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SUPPLY CHAIN RISK MANAGEMENT PRACTICES AND OPERATIONAL PERFORMANCE OF IMPORT AUTHORIZED ECONOMIC OPERATOR COMPANIES IN MOMBASA COUNTY, KENYA

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Abstract

Purpose of the study: The objective of the study was to determine the effect of supply chain risk management practices on operational performance of import authorized economic operator companies in Mombasa County, Kenya.

Methodology: This research adopted a descriptive cross-sectional research design. This study targeted all 143 AEOs importers in Mombasa County. A census survey was adopted where all the 143 import AEOs in Mombasa County were involved in the study. This scholarly investigation collected primary data from the operations and clearing department heads within the import AEOs in Mombasa County. The data was collected using a structured questionnaire with 143 issued to AEOs. The questionnaire was self-administered through drop-wait-and-pick methodology. Data was analyzed using descriptive and regression statistics generated through SPSS version 29.

Results: The findings showed that the AEOs had adopted risk identification and control to a great extent. However, they adopted risk and monitoring analysis to a moderate extent. The findings showed that the organizations took more than 1 week to deliver their products/services. Further, the organizations had a low level of operational income and customer satisfaction; high operational costs and failed to meet quality standards. From the regression analysis, risk identification, risk analysis, risk control and risk monitoring had a positive effect on operational performance.

Conclusion: The study concludes that supply chain risk management practices have a positive effect on operational performance of import AEOs in Mombasa County.

Recommendation: The study recommends increased efforts in supply chain risk identification, analysis, risk and monitoring for increased operational performance through cost efficiency, quality, delivery time and customer satisfaction. Similar research is recommended based on other factors influencing operational performance, other supply chain risk management practices, other measures of operational performance, export AEOs, other AEOs and different research methodologies.

Keywords: *Economic Operator Companies, Operational Performance, Risk Identification, Risk Analysis, Risk Control, Risk Monitoring, Supply Chain Risk Management Practices*

INTRODUCTION

Supply chain risk management is a key factor influencing the operational performance of businesses. Due to this, the interplay around SCRMP and operational performances has become one of key areas of interest for both academic research and industry practice. Adoption of effective SCRMP is crucial in mitigating disruptions and ensuring efficient operations within an organization (Senna et al., 2023). Companies that adopt effective SCRMP deal with supply chain risks effectively and therefore reduce costs that come with supply chains leading to improved operational performance. However, companies that adopt poor SCRMP find themselves experiencing increased supply chain related risks (Pham et al., 2023). This shows despite extensive literature on both concepts, there remains a significant gap in understanding how specific SCRMP directly influence various dimensions of operational performances.

Mombasa County boasts of having the highest number of imports AEO companies in Kenya. These companies have adopted SCRMP related to risk identifications, analyses, monitoring and control (KRA, 2023). However, the companies have been experiencing poor and reduced operational performance in recent years. This has been shown by high supply chain costs, inventory costs and low operational income and large delivery time. For example, ISUZU East Africa had an operating income of 95.7 billion in 2023, down by 31.9% compared to the previous fiscal year (Isuzu, 2023). The company also showed an increase in operational costs in the year by 46% compared to the year 2022.

Scholarly works done on SCRMP and operational performance have produced mixed results. Globally, Munir et al. (2020) looked at SCRM and operational performances. They found that SCRMP improved operational performance through increased operational income and reduced costs. In addition, Ngo et al. (2024) in their study on supply chain risks (SCR) and supply chain performances found that SCRMP led to no significant improvement of operational performance. In Nigeria, Asikhia et al. (2022) looked at SCRM and firm performances of oil and gas marketers in Nigeria. The study found that SCRM positively influenced operational performance. In a study done by Ganiyu, et al. (2020) on the impact of SCRs and SCRM strategies on organizational performances in Ghana found SCRMP to possess positive but insignificant bearing on performances in terms of operational costs. This shows that knowledge gaps existed in relation to effects of SCRM on operational performance in different contexts.

