**Logistics Management Security Practices: A Quantitative Analysis of Internal Inventory Security Practices**

**ABSTRACT**

Warehousing security is an emerging trend which is shaping the performance of logistics companies and ensuring a smooth supply chain flow. Several factors can interrupt the smooth flow of materials along the logistics cycle increasing risks and reducing customer satisfaction. To this end, this book chapter explores the effect of internal inventory security practices on the security of inventory held by logistics service providers companies in Nairobi County. A descriptive survey research design was used as the research methodology. Warehouse employees working for logistics companies were issued with questioners for primary data collection. The data collected was analysed using descriptive statistics after data cleaning and coding. After data analysis, the results were presented using tables, bar graphs and pie charts. The book findings indicate that internal inventory security practices greatly affect the security of inventory held by logistics service providers companies in Nairobi County. The research recommends that, pilferage incidences should be reduced by all means necessary. The management of logistics service providers should come up with internal mechanisms to reduce employee theft like employee screening during hiring and monitoring of employees’ activities. A code of conduct should also be put in place to guide the conduct of employees handling warehoused materials. Secondly, logistics services providers should invest heavily in CCTV cameras purchase and installation in their warehouses. The cameras should be strategically located to cover all risk areas in the warehouses. Lastly, the relevance of inventory security manuals should be determined and any errors taken care of. The organization should ensure that the manuals are up to date and securely protected against manipulation and tampering. To sum up, as we move towards green suitable practices in logistics sector, we should conduct further research on the potential contribution of Warehouse safety layout and Inflammable items custody. These green security initiatives can be used to reduce the environmental impact cause other security measures that are more hazardous to the environment.

**Key words:** Security In Logistics Management, Supply Chain Risks, Material Security, Inventory Security and Supply Chain Disruptions.

**INTRODUCTION**

Clearing and forwarding companies form the back bone of the economy of Mombasa County. The large volume of cargo that passes through the port of Mombasa, serves both Kenya and the neighboring east Africa countries. There are several births with a total capacity of 1.1 million TEUs and several machineries to facilitate cargo handling. For this reason, organizations must come up with security measures to safe guard their supply chain networks against various risk elements (Dusitin, 2017). Supply chain security management initiatives are an important component that aid organizations achieve their strategic objectives in the long run. Supply chain security management is defined as "the application of policies, procedures, and technology to protect supply chain assets (product, facilities, equipment, information, and personnel) from theft, damage, or terrorism, and to prevent the introduction of unauthorized contraband, people, or weapons of mass destruction into the supply chain" (Closs and McGarrell, 2004). Supply chain practitioners have in the recent past identified recent trends affecting materials security beyond the traditional aspects of theft and pilferage to include cyber security and supply chain networks disruptions. To achieve this objective, clearing and forwarding agents must create and implement internal inventory security initiatives (measures that protect the organizations facilities (Voss, et al, 2009). This will include, use of radio frequency identification (RFID) to track materials within our premises (Voss, et al, 2009).

Clearing and forwarding organizations in Kenya should pay attention to supplier characteristics during the supplier selection process because it greatly affects security of the supply chain (Tong and Cheng, 2019). On the other hand, employees have been known to share company confidential documents, passwords and weak points with external criminals (Luca and Juha, 2017). All organizations should come up with effective internal control systems to monitor the flow of materials to reduce incidences of damage, theft and other risks (Anastasia et al, 2023). Other measures commonly used to enhance security of materials travelling within the supply chain include; certification standards for warehouses (Njomnang, 2015), relocation of warehouses and change of layout (Gould et al, 2010), use of passive and active security initiatives (Closs and McGarrell, 2004), insurance cover for stored materials (Jażdżewska-Gutta, 2014) and video filming of loading and offloading activities (Suhaiza, et, al, 2015).

Kenya Mombasa port is the largest port in east Africa serving a majority of the east African countries for all of their imports and exports. 20 ft. and 40 ft. cargo containers are mainly transported by road, while a few use the railway. Their warehouses store goods in transit temporarily awaiting cargo customs clearance and payment of taxes. This can take a few days to several weeks not exceeding three weeks on average, before transportation to final destination is arranged. This short duration is crucial because a lot of theft and pilferage can occur unnoticed. Clearing and forwarding employees ethical and professional standing is therefore important, because it helps reduce such cases. Clearing and forwarding companies are mainly based at Mombsa, Nairobi and a few at border points to Uganda and Tanzania. They provide cargo clearance service, warehousing and transportation of cargo. Cargo in transit as well as warehoused materials security is paramount for smooth flow of operations. If customer cargo get lost or damaged the reputation of the company is at risk. Clearing and forwarding companies in Kenya are losing a lot of money each year due to lose and theft of materials in warehouses. Pilferage is particularly difficult to detect because a company’s employees are the trusted people who are given the task to safe guard company assets. A rising trend is a practice where organizations security guards and warehouse employees collude with outsiders to break into stores and steal materials unnoticed. Despite strong reinforced doors, windows and gates, break in is a common problem affecting clearing and forwarding companies in Mombasa and Nairobi. To reduce customer complaints, cut cost associated with legal fees handling theft and pilferage cases and to enable the clearing and forwarding companies maintain their profitability, they must take care of security of materials. Adherence to laid down internal security measures and constant monitoring and evaluation of the processes will go a long way in helping companies protect their materials. With the entry of foreign companies from china and the middle east, local clearing and forwarding companies must strengthen their internal security measures to ensure customer satisfaction so that they can remain competitive.

