

**E-LOGISTICS AND OPERATIONS PERFORMANCE OF
INTERNATIONAL HUMANITARIAN ORGANIZATIONS IN
NAIROBI**


MAWIYOO FAITH MAWIA

**A Research Proposal Presented in Partial Fulfillment of the Requirements for the
Award of Master of Business Administration, School of Business and Management
Sciences, University of Nairobi**

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DECLARATION

I, the undersigned, declare that this is my original work and hasn't been submitted for review to any other institution but the University of Nairobi.

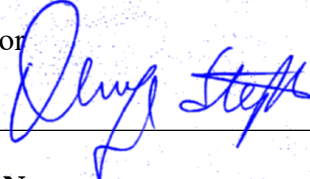
Signed:  _____ Date: 29/11/2023

Mawiyoo Faith Mawia

D61/35578/2019

This research proposal has been submitted for examination on approval as the University

Supervisor

Signed:  _____ Date: 30/11/2023

Onserio Nyamwange

Lecturer, Department of Management Science and Project Planning

Faculty of Business and Management Sciences, University of Nairobi

DEDICATION

This project report is devoted to my family and friends who consistently showed their support and offered me encouragement while working on this project.

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I want to start by thanking God for the gift of life. I also appreciate my supervisor, Onserio Nyamwange, for his advice and assistance. I also acknowledge the support of my friends and families that provided a conducive environment for study.

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ABBREVIATIONS AND ACCRONYMS

CIPS Chartered Institute of Supplies Management

EDI Electronic Data Interchange

IDS Information Directed System

IHO International Humanitarian Organizations

JIT Just in Time

MFT Material Flow Theory

NGO Non-Governmental Organizations

RBV Resource Based View

SC Supply Chain

SME Small and Medium Sized Enterprises

VMI Vendor Managed Inventory

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ABSTRACT

The purpose of this research was to determine the relationship between e-logistics and operational performance of international Humanitarian Organizations (IHOs) in Nairobi County. The study specifically determined the degree e-logistics practices have been adopted by IHO's in Nairobi County; and to the effect of e-logistics practices on operational performance of IHO's in Nairobi County. The research's target population consisted of all the 64 IHOs in Nairobi City County. The study used primary data that was gathered through questionnaires. The study employed a descriptive research design and utilized frequency distribution, mean scores and standard deviation, were used as descriptive statistics measures of descriptive statistics. Additionally, it employed multiple regression analysis to test the strength of the association between e-logistics practices and the operational performance of IHOs in Nairobi. The research established that IHOs in Nairobi County have implemented e-logistics practices to a great extent. The e-logistics practices implemented include; e-transportation, e-inventory management, e-warehousing, e-procurement and information sharing. It was concluded that a positive but insignificant association exists between e-logistics practices and the operational performance of IHO's in Nairobi County. The use of e-logistics by the organizations is responsible for 7% of the overall variation in the operational performance of the IHOs in Nairobi County. The recommended is for IHOs in Nairobi County to conduct regular benchmarking with other global firms that are best in E-logistics for proper implementation insights. This will make them comprehend on the improvement of implementation mechanisms. The study also recommends that there is a need for IHOs to promote employee training on e-logistic practices and set aside an adequate budget for e-logistics implementation.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In the present-day business environment, many companies are considering expanding to new markets to boost their market share and improve production and sourcing efficiencies (Cheng, 2016). The advancement of technology and the emergence of e-commerce have made companies adopt new strategies when it comes to logistics management. The proliferation of the Internet and ICT has enabled the advent of e-commerce (EC) and e-logistics technologies in logistics operations, bringing both benefits and opportunities as well as some challenges for managing logistics activities. A crucial aspect influencing business operations is the proper handling of the logistics function to enable an uninterrupted materials flow, goods, and data all through a corporation's supply chain (Yin, 2018).

E-logistics is often utilized for its capacity to foster transparency and ensure seamless exchange of information between supply chain (SC) partners, which is advantageous for offering superior customer service and prompt delivery of goods and services (Wang & Pettit, 2016). Numerous firms have adopted the utilization of contemporary technology such as electronic data interchange (EDI), e-commerce and IT in their logistics management, greatly contributing to improved communication with a range of partners along the SC (Kawa & Swiatowiec-Szczepanska, 2021).

In international humanitarian organizations, investment in the adoption of modern logistic systems, information technology (IT) and management information systems (MIS) has been minimal (Las, 2015). Most NGOs lack modern systems and do not appreciate the impact of

logistics management, integrated systems and supply chain management in satisfying customer needs through efficient delivery at lower cost.

There are several theories that relate to e-logistics. Nevertheless, for the purpose of this study Barney's (1991), resource-based view (RBV) and the material flow theory (MFT) (Xu, 2008) will be used. Barney (1991) through the resource-based view, proposed by, advocates that a firm can achieve sustained competitive advantage and improved performance by taking advantage of , valuable, rare non-substitutable and imperfectly replicable resources (Salazar, 2017). The material flow theory (MFT) brings out guidelines on how firms manage material flow in the organization to curb time and improve performance.

1.1.1 E-logistics

E-Logistics is an online logistics value chain that facilitates the delivery of efficient and competitive logistics services. E-logistics is a system that uses information and communication technology (ICT) to coordinate and manage various logistics activities like, procurement, inventory management, trucking, transportation and warehousing (Wang, 2016). With the help of information sharing and transparency of information, businesses can become more competitive in their industry (Park & Kim, 2013). This system helps them to benefit from increased efficiency and cost reduction.

The utilization of e-logistics may improve the access to internet-based technologies for material provision, warehousing, transport, and allow more efficient distribution by means of routing optimization and inventory oversight (Serik, 2013). E-logistics is beneficial for overseeing three primary back-end procedures that are needed from the point of purchase to cover warehouse, delivery, transport, and customer engagement. In this research, we will

examine e-procurement, e-inventory management, e-warehousing, e-transportation, and sharing of information in regard to e-logistics activities.

1.1.2 Operations Performance

Operations performance is an indicator that is established by evaluating the level of effectiveness and efficiency against a set standard for success (Calzon, 2022). This metric can gauge a firm's performance by examining aspects such as delivery time, productivity, agility, and leanness (Schoenher, 2012). Cost-effectiveness, time efficiency, operations adaptability, and quality are the four primary criteria used to evaluate operations performance.

Operational performance seeks to enhance efficiency and effective systems that are dependable and can guarantee superiority, surpassing customer requirements. It involves minimizing the cost of the product, reducing lead times, enhancing the quality of the product, and increasing the responsiveness (Kivite, 2015). It further targets minimizing the cost of production, escalating the speed of product development and production, maintaining flexibility of the production system, and guaranteeing quality assurance for the product. In this research, we take a critical look at the elements of performance that can be attributed to the operational performance parameters of responsiveness and efficiency.

1.1.3 International Humanitarian Organizations

An international humanitarian organization (IHO) is a non-profit organization or association that operates independently of governmental structures and takes action to advance its objectives through methods such as lobbying, persuasion, or direct action in local and global contexts. The organization is focused on activities that benefit society and aid people in need, regardless of their nationality (Frennesson, Kembro, Harwin de Vries, Jahre &

Wassenhove, 2022). International humanitarian organizations are non-profit associations of individuals or organizations, established for the purpose of helping those in need. They often have their headquarters in developed countries and manage their activities in numerous developing countries. Their aim is to provide assistance and support to people in vulnerable situations, without any intention of financial gain. The International Humanitarian Organizations (IHOs) were established in 1839, with the records from the NGO Registration Board indicating that there are currently 64 IHOs operating in Nairobi County. The source of funding for these organizations varies across different sectors, such as health and education, providing the distinguishing factor among NGO's in Kenya (Council of NGO, 2015).

