

**INFLUENCE OF E-INVENTORY MANAGEMENT SYSTEMS ON
PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA**

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**A RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF
REQUIREMENTS FOR THE AWARD OF MASTERS IN PROCUREMENT
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DECLARATION

I declare that this thesis has not been presented anywhere for any award and that all sources of information have been acknowledged by means of references.

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APPROVAL

This research project has been submitted for examination purposes with my approval as the University Supervisor.

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Sign.......... Date...01/04/2025.....

DEDICATION

I dedicate this proposal to my family. My Parents, Humphrey Mudanya and Saumu Kadaji, have been extremely supportive through this project. This far I have come is all thanks to them.



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I am thankful to the Almighty God for His continued mercy and love upon my life and that of my entire family and strengthening us especially through these trying times. I would like to also express my special thanks to my supervisor Dr Jackson Ndolo for their invaluable guidance, support, and encouragement throughout the entire duration of this proposal. I am also grateful to Dr Evans Omweri. Your useful advice and suggestions were really helpful to me during the project completion. Appreciation to all of the above for being understanding during the entire period of my course.



ABSTRACT

Inventory management is pivotal in an effective and efficient organization. Due to its numerous advantages for both the businesses using them and the entire supply chain, e-inventory systems have been a quickly expanding trend that is being accepted by the majority of nations. Regardless of the organization's size or range of influence, it applies to all organizations. This study seeks to investigate the impact of electronic inventory management systems on supermarket performance in Nairobi County, Kenya. This study specifically aims to determine influence of bar coding, radio frequency identification, electronic data interchange and cloud computing on performance of supermarkets in Nairobi County, Kenya. This study is anchored on Theory of Technology Adaption and Diffusion, Instrumentalism Theory of Technology and Resource-Based View. Descriptive cross-sectional survey research design was adopted. The unit of observation were the employees working at corporate, business and functional levels of four supermarkets in Nairobi County namely Skymart, GreenMart, Mathais and East Matt supermarkets. Study targeted all employees of four supermarkets since they cater to broader needs with their extensive inventory. The sample was the senior employees working at corporate, business and functional levels of the four supermarkets in Nairobi County. The sample respondents included chief executive officer, operations manager, marketing manager, human resources manager, strategic manager, IT manager Finance manager, procurement manager, Quality assurance manager, General Manager, Diaspora extension manager and Branch service manager arriving at a sample of 48 respondents. This study adopted purposeful sampling where specific population was studied. A questionnaire was used to collect primary data. The questionnaire was first be checked and tested for validity and reliability. The data collected was analysed through descriptive statistics and regression analysis with the help SPSS software version 25. Pilot results showed a reliability test of a Cronbach's Alpha coefficient between 0.9820 and 0.855. Validity was established through expert review. The findings revealed bar coding, radio frequency identification, electronic data interchange and cloud computing account for 51% variation in performance of supermarkets in Nairobi County, Kenya. It was further revealed that Barcoding, RFID, electronic data interchange, and cloud computing were significant predictors of supermarkets' performance.

This study concluded that barcoding enhanced operational efficiency and enabled management to make informed decisions based on analyzed data, thus significantly boosting overall performance. On the same note RFID improved product tracking, reduced losses, and optimized transportation and routing. Additionally, RFID data was used for decision-making, and its implementation was associated with cost reductions over time, thereby enhancing supermarket performance in the region. Further, this study established that EDI facilitates better communication among vendors, employees, and customers, promotes shorter lead times, and minimizes operational errors which resulted in improved efficiency and effectiveness, positively influencing the performance of supermarkets in Nairobi County. Finally, this study established that cloud computing allows for substantial data storage, easy access to data, and improved management decision-making which significantly influenced the performance of supermarkets.

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ABBREVIATIONS AND ACRONYMS

| | |
|--------------|---------------------------------------|
| CC | Cloud computing |
| CSCM | Cloud Supply Chain Management |
| DOI | Diffusion of Innovation |
| EDI- | Electronic Data Interchange |
| ERP | Enterprise Resources Planning Systems |
| GS1 Data-bar | Global Standards Data-bar |
| ICT | Information, communication technology |
| IOS | Information Operating System |
| JIT | Just in time |
| MRP | Material Replacement Policy |
| QR Code | Quick Response Code |
| RBV | Resource based View |
| RFID | Radio Frequency Identification |
| SC | Supply Chain |
| SCM | Supply Chain Management |
| VMI | Vendor Managed Inventory |

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Chapter one provides a thorough examination of study's background, problem statement, study's importance, research goals and queries, study's scope, as well as limitations and boundaries.

1.1 Background to the Study

Efficient management of inventory plays a crucial role in supply chain operations today, which are increasingly challenging on a worldwide level according to Gomez-Mejia et al. (2021). Due to the advancement of warehouse inventory management systems, companies can now utilize advanced tools to efficiently and accurately manage their inventories, prompting the global adoption of more efficient inventory tracking methods. In the present day, businesses are aiming to automate their inventory management systems to take advantage of higher profitability, efficiency, productivity, and customer service (Atnafu et al., 2018).

Historically, inventory control techniques have relied on labour-intensive manual tasks like physical counts, spread sheet tracking, and data entry by hand. These procedures lack real-time visibility into inventory levels, are time-consuming, and are subject to human error. Typical difficulties with traditional inventory control include the following: Forecasting errors, limited visibility of the inventory, ineffective replenishment procedures, higher carrying costs, and a lack of scalability (Nalini, 2023). According to McCombes (2021), inventory control involves overseeing the amount, whereabouts, and standard of the goods or resources held by a company or entity. Managing inventory is crucial to guaranteeing customer happiness, cutting expenses, and enhancing productivity.

Similarly, Peteraf, (2015), mentions some of the benefits of inventory control as helping to avoid stock outs and overstocking, which can affect sales and customer loyalty, enables accurate forecasting and planning, which can improve cash flow and profitability, reduces

waste and shrinkage, which can lower expenses and environmental impact and enhances productivity and performance, which can boost employee morale and customer satisfaction.

However, Peteraf, (2015), indicates that some of traditional inventory control techniques have many limitations and drawbacks. They rely on manual tasks that are prone to human error, time-consuming, and inefficient. They also lack real-time visibility into inventory levels, which can lead to poor decision making and missed opportunities. To overcome these challenges, many businesses and organizations are adopting modern inventory control techniques that use technology to automate and optimize the inventory management process. Halton, (2021) states that technologies utilized for inventory management consist of barcode scanners and RFID tags for tracking inventory movement and location, inventory management software and cloud-based systems for storing and analysing data, artificial intelligence and machine learning for optimizing inventory, and Internet of things (IoT) devices and sensors for monitoring inventory quality.

Sirk, (2020) suggests that these technologies can assist in reaching specific goals for managing inventory: predicting future demand through demand forecasting, determining the best inventory levels and reorder points with inventory optimization, allocating inventory items across various locations or channels based on demand and availability with inventory allocation, and automating the ordering and receiving of items through inventory replenishment. By using these modern inventory control techniques, businesses and organizations can improve their inventory management process and gain a competitive advantage in the market. They can also reduce their operational costs, increase their customer satisfaction, and enhance their sustainability.

The limitations of conventional inventory control methods in organizations have given way to the transformative power of automation. Automation streamlines and optimizes inventory control processes by utilizing cutting-edge technologies and software systems, improving

accuracy, efficiency, and cost-effectiveness. Automation makes it possible to gather, analyse, and make decisions based on real-time data, improving supply chain optimization, demand forecasting, order processing, and inventory visibility.

Manufacturers can increase productivity, decrease waste, cut costs, and enhance overall operational performance by automating inventory control (Nalini, 2023). Bonaire et al. (2022) state that the success of an inventory management system relies on the quality of data it uses and the strength of the company's IT infrastructure. Recent developments in information systems have led to more frequent feedback, allowing for instant monitoring. Enterprise Resources Planning systems (ERP) are the most popular software for managing inventory levels and initiating order placements (Ballou, 2016). The ERP system in businesses manages inventory levels by applying the principles of Just in Time (JIT) and Material Replacement Policy (MRP). Utilizing these methods allows the inventory manager to effectively, accurately, and efficiently handle inventory (Obadire et al., 2022).

1.1.0 E-inventory Management Systems

For businesses to operate successfully, inventory management must be managed efficiently. Different inventory management systems have been researched overtime and performance, and these studies have gathered large amount knowledge associated with inventory management and firm performance. Murk (2019) examined the correlation between organizational performance and inventory management in USA where it was found that maintaining required inventory levels, proper planning and control, an organizations can attain its goals and maximize overall operational efficiency. Maria and Jones (2019) examined the impact of inventory management on stock management in 7 OECD Countries and found that achieving optimal inventory management technique is concerned with providing premium products at relatively lower prices. They also indicated the importance of setting a daily ordering schedule and frequently calculating inventory turns. On the other hand, Ballon (Citation2000) did a study

in Sweden using data from 4 leading supermarkets and inventory costs were discovered to be an important factor to consider when making inventory decisions. He discovered that inventory carrying costs ideally range between 20% and 40% of inventory value. Cho (2019) in a study in China revealed that the higher the level of inventories stocked, diverting from a lean manufacturing, by an organization lowers the return rate.

Jonsson and Mattsson (2018) investigated how material planning techniques is used to manage material flow inventories of acquired goods. This study looked at how different techniques of material flow control are employed in manufacturing and distribution companies were used in planning. Additionally, they investigated how other planning attributes and methodologies have produced different perceptions of how planning has impacted performnce. Based on survey data, a total of five material planning techniques were examined. Gill, Biger, and Mathur (2020) in a study in Turkey argue that to much stock is liability in operation, because valuable space is used during storage thus increasing operational expenses. The rate of replenishing of raw materials has been established to contribute significantly in inventory costs. It is tactical to frequently place small-scale orders to manage inventory cost. When it comes to SMEs, this is really pertinent. This is due to the fact that SMEs typically do not profit from quantity discounts. For organization to receive these benefits, SMEs value frequent lower material procurement.

Businesses in Africa are putting more emphasis on inventory control and management due to the continent's current dynamic business environment and growing competition, which is pressuring them to cut costs and improve performance. The level and quality of service delivery and the products offered are not being negatively impacted as managers look for ways to cut costs and improve inventory management (Mwangi, 2018). Academic institutions have shown interest in offering the critically important knowledge on inventory management in this regard.

Lukic (2012) examined the impact of South Africa's e-inventory management system on the retail sector's performance. Research results were based on mail survey responses from 111 retailers in South Africa. The e-inventory management system was recognized as a crucial factor for businesses in the sector to succeed, according to this study. Obadire et al. (2022) conducted a separate study on the efficiency of retail stores in South Africa and inventory management techniques. This research found that retail stores commonly utilized inventory management methods such as EOQ, JIT, barcoding, and inventory management software in their daily activities. The performance of retail stores was also positively affected by these tools and techniques.

Several research studies have also been conducted in Nigeria on the inventory management system. Obi's (2018) research on how inventory management systems affect operational performance in the manufacturing industry discovered that electronic inventory control management systems can significantly benefit organizations. Some of the benefits included the improving efficiency in use of resources, cost savings, increased profitability, waste reduction, transparency and accountability, and simple stock storage and retrieval. Despite the potential benefits listed in this study, businesses have found it difficult to invest in the technology required to synchronize their systems to ensure efficient inventory control management. These software solutions can help businesses automatically synchronize their inventory across multiple platforms and monitor it in real-time. By using these systems, businesses can avoid the risk of overstocking or stock outs, reduce the risk of errors, and improve efficiency in their operations.

Akpoviro and Vareckova (2023) examined the correlation between organizational performance and inventory management in Nigeria. The research asserted that the blend of advanced manufacturing methods and increasing product needs resulted in a wide range of inventory types and management has developed into an intricate series of procedures. Due to

this factor, every company needs a distinct inventory control system. With the help of software, inventory control management has become easier due to technological advancements. Nevertheless, Muturi (2017) emphasized the necessity of empirical evidence to conclusively establish impact of automated inventory control and management systems on performance within the Kenyan setting. Moreover, the existing literature primarily concentrates on continents other than Africa, such as North America, Europe, and certain parts of Asia. The utilization of Information and communication technology (ICT) as a key driver of rapid business expansion in the 21st century in Kenya, as well as globally, facilitates and enhances organizational functions like inventory management and control.

E-Inventory management systems have received attention recently for their potential to significantly improve business performance through lower operating costs, efficient inventory control, untying of working capital, and enhanced customer service (Arasa&Odooyo, 2020; Mwangi, 2018). Arasa and Odooyo (2020) conducted research on the utilization and execution of e-inventory management systems to assess effectiveness of supermarkets in Nairobi County, Kenya. The authors made the case that e-inventory management systems could greatly enhance supermarket performance. This research only focused on a limited scope, so it is suggested that future studies should broaden their scope to include a wider population and more variables. This will help further understand the topic and contribute to the existing knowledge in the field. The aim of the upcoming study is to assess how supermarkets have adopted and implemented e-inventory management systems and how this has improved their performance in terms of cost reduction, inventory management, and overall supermarket operation.

1.1.1 Performance of Supermarket Chains

Measuring supermarket performance goes beyond financial metrics. By analysing transaction data, understanding customer behaviour, and ensuring product availability, supermarkets can continuously improve and provide exceptional service. As consumers, we benefit from their

commitment to excellence. Activities offer a strong link between the firm's strategic objectives, client orientation, and economic contribution, which in turn leads to performance (Salem, 2018). All farms concentrate on performance and its maintenance since it will allow the business to expand and advance. Making strategic decisions is a critical component of management and may be one of the most crucial indicators of a business's success. (Corina et al., 2019).

