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INVENTORY AUTOMATION AND PERFORMANCE OF DISTRIBUTION FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

The purpose of this was to establish the relationship between Inventory automation and performance of distribution firms in Nairobi City County, Kenya. The specific objectives of this study were; E- sourcing and E-invoicing. The study employed a descriptive research design. The study preferred this method because it allowed an in-depth study of the subject. The target population of this study was 135 respondents from 45 registered distribution firms in Nairobi City County, Kenya as per KIFWA. Deputy heads and heads of transport and logistics department from each of the distribution firms were the respondents. Data was collected using self-administered questionnaires. The study employed stratified random sampling technique in coming up with a sample size. Pilot study was carried out to establish the validity and reliability of the research instruments. The instruments were designed appropriately according to the study objectives. The data collected was analyzed by used of descriptive and inferential statistics. The study used multiple regression and correlation analysis to show the relationship between the dependent variable and the independent variables. The data generated was keyed in and analyzed by use of Statistical Package of Social Sciences (SPSS) version 24 to generate information which is presented using charts, frequencies and percentages. Pilot test results produced over 0.7 and above rating. This confirmed the reliability of the research instruments and construct content validity results was over 0.5 which was acceptable.

Key Words: Inventory Automation, E- sourcing, E-invoicing, Performance of Distribution Firms, Nairobi City County

Background of the Study

Supply chains integrate several areas and so several actors with divergent interests. The main challenge is conciliate all the expectations and provide the appropriated level of service and quality for the customers. Kandpal and Dhingra (2021) states that SCM's practices involve a set of activities undertaken by organization to promote effective management of their supply chain. go beyond that and states that SCM lead to changes in the structure of the organization by integrating internal functions and linking these with the external operation of suppliers, customers and others stakeholders of the supply chain. . Due the globalization and specialization of the firms supply chain integration has become one of the most important fields of study as the performance. Integration has at least two strands: the logistics integration, refers to specific logistics practices and operational activities that coordinate the flow of materials from suppliers to customers throughout the value stream, and the information integration which refers to the sharing of key information along the supply chain network which is enabled by information technology (IT) (Kisimbii & Maalim, 2019).

Fatonah, Yulandari and Wibowo (2018) captures the three principal elements of an integrated supply chain suggested by Handfield and Nichols (1999), as seen below: Information flow; Product and material flows; Long term relationships between supply chain partners. Supply change management is a highly-detailed system used by small and large organizations alike to get products to consumers, from obtaining raw materials, manufacturing and delivering the final product to the customer. A well-organized supply chain management system involves optimizing operations functionality to be fast and efficient. Today, more than ever before, supply chain management has become an integral part of business and is essential to any company's success and customer satisfaction. Supply chain management has the power to boost customer service, reduce operating costs and improve the financial standing of a company, but how does this work? What is Supply Chain Management, and why it is Important Organizations increasingly find that they must rely on effective supply chains, or networks, to compete in the global market and networked economy.

This idea of business partnerships extends beyond conventional organizational boundaries and tries to structure complete business operations along a value chain of numerous enterprises according to Peter Drucker's (1998) new management paradigms (Kisimbii & Maalim, 2019).

In late many years, globalization, outsourcing, and data innovation have empowered many associations, like Dell and Hewlett Packard, to effectively work collaborative supply networks in which each particular business partner centers around a couple of key strategic activities (Fatonah et al.,2018). This inter-organizational supply network can be recognized as another type of association. However, with the complicated interactions among the players, the organization structure fits neither "market" nor "hierarchy" categories (Powell, 1990). Customarily, organizations in a stockpile network focus on the data sources and results of the cycles, with little worry for the interior administration working of other individual players. Therefore, the decision of an internal management control structure is known to influence local firm execution (Kisimbii and Maalim, 2019).

The goal of supply chain management is to increase operational efficiency inside a business, not just to reduce costs and balance the budget (Fatonah et al., 2018). While these are a part of the whole ecosystem, modern supply change management encompasses the strategic alignment of end-to-end business processes to realize market and economic value, as well as giving a firm the competitive advantage over their business rivals. In recent times, the dawn of the digital age has brought wholesale transformation to the world of commerce. Only twenty years ago, these processes were arduous, labor intensive, time consuming and disorganized. It now may seem like ancient history; delivery times have gone from two weeks to a month down to a turnaround of

hours in some cases. Automated systems and high-speed communication have paved the way for supply chain management and its increased demand (Kisimbii & Maalim, 2019).

Today, more than ever before, supply chain management has become an integral part of business and is essential to any company's success and customer satisfaction (Fatonah et al.,2018). Supply chain management has the power to boost customer service, reduce operating costs and improve the financial standing of a company, but how does this work? The Interconnected Supply Chain Essentially, the world can be viewed as one large supply chain. Consumers and producers are constantly communicating with each other, and a product goes through many hands before reaching its destination.

Supply chain management deals with major issues such as the growth of multinational corporations, partnerships, global brand expansion, and outsourcing. Everything that affects the world affects supply chain management, from fluctuating gas prices to environmental concerns. SCM is the single most important business discipline in the world today, and has only gotten more interconnected. The importance of a well-run supply chain cannot be overstated. According to a report from Allianz SE, business interruptions (BI) account for higher proportions of property loss than 10 years ago. From 2010 to 2014, claims from 68 countries were at $2.4 (Kisimbii & Maalim, 2019).