In Kenya, Adala, Miroga and Malenya (2022) undertook research on supplier management practices on supply chain performances of western county referrals hospitals. The SCRMP positively influence supply chains performances. Other related studies included Muthoni and Mose (2020) on influences of SCMP on performance of food and beverage manufacturers; Karani (2022) on the effect of supply chain strategies on the performance of manufacturing firms in Kenya; and Metet, Gitonga and Kipsang (2021) on risk management strategies on performances of customs and border control departments. The studies had showed conceptual, contextual and methodological gaps which created the need for this study.

Purpose of the Study

To determine the effect of supply chain risk management practices on operational performance of import authorized economic operator companies in Mombasa County, Kenya.

Research Objectives

i. To establish the extent to which import authorized economic operator companies in Mombasa County have adopted supply chain risk management practices
ii. To establish the effect of supply chain risk management practices on operational performance of import authorized economic operator companies in Mombasa County.

Research Question

What is the effect of SCRMPs on operational performances of import authorized economic operator companies in Mombasa County?

LITERATURE REVIEW

Theories

This study was based on the dynamic risk management theory and the theory of constraints. Dynamic risk management theory emphasizes the need for continuous monitoring, flexibility, and proactive and reactive strategies to manage evolving risks, integrating risk management across all organizational functions with feedback loops. In contrast, the theory of constraints (TOC) focuses on identifying and managing the most critical limiting factor (bottleneck) within a process to optimize overall system performance. Applying these theories to import Authorized Economic Operator (AEO) companies in Mombasa County, Kenya, can lead to improved SCRMP and operational performance by enhancing risk detection, flexibility, and response mechanisms through dynamic risk management, and by pinpointing and optimizing bottlenecks to enhance operational performance.

Empirical Literature Review

At the international scene, Munir et al. (2020) looked at SCRM and operational performance. This paper used data from 931 manufacturers of the latest edition of the International Manufacturing Strategy Survey (IMSS VI) utilizing SEM. The SCRMP improved operational performance through increased operational income and reduced costs. Despite the study looking at SCRM and operational performance, the measures adopted were different from the present study. This shows that a conceptual gap existed in the study. Further, the study was done in Pakistan which created a contextual gap which may influence the way the SCRMP relate with operational performance.

In addition, Ngo et al. (2024) undertook a study on sustainability-related supply chain risks and supply chain performances of garment industry in Vietnam. The study gathered data from 254 garment companies in Vietnam using a structured questionnaire based on a descriptive research design. Multiple regression modelling was done. Supply chain risk management practices produced no significant improvements in operational performance. This study looked at sustainability-related supply chain risks other than SCRMP in relation to performance. Further, they looked at supply chain performance other than operational performance creating a conceptual gap. On the other hand, the study was done on garment companies other than import AEOs creating a contextual gap.

In, In Nigeria, Asikhia et al. (2022) looked at SCRM and business performance of selected oil and gas marketing companies in Lagos State. Utilizing stratified random sample along with proportional sampling, 3 major oil and gas businesses were polled. Using an 807-person sample size, an estimated number of 9,437 workers was examined. The analysis method employed were multiple linear regressions. From outcomes, SCRM positively influenced operational performance. The study looked at the general performance other than operational performance creating a conceptual gap. Further, the study was done on oil and gas marketing companies other than import AEOs which creates a contextual gap.

In another investigation, Ganiyu, et al. (2020) used a cross-sectional research approach to examine the effects of supply chain risks and SCRMP techniques on firm performances in Ghana. A survey was used to gather data from 210 Ghanaian businesses, and a structural model was used for analysis. According to the research, SCRMP improved operational costs performances, although not significant. The study included supply chain risks which created a conceptual gap. It also looked at enterprise performance other than operational performance adding to the conceptual gaps. On the other end, the researchers involved enterprises based in Ghana other than Kenya, creating a contextual gap.