Performance parameters are used to assess success from a variety of angles, including customer, employee, financial, and business process perspectives, as well as past, present, and future performance. Understanding the internal procedures of the company that help it achieve its goals and learning how to add value to the services and goods that customers buy are part of the internal processes of the business. (Arshan, 2018). Supermarkets play a pivotal role in our daily lives, providing essential goods and services. To thrive in a competitive market, supermarkets must continually assess their performance. According to Arshan, 2018) most critical parameters to measure performance of supermarkets, Transaction Metrics One critical aspect of supermarket performance is understanding customer behaviour. Two essential transaction metrics are: Average Basket Size: This metric tracks the number of items purchased by a customer. A larger basket size indicates higher sales. Supermarkets analyse this data to tailor promotions, manage inventory, and enhance sales strategies. Customer Acquisition Cost (CAC): Grocers invest in marketing and promotions to acquire new customers.

According to Corina et al., (2019), calculating CAC ensures that the revenue gained per customer covers the acquisition cost and $\text{Total sales and marketing expenses} / \text{Total new customers}$ which is also referred to as Customer Lifetime Value (CLV): CLV predicts how much revenue a new customer will generate over time. A healthy CLV-to-CAC ratio (ideally 2.5 or more) ensures profitability. Retailing is the final stage in the distribution channel such that goods can reach the customers and consumers. Retailing can be done in groceries, retail

shops, kiosks, supermarkets and hypermarkets (Mulemba, Ouma&Atieno, 2022). Supermarkets allow the customer to enter and select the goods on display, pay and leave at their pleasure, which increases their satisfaction rate. Supermarkets also have many products under one roof including vegetables, clothing, detergents, food items, tools and utensils among others. Therefore, some of the strategies suggested to reverse the declining performance include turnaround strategies, business innovation, better debt-equity financial structure, leadership and management changes, growth strategies, marketing and merchandizing.

1.1.2 Supermarkets in Nairobi County

Supermarkets have been on the rising trend in Kenya, most especially in Nairobi County. People have become accustomed to the efficiency brought by shopping for all the things you need in one place. Supermarkets are known as self-service stores which save a lot of time. They also provide more options for the same product allowing you to choose the best product for your convenience and wishes. Supermarkets offer discounts on most of the items in display for sale since they buy goods at a lower price from producers. (Geeks for Geeks, 2024) This has made it essential to have at least a mini supermarket in all areas of the country. Due to the increased importance of supermarkets to the economy and consumers, the researcher looked into e-inventory systems for ways to optimize the current productivity.

Nairobi County has most of the biggest supermarkets in the country. All these supermarkets have one thing in common. They have integrated e-inventory into all their systems. Bar code scanners are used at all checkout points to identify the products that have been bought and those still on the shelves and on the stores. Some of their products like clothes use RFID technology for identification.

The employees also use RFID tags to mark attendance when they clock in. They have also incorporated EDI where they are able to communicate with suppliers real time on stocks currently on the stores and shelves, lead times, demand and supply among other things. This has also led to the adaptation of Vendor Managed Inventory. Cloud computing has also been

helping them manage customer satisfaction as all the data that is collected from customers is analysed and they are able to do targeted marketing. All this e-inventory management systems has enabled supermarkets to be efficient, effective and on top of the game for decades now.

1.2 Statement of Problem

E-inventory management systems are systems that use electronic data interchange (EDI) or internet technologies to manage inventory of goods and materials in an organization. They can help decrease costs, enhance efficiency, and better customer satisfaction. However, adoption of e-inventory management systems may vary depending on the level of development of a country (Setyawan, 2018, Makhfiroh, & Noor, 2020). Some of the differences and implications of e-inventory management systems adoption in developed and developing countries are: infrastructure, lack of favourable legal and regulatory frameworks that can facilitate the adoption and use of e-inventory management systems, such as clear standards, policies, and procedures for data security, privacy, and quality. Lack of study to understand the implication of these gaps is missing in the literature. In this day and age, all supermarkets have adopted e-inventory in some form or another. These systems leverage electronic data interchange (EDI) and internet technologies to efficiently manage inventory in organizations. They promise cost reduction, improved efficiency, and enhanced customer satisfaction.

The adoption of e-inventory systems varies based on a country's level of development. Developed countries often embrace these systems more readily, while developing nations face challenges related to infrastructure and regulatory frameworks. Despite the growing adoption, there's a lack of comprehensive studies exploring the implications of these gaps in e-inventory adoption. Understanding these implications is crucial for informed decision-making. In Nairobi County, Kenya, supermarkets like Mathais, Skymart, Greenmart, and East Matt predominantly use barcode scanners. Larger supermarkets have integrated multiple e-inventory systems for greater efficiency. Supermarkets employ a mix of technologies,

including RFID, EDI, Cloud Computing, and Vendor Managed Inventory, to achieve organizational objectives. This trend has significantly improved performance by streamlining demand-supply dynamics and enhancing communication among supply chain participants by 60%. (Researcher, 2024) Embracing e-inventory will benefit suppliers, businesses and customers all at the same time. This study aims to advocate for the use of e-inventory systems by showing their influence on the modern-day supermarket performance which strives for efficiency and effectiveness in day-to-day performance at the supermarket.

Businesses risk missing out on the competitive advantages of implementing e-inventory technologies like RFID and barcoding if this trend is not addressed. As a result, they may eventually lose their capability to face competition in the market and go out of business. Understanding how they affect supermarket performance can help identify any gaps in the capabilities and needs for optimizing this technology. These include the need to adapt and customize e-inventory management systems to the specific needs and context of the local area, taking into account factors like language, culture, environment, and customer preferences, as well as the need to overcome various risks and challenges associated with the adoption of e-inventory management systems. Business may benefit from the adoption and use of e-inventory management systems in terms of cost reduction, efficiency improvement, customer satisfaction enhancement, transparency promotion, and competitiveness increase. This study aims to advocate for e-inventory system adoption by showcasing their positive influence on modern-day supermarket performance. Efficiency and effectiveness are critical goals for supermarkets, and e-inventory systems play a pivotal role in achieving them.

This study bridges the gap between theory and practice, emphasizing the relevance of e-inventory systems in today's competitive retail landscape. By understanding their impact, we can drive informed decisions and propel supermarkets toward greater success. Efficiency and Effectiveness: E-inventory systems have revolutionized how supermarkets handle inventory.

Efficient management ensures products are available when needed, minimizing stock outs and excess inventory.

1.3 Research Objectives

1.3.1 Purpose of Study

The purpose of this study was to analyse influence of e- inventory management systems on performance of the supermarkets in Nairobi County, Kenya.

1.3.2 Specific Objectives

- i. To determine the influence of bar coding on performance of supermarkets in Nairobi County, Kenya.
- ii. To establish the influence of radio frequency identification on performance of supermarkets in Nairobi County, Kenya.
- iii. To evaluate the influence of electronic data interchange on performance of supermarkets in Nairobi County, Kenya.
- iv. To determine the influence of cloud computing on performance of supermarkets in Nairobi County, Kenya

1.4 Research Questions

- i. What was influence of bar coding on performance of supermarkets in Nairobi County, Kenya?
- ii. How does radio frequency identification influence performance of supermarkets in Nairobi County, Kenya?
- iii. What was the influence of electronic data interchange on performance of supermarkets in Nairobi County, Kenya?

- iv. How does cloud computing influence performance of supermarkets in Nairobi County, Kenya?

1.5 Significance of Study

First is that this research has added on to the growing knowledge of e-inventory to the respondents of this study. Supermarkets benefit from this study as they are able to see how e-inventory affects their costs, customer satisfaction and process efficiency. Employees could learn from this study as it shows how e-inventory can improve their work experience through improved accuracy and saving time. Conducting a study on the influence of e-inventory management systems on supermarket performance is a valuable endeavour. Supermarkets heavily rely on efficient inventory management to improve stock levels, lower costs, and boost customer satisfaction-inventory systems (such as bar coding, RFID, EDI, and cloud-based solutions) play a crucial role in streamlining inventory processes.

This study was also of value to the managers seeking to understand the value of e-inventory systems to the supermarkets' performance. Suppliers may also benefit from this study by getting some insights on how they can be able to manage demand and supply of their products through the technology of e-inventory thus ensuring utmost customer satisfaction. By embracing these technologies, supermarkets achieve better supply chain coordination, leading to improved overall performance. Efficient inventory management translates to better customer experiences, as products are readily available, and service quality improves. Customers may also benefit the most from this study as all parties of the supply chain use e-inventory systems to make sure that the demand of supplies are met in a timely manner. Academic scholars can use this study as reference material for future studies in the area of e-inventory. The recommendations here will guide researchers and businessmen on future endeavours in embracing e-inventory systems for sustainable businesses.

Findings from this study can guide supermarkets in adopting or optimizing e-inventory systems. These supermarkets operate across Nairobi County and even in the Diaspora, making their experiences relevant to different contexts. The fact that Nairobi County is a major commercial hub in Kenya, with a vibrant retail sector therefore studying supermarkets would allow for insights into urban retail dynamics and challenges. Improved inventory management can lead to cost savings, reduced stock outs, and better customer service.

1.6 Scope of Study

This study was undertaken in Nairobi County and involved four supermarkets which have fully fledged branches across the County and Diaspora namely Mathais, Skymart, Greenmart and East Matt supermarkets. Study targeted these four supermarkets since they cater to broader needs with their extensive inventory unlike other small supermarkets which specialize in specific goods and hence small inventory. The purpose of research was to examine contribution of electronic inventory management systems on operational efficiency of supermarkets in Nairobi County, Kenya.

This study included all 48 senior employees at corporate, business, and functional levels as the target population. This study utilized census sampling method to include all 48 senior executives from 14 divisions. The research utilized a method of census sampling in which every individual in the target population will be included in this study. The research employed primary and secondary data and information, which was analysed accordingly. Data analysis involved utilizing central tendency measures like means and frequencies, as well as standard deviations and regression analysis. The research is scheduled to occur from June to November 2023.

1.7 Limitations of the Study

Many researchers have studied how e-inventory has affected different industries all around the world. However, there is little research on contribution of e-inventory on supermarkets

specifically. The researcher also experienced constraints or challenges getting the supermarket management to approve their staff to be part of this study officially. Some of the branches were limited by general policies of the headquarters. The headquarters took too long to reply to the research requests and others refused to be part of this study. Due to this, it was also anticipated that the supermarket managers may take time to fill the questionnaires due to their busy nature. The researcher however extended time to allow those who were extremely busy to get adequate time to fill the questionnaire so as to get accurate data/ information for study.

1.8 Delimitations of Study

This study was limited to Nairobi County, Kenya. The findings were based on the opinions and experience of the warehouse/ storekeeping officers who work in supermarkets that were interviewed. This study focused on four elements only namely: Barcoding, RFID, Cloud computing and EDI in Supermarkets.

1.9 Assumptions of Study

The researcher anticipated that the selected sample reflected the entire population accurately. There was also a belief that the target population responded honestly since confidentiality was guaranteed. It was also assumed that the questionnaire was adequate to collect reliable data to inform the objectives of this study.

1.10 Operational Definition of Terms

Bar coding this refer to the process of generating and embedding relevant information within a barcode, which consists of a printed series of parallel bars or lines of varying width, barcoding allows us to represent data in a visual format that can be easily read by machines, making it an essential tool in modern supply chains and retail systems. It's a widely used method for tracking inventory, managing retail products, and facilitating efficient logistics.

Cloud computing means that computing resources (like storage and infrastructure) are readily accessible through the internet when needed. Simply put, it eradicates the need for organizations and individuals to personally handle physical resources. Instead, they have the ability to utilize these resources as easily adjustable, available services, and only paying for the amount they actually use.

Electronic Data Interchange, this refers to technology that enables businesses to exchange essential documents related to the trading of goods in a standard format. Instead of relying on paper-based documents like purchase orders or invoices, EDI automates transactions by allowing information to move directly from one computer application in an organization to another.

Radio Frequency Identification (RFID) this is referring to a wireless communication technology that utilizes electromagnetic waves to detect and monitor tags connected to items. RFID is essential in improving efficiency and inventory management in supermarkets.

Performance, this refers to the effectiveness with which an organization meets its objectives and goals. It is often evaluated using key performance indicators such as profitability, efficiency, productivity and customer satisfaction.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

Chapter two examines influence of electronic inventory management systems on operational efficiency of supermarkets in Nairobi County, Kenya.

2.1 Empirical Review

2.1.1 Bar Coding and Performance of Supermarkets

Barcode technology has grown significantly in acceptability and usage over time. Bar codes have been used for over five decades in various industries and have a proven track record of enhancing business processes globally. Researchers Mahee, Chowshury, Rahaman & Ahamad (2019) have demonstrated that bar codes are highly beneficial for cost management, error reduction, and supply chain visibility when implemented strategically. They also noted that bar-code technology is effective in identifying and deciphering several barcodes at once. A barcode is used to represent the product specifications for all types of products. The detection of barcodes is critical in collaborating products and matching the product ID to obtain information about the product. Normal barcode scanners take a long time to detect each barcode. Furthermore, these scanners are very expensive and require user guidance. The ideal goal is to assist in increasing productivity, reducing user guidance, saving time, opening a new window of comparison to reduce consumer confusion, and living a better life (Mahee, Chowdhury, Rahaman, & Ahamad, 2019).

A study by Swatheni (2016) on adoption on effectiveness of the barcoding system was also conducted in a hospital. This study's findings benefit medical personnel from the hospital's information system department as well as stakeholders. This study's findings can be used as a decision-making framework in the management of medical personnel, which can lead to high performance of hospital health services. Another study by Setyawan, Makhfiroh, Noor (2020), on the impact of barcoding in business transaction found that the fact that barcodes are

automatic, fast, and precise, they allow for accurate, simple, and cost-effective traceability means that they are able make transaction effective and overall business to be effective, On the other hand, QR codes are two-dimensional barcodes that are widely used for automated product tracking and customer identification.