Statement of the Problem

According to Ongeri and Osoro (2021) the performance of distribution firms in Nairobi City County, Kenya, has been experiencing problems due to inventory automation. Demand for better quality, faster delivery and better overall value increase is increasing; which has led to visionary leaders to consciously differentiate between the things that create value and those that do not (WB, 2013). This has led to adoption of inventory automation in all areas that seek to help organizations in the distribution to have a competitive advantage over rivals and position themselves for future success (KPMG, 2012).

Hussein (2018), most distribution companies in Kenya operate at a technical efficiency of about 59% compared to their counterparts in South Africa at 70% and Malaysia at about 84% hence inventory automation may help to close this gap. According to a report by Deloitte (2012) on distribution companies in Kenya, inventory automation saved various firms over Kshs.70 billion in the financial year (FY) 2011/2012). A number of studies have been conducted on inventory automation globally. For instance, Hussen (2018) conducted a survey on 121 energy firms in the UK and found out that though 92% claimed inventory automation seemed to have reduced transaction costs. The studies found that the investigated energy firms looked at inventory automation instead of focusing on streamlining the inter-organizational processes. This study was however, conducted in a developed country and not in Nairobi City County, Kenya. Few studies have been done locally; Ongeri and Osoro (2021) did a study on factors affecting inventory automation of the procurement function in the public sector in Kenya. In view of the foregoing this studies is done in the Kenyan context so as to bring new ideas which will fill the existing knowledge gap.

Objectives of the Study

The general objective was to establish the relationship between inventory automation and performance of distribution firms in Nairobi City County, Kenya.

The specific objectives of this study were:

i. To assess the effect of e-sourcing on performance of distribution firms in Nairobi City County, Kenya.

ii. To determine the effect of e- invoicing on performance of distribution firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Theory of Constraints

The theory of constraints is a method for managing operations that was created. It offers a supply chain management philosophy of how businesses should be operated, particularly the categorization of inventories, according to Chiappori and Salanie (2003). The concept was extended to theory of constraints (TOC) with a publication which views any manageable system as being limited in achieving more of its objectives by a very small number of constraints. There is always one constraint and the TOC uses a focusing process to identify the constraint and restructure the supply base around it. TOC emphasizes on the optimization of performance within a defined set of constraints of the existing process and it provides an action framework which combines the activities of the managers and the visible system elements (Eisenhard & Graebner, 2007).

TOC views inventory categorization as systems consisting of resources, which are linked by the processes they perform. The goal of the supply base serves as the primary judge of success. Within that system, a constraint is defined as anything that limits the inventory categorization from achieving higher performance relative to its purpose. Just as the strength of a chain is governed by its single weakest link, the TOC perspective is that the ability of any supply base to achieve its goal is governed by a single, or at most very few, constraints. The theory of constraints defines a set of tools that change agents can use to manage constraints, thereby increasing profits (Feidler and House, 1994). Most businesses can be viewed as a linked set of processes that transform inputs into saleable outputs.

TOC conceptually models this system as a chain, and advocates the familiar adage that a chain is only as strong as its weakest link. This theory incorporates the idea that the goal or mission of an organization exists, and organizations can be measured and controlled by variations on three measures having A, B and C class items clearly categorized (Chiappori & Salanie, 2003).

Transaction Cost Economic Theory

Transaction cost economics (TCE) has been the predominant theory used to examine business sourcing and inventory control systems from a just in time perspective (Christopher, 2009). TCE tenets imply that sourcing decisions involve a comparison of the just in time and economic order quantity. The total transaction costs included in the inventory control systems include the direct economic costs associated with sourcing service development and delivery, transaction-based monitoring and control costs incurred to ensure that the purchaser acts in the best interest of the firm. Inventory control transaction costs also increase with asset specificity, where the increased complexity of interactions required to produce sourcing outputs necessitates increased monitoring and control costs to protect source investments. Chiappori and Salanie (2003), TCE offers a very rational view for evaluating make versus buy decisions, where the sourcing choice is made strictly based on the economic merits of market versus hierarchy costs associated with each individual inventory control systems. In such cases, the level of analysis implied by TCE moves from the individual transaction to the network of inventory control systems at the organizational level, with firms making inventory control systems that maximizes the economic value added from interactions with sourcing partners. The overall value of these inventory control systems includes the minimization of economic costs incurred from managing a nexus of inventory control systems, as well as maximizing the value of network connections and other knowledge gained from

inventory control systems and transactions; this is very applicable in procurement functions in the distribution firms (Christopher, 2009).

Conceptual Framework

Conceptual framework is a detailed description of the phenomenon under the study accompanied by the graphical or visual depiction of the major variable of the study. According to Cheruiyot, (2018), conceptual framework is diagrammatical representation that shows the relationship between dependent variable and independent variables.