1. **Conceptual Framework**

The schematic diagram below shows the relationship between the independent and dependent variables.

**Figure 1**

**Conceptual Framework**

**Dependent Variable**

**(Effective Logistics Performance)**

**Independent Variables**

**(Internal inventory security practices)**

(Effective Logistics Performance):

* Continuous inventory flow
* Customer satisfaction
* Reduced stock outs
* High inventory turnover
* High profits
* Large customer base
* Timely delivery

Internal Inventory Security Practices:

* Pilferage
* Alarm systems
* Cctv cameras
* Warehouse layout safety
* Inflammable items
* Lock and key
* Windows and external doors
* Strong store rooms

Moderating Variables:

* Low salary
* Unemployment
* poverty

**(Source: Author 2024)**

**1.1.0 Illustration**

Every organisation puts much consideration on security measures on its inventory and hence high profits in returns. In this process the organisation has to manipulate some factors in order to achieve the desired results. Where the pilferage, alarm systems, CCTV cameras, warehouse layout safety, inflammable items, lock and key, windows and external doors and strong store rooms, is not done to the required standards, then the inventory may end up being faced by break in of burglars hence loss of inventory causing poor response on profit levels. However, there are other moderating factors that affect the dependent variables alongside the independent variables. The organisation cannot control such. In this case they include poverty in the country. If there is a high level of poverty, most people will be actuated to theft as a means of surviving and the organisation cannot control it. With population pressure many people will not be able to secure jobs for themselves since the number of people is higher than the vacancies of employment hence making many people idle and as a result theft. This factor the organisation cannot control it. In conclusion, if the input and the process variables are in harmony then the output variables are favourable hence there will be proper security measures in place hence high inventory management leading to excellent procurement performance.

**RESEARCH METHODOLOGY**

Descriptive survey research design, was used for this study (KIM, 2009). 583 employees of clearing and forwarding companies made up the target population of the study. The convenient sample size of the study were 175 employees of clearing and forwarding companies in Nairobi County, Kenya, which accounted for 30% of the target population. Data was collected using open ended and closed ended questionnaires. Validity of the questionnaires was tested through a pilot study in Kiambu County. Furthermore, to test the reliability of the questionnaires; Cronbach’s Alpha Coefficient was calculated and produced an alpha of 0.88. From the analysis, both validity and reliability of the questionnaires proved to be above the set standards. Descriptive statistics and inferential statistics were used to analyse the data collected from the questionnaires (Mugenda, 1999).

**RESULTS AND DISCUSSION**

**3.1 Response Rate**

The researcher issued 175 self-administered questionnaires to the respondents and received back 164 implying that it was 93.7% response rate. This is captured in table 1.

**Table 1**

**Response Rate**

|  |  |  |
| --- | --- | --- |
| **Response** | **Frequency** | **Percentage** |
| Response | 164 | 93.7 |
| Non Response | 11 | 6.3 |
| Total | 175 | 100 |

**(Source: Author 2024)**

Table 1 shows that out of 175 respondents who were given questionnaires, 164 responded and 11 did not respond representing 93.7% and 6.3% respectively. The findings of the study shows that the study was well responded to.

**3.2 Demographic Data**

The first question sought demographic data of the respondents which included gender, level of education and work experience. The study was carried out in selected clearing and forwarding firms in Nairobi County. The study was conducted among warehouse managers, assistant warehouse managers and stores clerks. There was an even number of male and female workers who participated in the study, 50% males and 50% females. The study sought to find out the education levels of warehouse workers in the study. Table 2 shows the respondents’ level of education.