Research conducted by Cooper (2019) indicates that companies can reduce costs by 30.0% by implementing automated technology, such as bar-code computing, leading to positive results like cost savings and increased efficiency. The findings also suggested that small and medium-sized businesses should take into account the security and privacy concerns related to Bar-code computing and put in place necessary actions to safeguard their confidential information. Another study Reddy, Kurnia, and Tortorella, (2022) barcodes are a popular tool for increasing efficiency and productivity across a wide range of industries. They are used to streamline data collection processes, reduce human error, and optimize workflows. In fact, studies show that using barcodes can result in an eight to ten-fold increase in productivity.

Study by Klin (2017) found that barcoding medication administration consistently reduced medication errors across all included studies. A different research project utilized barcode technology to improve electronic quality-assured patient recruitment and sample collection procedures, leading to the creation of a precise patient and specimen tracking system. Overall, barcode technology has been shown to be an effective tool for improving efficiency and reducing errors in various industries.

2.1.2 Radio Frequency Identification and Supermarkets' Performance

A lack of comprehension and willingness to embrace RFID among business owners in developing countries is a barrier to the use of Radio Frequency Identification (RFID). Khayyam et al (2022) suggests that developing-country business people are unfamiliar with RFID applications in business. This lack of innovation is attributed to a lack of infrastructure and awareness about the capabilities of RFID. The authors suggest that developing-country

industry practitioners can benefit from a framework for RFID implementation, which they can customize according to the nature of their organization. The suggested framework includes both technical and non-technical elements and aspects, which could facilitate the adoption and execution of RFID technology in emerging nations. Culture is a major obstacle for RFID implementation in Pakistan, standing out as a significant barrier. The absence of innovation is a result of inadequate infrastructure and limited knowledge of their potential.

Khayyam et al. (2022) suggest a model for integrating Radio Frequency Identification (RFID) technology in the retail industry of developing nations such as Pakistan. The suggested framework includes both technical and non-technical elements and would support the adoption and integration of RFID in developing nations. Tan and Sidhu (2022) conducted a study on the application of RFID in supply chain management (SCM) and found that RFID can help improve management system efficiency, maximize productivity, and reduce costs. They also investigated the current challenges in RFID implementation in the supply chain. The research aimed to bridge the gap by conducting a systematic review on the effectiveness, interoperability, scalability, and compatibility of RFID and information technology integration in SCM.

An examination of 25 conference papers, articles, and review papers in Scopus and 67 articles from popular publications such as Emerald Insight, Elsevier, and Sprouts found key topics and theories discussed, as well as the factors influencing cloud adoption in SMEs (Shetty & Panda, 2021). The research discovered that key factors like "cost" and "flexibility" provide numerous advantages of cloud computing, including both tangible and intangible benefits. Findings represent the combination of theoretical frameworks, including the Technological-Organization-Environment framework and Technology Acceptance Model.

In addition to SMEs, cloud computing has also impacted business efficiency in general. Properly implemented cloud computing efforts can benefit business efficiency by providing scalability, flexibility, and cost savings. In order to identify existing discoveries,

areas of study created, and research gaps to guide future research, another academic work looks at the status of research in Radio Frequency Identification and Supply Chain Integration.

Following a systematic review of literature, a total of 77 papers on the correlation between supply chain integration and cloud computing were discovered and are set for analysis. This research shows the correlation between the utilization of Radio Frequency Identification and the integration of supply chain partners, technology/system, and process/activity. The utilization of Radio Frequency Identification in the supply chain, as discussed in the literature, can affect the merging of information, physical, and financial factors (Novais, Maqueira, & Ortiz-Bas, 2019). Despite what is commonly thought, the wide range of security measures, automated upkeep, and centralized control in cloud computing can actually enhance businesses' security position. Cloud service providers with a good reputation utilize advanced security methods and top-notch staff, providing enhanced security measures. Additionally, they offer backup and disaster recovery solutions. When faced with an emergency like hardware failure, malicious threats, or user error, storing data in cloud can help avoid data loss. This enables businesses to continue their operations even in the event of a disruption (Unacademy, 2022). Cloud computing has disrupted the information technology industry by eliminating the requirement for costly hardware investments and IT infrastructure. Small and medium enterprises (SMEs) are an important market for cloud-based services because using managed services such as cloud sourcing can help lower costs and increase efficiencies.

A study conducted by Telco International with funding from Harvard University in (2016) found that RFID solutions offer numerous advantages for managing supply chains. They allow for immediate tracking of inventory, enabling companies to easily and precisely find items in their warehouses or along the supply chain process. RFID technology is also known to be more efficient in dealing with a high quantity of tags and substantial amounts of data at the same time. Nevertheless, it is crucial to collaborate with an expert who has a comprehensive grasp

of how this technology operates in different scenarios. RFID can only provide excellent outcomes for your business if it is implemented correctly.

2.1.3 Electronic Data Interchange and Supermarkets' Performance

Research published on Springer Link discovered that cloud computing benefits small and medium enterprises by enabling them to distribute their computing services and access them online without requiring program installations. This shift in IT organizations has led to the standardization and automation of many manual tasks, resulting in a successful commercial outcome. Other studies have also indicated that EDI has transformed business operations by offering a customizable infrastructure that is both flexible and scalable to meet individual needs. Electronic Data Interchange (EDI) allows businesses to enhance efficiency, cut costs, and boost revenue by facilitating electronic data exchange with trading partners. Automating data exchange between applications throughout a supply chain can assist in achieving higher visibility, efficiency, and streamlined workflows for businesses. According to Al-Wahaibi (2015), utilization of EDI Technology and Computing in Small and Medium-sized Enterprises in Malaysia can lead to a reduction of at least 35% in business operating costs by getting rid of costs linked to paper, printing, reproduction, storage, filing, postage, and document retrieval. A 2018 study by Deloitte revealed that many small and medium enterprises in developing nations have adopted EDI, resulting in a 61% faster business cycle due to automation of processes.

This automation significantly decreases administrative, resource, and maintenance costs by reducing or eliminating time delays typically seen in manual data entry, filing, and comparison processes. Management of inventories is optimized with live data updates, leading to decreased human errors and enhanced record precision. Manual procedures are very susceptible to mistakes, which frequently arise from messy handwriting, mistakes in entering data, and improper document management. By implementing EDI, an organization can greatly enhance

the quality of its data and avoid having to redo orders by decreasing transactions with errors by 30% to 40%.

A Deloitte study in 2018 revealed that many SMEs in developing countries have embraced EDI, resulting in greater business efficiency and reduced human error for improved efficiency levels. Instead of concentrating on boring and repetitive tasks, workers can dedicate their time to more valuable and meaningful activities. Faster delivery of goods and services due to EDI can also enhance an organization's management of customer and trading partner relationships. Al-Wahaibi (2015) carried out a research study on influence of Cloud Computing on small and Medium-sized Enterprises in Indonesia, explores the encounters of six grocery store franchises regarding the adoption of EDI technology in Canada. The authors assert that a reliable assessment of the success of benefits from EDI and other information systems can be obtained by comparing the expected benefits before implementation with the realized benefits after implementation. The research discovered that the adoption of EDI has led to significant improvements in efficiency for grocery store networks, has bolstered transaction security through the secure exchange of data using different communication protocols and security norms. Implementing EDI is a highly effective method for e-commerce companies to address and navigate various challenges within the industry.

2.1.4 Cloud Computing and Supermarket Performance

Research conducted by Paulo and colleagues in 2016 regarding the uptake and consequences of Cloud Computing among Small and Medium-Sized Enterprises in Portugal. The research employed a group of 200 supermarkets for this study. The methodology employed was correlational research design for the results. The findings indicated that many small and medium-sized businesses (SMBs) have embraced cloud computing, leading to lower expenses and increased productivity. The findings also showed that small and medium-sized businesses should take into account the security and privacy aspects of cloud computing and put in place

suitable measures to safeguard their confidential information. The research discovered that additional investigation is necessary to understand how cloud computing affects various categories of small and medium-sized businesses, including those in diverse sectors and regions.

Moreover, upcoming studies need to explore the security and privacy concerns related to cloud computing, as well as the strategies that small and medium-sized businesses can use to safeguard their confidential information. In conclusion, further studies are required to examine the lasting effects of cloud computing on growth and competitiveness of small and medium-sized businesses. This study sought to investigate how cloud computing affects small and medium-sized businesses (SMBs).

In 2015, Al-Wahaibi performed research to investigate effects of Cloud Computing on Small and Medium-sized Enterprises in Indonesia. The research emphasized the various advantages of cloud computing, such as reduced expenses, increased efficiency, and enhanced data security. This study's research design integrated both qualitative and quantitative data collection methods in a mixed methods approach. Qualitative data on SMBs' views and experiences with cloud computing were gathered through semi-structured interviews and focus groups.

The impact of cloud computing on small and medium-sized businesses (SMBs) was evaluated using data collection techniques emphasizing numerical information, such as surveys and statistical analysis, to detect trends and patterns. Data for this study was collected through semi-structured interviews with small and medium-sized business (SMB) owners and managers, holding focus groups with SMB employees, and distributing an online survey to a sample of SMBs. Semi-structured interviews and focus groups were carried out in order to collect qualitative data on the perspectives and encounters of small and medium-sized businesses (SMBs) using cloud computing. A study conducted by Deloitte in (2018) found that many small

and medium-sized enterprises in developing countries have embraced cloud computing, which has resulted in cost savings, increased efficiency, and improved competitiveness in their business operations. Our results help to enhance knowledge on how cloud computing affects SMEs and offer suggestions and advice for SMEs thinking about adopting cloud computing. A different research project published in the Journal of Computer Science & Systems Biology used a combination of various data collection methods and analysis techniques to study a group of SMEs. The research discovered that cloud computing benefits business organizations by boosting their profits. Additionally, it improves financial processes, enhances resilience, and aids in achieving business objectives.

2.2 Theoretical Review

A theoretical framework provides a foundational analysis of existing theories to help structure the rationale for your own research. This study of established theoretical frameworks aids to give a better understanding of the subject matter. Theories studied and which are relevant to this study of e-inventory are; Theory of technology adaption and diffusion, theory of technology instrumentalism and theory of supply chain management (resource based view).

2.2.1 Theory of Technology Adaption and Diffusion

E.M. Rogers introduced Diffusion of Innovation (DOI) Theory in 1962 as one of the initial social science theories. It initially emerged in communication to describe the process by which a particular idea or object gains approval and slowly spreads throughout a specific population or social structure. People incorporate a new idea, behaviour, or product into a social system through the spread of information. When someone adopts a new product or behaviour, they are said to have changed their previous actions. In order for someone to accept an idea, behaviour, or product, they must perceive it as new or inventive (Holden, 2021). Knowing the characteristics of a specific group of people that could either support or obstruct the adoption of a new product is essential when marketing it to them. Even though most people fall into the

middle categories of adopter types, it is crucial to understand the characteristics of the target audience. Various strategies are used to promote a new product in order to attract various groups of potential customers (Sirk, 2020).

People that are innovators strive to test out novel concepts initially. These people are willing to take chances and typically come up with innovative ideas first.

Early Adopters: These are the thought-leaders in the field. They are receptive to new ideas since they are already aware that change is necessary.

Early Majority: Although they don't often take the lead, these individuals are the first to adopt novel concepts.

Late Majority - These individuals are resistive to innovation and will only accept it after the majority has given it a shot.

Laggards – These folks are extremely traditional and conservative. They are the hardest to convince and the ones who are most resistant to change.

This theory accurately represents our modern world. Not every firm is typically adaptable to change. This theory will mainly help in understanding the rate at which EDI and cloud computing have been adapted in supermarkets. These two variables pose major risks that may or may not affect the adaptation trend in an organisation. In actuality, there is a lot of opposition to change in many areas of business. Businesses usually weigh the pros and cons of these trends and are still faced with difficulty to be among the early adopters due to the risks involved in adapting the change. These two variables mainly pose a concern to businesses due to cyber security issues and high cost of initial installation. (Researcher, 2024) The rate of change adoption always provides a competitive advantage and helps distinguish early adopters from laggards (Setyawan, ,2020).

A critique is that the Diffusion of Innovations Theory is sometimes misunderstood; leading people to believe that innovation is a personal trait, even though adopters frequently fit into multiple categories for various ideas. Hence, a person who adopts one invention slowly may do so quickly for a different innovation. Geoffrey Moore, the author of the book *Crossing the Chasm*, offers yet another argument against the Diffusion of Innovations Theory (2002). For discontinuous technology, where consumers must significantly alter their behaviour or other products and services they use, he contends that the adoption curve is not continuous (Taherdoost, 2023).

2.2.2 Instrumentalism Theory of Technology

Instrumentalism is John Dewey's practical philosophy that views thought, theories, and concepts as tools for resolving real-world issues. Past studies saw this theory as viewing technology as an unbiased tool or device used to carry out particular tasks for individuals. You determine if the users' motives are positive or negative. Proposed technologies can be utilized for either positive or negative purposes depending on the moral intentions of human actors. This theory posits that technology evolves over time, with new technologies being built upon the successes of past technological innovations. The purpose is to enhance productivity and efficiency as stated by Joseph in 2014.