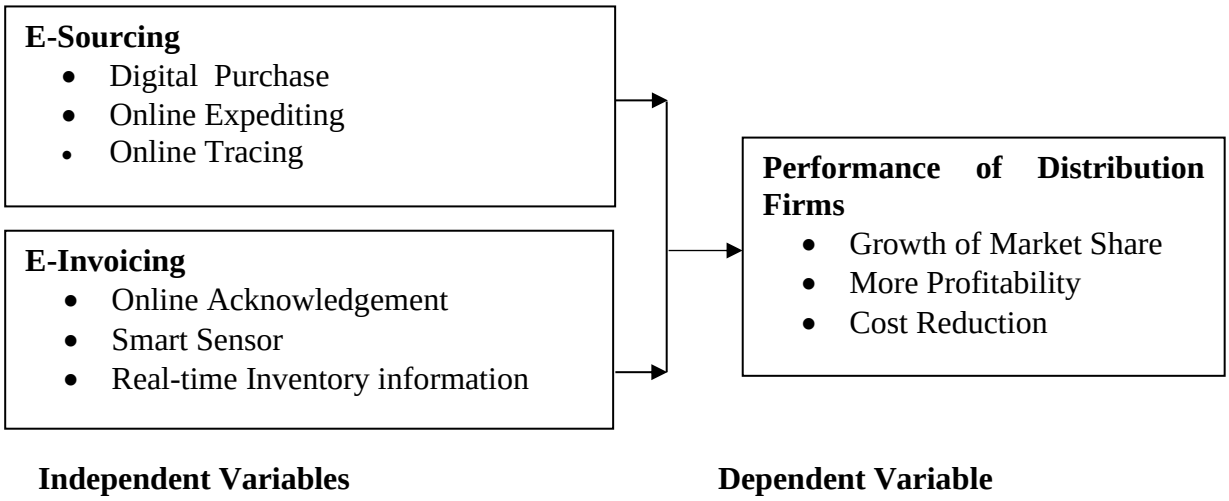

Figure 2.1: Conceptual Framework

E-Sourcing

The idea of e-invoicing is not new. Electronic invoices have been around for 30 years, using electronic data interchange (EDI) and XML formats. More recently, the main driver behind e-invoicing adoption has come from a government level. Fatonah, Yulandari and Wibowo (2018), in Europe the world's most active region with regard to e-invoicing a series of legislation has been created to promote the uptake of e-invoicing across the European Union. In fact, as of April 2020, EU countries are required to transpose the European Union's e-Invoicing Directive into their national laws and comply with its associated standards. The benefits of e-invoicing: Significant cost and time savings can be achieved by removing paper and manual processing from your invoicing. But the real benefits of e-invoicing come with the level of integration you can achieve, not only with your trading partners but also between your invoicing software and other business systems. For accounts payable in particular, integrating e-invoices directly into the AP automation solution further drives touchless invoice processing - which frees up time and resources for more value-adding and strategic tasks (Ongeri & Osoro, 2021). Starting to send and receive e-invoices can be an excellent first step of your organization's digital transformation journey, and a critical step in ensuring that your business operations are efficient and scalable to support future growth.

Technological innovation in the supply chain has become very important, allowing improvements, in terms of efficiency and quality, in the management of physical, information and financial flows**.** Fatonahet al. (2018), an automated inventory management system contributes greatly to business digitalization, leading to increased system accuracy, the tuning of real-time tracking, early problem detection, and increased efficiency. Obviously, an automated inventory system is able to grant new possibilities to your business. Either you are an e-commerce executive, small, medium, or perhaps a fortune-level supply chain business owner. You might even have deep roots in logistics. If so,

that's great news! Going digital and optimizing and streamlining your inventory management will increase bottom-line Return on investment. Moreover, it will free up cash flow to invest in the latest and greatest emerging tech. We can help support those efforts, but first, let's take a look at an automated inventory management system works (Ongeri & Osoro, 2021).

A lot of digital transformation companies provide a variety of automated inventory management systems to optimize business scalability, address human error issues, save time, and, as a result, gain cost-effective company operations. How can you reach a smoother performance of supply chain business processes? Regarding inventory, automation is defined as utilizing certain software or technology to manage warehouse stock in real-time with minimum effort and errors (Feizabadi, Gligor & Alibakhshi, 2021). This sophisticated method grants new possibilities in: processing customer order deliveries; inventory demand fulfillment; managing real-time data, which is essential for warehouse operations; comprising all the warehouse management systems already applied; and performing tracking tasks (Li, & Zhao, 2020). Inventory automation includes many options. Among the most widespread ones used by the retailers is automated reordering; keeping accurate track records of stock transferring; uniting multiple locations reporting in your chain; processing store orders; notifying about the goods dispatch. These and other options give opportunities to address operational cases when workers manually log each item into the inventory system and errors occur as well as visually inspect products' quality and quantity (Feizabadi et al., 2021). Intel reports 5% of inventory inaccuracy only due to manual processing. However, other problems exist as well to be solved by digitalizing business operations.

That is why utilizing inventory management software grants the potential to the whole business to perform better. Mainly inventory is grouped into: raw materials as components for the production of the finished goods; finished goods as the products ready for selling; MRO (maintenance, repair, and operating supplies stands for everything supporting the manufacturing process. What's interesting is that the screws, for example, used for machinery assembling are classified as raw materials, but when they are the spare parts for machinery repairing, they are grouped like MRO; work-in-progress inventory items, which are the goods waiting for the next stage of processing having been produced such as goods placed in the stock for quality control. Sunmola and Shehu (2020), an asset tracking expert on the market, uses the concepts of perpetual and periodic inventory control systems (Obradovi, Vla & Dabi, 2021). Perpetual control apps update information about the stock in real-time via barcodes and special scanning equipment. Periodic ones utilize manual item counting and number comparing in the beginning and in the end of the period.