The International Humanitarian Organizations (IHOs) are integral to the economy due to the roles they play. These organizations aid in the growth of a nation's economic development through a number of projects such as constructing water resources, building schools, financing education, and ensuring rural healthcare services. They provide ways to empower various minority groups in the society such as the elderly, widows, and survivors of rape, by implementing programs that can improve their quality of life. Additionally, they provide financial assistance and other resources during times of extreme necessity, such as floods, earthquakes, and other catastrophes (NGO directory, 2018).

1.2 Research Problem

The supply chain's goals of delivering the right item at the ideal location and ideal time can be met with the aid of logistics management. Implementation of e-logistics can assist in increasing the efficiency of goods movement, enable the unified management of a geographically dispersed entity, and reconcile decentralization and centralization within a

unified system. According to Georgise, Heramo and Bekele (2020), e-logistics is a term which refers to the utilization of the Internet for the efficient and timely delivery of product and services, allows for flexibility in logistics services and helps minimize operations costs. Shipping firms are able to cut on costs due to the reduction in theft cases by use of trucking devices on the trucks.

The management of IHO logistics is faced with numerous challenges including inadequate information, slow mobilization, and poor collaboration between government, governmental aid organizations, and non-governmental organizations can lead to delays in delivering goods to customers, thus necessitating e-logistics (Gonzavales, 2015). Some of these agencies have been overwhelmed with aid there is poor coordination between the various stakeholders involved that has a negative effect leading to redundancies in mandate and no willingness in information sharing (Rinehart and Eckert, 2014).

A number of research have been done on the concept of e-logistics. Globally, Gunaserekan and Ngai (2015) in their research on how he performance of logistics value chain in SMEs in China are influenced by development of e-logistics system and established that implementation information technology in the form of e-logistics and internet positively influenced the performance. This study however focused on China and therefore results may not be relevant to the Kenyan situation and IHOs specifically. Chan and yang (2015) in their research on adoption of e-Logistics Systems to facilitate development of an e-commerce in SMEs in Taiwan established that to a moderate extent the SMEs in Taiwan. This study however didn't establish the challenges that come with the adoption of e-logistics. Besides the study was in Taiwan hence the results would not be applicable in Kenya. Sarkis, Meade, and Talluri, (2014), studied on the impact that e-logistics has on the natural environment.

The research ascertained that adoption of e-logistics positively influenced the environment just as reverse logistics has on the natural environment. This study however was aimed on the influence of e-logistics on the environment and it didn't bring out the role that e-logistics has on operational performance.

Locally, Mutisya (2016) investigated the implementation of e-logistics among providers of logistics service in Kenya, and the results suggested that there was only a limited implementation of ICT within logistics management for these providers. Ojwang (2016) conducted research which explored the use of ICT in logistics management of Kenyan humanitarian firms. The results revealed that implementation of ICT facilitated improved operational efficiency, decreased costs, enhanced flexibility, and heightened quality of goods and services. Nonetheless, this study is based on a distinct context.

Maalu, Njihia and Mwanyotta (2020) investigated how operational performance and competitiveness is influenced by reverse logistics on in Kenyan manufacturing firms. The results revealed that adoption of reverse logistics had a positive impact on competitiveness. This study, however, focused on reverse logistics instead of e-logistics and its findings only apply to the Kenyan manufacturing sector, limiting its relevance in fields like the International Humanitarian Organization (IHO).

Based on the global and local research studies conducted, it is clear that there is a lack of understanding regarding the effects of e-logistics on operational performance of IHO's in Nairobi County. To address this knowledge gap, this study meant to examine the degree of adoption of e-logistics in IHO's in Nairobi County and the effect it has on their operational performance. Specifically, the research questions guiding this exploration were: What is the

extent of adoption of e-logistics in IHO's in Nairobi County? and What is the effect of implementation of e-logistics on operational performance of IHO's in Nairobi County?

1.3 Research Objectives

This study was be guided by the following study objectives:

- i. To establish the extent to which e-logistics practices have been implemented by IHO's in Nairobi County.
- ii. To determine the effect of e-logistics practices on operational performance of IHO's in Nairobi County.

1.4 Value of the Study

The results from the research can be instrumental to IHO's in linking their e-logistics performance to their competitiveness. They will understand the benefits of implementing e-logistics to attain improved operational performance. IHO's will be able to understand the challenges they are likely to experience while implementing e-logistics and come up with solutions. The results can also be employed by other Kenyan organizations that are not necessarily IHO's, as logistics management is applicable across all sectors in business and it affects their competitive edge in a similar manner.

The results of this research could provide beneficial insights for the Government of Kenya and other policy-makers in terms of enacting or amending the pieces of legislation which seek to promote the growth and survival of IHO's in the country. The government will use these findings to come up with policies that can help govern IHO's and help in coming up with policies that promote the adoption of e-logistics in Kenya.

The research will also make contributions to the existing understanding of e-logistics and suggest areas for further examination and investigation by academics in the future to make meaningful inferences by supply chain students and practitioners. Future researchers with intentions of carrying out studies on e-logistics will find this study useful in creating their review of literature.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature on e-logistics theories, operational performance and challenges. Further, a summary of the literature review and conceptual framework are given at the end of the chapter.

2.2 Theoretical Literature Review

Resource Based View Theory and material flow theory will guide this study. These theories are as discussed below:

2.2.1 Resource Based View

Barney (1991) introduced the Resource based view (RBV). The model ascertains that a company's sustained competitive gain is a result of capabilities and resources that are unique which a firm (Lynch, Keller & Ozment, 2000) holds. The RBV emphasizes the organizations' success is determined by not only the external environment but also the internal environment (Barney, 1991; Thompson, 2001). According to Barney (1991), improved performance is achieved through exploitation of resources which are very high in value, rare to find, nor easy to imitate and cannot be easily substituted.

Based on this theory the level of profitability in the firms is determined by, rent-producing resources which is achieved by ensuring that the resources are scarce and hence getting substitutes for the same is a challenge. Hence, firm-specific resources and capabilities, which lead to uneven distribution of resources, allocated unevenly within an industry (Warnier, Weppe, & Lecocq, 2013) affect a firm's performance. A valuable resource enables an enterprise to capitalize on existing opportunities in the environment and mitigate

any potential risks from both the external and internal environment (Barney, 1991). For a firm to attain competitive advantage there is need for it to have unique resources and capabilities (Lynch, 2000).

The RBV is related to this study since it underlines the rationale that is behind e-logistics on the concept of sharing of resources by the firm and allocations to the various departments for adequate achievement of the firm's goals. E-logistics facilitates a firms' ability to acquire competently valuable resources that it does not possess. There is need for the firm to ensure that they adequately manage the manner that they carry out their daily activities to ensure that the resources available are made use of in the right manner there of (Lockett & Thompson, 2001). This facilitates value addition to the customers through aspects like cost reduction, timely deliveries and high levels of flexibility.

2.2.2 Material Flow Theory

Material Flow Theory (MFT) is a support theoretical system used to model, simulate, diagnose, and predict the behavior of material flow (Xu, 2012). By expanding the features of logistics systems to incorporate their coordination of the environment, economy, and society, this theory is essential for the research of materials handling processes and practices. MFT seeks to establish a smooth and efficient movement of goods, with minimal handling from receiving to exiting a facility (Mustafa, 2015). By implementing this system of flow, inefficiencies and disruptions can be alleviated, helping to save time and money.

Material flow theory serves as the theoretical foundation of this research in order to offer insightful perspectives on material flow procedures, which is the prime focus of the study. This theory amalgamates social and economic components of materials management,

leading to enhanced customer satisfaction. In this study, it is expected that firms can effectively manage the material flow in order to fulfill customer requirements, as well as deliver time and place utility. This could lead to better business performance. Additionally, e-logistics can be employed to boost logistics visibility and overall operational efficiency.