Fernandez goes on to say that instrumentalists view technology as nothing more than a tool or neutral instrument that people utilize to advance their own objectives. The perception of technology is essentially neutral. An instrumental theory is less interested in the technology itself than in how people utilize it. This places more emphasis on how technology is used than how it was created. It also suggests that one must take use into account while determining value. This theory helped the researcher to understand how barcoding, RFID, EDI and cloud computing can be used by firms to maximize on the benefits to the businesses. The variables themselves are used as tools for businesses to achieve their core functions. The combination of

the use of these trends is what gives the firms a competitive advantage and leverage over others. The researcher aims to look into just how many these technologies are used as tools for business developments. (Researcher, 2024)

Gonzalez (2021), the unpredictability of instrumentalism has its critics. This uncertainty issue, which is sometimes linked to instrumentalism, is not specific to science but rather a problem that constantly affects all of human endeavour. Our minds are notoriously assessing the risks, even when this is untrue. Social scientists would refer to this as a psychological requirement, which is inadequate for science. The arguments against instrumentalism as a scientific technique are not strong enough to have an effect. (John, 2009). The theory is basically about how firms will deal with the limit and capability of these limitations to foster efficiency and this can be achieved by putting in place suitable inventory control mechanisms. Theory of constraints is an approach which put forward proposition is concerned with achieving a reduction of the organizational inventory.

2.2.3 Supply Chain Performance Theory - Resource-Based View

Jay Barney created it as an economic tool based on an article from 1991. The development of this idea has been significantly influenced by firm resources and long-term competitive advantage. The basic tenet of the resource-based theory is that a firm's competitive advantage essentially stems from how it uses and manages the priceless resources at its disposal (Corgi, 2020). Resource-Based View (RBV) theory states that a company's success in the market relies on its skill in combining its distinct, valuable, and non-substitutable assets and resources (Shan et al., 2019). The theory emphasizes that a firm's internal resources and capabilities can be enhanced and expanded by integrating external resources through an inter-organizational system. This integration can help the partners of the supply chain network achieve mutual goals (Falcone et al., 2020).

In today's age of information and knowledge, a large volume of data is created and shared among supply chain partners via Inter-organizational Systems (IOS). IOS assists businesses in handling the communication of data and information across the SC network between the sender and recipient. An effectively designed platform for sharing data can lead to increased visibility in the supply chain, giving companies up-to-date information and a comprehensive view of their partners throughout the entire process, from sourcing materials to delivering products to customers. Having access to the current whereabouts, production speeds, and delivery timetables of raw materials, components, and finished goods throughout the worldwide supply chain such as manufacturing facilities, port terminals, storage sites, or during transportation makes it simpler and faster to pinpoint disturbances, minimize their consequences, and enhance efficiency (Fahd, 2002; Petered, 2015).

Sharing information freely and making decisions together help to minimize the inefficiencies commonly found in unsynchronized partnerships. Improved utilization of IOS by supply chain partners indirectly enables partners to leverage synergies and enhance overall performance. Managing key resources is a crucial task for managers. After identifying its key resources, the organization must evaluate them. The criteria classify them as valuable, rare, non-substitutable, or imperfectly imitable. Following the evaluation, the resources that meet these criteria are developed, nurtured, and protected.

Wade and Holland (2010) state that resources, being valuable and scarce, can be utilized by a firm to gain competitive advantage in the short or long term, depending on how well the firm can prevent resource imitation, transfer, or substitution. The RBV theory focuses on how firms' internal resources and capabilities impact their strategic decisions in external business environment. It evaluates and understands organizations' internal resources and based on this they are able to see whether adapting trends like e-inventory systems are sustainable for them

long term. Adaptation of these trends solely depends on if the firm is financially able to support the change.

Firms can gain competitive advantages by possessing resources that are valuable, rare, inimitable, and non-substitutable. RBV suggests that not all resources within a firm are strategic and can lead to competitive advantage. Competitive advantage arises when there is diversity in resources and the resources are not easily transferable. Resource Based Theory offers a solid framework for explaining how resources and abilities impact e-inventory. The paper delves into the connections between internal resources, RFID capabilities, and barcode performance (Akhter, Uddin, & Jahan, 2018). Some companies struggle to adjust to new trends because their budgeting scheme lacks provisions. This results in a lack of ability to participate in e-inventory practices that would have ultimately been beneficial financially. Consequently, one of the most obvious and palpable parts of running a small business for many entrepreneurs is managing inventories. Finished items, goods in production, and raw materials are examples of different types of inventory. Every category denotes funds that are restricted until the inventory departs the business as acquired goods. Likewise, merchandise stocks in a retail store contribute to profits only when their sale puts money into the cash register. Literally speaking, inventory is the stock of anything needed to conduct business. These equities make up a sizable amount of the company's investment and need to be carefully managed to optimize returns. In actuality, a lot of small businesses are unable to sustain the kinds of losses brought on by inadequate inventory control. Stocks are expensive, ineffective, and unpredictable if they are not managed. Inventory is an idle stock of tangible items with economic worth that are maintained in different forms by an organization and are ready to be packed, processed, transformed, used, or sold at an alternative time. An organization's capacity to manage its inventory, which promises that a balanced supply of commodities is maintained at an appropriate quality, quantity, and readily availability at the required time and location, is

important to its ability to meet consumer requests while lowering costs or increasing profits. This section will review the literature on inventory management approaches.

2.2.4 Vendor Managed Inventory Theory

Vendor-Managed Inventory (VMI) is a concept that was first introduced by the multinational consumer goods company Procter & Gamble in collaboration with their retail partner, Walmart, in the 1980s. The core idea behind VMI is that suppliers take responsibility for managing inventory levels at the retailer's location, utilizing real-time data to optimize stock levels and reduce inefficiencies. This approach aligns with the Resource-Based View (RBV) of the firm, which emphasizes the importance of utilizing unique resources, such as supplier expertise and advanced technologies, to achieve a competitive advantage.

Key early research into VMI was conducted by (Gaur, Bienstock, & Ramaswamy, 2005), who examined how this model could enhance supply chain coordination, reduce costs, and improve operational efficiency. Their studies showed that VMI can lead to better inventory management by integrating suppliers more closely with retailers, ultimately resulting in lower stock-outs and overstocking situations. Further studies by researchers such as (Maina, 2018) explored the impact of VMI on supplier-retailer relationships and found that VMI leads to improved collaboration, more accurate demand forecasting, and cost savings. These studies highlighted the benefits of using technology, such as RFID and cloud computing, to track inventory levels and facilitate seamless replenishment.

However, researchers have also identified several gaps in the application of VMI. One significant gap is the dependence on suppliers for inventory management, which can introduce risks if the supplier's performance falls short. Retailers may feel they lose control over their inventory decisions, and this dependency can sometimes lead to inefficiencies. Additionally, the initial costs associated with implementing VMI systems, including technology and training,

have been noted as a barrier to adoption for some firms, particularly smaller ones. (Kwateng, Fokuoh, & Tetteh, 2022)

Another gap identified by researchers is the complexity of integrating VMI with existing systems. Studies have found that large organizations with complex supply chains may face significant challenges in aligning their traditional inventory management practices with VMI systems. Data security concerns also remain an issue, as sharing real-time inventory data between parties may expose sensitive business information. (Guo, Liu, Song, & Wang, 2024) Thus, while VMI offers considerable benefits, including improved inventory accuracy and cost savings, its implementation is not without challenges. Theoretical advancements are required to address these gaps, particularly in terms of managing supplier relationships, minimizing risk, and improving the scalability of VMI systems in diverse business contexts.



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2.3 Theoretical Framework

The theories underpinning this study variables are presented in figure 1. Instrumentalism theory of technology, theory of technology adaptation and diffusion and resource-based view theory.

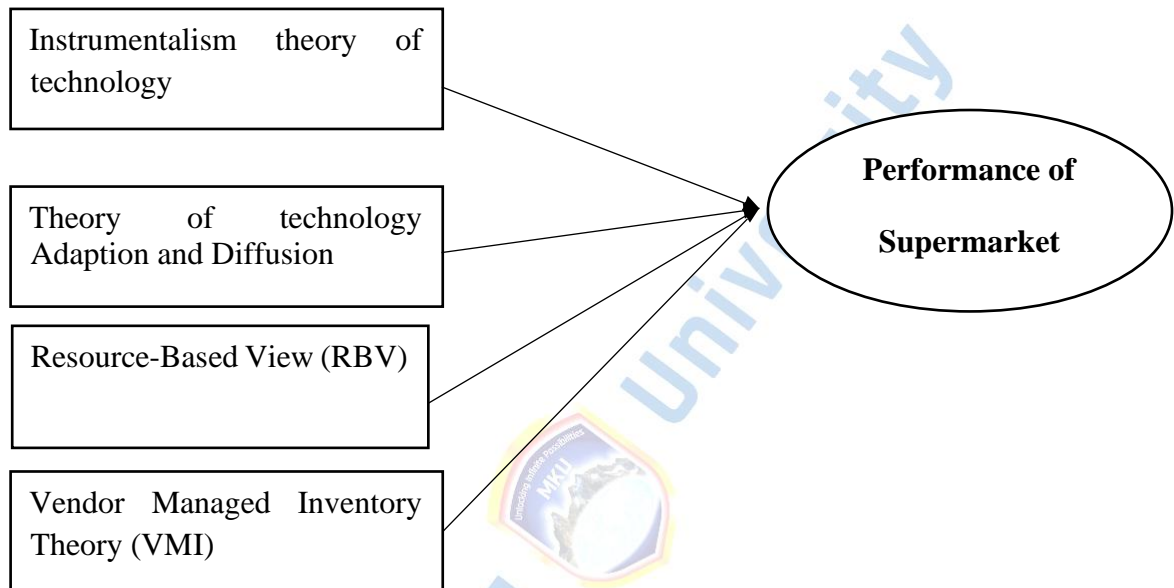


Figure 2.1 Diagram of Theoretical Framework

Source: Researcher (2024)

2.4 Conceptual Framework

This study's conceptual framework exemplifies how the dependent and independent variables interact. It demonstrates the connections between bar coding, cloud computing, electronic data exchange, and radio frequency identification.

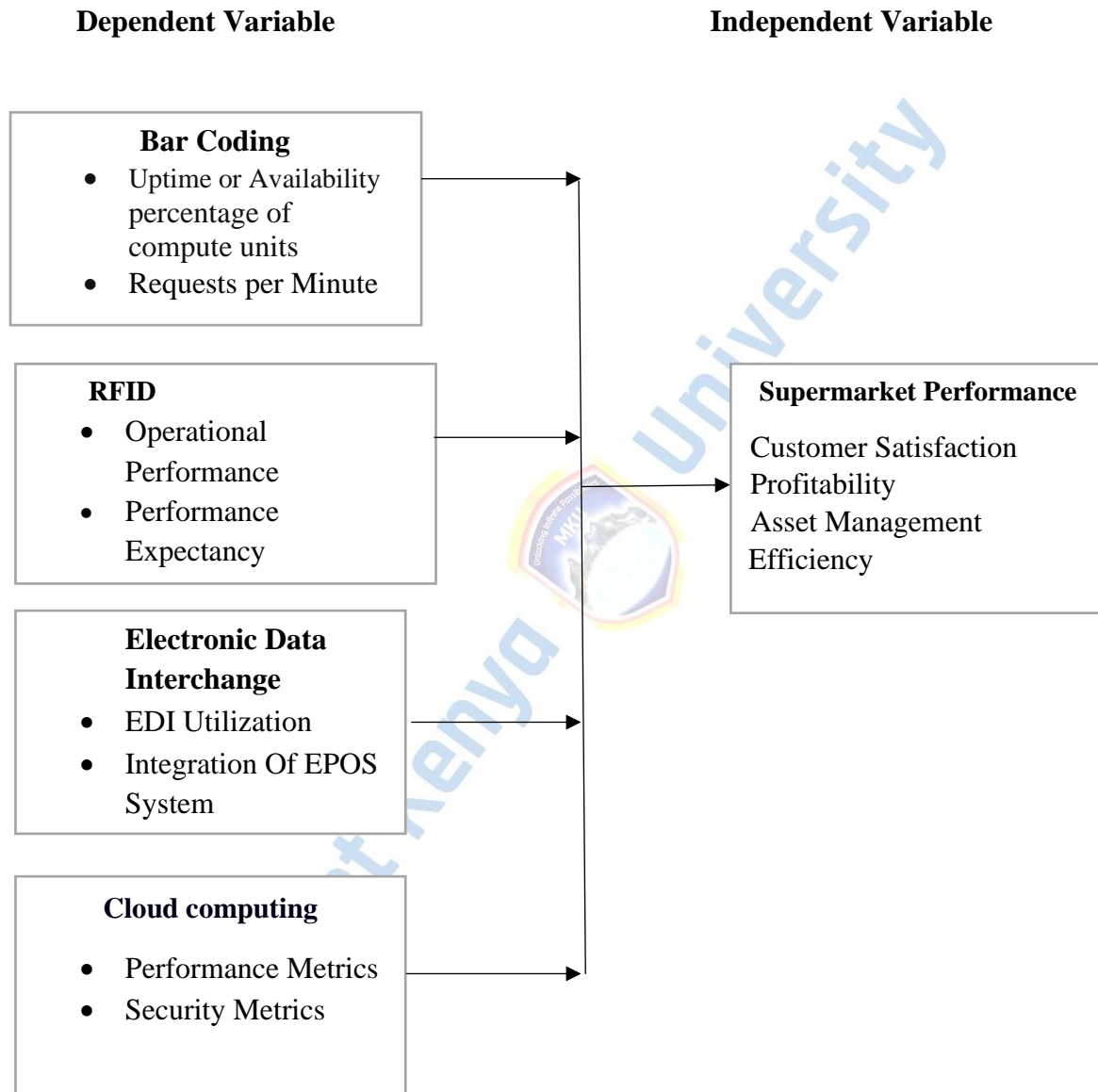


Figure 2.2 Conceptual Framework

Source: (Researcher, 2024)

2.4.1 Summary of Variables

According to scholars Mahee, Chowshury, Rahaman & Ahamad (2019), bar-code technology is very versatile in detecting and decoding multiple barcodes simultaneously bar coding aims to enable the requisite personnel and IoT devices to scan the barcode and accurately retrieve product data. Barcodes are a way to visually display data in a format that can be read by machines. Barcoding is now almost ubiquitous in the automation of supermarket checkout systems. It has also expanded for use in medical clinics, legal offices, postal services, shops, security systems, returning rental cars, and many more.