Once a company applies a perpetual system to count on MRO or raw materials, it needs special equipment; but when it uses a periodic control system, it should consider counting errors and time limits to provide the sales department with accurate information. He focus along the chain moves from downstream, and then from the last links in the chain, to upstream, directly in contact with the supply network. With e-procurement the entire procurement process is handled online, so the company decided to make the purchases of various types, from raw materials to services, using B2B systems: these tools allow enterprises to reduce the cost and time of the procurement process, improve inventory and stocks management and, consequently, this is reflected in a decisive improvement in the management of all business processes. This is a necessary solution for large companies because it makes easier and more effective the management of the entire process of purchasing and supply network, and, on the other hand, for smaller companies that, in adopting e-procurement solutions, can become part of a global business with many opportunities for growth. The entire process of Procurement involves a series of processes of implementing as well as series of evaluations on strategic choice. The entire process of e-Procurement is then divided into two phases:the phase of e-sourcing and the phase of e-Supply Chain Management.

The e-supply chain is the series of processes involving a company and its main partners, managed in an integrated manner with the potential of new technological solutions that allow the planning of processes and objectives and the sharing of information relevant for the entire chain. In order to understand in detail the characteristics of e-supply chain, it can be adopted an analytical model based on two variables interpretative: x the application environment which includes the processes of e-supply chain execution and collaboration; x the technological choices of the companhe focus along the chain moves from downstream, and then from the last links in the chain, to upstream, directly in contact with the supply network. With e-procurement the entire procurement process is handled online, so the company decided to make the purchases of various types, from raw materials to services, using B2B systems: these tools allow enterprises to reduce the cost and time of the procurement process, improve inventory and stocks management and, consequently, this is reflected in a decisive improvement in the management of all business processes. This is a necessary solution for large companies because it makes easier and more effective the management of the entire process of purchasing and supply network, and, on the other hand, for smaller companies that, in adopting e-procurement solutions, can become part of a global business with many opportunities for growth.

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E-Invoicing

The adoption of technological solutions involves both organizational changes and reengineering of processes. The use of B2B tools provides a new role to management, who can spend more attention to strategic activities with greater added value. The traditional mode of acquisition is changed going from centralized to decentralized and this leads to a fundamental change in the role of employees in purchasing. Table 1 shows a summary of the evolution of the purchasing function following the adoption of tools for e- procurement. This change is proportional

to the intensity with which company uses the electronic market. The management will have to develop the rules that define the relationship between suppliers and customers. A

new corporate figure, will have to design tools for decision making that allows employees to set the criteria for purchase. So, these tools provide support and supervision in the purchase phase and an integrated view of the process. E-Procurement is defined as "a technology solution that facilitates corporate buying using the Internet" (Presutti, 2003). It 'a set of e-businesses and e-solutions that support the buying process. In this specific case the adoption of technological solutions involves both organizational changes and reengineering of processes.

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Electronic invoicing (e-Invoicing) is the exchange of the invoice document between a supplier and a buyer in an integrated electronic format (Yevu, Yu, Nani, Darko & Tetteh,2022). The adoption of technological solutions involves both organizational changes and reengineering of processes. The use of B2B tools provides a new role to management, who can spend more attention to strategic activities with greater added value (Harelimana, 2018).

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technological solutions that allow the planning of processes and objectives and the sharing of information relevant for the entire chain. In order to understand in detail the characteristics of e-supply chain, it can be adopted an analytical model based on two variables interpretative: the application environment which includes the processes of e-supply chain execution and collaboration; the technological choices of the company (Mogoi & Osoro, 2022).

Performance of Distribution Firms

The transmission of commodities from one business to another is referred to as distribution. Factory to supplier, supplier to retailer, or retailer to final consumer are all possible scenarios. It is described as a series of middlemen who each pass the product on to the following company before it finally reaches the customer or end-user. The "distribution chain" or "channel" is the term used to describe this procedure. The manufacturer must take into mind both the needs of the crucial end-user and those of each individual link in these chains, as each will have unique requirements (Alene, 2008). Due to the increasingly competitive global corporate climate over the past few decades, global supply chain management has significantly increased in relevance. Mogoi and Osoro (2022) emphasize the necessity of supply chain design for international operations and contend that the selection of a supply chain strategy affects performance in a competitive environment. The globalization or internationalization of supply chains has boosted foreign rivalry in the local marketplaces of the nations. Because of this, businesses must act swiftly and carefully when making strategic and tactical decisions on the global sourcing of goods and services in order to reduce the severity of any associated risks or issues (Mutuku, 2020).

Procurement firms establish relationships networks with their key suppliers when they perceive supply risks (Ominde, Osoro & Monari, 2022). Their study on supply risk management via relational approach in the Chinese business context reveals that improved communication and supplier trust are positively related to supplier performance and emphasized that in order to "mitigate quality risks, supply chain members are coordinated by sharing their information". This result supports on integration of the global supply chain. Supply chain management (SCM) has received in recent years a great deal of attention by researchers and practitioners. Effective SCM will lead to a lowering of the total amount of resources required to provide the necessary level of customer service to a specific segment and improving customer service through increased product availability and reduced order cycle time; engage in information exchange (forecasting techniques, inventory management, delivery) and structural collaboration (just-in-time system, outsourcing, vendor-managed inventory and co-locating plants) relationships with downstream supply chain partners to create end-customer value and maximize benefits and minimize costs along the supply chain (Mogoi & Osoro, 2022).