2.3 E-logistics Practices

E-logistics involves the use of information technology in various logistics operations. Examples of e-logistics practices include e-warehousing, which refers to the implementation of advanced warehousing technologies to minimize costs associated with the storage and handling of goods. These technologies include automated storage and retrieval systems, which are used to manage the storage and allocation of materials in manufacturing companies and distribution networks (Wang, 2016). It allows for easier identification and retrieval of materials in a manufacturing system.

An automated sorting system can be deployed in the warehouse to enable rapid and efficient movement and storage of goods (Yang, 2016). Besides the implementation of a computer-aided picking system, which can enhance accuracy and efficiency in a warehouse environment, Warehouse Management Systems (WMS) can also help firms reduce warehousing-related costs by adequately managing their operations within the warehouse (Dunakin, 2021).

E-transportation involves utilizing advanced technology to accomplish transportation activities. The incorporation of technology in transportation can provide cost savings, as well as reduce the number of theft cases. Utilizing trucking devices as a tool for e-logistics can boost transparency by avoiding incorrect routes, while weather monitoring enables more efficient planning of routes and timetables.

Using trucking devices as a tool of e-logistics helps to create transparency by avoiding incorrect routes. Weather monitoring can also aid in setting up appropriate routes and timetables. Upon shipping the goods, customers can be provided with tracking numbers which can then be linked to the order number in the relevant e-commerce system (Fuchs, 2020).

Using trucking devices as a tool of e-logistics can help to create transparency by avoiding inaccurate routes. Furthermore, weather monitoring can assist with the planning of routes and timetables. Once the goods have been shipped, the customer is given a tracking number which is then linked to the purchase order number in an e-commerce system (Fuchs, 2020). Transport management systems can help streamline the scheduling, tracking, and tracing of products, in addition to optimizing the number of vehicles required for transporting the goods (Wang, 2016).

E-procurement entails streamlining purchasing and supply chain management processes through use of information communication and technology. It allows for orders to be created on-line by the purchasing manager based on the organization's needs. These tools and solutions provide a range of options to facilitate improved procurement and supply chain operations (CIPS, 2014). The use of ICT in procurement can be referred to as e-procurement, involving the stages of sourcing, receipt, ordering, negotiation and post-purchase review (Awati & Prat, 2016). The adoption of e-procurement has allowed for improvements of the procurement process by optimizing the end-to-end trading cycle, expanding markets through electronic markets, shortening the procurement process, and eradicating inefficiencies and costly practices associated with traditional procurement methods.

E-inventory management can be defined as the system used by a business to manage its stock investments (Gustavson, 2015). It involves the tracking and monitoring of inventory levels, forecasting future demand, and making decisions on when and how to order, all powered by information technology (Laudon, 2015). Use of systems helps track the stock levels of items held by the firm. Additionally, Just in Time (JIT) technologies help minimize waste and lower inventory costs. This assists in reducing shortages of products within the firm (Park, 2013).

E-information sharing is an essential element in logistics management as it assists businesses to meet their customers' needs in a timely manner. Real-time information is vital to achieving timely and accurate information from both customers in terms of orders and suppliers to meet customer requirements and achieve both place and time utilities. By using technologies like distributors or Wholesalers, Vendor Management Inventory (VMI), Replenishment (CPFR) systems, Forecasting, Point of Sale (POS), and Collaborative Planning in the supply chain's upstream part can record data for each transaction and access up to date information. This enables wholesalers or distributors to customize products to fit the needs of retailers while still addressing consumer demands. After ordering, upstream wholesalers or distributors can promptly send products to retailers, which eliminates the need for retailers to stress about inventory levels. The use of internet within an e-logistics system assists firms with collecting and sharing accurate information both internally and externally (Shiralkar et al., 2021).

2.4 E-logistics and Operational Performance

Sudhanshu (2019) suggested that IT solutions can be a useful tool for improving the process of making decisions in logistics. These solutions can offer insight into costs, streamline

physical distribution and supply of products and services, provide more accurate accounting, integrate data and systems with suppliers, and assess the critical logistics functions' performance. The system for e-logistics can help businesses to improve efficiencies in a wide range of areas, including customer service, product design, order fulfillment, inventory management, and delivery (Wang, 2013). This system can further help to decrease the costs of handling orders, interacting with different suppliers, as well as other matters that are likely to lead to a greater price to the cost of services or products

Firms can successfully integrate the various types of flows both downstream and upstream of their supply chain. By leveraging electronic logistics as a part of their e-commerce capability, SMEs can actually exchange information and collaborate with other participants in their supply chains, ultimately forming virtual organizations (Shih, 2012).

Adoption of e-logistics by firms helps in reduction of instances of theft and fraud, elimination of multiple handling of individual items of cargo and cargo damage. Use of technologies trucking systems that create transparency and allows for easy trucking of the movement of goods which in the long run reduces cost of freight insurance, costs incurred in handling goods and compensations (Gail, 2011). Automation of logistics management processes helps in reduction of overtime costs, which results mostly from duplication of activities (Radadiya, 2019).

Use of the internet in logistics management helps a firm make fast and accurate transactions which results in speedy and accurate transactions that helps meet customer needs as per their requirements. Implementation of e-logistics in a firm is an overall strategy that enables a company acquire a competitive advantage through achievement of higher levels of

performance. Innovations in logistics management helps a firm attain cost reduction through increased transparency, reduced lead times, higher flexibility (Daugherty & Stank, 2018).

2.5 Empirical Review

Investigations have been conducted on the topic of e-logistics. Vlachopoulou (2005) conducted an international study to evaluate the impact of an integrated partnership relationship-management on the effectiveness of e-logistics networks. The findings showed that joining forces and harmonizing logistics procedures between multiple logistical associates positively influenced the performance of firm, in addition to increasing the efficiency of the e-logistics system.

Gunaserekan and Ngai (2015) conducted a research to explore how e-logistics system influences the value chain performance of Chinese SMEs. Their findings indicated a positive impact of implementing information technology such as e-logistics and the internet. However, due to the unique characteristics of the Kenyan context and its particular orientation towards Non-Governmental Organizations (NGOs) research in this area should be done in order to be enlightened on the effects of an e-logistics system in the local context.

Chan and Yang (2015) conducted research on implementing e-Logistic Systems for developing an e-commerce platform for SMEs in Taiwan. Although the study established moderate success in implementation in Taiwan, it did not pinpoint the key challenges that were encountered. Additionally, as the study was conducted in Taiwan, its results may not be applicable in Kenya.

Sarkis et al. (2014) examined the impact that e-logistics has on the natural environment, specifically the effect that reverse logistics has. Their research found that the adoption of e-

logistics could benefit the environment and facilitate environmental conservation. However, the study didn't address the role of e-logistics on operational performance since it was based on the effect of e-logistics on the environment.

Locally, Mutisya (2016) conducted a study to explore The implementation of e-logistics by logistics service providers in Kenya and its influence on their operational performance. A survey was conducted using a cross-sectional design and the necessary data was collected from a group of 23 participants via questionnaires. The results suggested that service providers had integrate e-logistics into the logistics management which positively influenced their operational performance.

Ojwang (2016) researched on the effect of incorporating ICT into the management of logistics in humanitarian companies in Kenya. The results of the survey showed a strong association between the use of ICT and enhanced operational efficiency, cost reductions, agility, and an overall improvement in product quality. The research utilized a cross-sectional survey design, collecting data from 53 firms using questionnaires. Although this study pertains to a unique context, the results are applicable to a range of other contexts.

Maalu, Njihia and Mwanyotta (2020) conducted research on reverse logistics and competitiveness in Manufacturing Firms in Kenya. A descriptive statistical analysis was conducted using a survey of 93 firms out of a population of 903. Questionnaires were used to acquire data. The results revealed that the implementation of reverse logistics positively impacted competitiveness, with operational performance acting as a mediating factor. In contrast to e-logistics, this study focused on reverse logistics, and more so, its context was limited to manufacturing firms in Kenya, thus its applicability to the local Kenyan context is uncertain.