**Table 2**

**Education Level of Warehouse Staff**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Education Level** | **Warehouse Managers** | | **Assistant Managers** | | **Stores Clerks** | |
|  | **No** | **%** | **No** | **%** | **No** | **%** |
| Master’s Degree | 2 | 16.7 | 0 | 0.0 | 0 | 0.0 |
| Bachelor’s Degree | 7 | 58.3 | 1 | 16.7 | 0 | 0.0 |
| Diploma And Certificates | 3 | 25.0 | 4 | 66.7 | 49 | 33.6 |
| Others | 0 | 0.0 | 1 | 16.7 | 97 | 66.4 |
| Total | 12 | 100 | 6 | 100 | 146 | 100 |

**(Source: Author 2024)**

Up to 58.3% of the warehouse managers had Bachelor’s Degree, 25% had a Diploma or Certificate and 16.7% had Master’s Degree. Majority of assistant warehouse managers 66.7% had diploma and certificates, followed by 16.7% who had a Bachelor Degree and others meaning they either had a KCPE or KCSE certificate or are either Primary school or Secondary school dropouts. None of the stores clerk had a Masters or Bachelor’s Degrees, while 66.4% had others meaning they only have KCPE or KCSE Certificates or are either Primary school or Secondary school dropouts and 33.6% had diplomas and certificates.

Based on the above analysis it is clear that majority of warehouse managers had a Bachelor’s Degree, majority of assistant warehouse managers had Diploma or Certificate qualifications, while majority of the stores clerks had either a KCPE or KCSE certificate or are either Primary school or Secondary school dropouts. It is therefore important for the stores clerks to be encouraged and supported by the management to further their education to either a Diploma or Certificate or to even a Degree programme. Assistant warehouse managers should be encouraged and supported to further their education to a Degree or even a Masters level, while more warehouse managers should be encouraged and supported to pursue a Master’s programme or even a Doctorate programme including a lot of research and development in their areas of specialization.

Katz, (1955), noted that the skills needed for effective management can be grouped into three broad categories, namely technical skills, human skills and conceptual skills. Technical skills refer to the category of skills which enable the manager to use resources and scientific knowledge and to apply techniques in order to accomplish the objectives of the organization. Human skills refer to the ability to work well with other people and achieve results through them. Conceptual skills refer to the cognitive capacity to perceive the organization in its totality and the relationship between parts thereof. Training of warehouse administrators and clerks is essential in enabling them acquire these skills and thereby implement inventory security practices competently.

**3.3 Work Experience**

The warehouse workers were asked to indicate their work experience in the warehouses, to which they responded as shown in Figure 2 below.

**Figure 2**

**Work Experience**

**(Source: Author 2024)**

Figure 2 shows that there were 33.3% of the warehouse managers each who had worked for less than five years, 5 – 10 years and 11 – 15 years. As for the assistant warehouse managers, 33.3% had worked for 5 – 10 years and 11 – 15 years, while 16.7% had worked for less than five years and 16-20 years. Finally 49.3% of stores clerk had worked for 5 – 10 years, 24% for 11 – 15 years, 14.4% for 16-20 years and 12.3% had worked for less than five years.

Based on these results, it can be concluded that majority of the respondents had worked for a long time, so they had enough experience to do their jobs accordingly, and were in a position to give useful insights into the challenges experienced in the implementation of inventory security practices.

Morrison and Jessop (1994)illustrated that work experience refers to events that are experienced by an individual that relate to the performance of some job. Given the importance of work experience for human resource practice and research, it is not surprising that a fair amount of research has examined the concept and its relationship with important outcomes such as job performance. The effects of work experience on performance are examined using both objective and subjective measures of job performance. A levels perspective can be used to develop a framework for the measurement of work experience. A levels perspective requires a clear definition of constructs and the domain of interest (dimensions of a construct) as well as the level of measurement specificity.

**3.4 Number of Internal Security Systems**

The third research question sought to find out the role of internal inventory security practices on inventory security practices in relation to number of internal security systems required in the firms, how warehouse workers coped with shortages of internal inventory security practices and employees’ ratings of criticality of internal inventory security practices in Nairobi County.

In order to understand the firm’s implementation trends and how this impact on procurement performance warehouse were asked to provide data on the number of internal inventory security practices, systems and measures their firms required and what was available, to which they responded as shown in Table 3 below.

**Table 3**

**Number of Internal Security Systems**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Required No** | **Available No** | **Deficit** |
| **2009** | 22 | 13 | 9 |
| **2010** | 17 | 9 | 8 |
| **2011** | 15 | 11 | 4 |
| **2012** | 19 | 19 | 0 |
| **2013** | 12 | 9 | 3 |
| **Total** | 85 | 61 | 24 |
| **Average** | 17 | 12.2 | 4.8 |

**(Source: Author 2024)**

Table 3 shows that the number of internal security systems required in the firms ranged from 12 to 22 per firm. On the other hand, available internal security systems ranged from 9 to 19. All the firms required a combined number of 85 internal security systems averaging to 17 internal security systems per firm. However, there were a total of 61 internal security systems available in all the firms, which translates to 12 internal security systems per firm, giving an average deficit of 5 internal security systems per firm. While, there was one year in which the firms did not require any additional internal security systems (2012), on others years, the firms required up to 9 extra internal security systems to be installed (2009).