Supply chain is a dynamic process and involves the constant flow of information, materials, and funds across multiple functional areas both within and between chain members (Puckett, 2019). Members in the chain need to cooperate with their business partners in order to meet customer's needs and to maximize their profit. However, it is a very difficult task in managing the multiple collaborations in a supply chain because there are so many firms involved in the supply chain operations with its own resources and objectives. The interdependence of multistage processes also requires real-time operation and decision making across different tasks, functional areas, and organizational boundaries in order to deal with problems and uncertainties. The strategic move of focus for mass customization, quick response, and high quality service cannot be achieved without more complex cooperation and dynamic structure of supply chains. Supply Chain Management is the function within and outside a company that enables the value chain to make products and provide services to the customer (Nyaboke et al., 2015).It is the network of entities through which material flows. Those entities may include suppliers, carriers, manufacturing sites, distribution centers, retailers, and customers. Supply Chain Management coordinates and integrates all these activities into a seamless process.

The ultimate goal of strategy is "long-term, sustainable superior performance." Such superior performance depends on the ability of an organization to become a fully integrated partner in a supply chain (Puckett, 2019), This requires that organizations adopt a supply chain strategy that focuses on how both internal and external business processes are integrated and coordinated throughout the supply chain to better serve ultimate customers and consumers while enhancing the performance of the individual supply chain members. Examples of business processes that must be integrated include manufacturing, purchasing, selling, logistics, and the delivery of real-time, seamless information to all supply chain partners. Managing at the level of a supply chain requires a new focus and new ways of thinking as pointed out by Nyaboke et al. (2015). Managers must learn to communicate, coordinate, and cooperate with supply chain partners. Ongeri and Osoro (2021), described supply chain management as a "strategic level concept." Supply Chain Management (SCM) as having three core elements: value creation, integration of key business processes and collaboration.

Based on this conceptualization, they define SCM as "the philosophy of management that involves the management and integration of a set of selected key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders through the collaborative efforts of supply chain members (Nyaboke et al., 2015).

Empirical Review

E-Sourcing

Web-based ERP (Enterprise Resource Planning) involves creating and approving purchasing requisitions, placing purchase orders and receiving goods and services by using a software system based on Internet technology (Schoenherr, 2019). E-design refers to establishing buying requirements through the specification development process, and has emerged to help facilitate early supplier involvement. Buyers and suppliers communicate and develop products and specifications in line with collaboration. E-sourcing is the application of internet technology to the steps of supplier selection in purchasing process. A proposal is requested on the internet for pre-qualified supplier. The suppliers receive the request and submit bids electronically. Then, they evaluate the bids, negotiate online and select the most proper suppliers. In the contract agreement stage of purchasing process, the purchasing department needs more involvement with it. The role of e-procurement in this stage is on-line negotiation called e-negotiation. The final stage of e-procurement is e-evaluation. In this stage, information is critical; company requires more proper solutions to collect detail, extensive and accurate information for evaluating and rating suppliers (Mogoi & Osoro, 2022). Thus, e-procurement is organization's procurement using the internet technologies, including e-design, e-sourcing, e-negotiation and e-evaluation

E-procurement solutions provide the firm with data warehousing capabilities and other knowledge management tool to support this (Schoenherr, 2019). The impacts of e-procurement systems include economic efficiency as well as improved procurement capacity of organizations. In the developing countries, and mid-income countries like Kenya, the electronic transactions reduce the possibility of corruption that usually occurs with face-to-face transactions. Consequently, the introduction and utilization of integrated e-procurement systems creates internet-enabled supply chain, establishing business-business relationships and electronic procurement systems for managing the supply chain and would not only reduce costs and lead times but also will eventually enhance the company‟s competitiveness and position it for further growth. E-procurement system can improve the effectiveness of operation processes and the transparency of the supply chain. Therefore, it could be implied that an e-procurement system is more pivotal than other e-business applications when studying supply chain performance. In the current economic environment, a value creation perspective is important for improving supply chain performance (Mogoi & Osoro,

2022). It can be expected that the functional characteristics of e-procurement systems can enable companies to improve the efficiency of value creation processes in the supply chain

E-Invoicing

E-invoicing is the process of gathering and distributing purchasing information both from and to internal and external parties, using the internet technology. Schoenherr (2019). mentioned that information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner thus more efficiency and high performance of the supply chain. Information sharing does not only share information with partners, but also provides adequate, timely and accurate information. In other words, information sharing should include the concept of information quality (Mutukuet al., 2019). Information quality includes such aspects as the accuracy, timeliness, adequacy, and credibility of information exchanged. Information sharing includes both formal and informal information sharing with partners. And the information must ensure the quality with accuracy, timeliness, adequacy, credibility, and criticality thus more noticeable supply chain performance.

Ensuring the quality of shared information has become a critical issue of effective Supply Chain Management, supported that internet or internet tool can facilitate information sharing and more collaboratively with their partners (Mutuku et al., 2019). E-procurement is a kind of internet tool in their article. They also said that e-marketplace provides a shared internet-based infrastructure that enables participant organizations to communicate with one another effortlessly. Information sharing is about the information flow, the timeliness of information availability, and the openness and transparency. It will affect performance apparently. For instance, the e-marketplace provides a mechanism for companies to control, coordinate, and economize on transaction costs, as it improves information flows and helps reduce uncertainty (Schoenherr, 2019). The use of IT enables far greater information to be more widely distributed, and in terms of the ability to offer access to large catalogues of suppliers, the range of products and services available to employees is reported to have provided far greater range flexibility

Performance of Distribution Firm

The business performance of a company is defined by business outcomes supported by truncation metrics from SCM events or actions such as outsourcing (Muathe et al., 2019). Operational performance will focus not only on the successful integration of internal business processes and strategic alignment of internal functions within New KCC, but also through the integration and alignment of inter-company processes in the telecommunications industry. SCM requires a change from managing individual functions to integrating activities into key supply chain processes.