2.6 Conceptual Framework

The present study investigates the effect of e-logistics (independent variable), which comprises of e-transportation, e-warehousing, information sharing and e-inventory management on operational performance. The latter (dependent variable) is determined in form of efficiency and responsiveness. It is suggested that utilizing e-logistics positively influences the operational performance of organizations. Figure 2.1 indicates this association:

Independent Variables

Dependent Variable

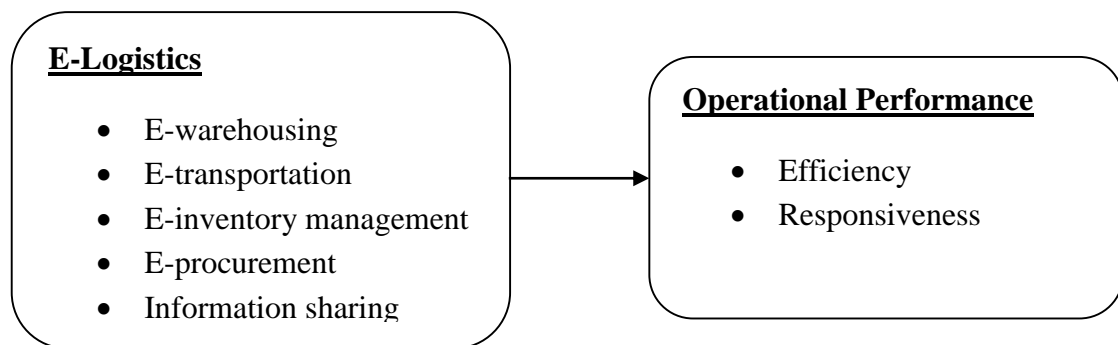


Figure 2.1 Conceptual Framework

2.7 Operationalization of Variables

The independent variable of this research is e-logistics and is operationalized as; e-warehousing, e-transportation, e-inventory management and information sharing. The study's dependent variable is operational performance and is operationalized as; that is measured by operational efficiency and responsiveness. Table 2.2 presents the measures of each of the researches variables both independent and dependent.

Table 2.2: Operationalization of Variables

Variables	Measures	Nature of the Variable	Scale of Measurement
E-Logistics	E-Warehousing <ul style="list-style-type: none"> • Use of IT to manage storage in warehouses • Use of IT in picking and handling of goods in the warehouses • Use of in sorting and organization of products in the warehouses 	Independent Variables	5-point Likert scale
	E-Transportation <ul style="list-style-type: none"> • Use of trucking systems to manage products on transit • Use of systems to schedule trucks • uses transport management system in loading orders 		
	E-Procurement <ul style="list-style-type: none"> • Online bidding • Online supplier evaluation • Online invoicing and delivery notes 		
	E-Inventory Management <ul style="list-style-type: none"> • Use of systems to monitor stock levels • Online monitoring of inventory • Online dispatch of customer goods 		
	Information Sharing <ul style="list-style-type: none"> • Use of IT to share information on available good • Online feedback process • Online communication of status of customer orders 		
Operational Performance	Operational Efficiency <ul style="list-style-type: none"> • Reduction in logistics costs • Reduced lead time • Improved quality of goods 	Dependent Variable	5-point Likert scale
	Operational Responsiveness <ul style="list-style-type: none"> • The capacity to adjust to transformations in the business atmosphere. • Managerial flexibility • Operational flexibility 		

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section examines the approach taken in this research. It commences with a discussion of the research design, followed by an explanation of the population of the study, the data collection methods employed, and the data analysis techniques used.

3.2 Research Design

A descriptive design investigates the association between research variables (Bryman & Bell, 2015). A descriptive research design was employed by the research that helped describe the prevailing relationship between E-logistics and operations performance of international humanitarian organizations in Nairobi. Related studies have successfully utilized a descriptive research design to examine the performance metrics of e-logistic system with mediating effect of ICT (Nadeem, Ul-Hameed, Alvi & Iqbal, 2018). Whereas qualitative research was utilized for descriptive purposes, a descriptive method of research design is generally classified as a form of quantitative research. The use of a descriptive research design aided collection of appropriate data for the study, analyze it, organize it, and then present it in a straightforward fashion to address deficiencies in the field of knowledge.

3.3 Population of the Study

The research population comprised of International Humanitarian Organizations (IHO) in Nairobi. The non-governmental organizations coordination board posits that there are 64 IHO'S in Nairobi (NGO Board, 2020) (Appendix II). The study adopted a census approach which entailed consideration of all the 64 NGOs in Nairobi as the study population. The

researcher endeavored to gather information from every element in the population. The approach is appropriate for various reasons; because the population of study is small and such a sample will not give adequate information; because the researcher wants precise information for each division of the population, a census is the most suitable option as it is not prone to sampling error.

3.4 Data Collection

This research utilized primary data collection through crafting a questionnaire that was administered through google form approach where a link was created containing the questionnaire and sent to their emails and WhatsApp contacts. The targeted respondents for the research included both senior and junior officials in the purchasing and supply chain departments from all the sixty four International Humanitarian Organizations. The senior may comprise a procurement officer or a supply chain manager whereas the junior officers may comprise the junior procurement or supply chain officers. These respondents were well suited to answer the questions posed by the research because they are in positions where they possess the required expertise or technical skills to respond to such kinds of enquiries.

The research questionnaire was organized into three parts. Part A included background information, Part B addressed the first objective, namely the implementation of e-logistics in IHOs in Nairobi County, and Part C included questions about the impact of e-logistics on operational performance in IHO's in Nairobi County.

3.5 Data Analysis

The data gathered from the forms was reviewed for accuracy and consistency. Descriptive statistics were used to analyze data for the first goal, which was the implementation of e-logistics in NGOs in Nairobi County. Regression and Correlation examinations were

leveraged to analyze data for the second goal, which was the association between operational performance in NGOs and their adoption of e-logistics in Nairobi County.

Regression analysis:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where:

Y = Operational Performance as determined by: supply chain efficiency and responsiveness

X₁ = E-warehousing

X₂ = E-procurement

X₃ = E-inventory management

X₄ = E-transportation

X₅ = Information sharing

€ = error term

β_{ij} = Regression Coefficients

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The section presents an analysis of the collected data from the study population of the 64 International Humanitarian Organizations in Nairobi. The final results were then presented in a useful format. Mean, standard deviation, frequency, and percentages were derived from the descriptive analysis. SPSS version 21 was used to perform inferential and descriptive statistical analysis. Tables were used to present the results for a clear visual representation of the data.

4.2 Response Rate

61 out of the 64 questionnaires issued, were received back completed with satisfactory responses, resulting in a response rate of 95.3% as indicated in Table 4.1.

Table 4.1: Response Rate

Response	Number	Percentage
Respondent	61	95%
Non-Respondent	3	5%
TOTAL	64	100%

Source: Researcher (2023)

50% response rate is considered acceptable to carry out data analysis; 60% rate is considered good, and 70% or higher is considered very good (Saunders et al., 2019). This study's response rate of 95% can thus be classified as very good.

4.3. Demographic Profile of the Respondents

This survey was designed to acquire data on the demographic profiles of participants, such as their age, gender, education level, work experience and employment history.

Table 4.2 Respondents Demographic Profiles

Variable	Categories	Frequency	Percentage (%)
Gender	Male	34	56
	Female	27	44
Age of Respondents	25-30 years	7	11
	31-34 years	21	34
	35-40 years	12	20
	41-44 years	10	17
	45-50 years	8	13
	Over 51 years	3	5
Level of Education	Primary	0	0
	Secondary	0	0
	Technical/Vocational	8	13
	Undergraduate	36	59
	Postgraduate	17	28
Work Experience	Less than 5 year	21	34
	5 - 10 years	28	46
	Over 10 years	12	20

Source: Researcher (2023)

Table 4.2 shows that the participant's gender was fairly balanced, with 56% of them being male and 44% being female. Regarding the age distribution of the respondents, 34% of them fell into the 31-34 years age bracket, 20% into the 35-40 years age bracket, 17% into the 41-44 years age bracket, 11% into the 25-30 years age bracket, and the smallest percentage, 5%, belonged to the over 51 years age bracket.