Based on the above analysis, the difference between the average number of internal security systems required and internal security systems available was very huge meaning that the firm needed to look for effective ways of coping with this shortage to avoid further under performance. An average deficit of 5 implies that action needs to be done immediately. This can be effectively done by periodically increasing the internal security systems available each by a substantial amount until the deficit is eliminated. This is important because form the data provided, despite continuous increase in need of internal security systems, the firms were not increasing their stocks of these internal security systems.

Păunescu and Argatu, (2020), explains that in order for a firm to advance the opportunities offered to the customers, it has to adequately utilize the facilities available. Internal security facilities include pilferage, CCTV cameras, alarm systems, warehouse layout, firefighting safety measures, employee training on internal inventory security practices and emergency exits. If such facilities are inadequate then the firms fails to provide quality logistics and warehousing services. It is the responsibility of the warehouse managers to ensure that there are adequate internal security resources for secure warehousing activities to take place without any hitches.

**3.4 Coping with Shortages of Internal Inventory Security Practices**

Then the warehouse workers were asked to indicate the coping strategies that they employed to deal with challenges related to shortages of internal inventory security practices, to which they responded as shown in Table 4

**Table 4**

**Coping With Shortages of Internal Inventory Security Practices**

|  |  |  |
| --- | --- | --- |
| **Coping Strategies** | **No Of Warehouse Workers** | **Percentage** |
| Outsourcing | 90 | 54.9 |
| Multi Sourcing Strategy | 30 | 18.3 |
| Make Or Buy Strategy | 7 | 4.3 |
| Strategic Partnerships | 17 | 10.4 |
| Market Research And Development | 20 | 12.2 |

**(Source: Author 2024)**

Table 4 shows that 54.9% of the warehouse workers coped with shortages of internal inventory security practices by outsourcing such services and goods to third party contractors and supplies, 18.3% coped by using multi sourcing strategy, 4.3% coped with shortages of internal inventory security practices by use of make or buy strategy, 10.4% by strategic partnerships, while 12.2% used market research and development.

The above analysis shows that majority of firms use outsourcing to solve their shortage of internal inventory security practices. This is important because it will help them to avoid total shut down of operations, however the firms should be encouraged and advised to try and use a portfolio of strategies to avoid over reliance on one. This showed that implementation of inventory security practices has been faced by various challenges which led to warehouse managers making strategic decisions to solve the problems.

Fiona and Samuel, (2023), suggested that building relationship with suppliers has become an explicit part of the procurement strategy for both small and big companies. Outsourcing involved the strategic use of resources to perform activities handled by internal staff and their resources, while partnership sourcing is a commitment to both customers and suppliers, regardless of size to a long-term relationship based on clear mutually agreed objectives to strive for world class capability. On the other hand make-or-buy decisions compare the cost of producing a component or providing a service internally with the cost of purchasing the component or service from an external supplier. Finally multiple sourcing of item(s) means that the company adopts the practise of purchasing all its requirements from various suppliers in the market.

**3.5 Criticality of Internal Inventory Security Practices**

Another factor that could affect the internal inventory security practices is related to criticality of internal inventory security practices used by various firms. Consequently, data was collected from warehouse workers on the criticality or lack of criticality of internal inventory security practices, systems and measures in their firms, to which they responded as shown in Table 5 below;

**Table 5**

**Criticality of Internal Inventory Security Practices**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Internal Security Practices** | **Critical** | | **Not Critical** | |
|  | No | % | No | % |
| Pilferage Prevention Measures | 90 | 54.9 | 74 | 45.1 |
| CCTV Systems | 70 | 79.3 | 34 | 20.7 |
| Alarm Systems | 145 | 88.4 | 19 | 11.6 |
| Warehouse Layout | 35 | 21.3 | 129 | 78.7 |
| Firefighting Safety | 82 | 50.0 | 82 | 50.5 |
| Employee Training | 25 | 15.2 | 139 | 84.8 |
| Emergency Exits | 50 | 30.5 | 114 | 69.5 |

**(Source: Author 2024)**

Table 5 shows that 54.9% of the employees indicated that pilferage prevention measures were critical, while 45.1% indicated that they were not critical. CCTV systems were rated critical by 79.3% employees and not critical by 20.7% respondents. Alarm systems were rated critical by 88.4% employees and not critical by 11.6% respondents. Another, 21.3% of the employees rated warehouse layout as critical while 78.7% rated them not critical. An equal proportion of respondents rated firefighting safety critical 50% and not critical 50%. Employee training was rated 15.2% critical by respondents and not critical by 84.8% of the respondents. Emergency exits were rated as 30.5% critical and 69.5% not critical.

Based on this analysis, it emerges that the most critical resources in the organizations according to respondents were pilferage prevention measures, CCTV systems and alarm systems. Warehouse layout, emergency exits and employee training on internal inventory security systems were rated as less critical by majority of the warehouse workers. Therefore, it is very important for all firms to try and combine all forms of internal inventory security systems as a way to avoid over reliance on one system.