Shared information between supply chain partners can only be fully leveraged through process integration. Process integration is a term used in chemical engineering which means a holistic approach to process design which considers the interactions between different unit operations from the outset, rather than optimizing them separately. Mogoi and Osoro (2022), calls this integrated process design or process synergy project. An important first step is often product design which develops the specification for the product to fulfill its required purpose.

Process integration links the different components within and outside the organization that links the supply chain to the performance of that organization. Supply chain business process integration involves collaborative work between buyers and suppliers, joint product development, common systems and shared information. According to Kitonga, Bichanga & Muema (2016) operating an integrated supply chain requires continuous information flow with the end result of the information flow being measuring and reacting to performance. However, in many companies, management has reached the conclusion that optimizing the product flows cannot be accomplished without implementing a process approach to the business. The key supply chain processes stated are:

Customer relationship management, Customer service management, Demand management, Order fulfillment, Manufacturing flow management, Supplier relationship management, Product development and commercialization and returns management Experts found a strong relationship from the largest arcs of supplier and customer integration to market share and profitability and overall business performance. By taking advantage of supplier capabilities and emphasizing a long-term supply chain perspective in customer relationships, SCM can be correlated with a firm's performance. Hussein (2018) noted that firms engaging in comprehensive performance measurement realized improvements in overall productivity (Muathe et al., 2019).

RESEARCH METHODOLOGY

The study adopted a descriptive research design since the study gathered quantitative and qualitative data was described by the nature and characteristics of the effects of inventory automation on performance of distribution firms in Kenya. According to KIFWA, the study's target audience consisted of 135 respondents from 45 Nairobi City County, Kenya, distribution enterprises that were registered. Each of the distribution firms' deputy heads and heads of the transport and logistics departments provided responses to the study's questions regarding the impact of inventory automation on those firms' operations in Nairobi City County, Kenya.

The study employed a census survey approach to collect data from the respondents hence no sampling techniques was used. According to Kothari (2011) a census is a count of all the elements in a population. When a population was sufficiently small, it is not necessary to sample, while a sample is a portion or part of the population of interest. The study will collect both primary and secondary data during the research. Questionnaires was open and closed ended.

The purpose of validity and reliability was to find out if research instrument fits with and measure the issues to be researched. Kothari (2011) 10% of the target population should constitute the pilot test which was not be included in final study. Piloting of the research instrument means administering the instrument to a small representative sample identical to but not including the group one is going to survey. In this study, 10% of the target population was 14 respondents. The study generated both quantitative and qualitative data (Kothari, 2011). Both descriptive statistics and inferential statistics were applied to analyze numerical data gathered. Descriptive analyses are important since they provide the foundation upon which correlational and experimental studies emerge. Statistical Package for Social Sciences (SPSS) version 24 was used as a tool for analysis of study variables. Multiple linear regression attempts to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to the observed data, where every value of independent variables is associated with a value of the dependent variable.

RESEARCH FINDINGS AND DISCUSSION

Out of 121 questionnaires that were circulated to the respondents, 99 of the respondents dully filled and retuned questionnaires; yielding a response of 81.8%. This was considered to be a very reliable response rate for the generalization of study findings is in line with Sharma (2018), states that a response rate of 70% and above is believed to be a reliable response rate. This was less 14 (10%) respondents who were pilot tested.

Descriptive Statistics

In this section, the study presents findings on Likert scale questions on the role of inventory management practices and performance of distribution firms in Nairobi City County, Kenya. The study specifically presents the effect of e-sourcing and e-invoicing on performance of distribution firms in Nairobi City County, Kenya. Respondents were asked to use a 5-point Likert scale where 5 (SA) = Strongly Agree, 4(A) = Agree, 3(UD) = undecided, 2 (D) = Disagree, and 1(SD) =

Strongly Disagree. Results obtained were interpreted using means and standard deviations where a mean value of 1-1.4 was interpreted as strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree.

E-sourcing

Respondents were asked to give their responses in regard to e-sourcing in a five point Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree. Results obtained were presented in Table 1 below; Respondents were asked to give their opinion on the variable e-sourcing. From table 4.7, the respondents unanimously agreement that calling vendors to supply e-sourcing, on performance of distribution firms in Nairobi City County viable (M=3.732 SD=1.1492); Through Digital Purchase distribution firms are able to make rational decisions on priority and non-priority to performance of distribution firms (M=3.723, SD=.8052); online expediting management assessment has contributed to the quality and innovation of performance of distribution firms (M=3.845, SD=.8124); online tracing assessment for performance of distribution firms can put in place quick delivery and maintain inventory automation in procurement optimization (M=3.173, SD=.8525); in Nairobi City County performance of distribution firms to prevent complaints (M=3.842, SD=1.1762); and inventory automation management practices enhances performance of distribution firms in Nairobi (M=3.850, SD=.8022). These findings were in line with the findings of Ominde et al. (2022), who observed that clear description of inventory e-sourcing, can enhance effective performance of distribution firms in Nairobi City County, Kenya..