Regarding the education, (59%) which forms the majority of the respondents had acquired an undergraduate certificate, followed by (28%) those with a postgraduate certificate as the highest level of education and then (13%) those with Technical/Vocational training certificates as their highest level of education. No survey respondent had their highest education level lower than beyond the primary or secondary school level. The data suggests that most of the respondents were likely undergraduate students.

Out of the respondents who completed a work experience survey, 46% had 5-10 years of experience with their current organization, 34% had less than 5 years, and the remaining 20% had been employed longer than 10 years. The findings say majority of participants were likely well-equipped to provide meaningful responses to the questions posed by the researcher.

4.4 Descriptive Statistics

A summary of the responses the four independent and the dependent variables is given by the descriptive statistics.

4.4.1 E-Warehousing

The study aimed to investigate whether the organizations had put in place e-warehousing practices. The participants were then asked to show the degree to which their firms had adopted the e-warehousing practices on a scale of 1-Not at all, 2-Small extent, 3-Moderate extent, 4-Great extent, and 5-Very great extent.

Table 4.3 E-Warehousing

Statement	Mean	Std. Dev
Your firm uses information technology in storing of goods in the warehouse	4.5738	.49863
Your firm uses information technology in picking and handling of goods in the stores	3.9672	.54672
Your firm uses warehouse management system to truck items in the warehouse and manage all warehouse activities	4.1803	.53255
Your firm uses systems in sorting and organization of goods in the warehouse	3.9508	.56054

Source: Researcher (2023)

Table 4.3, reveals that respondents are of the opinion that the IHO's in Nairobi make considerable use of IT in storing goods in their warehouse as shown by (M=4.5738, SD=.49863). The participants also accepted to a great degree that IHO's in Nairobi uses information technology in picking and handling of goods in the stores as shown by (M=3.9672, SD=.54672). The participants also accepted to a great extent that IHOs uses warehouse management system to truck items in the warehouse and manage all warehouse activities as shown by (M=4.1803, SD=.53255). It is agreed that International Health Organizations located in Nairobi County utilize systems to a great degree in sorting and organization of goods in the warehouse as shown by (M=3.9508 SD=.56054

4.4.2 E-Transportation

The study sought to ascertain whether the IHO's in Nairobi had implemented e-transportation practices. The respondents were asked to specify the degree their firms had

implemented e-transportation practices as to; 1-Not at all 2-Small extent 3-Moderate extent 4-Great extent 5-Very great extent.

Table 4.4 E-Transportation

Statement	Mean	Std. Dev
The firm uses trucking systems for management of goods in transit	4.2951	.86302
Your firm uses transport management systems that assist in scheduling of trucks to be used in transportation of goods	4.5738	.53101
Your firm uses transport management system for tracking and tracing to avoid instances of theft and goods damage	4.1148	.60823
Your firm uses transport management system for loading order of goods and optimizing in number of vehicles involved	4.3115	.67184

Source: Researcher (2023)

Table 4.4 results reveal that it is accepted to a great degree that IHO's in Nairobi uses trucking systems for management of goods in transit as shown by (M=4.2951, SD=.86302). It was agreed that IHO's in Nairobi employ transport management systems to a great degree which assists in scheduling of trucks to be used in transportation of goods as shown by (M=4.5738, SD=.53101). The participants also agree to a great degree that IHO's in Nairobi uses transport management system for tracking and tracing to avoid instances of theft and goods damage as shown by (M=4.1148, SD=.60823). The respondent accept to a great extent that IHO's in Nairobi uses transport management system for loading order of goods and optimizing in number of vehicles involved as shown by (M=4.3115, SD=.67184).

4.4.3 E-Procurement

The research sought to discover whether the IHO's in Nairobi had implemented e-procurement approaches. The participants were to tick the degree to which their organizations had adopted e-procurement approaches as to; 1-Not at all 2-Small extent 3-Moderate extent 4-Great extent or 5-Very great extent.

Table 4.5 E-Procurement

Statement	Mean	Std. Dev
Suppliers are sent requests for quotations and other documents by the firm online	4.8197	.38765
Responses from suppliers are received by the firm online	4.1148	.70942
Purchases are approved online	4.1639	.37329
The firm evaluates suppliers online	4.1475	.35759
The firm receives and posts invoices and delivery notes of goods supplied online before suppliers are paid	4.0820	.37838

Source: Researcher (2023)

The findings from Table 4.5 reveal a high degree of agreement among respondents that IHO's in Nairobi are sending requests for quotations to suppliers online as shown by (M=4.8197, SD=.38765). The respondents showed a very positive attitude towards the idea that International Humanitarian Organizations in Nairobi receive responses from suppliers online to a great degree as revealed by (M=4.1148, SD=.70942). It is widely agreed that IHO's in Nairobi get approval for purchases online as shown by (M=4.1639, SD=.37329). The participants accept to a great degree that IHO's in Nairobi evaluate suppliers online as shown by (M=4.1475, SD=.35759). It is also accepted to a great degree that IHO's in

Nairobi receive and post invoices and delivery notes of goods supplied online before suppliers are paid as shown by (M=4.0820, SD=.37838).

4.4.4 E-Inventory Management

The research sought to ascertain if the IHO's in Nairobi had implemented electronic practices of managing inventory. The survey respondents were called upon to reveal the degree that their organizations had adopted e-inventory management practices as to; 1-Not at all 2-Small extent 3-Moderate extent 4-Great extent or 5-Very great extent.

Table 4.6 E-Inventory Management

Statement	Mean	Std. Dev
The firm monitors stock levels in the stores by use of information technology and modern systems	4.2459	.59598
The firm monitors the stock levels at the customers end by use of modern systems	4.7213	.45207
Orders for goods and the goods dispatched are recorded online	3.7705	.71632
The levels of inventory held by the firms are monitored by the firm online.	4.1967	.54221
The firm adopts modern technology that helps avoid unnecessary inventory holding costs.	4.4098	.49588

Source: Researcher (2023)

Table 4.6 demonstrates a high level of acceptance among the participants that IHOs in Nairobi closely monitor inventory levels in the stores by use of information technology and modern systems as shown by (M=4.2459, SD=.59598). The participant agreed to a very great degree that IHOs in Nairobi monitor the stock levels at the customers end by use of

modern systems as shown by (M=4.7213, SD=.45207). The participant also concur to a great degree that orders for goods and the goods dispatched are recorded online by IHOs in Nairobi County as shown by (M=3.7705, SD=.71632). The participants also concur to a great degree that the levels of inventory held by the firms are monitored by the IHOs online as shown by (M=4.1967, SD=.54221). The participants also concur to a great degree that IHOs in Nairobi County adopt modern technology that helps avoid unnecessary inventory holding costs as shown by (M=4.4098, SD=.49588)

4.4.5 Information Sharing

The study aimed to ascertain if the IHO's in Nairobi County had carried out information sharing practices. The participants were show the level by which their firms had conducted the information sharing practices as to; 1-Not at all 2-Small extent 3-Moderate extent 4-Great extent or 5-Very great extent.