Păunescu and Argatu, (2020), pointed out that critical business functions are business activities and processes that shall not be disrupted such that they impact the ability of the organization to achieve its minimum business continuity objectives. Having a comprehensive understanding of the various quantitative and qualitative impacts to your business will help you to zoom in on the critical functions/processes to look at and apportion your resources accordingly to your company’s best interests. This also ensures that you will not omit considerations for some of the critical functions which are not apparent.

**3.6 Comparative Analysis of Internal Inventory Security Practices**

A summarized version of the descriptive analysis of the independent variable internal inventory security practices, were showcased in the table 6 below highlighted as mean, standard deviation (SD) and variance. The research respondents used the six point likert scale to give their feedback for the study.

**Table 6**

**Comparative Analysis of Internal Inventory Security Practices**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Mean** | **Standard Deviation** | **Variance** |
| Pilferage | 4.76 | 0.94 | 0.75 |
| Alarm Systems | 3.62 | 1.25 | 1.22 |
| CCTV Cameras | 4.23 | 1.15 | 1.21 |
| Warehouse Safety Layout | 2.96 | 1.35 | 1.19 |
| Inflammable Items Custody | 3.71 | 1.43 | 1.41 |
| Lock And Key | 3.54 | 1.22 | 1.02 |
| Windows And External Doors | 3.71 | 1.01 | 1.21 |
| Strong Store Rooms | 3.12 | 1.54 | 1.87 |
| Relevance Of Inventory Security Manuals | 3.91 | 0.87 | 0.72 |
| Frequent Updating Of Practices | 3.21 | 1.09 | 1.91 |

**(Source: Author 2024)**

*The six-point Likert scale running from 0 to 5 was used to project the above means, standard deviations and variances. This ranged from the lowest point of “no effect at all” to the highest point of “to very large extent” in that order as a consequence of taking up internal inventory security practices.*

Based on the five-point Likert scale, the results from Table 6 indicated that the variables that were predominantly influential in affecting logistical services performances were pilferage incidences with a (M) of 4.76, a (σ) of 0 .94 and a (s2) of 0.75 and Cctv camera’s which had a (M) of 4.23 a (σ) of 1.15 and a (s2) of 1.21. Other variables had the following (M): alarm systems (M = 3.62), warehouse safety layout (M = 2.96), inflammable items custody (M = 3.71), lock and key (M = 3.54), strong store rooms (M = 3.12), relevance of inventory security manuals (M = 3.91), frequent updating of practices (M = 3.71) and windows and external doors (M = 3.71). Their (σ) were 1.25, 1.35 1.22, 1.01, 1.54, 0.87, 1.09 and 1.43 respectively and their (s2) were 1.22, 1.19, 1.02, 1.21, 1.87, 0.72, 1.91 and 1.41 respectively. . Consequently, the (M) of ≥ 4 Implied that the study findings supported the hypothesis that the study variable certainly negatively or positively influenced the studies dependent variable i.e. security of materials of clearing and forwarding firms.

Voss, Whipple and Closs, (2009), confirmed that, logistics organizations which place a high emphasize on security strategies are able to detect internal and external security risks early enough. This enables the organizations to come up with mitigation measures in timely manner thereby reducing losses to the minimum. Similarly, another study by Andrzej, (2018), affirmed that, use of security services systems such as CCTV cameras and access control measures (Rotich and Ndeto, 2024), improve the security of materials in the warehouse reducing material loss. To reduce cases of pilferage by organization employees, the above measures should be put in place and emphasize placed on their full implementation and monitoring. Additionally, alarm systems, are another effective way of enhancing the security of warehouses and protecting stored materials (Mahambane, 2017). Alarm systems are mainly used by a majority of the logistics organizations to reduce material loss through pilferage. A majority of the past literature indicate that the following internal security practices greatly influence security of materials in the warehouses, security management systems, cyber threats, warehouse management system, cargo tracking system and detection systems, (Zailani, Et Al, (2015), (Tong, and Cheng, 2019), (Enache, 2023), (Urciuoli, and Ekwall, 2012).)