Table 1:E-sourcing

Statement	Mean	Std. Dev.
Digital purchase ensures conformance of inventory automation management	3.833	1.1492
Through inventory auto notification to vendors approaches the county can improve performance of groups	3.373	.8052
Online expediting of enhances performance of distribution firms	3.335	.8124
Online tracing management improving performance	3.174	.8525
The management of automation by e-ordering	3.842	1.1762
Inventory management practices enhances performance of Nairobi city County for all distribution firms	3.842	.8022

E-invoicing

Respondents were asked to give their responses in regard to e-invoicing on performance of distribution firms County in Nairobi, Kenya i.e. 5 point Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree. The results obtained were as presented in Table 2 below:

The findings presented in table 2 show that respondents agree that: e-invoicing has effect on performance of distribution firms in Kisi county, Kenya (M=3.734, SD=.7030); safety stock inventory management practices on performance of distribution firms in Nairobi City County, Kenya (M=3.374, SD=.8243); lead time in inventory management on can improve performance of distribution firms in Nairobi City County, Kenya (M=4.836, SD=.7124); stock out costs is significant when you want performance of distribution firms in Nairobi County , Kenya (M=4.422, SD=.6839); minimum stock level management can enhances our performance of distribution firms in Nairobi City County, Kenya (M=3.475, SD=.3912); and through evaluation,

the county is able to identify problems and find solutions in a timely manner to ensure high performance of disadvantaged groups within the county (M=4-.830, SD=.7631).

The findings is in line with the finding of mwangi (2019), he observed that it is critical to risk management frequently and at regular intervals after award to ensure that the group is providing the goods and services on schedule and within the procurement plan , and that quality standards are being met, especially for the highest-risk and most complex contracts. These include identifying performance criteria, such as key performance of groups as per a county indicators , at the time of contract formulation, and providing adequate monitoring resources and a capable workforce for performance of distribution firms in Nairobi City County, Kenya.

Table 2: Re- Order level Management

Statement	Mean	Std. Dev.
Our safety stock awareness on performance of Distribution firms County	3.734	.7030
Our lead time schedule on performance of Distribution firms County ,	3.374	.8245
Through stock out cost on performance of Distribution firms County	4.833	.7124
Minimum e-invoicing on performance of Distribution firms County	3.475	.7912
Through of supply chain best practices on performance of distribution firms County,	4.830	.7631

Performance of Distribution firms

Respondents gave their level of agreement on various statements relating with performance of distribution firms in Nairobi City County, Kenya through supply chain optimization. The results were as presented in Table 3 below:

From the findings, respondents were in agreement that performance of distribution firms in Nairobi City County, Kenya is being affect by inventory management practices , they gave (53) 53.1% of the respondents ; when asked about e-sourcing and its effect on distribution firms in Nairobi they gave (68) 68.9 % of the respondent; When the respondents were asked to show their level of agreement on how level of people with disability live hood improvement affects performance of distribution firms in Nairobi City County, Kenya they gave (18) 18% of the respondent; When also the respondents were asked to show their level of agreement on how youth lifestyle affects performance of distribution firms in Nairobi City County, Kenya they gave (69) 69.8% of the respondent; growth of more income it contributes to women lifestyle on performance of distribution firms in Nairobi City County, Kenya they gave (63) 62.6% of the respondent and through contract management, inventory performance measured by just in time concepts , flexibility, results to better income on performance of distribution firms in Nairobi City County, Kenya they gave (76) 76.3% of the respondent. The findings is in line with the findings of Ominde *et al.* (2021) they observed that some of the factors that contribute to inefficiency in public procurement as corruption, delayed payments, poor planning, statutory amendments, use of e-invoicing, and lack of inventory management practices negatively affects performance of distribution firms in Nairobi City County, Kenya.

Table 3: Performance of Distribution firms

Statements	Yes (%)	No (%)
Firms improvement can affect performance of distribution firms in Nairobi City County, Kenya	53.1	36.9
firms can affect performance of distribution firms in Nairobi city County, Kenya	68.9	31.1
firms can affect performance of distribution firms in Nairobi City County, Kenya	18.1	81.9
low income can affect performance of distribution firms in Nairobi County, Kenya	62.3	37.7
Low Quality of supplies can affect performance of distribution firms in Nairobi City County, Kenya	75.9	24.1
performance of distribution firms in Nairobi city County, Kenya	73.3	24.7

Pearson Correlation Analysis

The study further conducted inferential statistics entailing both Pearson and regression analysis with a view to determine both the nature and respective strengths of associations between the conceptualized predictors such as e-sourcing, and e-invoicing on performance of distribution firms in Nairobi City County, Kenya.

Table 4: Pearson Correlation

Variables		E-sourcing.	E-invoicing	Performance of distribution firms
E-sourcing	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	99		
	Pearson Correlation	.347**	1	
E-invoicing	Sig. (2-tailed)	.000		
	N	99		
Performance	Pearson Correlation	.147	.087	1
Distribution firms	Sig. (2-tailed)	.099	.083	
	N	99	99	99

From the findings, a positive correlation is seen between each variable and performance. This is tandem with the findings of Mogoi and Osoro (2022), they observed that all independent variables were found to have a statistically significant association with the dependent variable at over 0.05 level of confidence.

Regression Analysis

To establish the degree of the effect of supply chain for a regression analysis was conducted, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent variables and dependent variable for accuracy of estimation, which was achieved as the standardized coefficients were used in interpretation. The multiple regression model was as follows: Where;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

Performance of distribution firms = β_0+ β_1 (e-sourcing) + β_2 (e-invoicing) + error term. Regression analysis produced the coefficient of determination and analysis of variance (ANOVA).

