal of Logistics Research and Applications*, 26(1), 1-20.

Njuguna, K., A., Muthoni, P., & Mwangi, E. (2023). Driver training and its impact on the security of high-value cargo. *Journal of African Transportation*, 9(1), 78-92.

Nyang'oro, J. (2022). The Virtue Command Centre: A model for convoy monitoring in Kenya. *East African Transport Journal, 9*(2), 87-106.

Ochieng, W., & Nyang'oro, J. (2021). The state of technology adoption in enhancing supply chain security in Kenya. *International Journal of Supply Chain Management*, 10(1), 217-225.

Okwiri, J., Adan, S., & Kirigia, J. (2021). Risk factors affecting delivery in the Kenyan logistics sector: A multi-case study approach. *East African Journal of Business and Economics*, 2(2), 47-70.

Omondi, F., Muturi, W., & Kipruto, A. (2021). Risk factors in freight transport: Insights from the Kenyan logistics sector. *Journal of Logistics Management*, 10(1), 25-40.

Otieno, L., & Wanjiru, E. (2021). Integration of risk assessment and intelligence in consignment journey management. *Journal of Security and Logistics Studies*, 8(2), 45-59.

Patel, S. (2022). Stakeholder Collaboration in Risk Assessment for Consignment Journey Management: Insights from Kenya. *Journal of Risk Management in Transportation*, 18(1), 67-82.

Simon, H. A. (1979). Models of Thought. *Yale University Press*.

Smith, R., & Brown, T. (2020). The evolution of risk management in global supply chains: Impacts and best practices. *Logistics*, 4(1), 45-58.

Tummala, V., & Schoenherr, T. (2020). Supply chain risk management: A review of the literature and a future research agenda. *International Journal of Logistics Management*, 31(3), 505-532.