**3.7 Comparative Analysis of Organization Logistical Services Provision Performance**

**Table 7**

**Comparative Analysis of Organization Logistical Services Provision Performance**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Mean** | **Standard Deviation** | **Variance** |
| Customer Satisfaction | 4.83 | 1.75 | 0.89 |
| Customer Retention | 4.81 | 1.54 | 0.77 |
| Reduced Inventory Theft Incidences | 4.73 | 1.23 | 0.67 |
| Higher Profits | 4.65 | 0.54 | 1.89 |
| Increased Customer Base | 4.59 | 1.87 | 0.74 |
| Excellent Service Provision | 4.43 | 1.98 | 0.78 |
| Continuous Supply Chain Flow | 3.87 | 1.34 | 0.99 |
| Timely Delivery | 2.76 | 0.67 | 1.88 |
| Uninterrupted Schedules | 2.59 | 0.67 | 1.89 |
| Awarded ISO Certifications | 2.98 | 0.56 | 1.42 |
| Performance Contracting Manuals | 2.11 | 0.67 | 1.34 |

**(Source: Author 2024)**

*The six point likert scale running from 0 to 5 was used to project the above means, standard deviations and variances. This ranged from the lowest point of “no effect at all” to the highest point of “to very large extent” in that order as a consequence of taking up internal inventory security practices.*

The variables which were outstanding in the sampled firms included: customer satisfaction with a (M) of 4.83, a (σ) of 1.75 and a variance (σ) of 0.89, customer retention with a (M) of 4.81, a (σ) of 1.54 and a (s2) of 0.77, reduced inventory theft incidences with a (M) of 4.73, a (σ) of 1.23 and (s2) of 0.67, higher profits with a (M) of 4.65, a (σ) of 0.54 and a (s2) of 1.89, increased customer base with a (M) of 4.59, a (σ) of 1.87 and a (s2) of 0.74 and excellent service provision with a (M) of 4.43, a (σ) of 1.98 and a (s2) of 0.78. Among the variables with moderate scores included: continuous supply chain flow with a (M) of 3.87, a (σ) of 1.34 and a (s2) of 0.99, timely delivery with a (M) of 2.76, a (σ) of 0.67 and a (s2) of 1.88, uninterrupted schedules with a (M) of 2.59, a (σ) of 0.67 and a (s2) of 1.89, awarded ISO Certifications with a (M) of 2.98, a (σ) of 0.56 and a (s2) of 1.42 and performance contracting manuals with a (M) of 2.11, a (σ) of 0.67 and a (s2) of 1.34

As expected, my results prove that customer base and retention levels in their workplaces is greatly influenced by internal security practices. This is in agreement with studies done by Nanyama and Kiarie, (2016), which found out that supply chain security practices influences customer satisfaction levels in organization. This emphasizes the need for logistics organization to allocate adequate resources to install alarm systems and CCTV cameras in warehouse premises. Additionally, Fan, (2022), affirmed that incoming cargo inspection helps to reduce insecurity incidents. Detailed inspection of offloaded materials against the delivery note ensures that the right quantity of materials is confirmed helping reduce inventory shrinkage. Lastly, Attah,Liman and Alh, (2024), confirmed that, pilferage incidences in the organization causes a major security threat to organizations reducing profit margin. Employee training and use of relevant documentations should be implemented to reduce cases of pilferage in logistics organizations. Therefore, it can be concluded that, it is crucial for logistics companies to completely device, regulate, observe and evaluate their internal inventory security practices so that they can retain customers and enhance customer satisfaction.

**3.8 Comparative Analysis of Organization Logistical Services Provision Performance**

**Table 8**

**Pearson’s Product Moment Correlations Results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Regression coefficient, B** | **Standard error, B** | **Persons coefficient, r** |
| Independent variables | 0.57, p< 0.05 | 0.26 | 0.47\*\*, p < 0.000 |

**(Source: Author 2024) \*\* Means p-value is significant at 0.05**

For my research studies, I used Pearson correlation analysis to determine the relationship between the dependent variable (organizational logistical services performance) and the independent variable (internal inventory security practices). The results indicate a moderately strong relationship between the dependent variable (organizational logistical services performance) and the independent variable (internal inventory security practices by clearing and forwarding companies in Nairobi County (r = 0.47\*\* p value = 0.000). This implies that the above relationship was significant because the p value 0.000 was less than 0.05 (significant level). The findings are in line with the findings of Andrzej, (2018), who indicated that there is a very strong relationship between security services systems such as CCTV cameras and access control measures and warehouse safety.

**3.9 Comparative Analysis of Organization Logistical Services Provision Performance**

**Table 9**

**Multiple Regression Model Summary**

|  |  |
| --- | --- |
| **Variables** | **Values** |
| Multiple R | 0.47 |
| R2 | 0.22 |
| Adjusted R2 | 0.18 |
| Standard Error (SE) | 0.39 |
| df | 1 |
| F value | 4.87, p=0.04 |

**(Source: Author 2024)**

While Table 9 show cases that internal inventory security practices has a significant difference on the overall mean of organizational logistical services performance (F = 4.87, p < 0.05). Therefore, internal inventory security practices had a profound effect on the overall mean of organizational logistical services performance. Multiple coefficient of variation (R) value of 0.47 indicates a high and positive relationship between the dependent variable (organizational logistical services performance) and the independent variable (internal inventory security practices). According to the R-Square value of 22 percent, pilferage, CCTV cameras and relevance of inventory security manuals explained 22 percent of variations in organizational logistical services performance by clearing and forwarding companies in Nairobi County. Region, Kenya, while random error or other factors account for 60.4 percent of those variations. The findings are in line with the findings of Mahambane, (2017).who indicated that there is a very strong relationship between use of alarm systems and the security of warehouses and protecting stored materials.