Employing a descriptive survey approach, Adala, Miroga, and Malenya (2022) investigated the impact of supplier's management techniques on supply- chain performances of referral hospitals in western Kenya. A total of 102 people provided information via questionnaires. Descriptive and inferential stats were used for analyzing info. The research discovered that hospitals identified possible supply chain risks. Moreover, supply chain performances was strongly and favorably impacted by SCRM techniques. The study was done on public referral hospitals which created a contextual gap. Further, it looked at supply chain performance other than operational performance showing a difference in the concepts.

Muthoni and Mose (2020) examined how 187 food and beverage manufacturers in Kenya performed in relation to their supply chain management strategies, with 125 of these businesses being selected for sampling. Data were examined employing regression analysis, correlational, and descriptive statistics utilizing questionnaires. The investigation discovered a significant positive correlation across performance and SCMs. The study looked at supply chain other management practices other than SCRMP which created a difference in the concepts. Further, the study was done in food and beverage manufacturing other than import AEO companies creating a difference in the context.

Employing a cross-sectional research methodology, Karani (2021) examined the impact of supply chain strategies on the operational performance of shipping businesses in Kenya. Eight twenty nice responses from manufacturers across the nation made up the target population. Data for the research project were gathered using an approach known as stratified random sampling. The sample was composed of 270 participants who were chosen at random. The results of the multiple regression analysis indicated that SCRMPs significantly and strongly improved performance. This study looked at supply chain strategies other than SCRMPs in relation to operational performance creating a conceptual gap.

Conceptual Framework

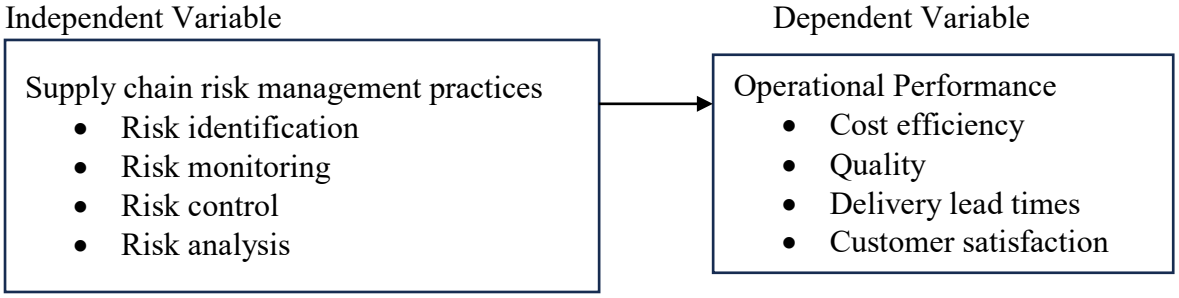

Figure 1: Conceptual Framework

METHODOLOGY

This research adopted a descriptive cross-sectional research design. This design fits as it allowed the scholar to discuss operational performances and SCRMP of import AEOs. It also enabled researcher collect data from a number of importing AEOs in Mombasa County at a certain time. Further, it guided the researcher in establishment of effect of SCRMPs on operational performance. Hence design was a fit for this study.

This study targeted all the 143 AEOs importers in Mombasa County as per KRA report (2023). Mombasa County had the highest number of imports AEOs in Kenya making it the most preferred locality for the study. A census survey was adopted where all the 143 import AEOs in Mombasa County were involved in the study. A census provides comprehensive information which eliminates sampling errors and ensures that all groups within the population are represented. It also allows for a deeper analysis of the research problem by the researcher. However, a census survey is time consuming as all the units in a population are involved increasing time to collect and analyze the data. This was overcome by having research assistants to assist in data collection and entry.

This scholarly investigation collected primary data from the operations and clearing department heads within the import AEOs in Mombasa County from 143 AEOs. The questionnaire had closed queries which guided the research and ensure that the responses were based on the research variables. The questionnaire had three sections: section one had questions related to the general information; second section had queries on SCRMPs; while third one had questions on operational performance.