Tan and Sidhu (2022) researched the use of RFID in supply chain management (SCM) and determined that RFID has the potential to enhance efficiency, increase productivity, and cut expenses. RFID technology is especially beneficial in retail environments. Retailers can use radio waves to identify items and send data from an RFID tag to a reader, which enables precise, up-to-date tracking of inventory. This can aid retailers in enhancing visibility of their supply chain and accuracy of inventory, resulting in improved decision-making and efficiency.

According to Al-Wahaibi (2015), EDI is particularly beneficial in transactional businesses as it provides a dependable method for evaluating the effectiveness of EDI and other information systems. The research revealed that incorporating EDI has significantly increased efficiency in supermarket chains, improved transaction security by securely exchanging data through various communication protocols and security standards. Utilizing EDI is a highly effective method for ecommerce businesses to address and conquer a multitude of industry challenges.

In 2018, a study by Deloitte found that numerous small and medium-sized businesses in developing nations have adopted Cloud Computing. This technology has demonstrated advantages like reduced expenses, heightened productivity, and enhanced competitiveness through the utilization of online resources and web-based tools. It enables you to purchase only

the services you need, at the time you need them, reducing the initial costs of computers and peripherals.

2.5 Research Gaps

The results of earlier empirical studies have been discovered to contain flaws in methodology, conceptual, and contextually as observed on the theoretical framework and empirical review; previous researchers conducted their studies on public corporations globally. This may provide inaccurate findings as private corporations were not included in this study. Furthermore, the existing literature focuses on continents other than Africa, such as America, Europe, and some parts of Asia (Kassim, 2016). Locally, there is only a few public known research on e-inventory management systems in supermarkets. Also, e-inventory has been researched widely in the manufacturing and health industry, but none has been done in the retail sector.

This requires researching impact of e-inventory management systems on supermarkets' performance. A different research paper, printed on Springer Link, discovered that cloud computing benefits small and medium enterprises by enabling them to distribute their computing services and access them online without the necessity for program installations. This shift in IT organizations' economics has led to the standardization and automation of resources in various manual tasks, which has now become a successful commercial endeavour. In summary, research studies have proven that cloud computing has transformed businesses by offering a flexible and scalable infrastructure tailored to their individual requirements. It has assisted companies in boosting efficiency, cutting costs, and boosting revenue. The influence of electronic technology on business efficiency has been extensively researched as it has become a crucial component of modern business operations. Nevertheless, there are still deficiencies in the existing research regarding the effects of electronic technology on companies. (Researcher, 2024)

A literature review published in the International Journal of Organizational Analysis explored the role of technology in business survival during the Covid-19 lockdowns. This study established that adoption of technology plays a key role for small business survival during the Covid-19 pandemic. Another study published in Springer Link found that digital transformation has created new opportunities for businesses, but there is still a need for more research to understand how these opportunities can be leveraged. In conclusion, while there is a significant amount of research on the impact of electronic technology on businesses, there are still gaps in the literature.

Additional research is required to determine the potential benefits of using electronic technology to enhance business productivity and effectiveness. A research paper in the International Journal of Production Economics analysed how e-inventory management influences supply chain performance. The research discovered that implementing e-inventory management can enhance supply chain efficiency through lower inventory expenses and higher customer service levels. A different research paper in Springer Link investigated how e-inventory management can benefit small and medium enterprises (SMEs) by lowering inventory expenses, enhancing customer service, and boosting profits. The influence of electronic inventory management on business efficiency has been thoroughly researched, making it a key component in contemporary business operations. Nevertheless, there are still deficiencies in the existing research regarding the influence of e-inventory management on companies. Studies based on observation and experience have demonstrated that electronic inventory management has transformed the processes of businesses through offering a versatile and expandable system that can be tailored to individual requirements. Yet, more investigation is required to comprehend how the utilization of e-inventory management can enhance business effectiveness and productivity.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

Chapter three outlines the approach used for this study. This consists of methodology used for research, the design of study, the population of interest, size and procedures of sample, techniques for gathering data, methods of sampling, design of the research, and methods for analysing and presenting data.

3.1 Research Design

A research design is a set of guidelines for collecting and analysing data that seeks to strike a balance between efficiency and alignment with this study's objective (McKenzie, 2021). The researcher employed a descriptive research design in this study to assess impact of e-inventory management systems on performance of supermarkets. Descriptive research was useful in determining characteristics, frequencies, trends, and categories in a study. It proved beneficial in cases where there is insufficient data on the research subject or issue.

3.2 Area of the Study

The study will be conducted in selected supermarkets located in Nairobi County. The supermarkets are privately owned by local investors. They provide retail various good to the population within and outside Nairobi County which is estimated to be over 4 million. The county covers 695 Km².

3.3 Target Population

The target population comprises all elements under study (Saunders et al., 2014). It is essential that all elements and individuals being studied exhibit similar characteristics. In this study, the target population was all employees of four supermarkets in Nairobi County, Mathais, SkyMart, Greenmart and East Matt supermarkets. According to current Kenya Chamber of

Commerce Nairobi Branch data there are total of 3,750 employees working in the four targeted supermarket, as indicated in Table 3.1

Table 3.1 Target Population

| Respondents | Population |
|------------------------|-------------------|
| Eastmatt Supermarkets | 1800 |
| Mathais Supermarkets, | 1100 |
| Skymart Supermarkets | 530 |
| Greenmart Supermarkets | 320 |
| Total | 3750 |

Source: Kenya Chamber of Commerce Nairobi Brach (2023)

3.4 Sampling Techniques and Sample Size

3.4.1 Sampling Technique

The process of choosing a representative sample for a study's target population is known as the sampling technique (Sekaran&Bougie, 2013). Purposeful sampling, a method that involves deliberately selecting individuals, cases, or events with specific qualities that align with the study's objectives. This approach ensures focused data collection, providing deeper insights, especially in qualitative research and case studies, making the findings more relevant and meaningful. (Mugenda & Mugenda, 2014). The selected staff were considered by the researcher to have important knowledge about how e- inventory management systems on performance of the supermarkets in Nairobi County, senior employees of each supermarket made up the sample. Consequently, in order to meet the sample, each supermarket sent one representative from each of the following 10 departments: CEO, operations manager, marketing manager, HR manager, strategic manager, IT manager, finance manager,

procurement manager, quality assurance manager, general manager, Diaspora extension manager, and branch service manager.

3.4.2 Sample Size

Therefore, the sample was 48 employees as shown in table Table 3.2.

Table 3.2 Sample Population

| Category | Sample size | Percentage |
|----------------------------|-------------|------------|
| Chief Executive Officer | 4 | 8.33 |
| Operations Manager | 4 | 8.33 |
| Marketing Manager | 4 | 8.33 |
| Human Resources Manager | 4 | 8.33 |
| Strategic Manager | 4 | 8.33 |
| IT Manager | 4 | 8.33 |
| Finance Manager | 4 | 8.33 |
| Procurement Manager | 4 | 8.33 |
| Quality Assurance Manager | 4 | 8.33 |
| General Manager | 4 | 8.33 |
| Diaspora Extension Manager | 4 | 8.33 |
| Branch Service Manager | 4 | 8.33 |
| Total | 48 | 100 |

Source: Kenya Chamber of Commerce (2023)

3.5 Data Collection Instruments

The questionnaire served as the data collection tool in this study. This was beneficial for gathering primary data as it involved obtaining data directly from the original sources. In accordance with (Simplilearn, 2023), primary data is information obtained directly from the

source by the researcher and was deemed more dependable and current. The questionnaires were self-administered through email and use of Google forms. Email method was chosen in this study due to its efficacy, and easy way to administer time and its less costly (Jotform, 2023). All email addresses were collected from the Nairobi Business Directory and individualized emails sent to all participants, asking for a response within seven business days. Afterwards, notifications were sent to individuals who were yet replied within the specified timeframe.

3.6 Pilot Study

Based on Mugenda and Mugenda's (2003) suggestion, approximately 10% of the sample size was chosen from the target population as a pilot group to evaluate the research instrument's validity. The initial test phase involved Eastmatt supermarket in Nairobi that has also implemented E-Inventory, in alignment with Mugenda and Mugenda's (2003) recommendation that a sample size of 10-20% of the population is adequate for pilot testing research instruments. Four senior staff of Eastmatt supermarket were purposefully selected to participate in the pilot study. The reliability of Likert scale questions within each variable were evaluated with the Cronbach's alpha test using SPSS. Cronbach's alpha assesses the reliability of a survey tool by evaluating internal consistency via the average correlation of each item (Kothari, 2009). Cronbach's alpha usually ranges from 0 to 1, indicating reliability.

3.6.1 Validity Test

Validity evaluates the accuracy of research results or if this study effectively measures what it intends to measure. The reliability of the research instrument is assessed by looking at how consistent the results are when using a similar method, their endurance over time, and how well they reflect the entire study population (Taherdoost, 2015). Validity measures how accurately data analysis findings reflect the phenomenon under examination (Orodho (2009) describes validity as a preliminary qualitative evaluation of research tools to determine their accuracy,

correctness, truthfulness, significance, and appropriateness in gathering the required data for this study. Hence, experts on the subject was used evaluate the instrument's content validity to ensure that the questionnaire includes appropriate measuring techniques and covers relevant topics.

3.6.2 Reliability Test

The reliability of a research instrument is determined by how consistently it produces data in repeated trials or when given to the same respondents at multiple times with a significant time gap between administrations (Mugenda and Mugenda, 2003). Typically, a reliability coefficient above 0.7 is deemed satisfactory. Using the reliability test results, the researcher was able to adjust or revise the questionnaire as needed to guarantee its reliability in collecting the necessary data for this study's goals. It helped verify any inconsistencies and guarantee precise measurement of this study's intended subject. The researcher tested the data collection tool to verify its precision.

3.7 Data Analysis and Presentation

Calzon (2023) states that data analysis involves preparing and condensing data into easily understandable information to facilitate decision-making. The process includes sorting, organizing, and summarizing the data gathered. Analysing the questionnaire results thoroughly is necessary to verify the accuracy and consistency of the collected data. In addition, descriptive statistics like mean, standard deviation was utilized to determine the overall traits of the population being examined. The study used descriptive statistics before inferential statistics. SPSS software version 25 was used to process primary data which were then represented in terms of frequencies, summaries and percentages. Further, inferential statistics were used to analyse quantitative data through the use of multiple Linear Regression model to establish the significance of the independent variables on the dependent variable.

To understand the strength of relationship between the variables, Pearson correlation coefficient will be used. Kasomo (2006) stated Pearson Correlation Coefficient is commonly used in linear regression and is a measure of the strength of the association between two variables. Mugenda and Mugenda (2003) have retaliated that the calculation of a Correlation Coefficient gives a statistic that ranges from -1 to 1 which is known as a Correlation Coefficient. The Correlation Coefficient tells a researcher the magnitude and direction of the relationship between two variables and the bigger the coefficient the stronger the association between the two variables. The duo are emphatic that if the correlation coefficient is positive (+), it means that there is a positive relationship between the two variables and vice versa. As the rule of thumb, the following guidelines on strength of relationship are often used, though many experts would somewhat disagree on the choice of boundary (see Table 3.2).

Table 3.3 Guidelines on Strength of Relationship

| Value of r | Strength of Relationship |
|----------------------------|--------------------------|
| -1 to -0.5 or 1.0 -0.5 | Strong |
| -0.5 to -0.3 or 0.3 to 0.5 | Moderate |
| -0.3 to -0.1 or 0.1 to 0.3 | Weak |

Source: Choudhury (2009)

Therefore, regression analysis was conducted to determine how the four predictors of e-inventory management systems (RFID, barcoding, EDI, cloud computing) are related to performance of supermarkets in Nairobi County, Kenya. The following is the regression model:

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

Y=the supermarket performance

X₁=utilizing barcodes

X₂=utilizing Radio Frequency Identification

X₃=utilizing Electronic Data Interchange

X_4 =utilizing Cloud Computing

β_0 is a constant representing the dependent variable's value when all independent variables are at 0

β_1 - β_4 = represents the regression coefficients that calculate the impact caused by $X_1 - X_4$ and ε error term

3.7.1 Normal Test

The normality of the performance of supermarket performance as a dependent variable was determined by use of a Quantile - Quantile (Q-Q) plot. Q-Q plot is a plot of the percentiles of a standard normal distribution against the corresponding percentiles of the observed data. If the observations follow approximately a normal distribution, the resulting plot should be roughly a straight line with a positive slope. If the plots are aligned on the line $x=y$, then the data are normally distributed. A normal test was then used to fit a multiple regression model and for the fit to be done, the dependent variable must have been normally distributed.

3.8 Ethical Considerations

The researcher had an obligation to uphold utmost confidentiality in regard to the information provided by the respondents. Therefore, all information provided was used for this study only. In addition, participation was voluntary and therefore participants had a right to or not to participate to this study without any repercussions. The researcher explained the purpose of this study to all the respondents and only those who give consent were recruited to take part in this study.