Table 4.7 Information Sharing

Response	Mean	Std. Dev
The firm uses information technology in sharing of information on the goods available	4.4754	.53562
Information on the customer feedback based on the goods ordered is done on-line	4.3279	.59781
The firm communicates to the customers on the status of their orders on on-line platforms	4.0492	.49753

Source: Researcher (2023)

Table 4.7 results reveal that IHOs in Nairobi uses information technology in sharing of information on the goods available to a great degree as revealed by (M=4.4754,

SD=.53562). The participants agree that IHOs in Nairobi share information on the customer feedback based on the goods ordered is done on-line to a great degree as revealed by (M=4.3279, SD=.59781). The participants further agree that IHOs in Nairobi communicates to the customers on the status of their orders on on-line platforms to a great degree as revealed by (M=4.0492, SD=.49753).

4.4.6 Quality

The research sought to ascertain the degree to which e-logistics activities have affected service quality in International Humanitarian Organizations. The participants were instructed to utilize a Likert scale to indicate the scale of the effect using (1) Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent.

Table 4.8 Quality

Response	Mean	Std. Dev
Changes in quality been observed as a result of implementing e-warehousing	4.3934	.49257
The adoption of e-transportation led to an enhancement in the quality of goods and services acquired	4.3443	.57403
The implementation of e-procurement had on the purchased service and goods' quality	4.2131	.55120
The implementation of e-inventory management had on the quality of goods and services procured	4.5574	.50082
The adoption of information sharing led to an increased quality of goods and services acquired	4.5902	.55908

Source: Researcher (2023)

From the results as revealed by table 4.8, the participants accept to a large degree that variations in quality been observed as a result of implementing e-warehousing as shown by (4.3934, SD=.49257). The findings of the survey indicate that most respondents, with a mean of 4.3443 (SD=.57403), agree strongly that the implementation of e-transportation positively influences the quality of goods and services. To a great degree the adoption of e-procurement had on the quality of goods and services purchased as shown by (M=4.2131, SD=.55120). The participants accept to a very great degree that the implementation of e-inventory management had on the quality of goods and services procured as shown by (M=4.5574, SD=.50082). The participants agree to a large degree that the implementation of information sharing led to an increased quality of goods and services acquired as shown by (M=4.5902, SD=.55908).

4.4.7 Efficiency

The goal of the research was to evaluate how e-logistics activities influenced International Humanitarian Organizations' efficiency. The participants were invited to provide their views using a Likert scale to indicate the scale of the effect as follows; (1) Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent.

Table 4.9 Efficiency

Response	Mean	Std. Dev
Supply chain efficiency has become better as a result of adoption of e- warehousing	4.3607	.60643
Supply chain efficiency is enhanced as a result of adoption of e- transportation	4.3770	.52166
Supply chain efficiency is enhanced due to implementation of e- procurement	4.0328	.25607
Supply chain efficiency has improved as a result of adoption of e- inventory management	4.1803	.50027
Supply chain efficiency has become better as a result of adoption of information sharing	4.1475	.51108

Source: Researcher (2023)

Table 4.9 reveals that the participants accepted strongly that e- warehousing implementation resulted to improved supply chain efficiency in IHO's in Nairobi as shown by (M=4.3607, SD=.60643). The participant strongly that e-transportation implementation resulted to improved supply chain efficiency as shown by (M=4.3770, SD=.52166) and that e- procurement implementation resulted to improved supply chain efficiency as shown by (M=4.0328, SD=.25607). The participants strongly agreed that e-inventory management implementation resulted to improved supply chain efficiency as shown by (M=4.1803, SD=.50027). The participants also strongly agreed that information sharing implementation resulted to improved supply chain efficiency as shown by (M=4.1475, SD=.51108).

4.4.8 Timeliness

The researcher attempted to gauge how e-logistics activities have impacted efficiency within International Humanitarian Organizations. The participants were to employ a Likert scale to indicate the scale of the effect as follows; (1) Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent.

Table 4.10 Timeliness

Response	Mean	Std. Dev
To what extent has lead time in logistics reduced as a result of adoption of e- warehousing resulting timely meeting of customer demands	4.4262	.49863
To what extent has lead time in logistics reduced as a result of adoption of e-transportation resulting in hence timely deliveries	4.7869	.41291
To what extent has lead time in logistics reduce due to the adoption of e-procurement resulting in timely supplies	4.5410	.59368
To what extent has lead time in logistics reduced due to adoption of e- inventory management resulting meeting varying customer orders	4.5082	.67387
To what extent has lead time in logistics reduced due to adoption of e- payments resulting to timely payment of suppliers	3.7541	.84962

Source: Researcher (2023)

The results from table 4.10 demonstrate an extensive approval of the notion that e-warehousing implementation has led to a reduction in lead time in logistics and, consequently, timely satisfaction of customer requests (M=4.4262, SD=.49863). The participants concur strongly that the adoption of e-transportation led to decreased lead times in logistics, consequently enabling timely deliveries, as evidenced by (M=4.7869,

SD=.41291), and that e-procurement adoption resulted in decreased lead times in logistics, thus facilitating timely supplies, as shown by (M=4.5410, SD=.59368).

It is widely acknowledged that the adoption of e-inventory management has contributed significantly to shortened lead times in logistics, thereby ensuring timeliness in fulfilling diverse customer orders (M=4.5082, SD=.67387). The participants are in substantial agreement that the adoption of e-payments has resulted in shorter lead times in logistics, thus allowing for timely payments to suppliers (M=3.7541, SD=.84962).

4.5 Regression Analysis

Examination of the correlation between operational performance and adoption of e-logistics was done using regression analysis. Regression was used to measure the strength of the relationship and make predictions regarding the future link between said variables. Additionally, it was employed to evaluate the how the operational performance of Independent Health Organizations influenced by e-logistics in Nairobi.

4.5.1 Model Summary

Regression analysis is a technique employed to explore the association between two or more variables. It involves constructing a linear equation that estimates the value of a dependent variable using one or multiple independent variables. This study employed multiple regression, the output of which are provided in Table 4.11.

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.300 ^a	.090	.070	.19673

a. Predictors: (Constant), Information Sharing, E_Transportation, E-Inventory Mangement, E_Warehousing, E_Procurement

The regression model summarized in Table 4.11 indicates the degree that the model can predict the variation in the dependent variable. The findings reveal show that the coefficient of determination is 7%, showing that the adoption of e-logistic practices explains 7% of the changes in the operational performance of IHOs in Nairobi, as supported by an adjusted R Square of .070. This implies that of all the variation in the operational performance of IHOs in Nairobi, implementation of e-logistic practices, such as e-transportation, e-inventory management, e-warehousing, e-procurement and information sharing accounts only for only 7%. This illustrates that model does not have a strong predictive ability.

4.5.2 Analysis of Variance

A F-test was done to examine if there was a significant association among the studied variables. The results of the analysis are listed in Table 4.12.

Table 4.12: Analysis of Variance

Model	R	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.210	5	.042	1.085	.379 ^b
	Residual	2.129	55	.039		
	Total	2.339	60			

Source: Researcher (2023)

The independent variables (e-inventory management, e-transportation, e-procurement, e-warehousing and information sharing) explained a total of 0.210 of the total variance of 2.339. The F-value is obtained by dividing the Mean Square Regression by the Mean Square Residual. This ratio is expressed as $MSR/MSR = F$. In this case, the MSR is 0.042 and the MSR is 0.039, resulting in $F = 0.042/0.039 = 1.085$. The p-value corresponding to the F value of 1.085 is 0.379, which is greater than 0.05, indicating that the independent variables are not noticeably connected to the dependent variable.

This study found that the use of e-logistics and the operational performance of IHOs in Nairobi no appreciable association at 95% confidence level. This further shows that e-logistics practices (e-transportation, e-inventory management, e-warehousing, e-procurement and information sharing) are not significant predictors of the level of operational performance of IHOs in Nairobi.