**CONCLUSIONS**

In the recent past, more attention has been put on provision of security for goods by customers using the services of logistics service providers. As more logistics service provider’s managers have become aware of increased risks in the logistics cycle, there has not only been attempt to improve logistics services efficiency, but also on how to make them more secure and safe. Customers are cautious when choosing their logistics service providers and the risks involved. With increased competition and globalization, logistics service providers cannot afford to ignore the security concerns of their customers. For that reason, logistics security initiatives should be incorporated into organizations strategic plans. To this end, the results from this research affirmed the relationship between internal inventory security practices and organizational logistical services provision performance yielding moderate regression coefficient and beta values (F = 4.88, p < 0.05, B = 0.57, p < 0.05, r = 0.47\*\*, p < 0.05) indicating a moderately positive correlation between the variables.

The significant relationship between internal inventory security practices and organizational logistical services provision performance is in line with the studies conducted by Linda, (2016), who found out that regular inspection during cargo movement, sufficient lighting conditions and rigorous screening process before hiring employees greatly influence operational performance among logistic service providers in Malaysia via Supply chain visibility by assessing with timeline of shipping documents, Cargo clearance during custom clearance and Cargo delivery time window. These findings are according to what has been happening in Kenya over the past two decades. This was an indication that inventory security practices were not efficient in the studied firms, thus, affecting organizational logistical services provision performance of these firms in terms of customer satisfaction, customer retention, reduced inventory theft incidences, higher profits, increased customer base, excellent service provision, continuous supply chain flow, timely delivery, uninterrupted schedules, awarded ISO certifications and performance contracting manuals.

**RECOMMENDATIONS**

The following specific recommendations as informed by the findings and conclusions of this study, will be useful to the organization and other logistics service providers; pilferage incidences should be reduced by all means necessary. The management of logistics service providers should come up with internal mechanisms to reduce employee theft like employee screening during hiring and monitoring of employees’ activities. A code of conduct should also be put in place to guide the conduct of employees handling warehoused materials. Secondly, logistics services providers should invest heavily in CCTV cameras purchase and installation in their warehouses. The cameras should be strategically located to cover all risk areas in the warehouses. Lastly, the relevance of inventory security manuals should be determined and any errors taken care of. The organization should ensure that the manuals are up to date and securely protected against manipulation and tampering.

**SUGGESTIONS FOR FURTHER STUDY**

The research findings indicate that Warehouse safety layout, Strong store rooms, Frequent updating of practices and Lock and key have less significant in relation to organizational logistical services provision performance. Further detailed research should be conducted to measure the full extent of these variables and the extent to which they can affect security in the logistics industry sector. Lastly, as we move towards green suitable practices in logistics sector, we should conduct further research on the potential contribution of Warehouse safety layout and Inflammable items custody. These green security initiatives can be used to reduce the environmental impact cause other security measures that are more hazardous to the environment.

**LIST OF REFERENCES**

Andrzej Szymonik, (2018). Warehouse Safety. Logistics and Transport journal. No 2(38). DOI: 10.26411/83-1734-2015-2-38-11-18

Closs, D.J. and McGarrell, E.F. (2004), “Enhancing security throughout the supply chain”, Special Report Series, IBM Center for The Business of Government, available at: www. businessofgovernment.org

Dusitin, Clara. (2017). The Effect of Facility Management in Supply Chain Security Operational Performance and Firm in Malaysia (December 18, 2017). Available at SSRN: https://ssrn.com/abstract=3090093 or <http://dx.doi.org/10.2139/ssrn.3090093>

Edwin Ogbu Attah,  Abdullahi N. Liman, Usman Yusuf Alh, (2024). Employee’s Pilferage and Security in Beverage Manufacturing Companies in Lagos State, Nigeria. African Journal of Politics and Administrative Studies (AJPAS) 17(1) (June, 2024):324-340, <https://dx.doi.org/10.4314/ajpas.v17i1.16>

Enache, G.I. Logistics Security in the Era of Big Data, Cloud Computing and IoT. Proceedings of the International Conference on Business Excellence, 2023, The Bucharest University of Economic Studies, vol. 17 no. 1, pp. 188-199. https://doi.org/10.2478/picbe-2023-0021

Everlyne Nanyama and David Kiarie Mburu, (2016). Effects of Supply Chain Security on Supermarkets Performance in Kenya (A case of Nakumatt supermarkets in Nairobi). Journal of Applied Management Science. Vol. 2 Issue 4, Paper 5