Analysis of variance was done to show whether there is a significant mean difference between dependent and independent variables. The ANOVA was conducted at 95% confidence level.

Model of Goodness Fit

Regression analysis was used to establish the strengths of relationship between the performance of distribution firms (dependent variable) and the predicting variables; s e-sourcing, e-invoicing (Independent variables). The results showed a correlation value (R) of 0.734 which depicts that there is a good linear dependence between the independent and dependent variables. This finding is in line with the findings of Mogoi and Osoro (2022).

They observed that this also to depict the significance of the regression analysis done at 95% confidence level. This implies that the regression model is significant and can thus be used to evaluate the association between the dependent and independent variables. This finding concurs with the findings of Okumu and Bett (2019), they observed that analysis of variance statistics examines the differences between group means and their associated procedures.

Table 5: Model of Goodness Fit

R	R2	Adjusted R	Std. Error of the Estimate
0.734	0.737	0.763	0.061

a. Predictors: (Constants); e-sourcing, e-invoicing on performance of distribution firms in Nairobi City County,
b. Dependent Variable: performance of distribution firms i

With an R-squared of 0.737, the model shows that e-sourcing, e-invoicing can contribute up to 73.7% on performance of distribution firms in Nairobi City County, Kenya, while 26.3% this variation is explained by other indicators which are not inclusive in this study or model. A measure of goodness of fit synopses the discrepancy between observed values and the values anticipated under the model in question. This finding is in line with the findings of Nyile *et al*. (2021).

Analysis of Variance (ANOVA)

From the results in table 4.13, analysis of variance statistics was conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two. The P-value of 0.005 implies that county performance of distribution firms have a significant relationship with e-sourcing, e-invoicing, which is significant at 5 % level of significance.

Table 6: ANOVA TEST

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5.356	1	1.013	.441	.004
Residual	6.477	98	.539		
Total	**11.733**	**99**			

Regression Coefficients of Determination

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination. Findings in table 7 reveal a positive relationship between the performances of distribution firms in Nairobi City County, Kenya,

Table 7 Regression Coefficient Results

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.132	.060	-1.144	1.002	.001
E- sourcing.	.234	.132	.830	5.401	.002
E-invoicing	251	.057	.587	4.086	.002

a. Predictors: (Constants), e-sourcing, e-invoicing,
b. Dependent Variable: performance of distribution firms

A unit change in e-invoicing would thus lead to a .251 effect on performance of distribution firms in Nairobi City County sector ceteris paribus; also unit change of e-sourcing would lead to .234 of performance of the County. This finding concurs with the findings of Ominde *et al.* (2022). This implies that among other factors, e-sourcing, e-invoicing are significant determinants of performance of distribution firms in Nairobi City County, Kenya.

Conclusion

The study concludes that there is a positive relationship between supplier engagement and Performance of distribution firms. Speciation identification, periodic design assessment, continues improvement and proactive assessment are among the supplier engagement factors that significantly influenced the performance of distribution firms in Nairobi City County, Kenya. The study further concludes that by implementing supplier engagement has enhanced performance of distribution firms in Nairobi City County, Kenya, leading to operational increase in efficiency and effectiveness .Therefore, the study concludes Nairobi has significantly increased their suppliers' quality management in the County government in the supply chain practices.

Further, the study concludes that supplier risk management had a positive effect on performance of distribution firms in Nairobi City County. The study established that competence reviews, supplier performance, Supplier skills, supplier acquaintance, supplier training, Nairobi is able to identify problems and find solutions in a timely manner to ensure collaborative risk management of the goods and services delivered. From the findings, the study concludes that increasing risk management evaluation can leads to increased performance of distribution firms in supply chain practices.

Recommendations

The study recommend that supplier engagement formalizes relations between parties within a robust legal framework, but is much more besides; it is an opportunity to define the arrangements that encompass every aspect of what outcomes the Nairobi wants from the supplier and how it wants the relationship to work. This means that the county needs to take an active role in the development of the quality mechanism early on; it should not be left as a supplementary activity post negotiation. At preparation of every quality management can contribute to supplier evaluation on performance of distribution firms in Nairobi City County, Kenya. Proper supplier engagement can result to high procurement in Nairobi City County.

The study recommends that supplier risk management had a strong relationship with performance of distribution firms of Nairobi City County, Kenya. There should be a thorough and independent review that is informed by those involved in establishing and managing the supplier risk management. The evaluation was need to be tailored to the particular circumstances of the County but should consider both the effectiveness and efficiency of the arrangement. To get the best out of the evaluation, entities should: review all aspects of performance of distribution firms and its management; provide feedback to the contractor; this should not be done as part of another

procurement process; report to stakeholders; and identify lessons learned. The management of Nairobi should ensure regular supplier evaluation through well-established monitoring and evaluation of performance of distribution firms. This was ensure that there is input corrective measures to hedge against deviation of actual results against standards in the supply chain practices.

Suggestions for Further Studies

This study focused on supplier information sharing, supplier segmentation, risk management and supplier development and performance of distribution firms of Nairobi City County, Kenya. The study therefore recommends a further study to be conducted to other counties in Kenya. Then get their findings and compare with this and agree or disagree. Future researchers can investigate the factors affecting supply chain best practices broadly in all areas of concern in this profession on performance of distribution firms in the supply chain practices.

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