The researcher asked appropriate organizations and participants for their permission and approval. The researcher applied for a permit from the National Commission for Science, Technology, and Innovation (NACOSTI), also sent letters requesting permission to collect data from all of the targeted institutions and respondents. The University and any other interested

parties involved in this study received this study's findings along with other pertinent stakeholders.



CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This part is an analysis of how management of E-inventory systems have influenced the supermarkets in Nairobi County, Kenya in their performance. The former section discusses the aspects of descriptive collected data like demography of the collected data while preceding part focuses on quantitative or inferential statistics. This chapter also comprises of the outcomes of this study and discussions thereto. The findings of this study answer research questions.

4.1 Response Rate

Self-administered questionnaires was used to collect primary data was collected of which out of 48 anticipated respondents, 42 of the questionnaires were filled and returned, which is 85.3 % rate of response which was considered sufficient. (Okoth, 2018). According to Sekaran (2008), a rate of 60% response of the total is mostly deemed enough for social science research projects analysis. The response rate is summarized in Table 4.1 below.

Table 4.1 Response Rate

| Description | Numbers |
|-----------------------------------|----------------|
| Number of targeted respondents | 48 |
| Actual participants in the survey | 42 |
| Number of non-response. | 6 |
| Response rate percentage | 87.5% |

4.2 Reliability and Validity Findings

Below is the result of reliability test.

Table 4.2 Internal consistency of Scale

| Constructs | No. of Items | Cronbach's alpha |
|-----------------------------------|--------------|------------------|
| 1. Bar coding | 6 | 0.820 |
| 2. Radio frequency identification | 5 | 0.825 |
| 3. Electronic data interchange | 5 | 0.855 |
| 4. Cloud computing | 5 | 0.835 |
| 5. Performance of supermarkets | 7 | 0.842 |

Source: Survey Data, (2024)

The table shows that electronic data interchange held the highest reliability (Alpha = 0.855), followed by cloud computing (Alpha = 0.835), radio frequency identification pricing (Alpha = 0.825) and finally bar coding (Alpha = 0.820). This just shows that all four variables are reliable as their reliability was above the recommended threshold of 0.7.

Mugenda and Mugenda (2003) have explained that validity is the accuracy and meaningfulness of inferences which are based on the research results. Hence, validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. It relates to how accurately the data obtained in the study represents the variables of the study. If such data is a true reflection of the variables, then inferences based on such data are accurate and meaningful.

4.3 Background Information

This is comprised of results indicating the respondents' highest level of education and working experience. The record of responses is indicated in tables 4.3 and 4.4.

4.3.1 Level of Education

This study entailed secondary level, college level, university level, post graduate level, professional qualification who were working in supermarkets within Nairobi County. Responses of this study are recorded in the table below.

From the below, most of respondent sampled have a formal education. 38.1 % had college level education while 35.71% had university level of education. It was evident that 9.52% had attained post graduate level of education. This summarizes that the highest number of the respondents are college level education certified and on the contrary, lowest percentages of the respondents had professional qualification certification. This results therefore shows that most of participants have been through some form of formal education and are well equipped with the ability to understand research area being investigated by researcher.

Table 4.3 Distribution of Respondents Based on Highest education qualification

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------------------|-----------|--------------|---------------|--------------------|
| Secondary level | 5 | 11.91 | 11.91 | 11.91 |
| College level | 16 | 38.1 | 38.1 | 50.01 |
| University level | 15 | 35.71 | 35.71 | 85.72 |
| Post graduate Level | 4 | 9.52 | 9.52 | 95.24 |
| Professional qualification | 2 | 4.76 | 4.76 | 100.0 |
| Total | 42 | 100.0 | 100.0 | |

Source (Researcher, 2024)

4.3.2 Work experience

Table below shows distribution of respondents sampled according to the period they have worked at the supermarket. According to the Table 4.4, majority of sample population (38.1 %) agreed that they worked in the supermarket for a duration of between 9-12 years. This is closely followed by 28.57% who worked with them for approximately 13-18 years. Only 1.6 % agreed that they worked for a supermarket for between 21-25 years. This implies that majority of respondents in this study area have worked for a considerable amount of time with the supermarket hence considered knowledgeable in that area under research.

Table 4.4 Distribution of Respondents Based on years of experience at those supermarkets

| Year of experience | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|------------------|----------------|----------------------|---------------------------|
| Less than 3years | 2 | 4.76 | 4.76 | 4.76 |
| Between 4-8 years | 10 | 23.81 | 23.81 | 28.57 |
| Between 9-12 yrs. | 16 | 38.1 | 38.1 | 66.67 |
| Between 13-18years | 12 | 28.57 | 28.57 | 95.24 |
| 19 years and above | 2 | 4.76 | 4.76 | 100.0 |
| Total | 42 | 100.0 | 100.0 | |

4.4 Descriptive Statistics

This section comprised of this interpreted data of this study objectives and presented using tables. This study sought the respondents opinions in reference to influence of e-inventory management systems on how it influences the performance of supermarkets in Nairobi County, Kenya using a scale of 1-5, where; 1. Strongly Disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly Agree. Their responses were recorded in tables 4.5, 4.6, 4.7, 4.8, 4.9 and 4.10.

4.4.1 Bar Coding and supermarkets' performance.

This study was aimed at investigating the extent to which you agree with each statement in this context of influence of bar coding on performance of supermarkets in Nairobi County. This respondents were required to give their opinions, their responses were recorded in table 4.5 below.

Table 4.5 Barcoding and supermarkets' performance

| Statements | N | Min | Max | Mean | Std. Dev |
|---|-----------|-----|-----|-------------|--------------|
| Your organization has fully integrated barcoding into its daily operations. | 42 | 1 | 5 | 3.62 | 1.126 |
| Barcoding has led to improved sales and tracking. | 42 | 1 | 5 | 3.62 | .997 |
| Barcoding influences inventory turnover positively. | 42 | 1 | 5 | 3.50 | 1.013 |
| Employees approve of the efficiency brought by barcoding. | 42 | 1 | 5 | 3.48 | 1.021 |
| Management is able to use the analysed data from barcoding to make decisions. | 42 | 2 | 5 | 3.66 | .976 |
| Operations have become effective and efficient due to use of barcoding. | 42 | 1 | 5 | 3.58 | .993 |
| Overall Mean score | 42 | | | 3.58 | 1.021 |

Source (Researcher, 2024)

These outcome of descriptive statistics as tabulated in table 4.6 above, with N = 42 as its sum of respondents depicts the findings as shown below. In summary, barcoding has been reported to be widespread to a moderate extent as seen by this mean value of 3.58 and a standard

deviation value of 1.021 in supermarkets in Kenya. This infers that supermarkets have adopted barcoding moderately to enhance this performance of those supermarkets though much needs to be done.

4.4.2 Radio Frequency Identification and Supermarkets' Performance

This study also requested these respondents to give their opinion on this influence of radio frequency identification on performance of supermarkets.

Table 4.6 Radio Frequency identification and supermarket performance

| Statements | N | Min | Max | Mean | Std. Dev |
|--|-----------|-----|-----|-------------|--------------|
| Your organization uses RFID as an inventory management system. | 42 | 1 | 5 | 3.30 | .951 |
| RFID improves tracking thus loss of products is minimal and there is greater visibility. | 42 | 2 | 5 | 3.50 | .939 |
| Management is able to use the analysed data from RFID to make decisions. | 42 | 2 | 5 | 3.56 | .902 |
| RFID optimizes transportation and routing. | 42 | 1 | 5 | 3.54 | .903 |
| RFID reduces costs over a period of time. | 42 | 1 | 5 | 3.60 | .842 |
| Overall Mean score | 42 | | | 3.50 | 0.913 |

Source (Researcher, 2024)

These outcome for descriptive statistics as depicted in table 4.6 above, with N = 42 as the total sum of sample respondents, in overall, it was established that radio frequency identification is moderately prevalent in supermarkets in Nairobi County as indicated by this gross mean value of 3.50 and a standard deviation value of 0.913. This consequently infers that supermarkets

have adapted Radio frequency identification to a moderate extent to enhance the performance of those supermarkets though much needs to be done.

4.4.3 Electronic Data Interchange and Supermarkets' Performance

This study sought to find out this respondents view on influence of Electronic Data Interchange on performance of supermarkets.

Table 4.7 Electronic Data Interchange and Supermarkets' Performance

| Statements | N | Min | Max | Mean | Std. Dev |
|---|-----------|-----|-----|-------------|--------------|
| Management uses EDI for decision making. | 42 | 1 | 5 | 3.49 | .819 |
| EDI enhances communication among vendors, employees and customers. | 42 | 1 | 4 | 3.21 | .892 |
| EDI promotes shorter lead times thus ensuring customer satisfaction. | 42 | 1 | 5 | 3.22 | .912 |
| Automation promotes efficiency and effectiveness of supermarket operations. | 42 | 1 | 5 | 3.26 | 1.099 |
| EDI promotes minimal errors in operations. | 42 | 1 | 5 | 3.22 | 1.267 |
| Overall Mean score | 42 | | | 3.28 | 0.998 |

Source (Researcher, 2024)

This outcomes for descriptive statistics as depicted in table 4.7 above, with N = 42 as this sum of respondents, in overall, it has been demonstrated that electronic data interchange is moderately widespread in supermarkets in Nairobi County as indicated by this gross mean value of 3.28 and a standard deviation value of 0.998. This consequently implies that supermarkets have adopted electronic data interchange technology to a moderate extent to enhance this performance of this supermarket in Nairobi County.

4.4.4 Cloud Computing and Supermarkets' Performance

Table 4.8 Cloud Computing and Supermarkets' Performance

| Statements | N | Min | Max | Mean | Std. Dev |
|--|-----------|-----|-----|-------------|-------------|
| Cloud computing gives companies the opportunity to store large amounts of data for future use. | 42 | 2 | 5 | 3.73 | .874 |
| Efficiency is achieved due to easy access of processed and unprocessed data. | 42 | 2 | 5 | 3.79 | .626 |
| Cloud computing aids in management decision making. | 42 | 2 | 5 | 3.78 | .658 |
| Cloud computing enhances security of the organisation both online and physically. | 42 | 1 | 5 | 3.74 | .772 |
| Customer satisfaction is achieved due to targeted marketing from the data obtained from cloud computing. | 42 | 1 | 5 | 3.78 | .802 |
| Mean score | 42 | | | 3.76 | .746 |

Source (Researcher, 2024)

This outcomes for descriptive statistics as depicted in table 4.8 above, with N = 42 as this total number of respondents, in overall, it has been shown that cloud computing is moderately prevalent in supermarkets in Nairobi County as shown by this gross mean value of 3.76 and a standard deviation value of 0.746. This consequently infers that supermarkets have adapted cloud computing technology to a moderate extent to enhance the performance of the supermarket in Nairobi County.

4.4.5. Supermarkets' Performance

This study also requested the respondents to give their opinion on each statement in the context of the performance of supermarkets for the last 2 years.

Table 4.9 Supermarkets' Performance

| Statements | N | Min | Max | Mean | Std. Dev |
|---|-----------|-----|-----|-------------|--------------|
| Customer loyalty and satisfaction has improved for the last 2 years | 42 | 1 | 5 | 3.49 | .819 |
| Gross margin for the supermarket has improved for the last 2 years | 42 | 1 | 4 | 3.21 | .892 |
| Inventory turnover has improved hence sustaining supply chain | 42 | 1 | 5 | 3.22 | .912 |
| Price perception in the supermarket has improved. | 42 | 1 | 5 | 3.26 | 1.099 |
| Product availability has improved because of improved efficiency | 42 | 1 | 12 | 3.22 | 1.267 |
| Employee retention has improved | 42 | 1 | 5 | 3.46 | 1.111 |
| Supermarket profitability has improved | 42 | 1 | 5 | 3.40 | .925 |
| Mean score | 42 | | | 3.32 | 1.004 |

Source (Researcher, 2024)

This outcome for descriptive statistics as depicted in table 4.9 above, with N = 42 as this sum of respondents, in overall, it has been demonstrated that performance of supermarkets in Nairobi County has moderately improved as shown by this overall mean value of 3.32 and a standard deviation value of 1.004. This, as a result, implies that bar coding, radio frequency identification, electronic data interchange and cloud computing adapted by supermarkets have moderately enhanced the performance of the supermarket in Nairobi County.

4.4.6 Normality test

Normal Test Normal Test of the items of performance of state corporations as a dependent variable was carried out by use of a Q - Q Plot. Q-Q Plot provides a quick way to get a feel of whether data are distributed normally (Mugenda and Mugenda, 2003). The results of the Q - Q Plot indicated that the dependent variable was normally distributed (see Figure 4.1).