4.5.3 The Estimated Model

To ascertain the connection between the dependent and independent variables at 95% confidence level, regression analysis was conducted. The findings are presented in Table 4.13 below

Table 4.13: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.435	.856		4.015	.000
	E-Warehousing	.146	.096	.202	1.515	.135
	E-Transportation	.149	.074	.262	1.975	.053
	E-Procurement	-.092	.163	-.076	-.565	.574
	E-Inventory Mgmt.	-.001	.086	-.002	-.016	.987
	Information Sharing	.017	.083	.027	.208	.836

Source: Researcher (2023)

The operational performance of IHOs is 3.435 when all other factors are held at Zero. Research results further indicate that increasing e-warehousing by a unit will cause a 0.146 improvement in the level of operational performance of IHOs. The findings of an analysis have shown that increasing e-transportation by one unit will lead to better operational performance of 0.149. Additionally, the research found that operational performance reduces by -.092 and -.001 with a unit increase in e-procurement and e-inventory management, respectively. A unit increase in information sharing improves the level of operational performance by .017. The p-values for all the e-logistics practices (e-warehousing, e-transportation, e-procurement, e-inventory mgmt. and information sharing) are higher than 0.05, revealing absence of statistical significance.

The coefficient of determination table above shows that e-warehousing, e-transportation and information sharing positively influences the level of operational performance of IHOs in Nairobi while e-procurement and e-inventory management negatively influence performance. The five variables however jointly positively influences operational performance of IHO's in Nairobi.

The following model offers a summation of the results:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

$$Y = 3.435 + 0.146X_1 + .149X_2 - 0.092X_3 - 0.001X_4 + .017X_5 + \varepsilon$$

Y – Operational Performance (Dependent Variable)

X₁- E-Warehousing

X₂- E-Transportation

X₃- E-Procurement

X₄- E-Inventory Mgmt.

X₅- Information Sharing

β₀ - Is the constant of the model

β₁ – β₄ Are the regression coefficients

ε – Stochastic error term estimate

The estimated beta coefficients for e-logistics practices are (e-warehousing, e-transportation, e-procurement, e-inventory mgmt. and information sharing) are 0.202, 0.262, -0.076, -0.002 and 0.027 respectively which are lower than 0.50 revealing that there is a weak correlation between the operational performance of IHOs in Nairobi and e-logistics practices.

4.6 Discussion of Findings

The study's descriptive statistics show that IHO's in Nairobi use information technology in storing, picking and handling of goods in the warehouse. The study also found that IHOs use warehouse management system to track items in the warehouse and manage all warehouse activities. The study also found that IHO's in Nairobi County use systems in sorting and organization of goods in the warehouse. The results imply that e-warehousing influence IHOs' performance in Nairobi. The findings are in line with those of Wang (2016), Yang (2016) and Dunakin (2021) who concluded that using warehouse management systems puts a firm in a position to adequately manage its operations in the warehouse that results in lower warehousing related costs which enhances performance.

The results of the research show that IHO's in Nairobi use trucking systems for management of goods in transit and that they use transport management systems that assist in scheduling of trucks to be used in transportation of goods. The study established that IHO's use transport management system for tracking and tracing to avoid instances of theft and goods damage. The study further established that IHO's in Nairobi use transport management system for loading order of goods and optimizing in number of vehicles involved. The findings imply that e-transportation affect the IHO's performance in Nairobi. The results are similar to those of Wang (2016) and Fuchs (2020) who establish that e-transportation.

The results also showed that IHO's in Nairobi send requests for quotations to suppliers online and that they receive responses from suppliers online to a large degree. The research found that the IHOs evaluate suppliers and get approval for purchases online. The study further found that IHO's in Nairobi receive and post invoices and delivery notes of goods

supplied online before suppliers are paid. These implies that e-procurement in affects the performance of IHOs. The results are consistent with those reported by Awati and Prat (2016) who established that employing ICT in negotiation, ordering, sourcing, receipt, and post-purchase review is what is known as e-procurement.

The study further found that IHOs in Nairobi monitor stock levels in the stores by use of information technology and modern systems and that they monitor the stock levels at the customers end by use of modern systems. The results further reveal that orders for goods and the goods dispatched are recorded online by IHOs in Nairobi County and that the levels of inventory held by the firms are monitored by the IHOs online. The research also found that IHOs in Nairobi County have implemented modern technology that helps avoid unnecessary inventory holding costs. This suggests that e-inventory management affects the performance of IHOs in Nairobi. These findings are in line with those of Park, 2013), Gustavson (2015) and Laudon (2015) who concluded that using systems like Just in time (JIT) technologies to manage inventory helps in the waste minimization and lowers inventory costs which enhances performance of the organization.

The results also established that IHOs in Nairobi uses information technology in sharing of information on the goods available and that they also share information online on the customer feedback based on the goods ordered. The results also show that IHOs in Nairobi communicates to the customers on the status of their orders on on-line platforms. These imply that e-information sharing enhances the performance of IHOs in Nairobi. Other researchers have also determined that e-information sharing as an e-logistics management process assists companies in obtaining correct information, internally distributing

information and determining the extent of information sharing externally (Shiralkar et al. 2021).

Descriptive statistics show that most IHO's in Nairobi have implemented e-logistic practices including e-warehousing, e-transportation, e-procurement, e-inventory management and information sharing to a huge extent. The results are similar with those of Mutisya (2016) observed that organizations in Nairobi have implemented e-logistic practices in their operations. The results similar to those of Jadamba (2014) who revealed that e-logistic practices are gaining traction among international humanitarian organizations for managing the logistics process in Kenya.

Further, descriptive statistics show that e-logistics results to an increase in the goods and services quality obtained, to improved supply chain efficiency and reduced lead time in logistics hence timely meeting of customer demands. The findings are similar to Ojwang (2016) who found that the use of ICT in logistics management results in increased efficiency of operations, reduced costs, higher flexibility and better quality of goods produced all of which enhance performance. The results are in line with Gunaserekan and Ngai (2015), who determined that implementation of information technology such as e-logistics and the internet has a positive effect on performance.

Regression statistics further shows that e-logistics positively influences firm operational performance. The results are similar to those of Wang (2013) who established that e-logistics reduces costs in managing orders which enhances performance. The results are also similar to Shih's (2012) who revealed that implementation of e-logistics enhances firm capabilities which enhance the performance of firms. Similarly, e-logistics management is

found to enable the firm attain cost reduction through increased transparency, reduced lead times, higher flexibility which enhances firm performance (Daugherty & Stank, 2018).

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS

5.1 Introduction

Chapter five synthesizes the results from data analysis, infers conclusions, proffers recommendations for policy and practice, and proposes more research.

5.2 Summary of Findings

This research focused on ascertaining the degree to which e-logistics practices have been adopted by IHO's in Nairobi County and to analyze the influence of e-logistics practices on the operational performance of IHO's in Nairobi. The participant's gender proportionally represented. 95% response rate was recorded by the study. Most of the participants were male. In relation of age, the highest proportion of respondents fell within the 31-34 years' age bracket, with the second highest fraction in the 35-40 years' age bracket. With regard to education, most of the participants had a university education or higher, with the rest having either postgraduate or technical/vocational level qualifications. From the data analyzed, most participants had been employed with their current firms for 5-10 years, thus possessing the necessary experience to respond to the research questions.

Descriptive statistics show that most IHO's in Nairobi have implemented e-logistic practices including e-warehousing, e-transportation, e-procurement, e-inventory management and information sharing to a high degree. Descriptive statistics additionally show that e-logistics result to increased quality of goods and services acquired, to improved supply chain efficiency and reduced lead time in logistics hence timely meeting of customer demands.

Regression statistics shows that there is an insignificant positive association between e-logistics and firm operational performance. This is after the researcher established that e-logistics practices account for 7% variance in the operational performance of IHOs in Nairobi. This demonstrates that the model possesses limited predictive capabilities.