Jażdżewska-Gutta, Magdalena (2014) : Supply Chain Security Measures - The Business Perspective, In: Blecker, Thorsten Kersten, Wolfgang Ringle, Christian M. 978-3-7375-0341-9 (Ed.): Innovative Methods in Logistics and Supply Chain Management: Current Issues and Emerging Practices. Proceedings of the Hamburg International Conference of Logistics (HICL), Vol. 18, epubli GmbH, Berlin, pp. 225-248

Fan, S and Yang, Z (2022) Safety and security co-analysis in transport systems: Current state and regulatory development. Transportation Research Part A: Policy and Practice, 166. pp. 369-388. ISSN 0965-8564

Fiona, W. M., & Samuel , M. (2023). The Influence Of Supplier Relationship Management On The Performance Of Food And Beverage Manufacturing Firms In Kenya. Contemporary Journal of Business and Entrepreneurship Research (CJBER), 1(1), 65–86. Retrieved from <https://zapjournals.com/Journals/index.php/cjber/article/view/157>

Julie E. Gould & Cathy Macharis & Hans-Dietrich Haasis, (2010). Emergence of security in supply chain management literature. J Transp Secur (2010) 3:287–302 DOI 10.1007/s12198-010-0054-z

Jessop, D. and Morrison, A.(1994). Storage and Supply of Materials. isbn-9780273606048. url={https://books.google.co.ke/books?id=vn41AAAACAAJ},

Kajalo, S. and Lindblom, A. (2010), "Surveillance investments in store environment and sense of security", Facilities, Vol. 28 No. 9/10, pp. 465-474. <https://doi.org/10.1108/02632771011057198>

Katz R (1955) Skills of an effective administrator. Harvard Business Review.

Linda, Uitm, (2016). The Significance Of Supply Chain Security Practices On Operational Performances Among Logistics Provider In Malaysia. Supply Chain Security Practices.

Luca Urciuoli & Juha Hintsa (2017) Adapting supply chain management strategies to security – an analysis of existing gaps and recommendations for improvement, International Journal of Logistics Research and Applications, 20:3, 276-295, DOI: 10.1080/13675567.2016.1219703

Maria Anastasia, Nida Putri Rahmayanti, Kristin Mariyani, Jaya Bahwiyanti, Nurshifa, 2023. Analysis of the internal control system for merchandise inventory at PT Hokkian Anugerah Karya Abadi Banjarmasin. International Journal of Research in Business & Social Science 12(2), 580-587, <https://doi.org/10.20525/ijrbs.v12i2.2390>

Njomnang Darlyne Minette. (2015). Assessing Private Warehousing Security In Ghana A Case Of Selected Warehouses At Tema. Shanghai Maritime University. Regional Maritime University. Digital Repository

Păunescu, C., & Argatu, R. (2020). Critical functions in ensuring effective business continuity management. Evidence from Romanian companies. Journal of Business Economics and Management, 21(2), 497-520. <https://doi.org/10.3846/jbem.2020.12205>

Rotich Brenda Jebet, And Ndeto Charles, (2024). Warehouse Management Practices And Performance Of Retail Stores In Nairobi City County, Kenya. Int Journal Of Social Sciences Management And Entrepreneurship 8(4): 957-971, Issn 2411-7323

Suhaiza Hanim Zailani, Karthigesu Seva Subaramaniam and Mohamad Iransmanesh Mohd Rizaimy Shaharudin , (2015),"The impact of supply chain security practices on security operational performance among logistics service providers in an emerging economy: security culture as moderator", International Journal of Physical Distribution & Logistics Management, Vol. 45 Iss 7 pp. - Permanent link to this document: http://dx.doi.org/10.1108/IJPDLM-12-2013-0286

Tong, X., Lo , C. K. Y., Lai, K., & Cheng, T. Y. (2019). Supply chain security management: a citation network analysis. International Journal of Shipping and Transport Logistics, 11(6), 508-532. https://doi.org/10.1504/IJSTL.2019.103873

Urciuoli, L., & Ekwall, D. (2012). Possible impacts of supply chains security on efficiency - A survey study about the possible impacts of AEO security certifications on supply chain efficiency. In Unknown host publication (pp. 782-798) http://hdl.handle.net/2320/11303

VOSS, M. D., WHIPPLE, J. M., & CLOSS, D. J. (2009). The Role of Strategic Security: Internal and External Security Measures with Security Performance Implications. Transportation Journal, 48(2), 5–23. <http://www.jstor.org/stable/25702520>

Zailani, S.H., Seva Subaramaniam, K., Iranmanesh, M. and Shaharudin, M.R. (2015), "The impact of supply chain security practices on security operational performance among logistics service providers in an emerging economy: Security culture as moderator", International Journal of Physical Distribution & Logistics Management, Vol. 45 No. 7, pp. 652-673. https://doi.org/10.1108/IJPDLM-12-2013-0286