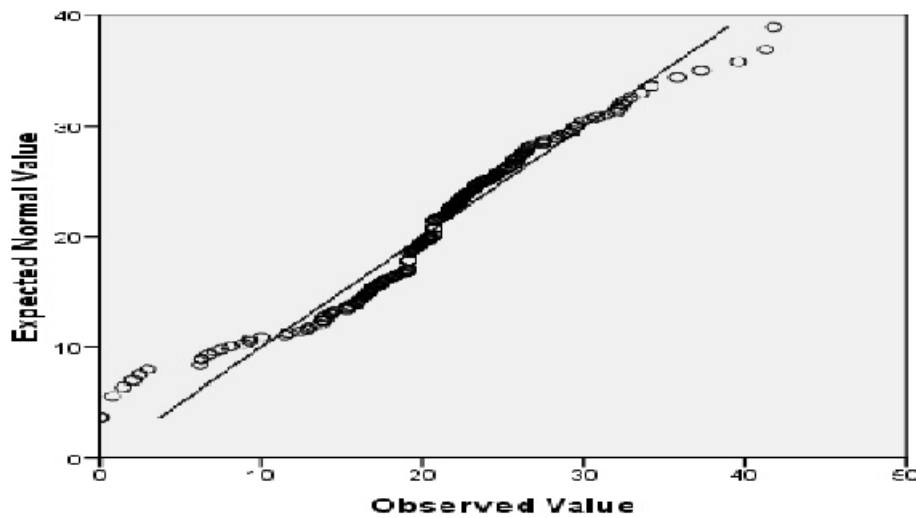


Figure 4.1 Normal Q-Q plot for Supermarket Performance

4.5 Inferential analysis

4.5.1 Correlation Analysis

Table 4.10 Correlation analysis

| | | Bar coding | RFID | Electronic data interchange | Cloud computing | Supermarket Performance |
|-----------------------------|-----------------|------------|--------|-----------------------------|-----------------|-------------------------|
| Bar coding | Pearson | 1 | .899** | .908** | .278** | .746** |
| | Correlation | | | | | |
| | Sig. (2-tailed) | | .000 | .000 | .000 | .000 |
| RFID | N | 175 | 175 | 175 | 175 | 175 |
| | Pearson | .899** | 1 | .875** | .327** | .806** |
| | Correlation | | | | | |
| | Sig. (2-tailed) | .000 | | .000 | .000 | .000 |
| Electronic data interchange | N | 175 | 175 | 175 | 175 | 175 |
| | Pearson | .908** | .875** | 1 | .339** | .875** |
| | Correlation | | | | | |
| | Sig. (2-tailed) | .000 | .000 | | .000 | .000 |
| Cloud computing | N | 175 | 175 | 175 | 175 | 175 |
| | Pearson | .278** | .327** | .339** | 1 | .496** |
| | Correlation | | | | | |
| | Sig. (2-tailed) | .000 | .000 | .000 | | .000 |
| Supermarket Performance | N | 175 | 175 | 175 | 175 | 175 |
| | Pearson | .746** | .806** | .875** | .496** | 1 |
| | Correlation | | | | | |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | |
| | N | 175 | 175 | 175 | 175 | 175 |

** . Correlation is significant at the 0.01 level (2-tailed).

Findings of the Correlation analysis show that all the study variables have a strong linear relationship with Supermarket performance. Electronic data interchange has the highest relationship with $r = .0.875$, $p < .01$, while cloud computing had the lowest but most important relationship with $r = .496$, $p < .01$. Furthermore, the findings show that RFID had significant association with Supermarket performance, as shown by $r = .806$, $p < .01$ whereas Bar coding has significant relationship with Supermarket performance as shown by $r = .746$, $p < 0.01$.

4.5.2 Regression Analysis

To actualize this study objectives, a regression analysis between these four dimensions of E-inventory management namely: bar coding, radio frequency identification, electronic data interchange and cloud computing was done. This direction and size of influence or effect of each of these dimensions of E-inventory management on performance of supermarkets in Nairobi County was finally determined using this regression method whose findings were presented in the three Tables below.

The table below gives this model summary which has established that the ratio of variance in this supermarket performance that is associated with the independent variables is 51% ($R^2 = .510$, $p < 0.001$). Since the F-statistic is significant and indicates that these independent variables collectively acting influence the dependent variable, the coefficient of determination ($R^2 = 0.510$) and this model are both acceptable. From the analysis, the value of Durbin-Watson is 1.802 which is within the acceptable range of between 0 to 4. Given that our value is near to 2, serial correlation is not present.

Table 4.11 Estimated Model of Supermarket performance

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | Durbin-Watson | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|--------|-----|-----|---------------|-------|
| | | | | | R Square Change | F | df1 | df2 | | Sig. |
| 1 | .714 ^a | .510 | .498 | .34863 | .510 | 42.024 | 4 | 42 | .000 | 1.802 |

a. Predictors: (Constant), Bar coding mean score, Radio frequency identification mean scores, electronic data interchange mean score and cloud computing mean score

b. Dependent Variable: Supermarket performance mean score

Table 4.12 shows ANOVA outcomes of this estimated model. This data test established that $F(4, 38) = 42.024$ at $p < 0.01$, an indication that this model fits this research data well. The researcher can therefore conclude that all these independent variables (i.e. bar coding, radio frequency identification, electronic data interchange and cloud computing) jointly explain the performance of the supermarkets in Nairobi County.

Table 4.12: ANOVA Results on the Estimated supermarket performance Model

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|----|-------------|--------|-------------------|
| Regression | 15.323 | 4 | 5.108 | 42.024 | .000 ^b |
| Residual | 14.706 | 42 | .122 | | |
| Total | 30.029 | 46 | | | |

a. Dependent Variable: Supermarket performance average score

b. Predictors: (Constant), Bar coding mean score, Radio frequency identification mean scores, electronic data interchange mean score and cloud computing mean score

The unfitted regression model was in this form $Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \epsilon_i$ and by adding regression coefficient as was shown in Table 4.13. This was later transformed into:

$$Y = 3.263 + 1.204 \times \text{Bar coding} + 0.296 \times \text{RFID} + 0.552 \times \text{Electronic data interchange} + 0.232 \times \text{Cloud computing} \dots\dots\dots \text{equation 4.1}$$

$$R^2 = 0.51 \text{ (51\%)}$$

Table 4.13: Coefficients of Independent Variables

| Model | Standard | | | | | | | | | |
|-----------------------------|----------------|------------|------|-------|------|---------------------------------|-------------|-----------|-------|-------------------------|
| | Unstandardized | | | | | 95.0% Confidence Interval for B | | | | Collinearity Statistics |
| | Coefficients | | Beta | t | Sig. | Interval for B | | Tolerance | VIF | |
| | B | Error Std. | | | | Lower Bound | Upper Bound | | | |
| (Constant) | 3.263 | 3.083 | | 1.058 | .295 | -2.933 | 9.459 | | | |
| Bar coding | 1.204 | .190 | .472 | 6.322 | .000 | .821 | 1.587 | .600 | 1.667 | |
| RFID | .296 | .246 | .210 | 1.201 | .000 | -.199 | .791 | .110 | 9.122 | |
| Electronic data interchange | .552 | .142 | .301 | 3.887 | .000 | .267 | .838 | .557 | 1.797 | |
| Cloud computing | .232 | .273 | .136 | .849 | .001 | -.317 | .780 | .129 | 7.723 | |

a. Dependent Variable: Supermarkets' performance

4.5.1 Contribution of bar coding on performance of supermarkets in Nairobi County, Kenya

The first objective of this research was to determine contribution of bar coding on performance of supermarkets in Nairobi County, Kenya. In this context, Bar coding was established to have a significant positive influence on employee productivity ($\beta=1.204, p=0.000$). This means that a change in bar coding practices causes 1.204 change in supermarket performance and the change is significant. This means that bar coding is a critical determinant of supermarket performance in Nairobi, County.

This result that bar coding has contributed significantly in the performance of supermarkets in Nairobi County has accrued some support from theoretical literature in addition to past empirical studies. For instance, Mahee, et al (2019) have demonstrated that bar codes are highly

beneficial for cost management, error reduction, and supply chain visibility when implemented strategically. They also noted that bar-code technology is effective in identifying and deciphering several barcodes at once. This study established that barcoding assist in increasing productivity, reducing user guidance, saving time, opening a new window of comparison to reduce consumer confusion, and living a better life. Similarly, a study by Swatheni (2016) on adoption on effectiveness of this barcoding system has established that bar coding technology can be used as a decision-making framework in the management of medical personnel, which can lead to high performance of hospital health services. The findings of this research are also supported by the study by Setyawan, Makhfiroh, Noor (2020), Cooper (2019) who established that there is a reduction in cost when bar coding technology is implemented.

However, most past studies reviewed (Swatheni, 2016; Klin, 2017; Reddy et.al. 2022; Nweke, 2016; Akinyi, 2014) focused on health sector. None of the reviewed studies above looked into Supermarkets despite these amount of challenges linked with the management of supermarkets. Moreover, all these studies were carried out outside Nairobi County. None of them focused on the contribution of barcoding in performance of supermarkets in Nairobi County.

The current research, however, was a significant step in formulating hypotheses, verifying them empirically, and establishing this previously unexplored relationship between bar coding and supermarket performance in Nairobi County.

4.5.2 The influence of radio frequency identification on performance of supermarkets in Nairobi County, Kenya

The second objective of this study was to find out the influence of radio frequency on the performance of supermarkets in Nairobi County. In this context, Radio frequency identification was found to have significant affirmative influence on employee productivity ($\beta = 0.296, p = .000$). This means that a change in radio frequency identification will cause 0.296 change in

performance of supermarkets in Nairobi County and this change is remarkable. This implies that radio frequency identification is a strong indicator of performance of supermarkets.

A study by Khayyam et al (2022) found out that there is low awareness and uptake of RFID applications in business in developing countries. A study by Tan and Sidhu (2022) who conducted a study on this application of RFID in supply chain management (SCM) and found that RFID can help improve management system efficiency, maximize productivity, and reduce costs. A study conducted by Telco International with funding from Harvard University in (2016) found that RFID solutions allow for immediate tracking of inventory, enabling companies to easily and precisely find items in their warehouses or along this supply chain process.

There is scanty information on this contribution of RFID in performance of supermarkets in Nairobi County. Consequently, the effect of RFID on performance of supermarkets in Nairobi County is not known. This current study, however, has made huge addition to new knowledge in terms of hypothesizing, analytically testing and finding this link between RFID and performance of supermarkets in Nairobi County that hitherto remained unexplored.

4.5.3 The contribution of electronic data interchange on Supermarkets' Performance in Nairobi County, Kenya

This third objective of this study was to evaluate contribution of electronic data interchange on performance of supermarkets in Nairobi County, Kenya. In this context, electronic data interchange was found to have a significant positive influence on performance of supermarkets ($\beta = 0.552, p = .000$). This means that a change in electronic data interchange will cause 0.552 change in the performance of supermarkets and this change is remarkable. This infers that electronic data interchange is indeed a critical determinant of this performance of supermarkets in Nairobi County.

The concept that electronic data interchange has a strong favorable impact on supermarket performance has been supported by both theoretical literature and previous practical studies. Electronic Data Interchange (EDI) allows businesses to enhance efficiency, cut costs, and boost revenue by facilitating electronic data exchange with trading partners. Automating data exchange between applications throughout a supply chain can assist in achieving higher visibility, efficiency, and streamlined workflows for businesses. According to Al-Wahaibi (2015), utilization of EDI Technology and Computing in Small and Medium-sized Enterprises in Malaysia can lead to a reduction of at least 35% in business operating costs by getting rid of costs linked to paper, printing, reproduction, storage, filing, postage, and document retrieval. A 2018 study by Deloitte revealed that many small and medium enterprises in developing nations have adopted EDI, resulting in a 61% faster business cycle due to automation of processes.

However, the study at hand has made a significant addition to new knowledge in terms of postulating, analytically testing, and finding a link between electronic data interchange and supermarket performance that has previously gone unexplored, particularly in the background of supermarkets in Nairobi County.

4.5.4 The influence of cloud computing on Supermarkets' Performance in Nairobi County Kenya

This fourth objective of this study was to determine influence of cloud computing on performance of supermarkets in Nairobi County, Kenya. In this context, cloud computing was discovered to have a considerable favorable effect on the performance of supermarkets. ($\beta = 0.232, p = .001$). This means that a unit change in cloud computing will cause 0.232 unit change in the performance of supermarkets and this change is significant. This infers that cloud computing is a critical determinant of the performance of supermarkets in Nairobi County.

This finding that cloud computing has a strong favourable impact on supermarket performance has been supported by both theoretical literature and previous actual studies. Research conducted by Paulo and colleagues in 2016 regarding this uptake and consequences of Cloud Computing among Small and Medium-Sized Enterprises in Portugal indicated that many small and medium-sized businesses (SMBs) have embraced cloud computing, leading to lower expenses and increased productivity. In 2015, Al-Wahaibi carried out research to investigate effects of Cloud Computing on Small and Medium-sized Enterprises in Indonesia which found out that cloud computing is associated with reduced expenses, increased efficiency, and enhanced data security. This is also supported by a study conducted by Deloitte in (2018) which found out that many small and medium-sized enterprises in developing countries have embraced cloud computing, which has resulted in cost savings, increased efficiency, and improved competitiveness in their business operations.

This study in question, on the other hand, has made huge contributions to new knowledge in terms of postulating, analytically testing, and findings this previously undiscovered link between cloud computing and retail performance, namely supermarkets in Nairobi County.

CHAPTER FIVE: SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMENDATIONS

5.1 Introduction

This chapter shares the summary of the findings, discussions, conclusions and recommendations of this study based on these objectives of this study. The chapter also presents the suggestions for further studies.

5.2 Summary of Findings

This research is an analysis of E-inventory management systems on the performance of supermarkets in Nairobi County, Kenya'. This target population was employees working in a supermarket within Nairobi County. This analysis was based on four critical variables namely, Barcoding, Radio Frequency Identification, Electronic Data interchange and Cloud Computing. This data was collected through questionnaires and analyzed using descriptive statistics and regression analysis

This study investigated the integration and impact of barcoding on supermarket performance in Nairobi County. Findings revealed that a majority of respondents agreed that their organizations had fully integrated barcoding into daily operations, leading to improved sales, tracking, and inventory turnover. Barcoding was also found to enhance operational efficiency and enable management to make informed decisions based on analyzed data, significantly boosting overall performance.

RFID (Radio Frequency Identification) as an inventory management system was another focus of this study. Most respondents indicated that RFID improves product tracking, reduces losses, and optimizes transportation and routing. Additionally, RFID data was used for decision-making, and its implementation was associated with cost reductions over time, thereby enhancing supermarket performance in this region.