The questionnaire was self-administered where participants filled questionnaires on their own using drop-wait-and-pick methodology. The research authorization letters from the university and the management of AEOs were attached to the questionnaires to introduce the researcher as well as the study. A letter was also written by the researcher indicating that the research assistants had the authority to collect data on their behalf.

Analytical Model

Data was analyzed using SPSS version 29 which allowed the researcher to code the data before entry into the SPSS for analysis through descriptive and regression stats. The study adopted the multiple regression model taking the form of:

$Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4+ \varepsilon$

Where; Y = operational performance of import AEOs; β_0=constant; β_{1-4} =regression coefficients; X_1= risk identification; X_2= risk analysis; X_3= risk control; X_4=risk monitoring; ε=error term

FINDINGS AND DISCUSSIONS

Table 1: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-25.095	2.719		-9.229	.000
	Risk identification	.303	.077	.388	3.908	.000
	Risk analysis	.763	.278	.976	2.747	.007
	Risk control	.211	.081	.263	2.611	.010
	Risk monitoring	.521	.139	.712	3.752	.000

a. Dependent Variable: operational performance

From Table 1, the fitted equation was:

Y = -25.095+ 0.303risk identification + 0.763 risk analysis + 0.211 risk control + 0.521risk monitoring

Based on the table, risk identification showed positive effects on operational performance. This depicts that where an organization identifies risks in their supply chain, they are most probably expected to experience better operational performance outcomes. The findings are similar to Emrouznejad, Abbasi and Sıcakyüz (2023) who indicated that by identifying risks, firms gain thorough awareness of the risk environment, which in turn helps them create efficient risk management plans and improve supply chains general resilience and reduce costs accrued to identified risks (Emrouznejad, Abbasi & Sıcakyüz, 2023). They also align to those of Karani (2021) who found that SCRMPs significantly and strongly improved performance. However, they differed with those of Ganiyu, et al. (2020) who found that SCRMP improved operational performances, although not significant.

Further, the table showed that risk analysis positively affected operational performance. Therefore, increased risk analysis led to improved operational performance outcomes. The outcomes were the same as Adala, Miroga, and Malenya (2022) who found that supply chain performances were strongly and favorably impacted by risk analysis in SCRM. However, the findings were different with those of Ganiyu, et al. (2020) who found an insignificant effect of risk analysis on operational costs performances.

Outcomes from Table 1 showed that risk control positively affected operational performance. This shows that increased supply chain risk control drove operational performance. The findings are the same as those of Asikhia et al. (2022) who found that risk control in SCRM positively influenced operational performance. However, Ngo et al. (2024) found that risk control in supply chain risk management had no significant improvements in operational performance. They also differed with Muthoni and Mose (2020) whose investigation discovered a significant positive correlation between operational performance and risk control in SCRM.

Outcomes from the Table also showed that risk monitoring had a positive effect on operational performance. This was shown by a positive and significant regression coefficient indicating that an increase in supply chain risk monitoring would lead to improved operational performances. They were the same as those of Asikhia et al. (2022) who found that risk control in SCRM positively influenced operational performance. They differed with those of Ngo et al. (2024) found that SCRMPs like risk monitoring produced no significant improvements in operational performance.

Conclusions

On the extent of adoption of supply chain risk management practices, the study found that the AEOs had adopted supply chain risk identification and control to a great extent but adopted supply chain risk analysis and monitoring to a moderate extent. Hence, import AEOs in Mombasa have adopted various SCRMPs. However, the practices are adopted to differing extents with risk identification and control adopted to a great extent. The study also concludes that import AEOs in Mombasa County have poor operational performance. This is shown by high operational costs displaying low-cost efficiency. The customer satisfaction levels as well as quality is also low in the AEOs with a high delivery lead time.