Further, the ANOVA examination yielded an $F=1.085$. The p-value relating to the F value of 1.085 is 0.379, which is greater than 0.05, indicating there is no significant correlation between the independent and dependent variables. This also reveals that the association between e-logistics and operational performance of IHOs in Nairobi is not statistically substantial at 95% confidence level. This further shows that e-logistics practices (e-transportation, e-inventory management, e-warehousing, e-procurement and information sharing) are not significant predictors of operational performance levels of IHOs in Nairobi. P-values for all the e-logistics practices (e-warehousing, e-transportation, e-procurement, e-inventory mgmt. and information sharing) are higher than 0.05 which shows that they are not statistically significant.

The coefficient of determination is present, as revealed by the table and that e-warehousing, e-transportation and information sharing positively influences the level of operational performance of IHOs in Nairobi County while e-procurement and e-inventory management affect it negatively. Despite this, the five variables collectively contribute to improve the operational performance of IHOs in Nairobi.

5.3 Conclusions

It is concluded that IHOs in Nairobi County have implemented e-logistics practices to a great extent. E-transportation, e-inventory management, e-warehousing, e-procurement and information sharing have all been implemented to a great extent. It is also concluded that a positive but insignificant association exists between e-logistics approaches and the operational performance of IHO's in Nairobi County. Further, it was established that 7% of the improvement in the operational performance of the IHOs in Nairobi County is attributed to the implementation of e-logistics by the organizations.

5.4 Recommendations

The paper suggests that Independent Hospital Organizations in Nairobi County should execute routine comparison tests with other global firms that are best in E-logistics for proper implementation insights. This will make them comprehend on the improvement of implementation mechanisms.

There is also a need for IHOs to promote employee training on e-logistic practices and set aside an adequate budget for e-logistics adoption.

5.5 Limitations of the Study

The study employed google forms and link to distribute questionnaire. However, some of the respondents took longer than expected to fill out the questionnaires because they were busy. The researchers handled the challenge by following up on the respondents through calls, emails and messages.

Further, the researchers had no way to verify the accuracy of the primary data provided. However, this issue is often encountered when working with primary data. The researcher was available to assist the respondents where they had any questions or needed clarification.

5.6 Suggestions for Further Research

It is recommended by the current study that more studies be done on e-logistic practices and operational performance of other organizations such as logistic firms especially private corporations for benchmarking purposes.

Since research has demonstrated that e-logistic approaches have a measurable influence on the operational performance of IHOs in Nairobi County, additional investigation should be done to identify the other determinants of the operational performance of IHO's that account for the remaining 93%.

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APPENDIX

Appendix 1: Questionnaire

This questionnaire seeks to provide information for the study on e-logistics on operational performance in international humanitarian organizations (IHO's) in Nairobi County. Please note that the information provided will only be used for educational purposes and will be kept completely confidential.

Please answer the following questions by checking the appropriate box (✓) or providing the necessary details in the spaces provided.

SECTION A: GENERAL INFORMATION

1. Kindly indicate your gender: Male [] Female []

2. Kindly indicate your age category:

25 - 30 Years []

31 - 34 years []

35 – 40 years []

41 – 44 years []

45 – 50 years []

Over 51 years []

3. Level of Education Attained

Primary []

Secondary []

Technical / Vocational []

Undergraduate []

Postgraduate []

4. Work experience (Years)

Less than 5 years []

5-10 years []

Over 10 years []

SECTION B IMPLEMENTATION OF E-LOGISTICS ACTIVITIES

Please indicate if your organization has adopted any of the following e-logistics activities, and indicate the extent to which your company has adopted each of these e-logistics practices - check as appropriate.

1- Not at all 2-Small extent 3-Moderate extent 4-Great extent 5-Very great extent

PRACTICE	1	2	3	4	5
e-warehousing					
Your firm uses information technology in storing of goods in the warehouse					
Your firm uses information technology in picking and handling of goods in the stores					
Your firm uses warehouse management system to track items in the warehouse and manage all warehouse activities					
Your firm uses systems in sorting and organization of goods in the warehouse					
e-Transportation					
The firm uses trucking systems for management of goods in transit					
Your firm uses transport management systems that assist in scheduling of trucks to be used in transportation of goods					
Your firm uses transport management system for tracking and tracing to avoid instances of theft and goods damage					

Your firm uses transport management system for loading order of goods and optimizing in number of vehicles involved				
E-Procurement				
Suppliers are sent requests for quotations and other documents by the firm online				
Responses from suppliers are received by the firm online				
The firm gets affirms for purchases online				
The firm evaluates suppliers online				
The firm receives and posts invoices and delivery notes of goods supplied online before suppliers are paid				
E-Inventory Management				
The firm monitors stock levels in the stores by use of information technology and modern systems				
The firm monitors the stock levels at the customers end by use of modern systems				
Orders for goods and the goods dispatched are recorded online				
The levels of inventory held by the firms are monitored by the firm online.				
The firm adopts modern technology that helps avoid unnecessary inventory holding costs				
Information Sharing				
The firm uses information technology in sharing of information on the goods available				

Information on the customer feedback based on the goods ordered is done on-line					
The firm communicates to the customers on the status of their orders on on-line platforms					

SECTION C: EFFECT OF E-LOGISTICS ON OPERATIONAL PERFORMANCE OF INTERNATIONAL HUMANITARIAN ORGANIZATIONS

Show the level to which e-logistics activities has influenced the operational performance of your organization.

Key (1) Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent.

PRACTICE	1	2	3	4	5
Quality					
E-warehousing implementation brought about better quality of goods and services acquired					
E-transportation adoption caused better quality of goods and services acquired					
E-procurement adoption has resulted to better quality of goods and services acquired					
E-inventory management adoption has resulted to better quality of goods and services acquired					
Information sharing adoption has resulted to better quality of goods and services acquired					
Efficiency					
E-warehousing implementation brought about better quality of goods and services acquired					

E-transportation adoption caused improved quality of goods and services acquired					
E-procurement adoption has resulted to better quality of goods and services acquired					
E-inventory management adoption has resulted to better quality of goods and services acquired					
Information sharing adoption has resulted to better quality of goods and services acquired					
Timeliness					
E-warehousing implementation brought about better quality of goods and services acquired					
E-transportation adoption caused better quality of goods and services acquired					
E-procurement adoption has resulted to better quality of goods and services acquired					
E-inventory management adoption has resulted to better quality of goods and services acquired					
Information sharing adoption has resulted to better quality of goods and services acquired					

Thank you for taking part!

Appendix II: List of International Humanitarian in Nairobi

1. Catholic Relief Services
2. Action Aid
3. Danish Refugee council
4. UNEP
5. People in Aid
6. ADESO
7. International Institute of Rural Reconstruction (IIRR)
8. Islamic Relief
9. Lutheran World Federation
10. Norwegian Refugee Council
11. Oxfam Novib
12. Practical Action
13. Solidarities
14. Transparency International
15. World Vision International
16. FAO Kenya
17. UNAIDS
18. UNHCR Ken
19. UNICEF ESARO
20. UNICEF Kenya
21. WFP
22. ICRC
23. IOM
24. ACTED
25. AMREF
26. Caritas Switzerland
27. Child Fund Kenya
28. Christian AID
29. Christian Blind Mission
30. Christian Children Fund
31. Christian Mission Aid
32. Feed the children
33. Food for the Hungry
34. Goal (K)
35. Handicap International
36. Kenya Red Cross
37. Merlin
38. Oxfam GB
39. Plan International
40. Samaritan's Pulse Int'l Relief.
41. Tearfund
42. Trocaire Kenya
43. World Concern
44. FAO ROEA
45. OCHA
46. UN Habitat
47. UNDP Kenya
48. . UNFPA
49. UNHCR RSB
50. UNWOMEN
51. WHO
52. IFRC
53. ILRI
54. Action against Hunger
55. CAFOD
56. Care International
57. Concern Worldwide
58. German Agro Action
59. Help age International
60. Hire-Kenya Programme
61. Horn Relief
62. International medical corps
63. International Rescue Committee
64. Save the Children

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