Based on the effect of supply chain risk management practices on operational performance, SCRMPS of risk identification, risk analysis, risk control and risk monitoring had a positive effect on operational performance. This study concludes that risk identification has a positive effect on operational performance of import AEOs in Mombasa County. Therefore, the AEOs which adopt efficient risk identification practices experience improved operational performance levels. In addition, those that increase their efforts in identifying supply chain risks reduce operational costs that come with the risks which in turn enhances operational performance. The study also concludes that risk control has a positive effect on operational performance of import AEOs in Mombasa County. This shows that increased risk controls in supply chain leads to improved operational performance of import AEOs in Mombasa County. Therefore, import AEOs that have high level of supply chain risk controls display high levels of operational performance.

In addition, from the outcomes, risk monitoring has a positive effect on operational performance of import AEOs in Mombasa County. An increase in risk monitoring leads to increased operational performance levels among the AEOs. Therefore, risk analysis has a positive effect on operational performance of import AEOs in Mombasa County. Therefore, AEOs undertaking continuous and regular analysis of supply chain risk show high operational performance levels. Generally, SCRM has a positive effect on operational performance of import AEOs in Mombasa County. Therefore, an improvement in SCRMPs in import AEOs in Mombasa County leads to improved operational performance.

The study faced various limitations. The study focused on SCRMPs and operational performance as variables. However, the study failed to look into other factors influencing operational performance. The study was also limited to Mombasa County, Kenya, targeting import Authorized Economic Operator (AEO) companies limiting the the generalizability of the findings. The data collection process also relied on a structured questionnaire which limited the study. Although this ensured consistency and facilitated quantitative analysis, it

restricted respondents from providing detailed explanations or elaborating on specific practices in SCRMPs. Additionally, relying solely on self-reported data introduced potential biases which could affect the accuracy of data. The study's data was collected at a single point in time, providing a cross-sectional perspective. This design limits the ability to assess long-term trends or causal relationships between SCRMPs and operational performance.

Recommendations

To improve operational performance among import AEOs in Mombasa County, it is essential to strengthen supply chain risk identification. The AEOs should develop comprehensive risk registers to document and categorize all potential risks while ensuring these registers are regularly updated to reflect changing circumstances. Moreover, regular supplier audits should be conducted to uncover vulnerabilities and ensure supplier operations align with organizational standards. In addition, leveraging technology, such as predictive analytics and AI tools, can help detect early warning signs of disruptions. Additionally, engaging stakeholders, including suppliers, logistics providers, and customers, can provide diverse perspectives on potential risks, further enhancing identification efforts.

Enhancing supply chain risk analysis is equally critical. Organizations should adopt advanced analytical tools, such as risk matrices and Monte Carlo simulations, to assess the likelihood and impact of risks. Prioritizing high-impact risks using structured frameworks ensures resources are focused on addressing the most critical vulnerabilities. Conducting scenario planning can also be done to prepare organizations for potential disruptions by simulating various risk scenarios and developing corresponding contingency measures.

Improving supply chain risk monitoring can significantly enhance operational performance. Real-time monitoring systems, powered by IoT and digital tools, can track supply chain activities and external market conditions effectively. Centralized dashboards should be established to consolidate risk data, enabling quick decision-making. Key performance indicators (KPIs), such as delivery reliability and cost fluctuations, should be tracked to detect early warning signs. Additionally, ongoing market surveillance can help organizations stay updated on external factors, such as geopolitical events and economic trends, that may affect the supply chain.

Strengthening supply chain risk control is also vital for operational performance. Supplier contracts should include robust risk-sharing and transfer clauses to mitigate potential financial and operational impacts. Preventative maintenance programs for equipment and infrastructure should also be implemented to avoid breakdowns that could disrupt operations. Moreover, organizations should develop comprehensive crisis management plans to address supply delays, cost escalations, and quality issues effectively.

Similar research is recommended based on other factors influencing operational performance, other supply chain risk management practices, other measures of operational performance, export AEOs, other AEOs and different research methodologies.

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