Electronic Data Interchange (EDI) was analyzed for its impact on supermarket operations. This study found that EDI facilitates better communication among vendors, employees, and customers, promotes shorter lead times, and minimizes operational errors. Respondents also highlighted that EDI automation improves efficiency and effectiveness, positively influencing this performance of supermarkets in Nairobi County.

This study also examined the role of cloud computing in supermarket performance. Results showed that cloud computing allows for substantial data storage, easy access to data, and improved management decision-making. Additionally, cloud computing enhances security, supports targeted marketing, and ultimately leads to higher customer satisfaction. Respondents acknowledged that cloud computing significantly influences this performance of supermarkets.

This study addressed this overall performance improvements in supermarkets over these past two years. Key findings included increased customer loyalty and satisfaction, better gross margins, enhanced inventory turnover, and improved price perception and product availability. Employee retention and profitability also saw notable improvements. This study concluded that inventory management systems have a substantial impact on this performance of supermarkets in Nairobi County.

5.3 Conclusion

This study investigated this integration and impact of barcoding on supermarket performance in Nairobi County. Findings revealed that a majority of respondents agreed that their organizations had fully integrated barcoding into daily operations, leading to improved sales, tracking, and inventory turnover. Barcoding was also found to enhance operational efficiency and enable management to make informed decisions based on data analyzed, significantly boosting overall performance.

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This study also examined the role of cloud computing in supermarket performance. Results showed that cloud computing allows for substantial data storage, easy access to data, and improved management decision-making. Additionally, cloud computing enhances security, supports targeted marketing, and ultimately leads to higher customer satisfaction. Respondents acknowledged that cloud computing significantly influences this performance of supermarkets.

Finally, this study addressed these overall performance improvements in supermarkets over this past two years. Key findings included increased customer loyalty and satisfaction, better gross margins, enhanced inventory turnover, and improved price perception and product availability. Employee retention and profitability also saw notable improvements. This study concluded that inventory management systems have a substantial impact on these performance of supermarkets in Nairobi County.

5.4 Recommendations

This study investigated this integration and impact of barcoding on supermarket performance in Nairobi County. Findings revealed that a majority of respondents agreed that their organizations had fully integrated barcoding into daily operations, leading to improved sales, tracking, and inventory turnover. Barcoding was also found to enhance operational efficiency and enable management to make informed decisions based on analyzed data, significantly boosting overall performance. The recommendation is for supermarkets to continue investing in and updating their barcoding systems to maintain these benefits, ensuring accurate tracking and efficient operations.

RFID (Radio Frequency Identification) as an inventory management system was another focus of this study. Most respondents indicated that RFID improves product tracking, reduces losses, and optimizes transportation and routing. Additionally, RFID data was used for decision-making, and its implementation was associated with cost reductions over time, thereby enhancing supermarket performance in this region. This recommendation is for supermarkets to expand their use of RFID technology, ensuring all inventory is tagged and tracked to further minimize losses and optimize logistics.

Electronic Data Interchange (EDI) was analyzed for its impact on supermarket operations. This study found that EDI facilitates better communication among vendors, employees, and customers, promotes shorter lead times, and minimizes operational errors. Respondents also highlighted that EDI automation improves efficiency and effectiveness, positively influencing the performance of supermarkets in Nairobi County. The recommendation is for supermarkets to fully integrate EDI systems into their operations and to provide regular training for staff to maximize these efficiency and accuracy of these systems.

This study also examined the role of cloud computing in supermarket performance. Results showed that cloud computing allows for substantial data storage, easy access to data, and improved management decision-making. Additionally, cloud computing enhances security, supports targeted marketing, and ultimately leads to higher customer satisfaction. Respondents acknowledged that cloud computing significantly influences the performance of supermarkets. The recommendation is for supermarkets to invest in robust cloud computing solutions that ensure data security and accessibility, leveraging these data for targeted marketing and enhanced customer service.

This study addressed the overall performance improvements in supermarkets over this past two years. Key findings included increased customer loyalty and satisfaction, better gross margins, enhanced inventory turnover, and improved price perception and product availability. Employee retention and profitability also saw notable improvements. This study concluded that inventory management systems have a substantial impact on these performance of supermarkets in Nairobi County. The recommendation is for supermarkets to regularly review and update their inventory management systems, ensuring they keep pace with technological advancements and continue to support improved performance metrics across the board.

5.5 Suggestions for Further Studies

These findings of this study were based on data from supermarkets in Nairobi County. It is suggested that similar studies be conducted on supermarkets in other regions of Kenya to ensure these results are more representative and reliable across different geographical locations. Additionally, this study focused on the integration and impact of barcoding, RFID, EDI, and cloud computing on supermarket performance. Future research could explore other technological advancements and inventory management systems to determine their effects on supermarket efficiency and customer satisfaction. Furthermore, examining the long-term

impact of these technologies on supermarket profitability and market share would provide a more comprehensive understanding of their benefits and limitations.



REFERENCES

- Akhter, B., Uddin, M. B., & Jahan, L. B. (2018). *Theories of Supply Chain Management: A Critical Analysis*. Retrieved from icmab.org.bd: <https://www.icmab.org.bd/wp-content/uploads/2019/12/04.Theories-of-Supply.pdf>
- Akpoviro, K.S., & Vareckova, L. (2023). Correlate of Inventory Management and Organizational Performance. *Ekonomicko-manazerske spectrum*, 17(1), 1-13.
- Amini, M., & Javid, N. J. (2023). *Supply Chain Management System Based on Cloud Computing*. Retrieved from ssrn.com: <https://deliverypdf.ssrn.com/delivery.php?ID=>
- Anwar, M. F. (2022, June 7). *The Influence of Inter-Organizational System Use and Supply Chain Capabilities on Supply Chain Performance*. Retrieved from sagpb.com: <http://journal.sagpb.com/index.php/SAJOL/article/view/16/15>
- Arasa, R., & Odoyo, A.J. (2020). Strategic Inventory Management Practices and the Performance of Supermarkets in Nairobi County, Kenya. *European Journal of Business Management and Research* 5(2). DOI:10.24018/ejbmr.2020.5.2.108
- Atnafu, D; Balda, A; & Liu, S. (2018). The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia. *Cogent Business & Management* 5:1. DOI:10.1080/23311975.2018.1503219
- Al-Wahaibi (2015). The Impact of Cloud Computing on Small and Medium-sized Businesses: An Empirical Study. *Cogent Business & Management* 5:1. DOI:10.1080/23311975.2018.22222

- Barnsbee, L. (2018). *Target Population and Subgroups*. Retrieved from <https://www.sciencedirect.com/>:
<https://www.sciencedirect.com/topics/engineering/target-population#:~:text=The%20target%20population%20is%20the,subgroups%20should%20be%20described%20clearly.>
- Calzon, B. (2023, March 3). *Your Modern Business Guide To Data Analysis Methods And Techniques*. Retrieved from datapine.com: <https://www.datapine.com/blog/data-analysis-methods-and-techniques/>
- Chebet, I. (2020). *Electronic inventory management system*. Retrieved from ir.busitema.ac.ug: <https://ir.busitema.ac.ug/handle/20.500.12283/842>
- Davies, S. (2020). *Designing Surveys for Evaluations and Research*. EdTech Books. Retrieved from edtechbooks.org: https://edtechbooks.org/designing_surveys
- Eckert, S. (2007). Inventory Management and its effects on customer satisfaction. *Journal of Public policy Vol 1, 3*.
- Enago Academy. (2022). *Why Is a Pilot Study Important in Research?* Retrieved from enago.com: <https://www.enago.com/academy/pilot-study-defines-a-good-research-design/>
- Fernandez, L. (2021). *Teaching Students How to Frame Human-Computer Interactions Using Instrumentalism, Technological Determinism, and a Quadrant Learning Activity*. Retrieved from frontiersin.org: <https://www.frontiersin.org/articles/10.3389/fcomp.2021.771731/full>

- Gaur, V., Bienstock, C., & Ramaswamy, V. (2005). Vendor-managed inventory in the retail supply chain: The effect on supply chain performance. *International Journal of Retail & Distribution Management*, 33(6), 406-416.
- Geeks for Geeks. (2024, May 29). *Supermarkets : Meaning, Characteristics, Advantages and Disadvantages*. Retrieved from [geeksforgeeks.org:
https://www.geeksforgeeks.org/supermarkets-characteristics-advantages-and-disadvantages/](https://www.geeksforgeeks.org/supermarkets-characteristics-advantages-and-disadvantages/)
- Gomez-Mejia, L.R., Martin, G., Villena, V.H., Wiseman, R.M. (2021). The behavioral agency model: Revised concepts and implications for operations and supply chain research. *Decis. Sci.*, 52 (5), pp. 1026-1038
- Guo, Y., Liu, F., Song, J.-S., & Wang, S. (2024, August). *Supply chain resilience: A review from the inventory management perspective*. Retrieved from ScienceDirect: <https://www.sciencedirect.com/science/article/pii/S2667325824003108>
- Halton, C. (2021, November 21). *Diffusions of Innovation theory*. Retrieved from investopedia.com: <https://www.investopedia.com/terms/d/diffusion-of-innovations-theory.asp>
- Harshitha, K. S. (2017). *Impact of Inventory Management on Financial Performance*. Retrieved from [worldwidejournals.in:
https://worldwidejournals.in/ojs/index.php/gjra/article/view/13603](https://worldwidejournals.in/ojs/index.php/gjra/article/view/13603)
- Imprint Enterprises. (2019). *The Top 5 Benefits of RFID Technology*. Retrieved from [imprint-e.com: https://imprint-e.com/benefits-of-rfid-technology/](https://imprint-e.com/benefits-of-rfid-technology/)

- Jansen, D., & Warren, K. (2020). *What Is Research Methodology?* Retrieved from gradcoach.com: <https://gradcoach.com/what-is-research-methodology/>
- John, E. O. (2009). INSTRUMENTALISM IN SCIENCE: COMMENTS AND. *GLOBAL JOURNAL OF HUMANITIES VOL 8, NO. 1&2* , 1-9.
- Joseph, J. (2014). *FOUR THEORIES OF TECHNOLOGY* . Retrieved from coursehero.com: <https://www.coursehero.com/file/9807108/FOUR-THEORIES-OF-TECHNOLOGY/>
- Jotform. (2023, June). *Data Collection Methods*. Retrieved from jotform.com: <https://www.jotform.com/data-collection-methods/>
- Karl. (2021). *What is a Master Production Schedule? With Examples* . Retrieved from mrpeasy.com: <https://manufacturing-software-blog.mrpeasy.com/what-is-master-production-schedule/>
- Khayyam, S., Ramish, A., Rehman, K., & Syed, A. R. (2022). *Strategizing Radio Frequency Identification (RFID) In the Retail Supply Chain Of Pakistan*. Retrieved from oscm-forum.org: <https://journal.oscm-forum.org/publication/article/strategizing-radio-frequency-identification-rfid-in-the-retail-supply-chains-of-pakistan-a-multiple->
- Kjellberg, H., Hagberg, J., & Cochoy, F. (2019). *Thinking Market Infrastructure: Barcode Scanning in the US Grocery Retail Sector, 1967–2010*. Retrieved from emerald.com: <https://www.emerald.com/insight/content/doi/10.1108/S0733-558X20190000062013/full/html>
- Kothari, C. R. (2009). *Quantitative Techniques*, 3E. Vikas publishing house PVT LTD.
- Kwateng, K. O., Fokuoh, B., & Tetteh, F. K. (2022, September 30). The relationship between vendor managed inventory and operational performance. Retrieved from

Emerald: <https://www.emerald.com/insight/content/doi/10.1108/mscra-03-2022-0009/full/html>

- Lukic, R. (2012). The Effects of Application of Lean Concept in Retail. In *Economia Seria Management*, 15(01) (pp. 88-98).
- Mahee, T. M., Chowdhury, A. I., Rahaman, M. S., & Ahamad, R. (2019). *A Study on Image Processing to Facilitate Business System by Multiple Barcoding Detection*. Retrieved from researchgate.net: https://www.researchgate.net/profile/Atiqul-Islam-Chowdhury/publication/338479793_A_Study_on_Image_Processing_to_Facilitate_Business_System_by_Multiple_Barcode_Detection/links/5e17084392851c8364bdac3c/A-Study-on-Image-Processing-to-Facilitate-Business-Sys
- Maina, A. W. (2018, October). Influence of vendor managed inventory on performance of retail outlets in Kenya. A case of Tuskys Supermarket Limited. Retrieved from ResearchGate: https://www.researchgate.net/publication/373932656_INFLUENCE_OF_VENDOR_MANAGED_INVENTORY_ON_PERFORMANCE_OF_RETAIL_OUTLETS_IN_KENYA_A_CASE_OF_TUSKYS_SUPERMARKET_LIMITED
- Makori, E. O. (2019). Factors affecting the implementation of green procurement in the automobile assembling industry in Kenya: A case study of Isuzu Motors. *The Strategic Journal of Business & Change Management*, 6 (4), 63–77.
- Makori, R. O. (2017). An Assesment of the Factors that influence Green Procurement Practices in the Tea Processing Industry, A Case Study of Tea Processing Firms in Kisii County, Kenya.
- Mburu, J. M. (2013). *he Relationship between Inventory Turnover and Financial Performance of Supermarkets in Kenya. (Thesis)*. Retrieved from erepository.uonbi.ac.ke:

http://erepository.uonbi.ac.ke/bitstream/handle/11295/59696/Mburu_The%20Relation%20Between%20Inventory%20Turnover%20And%20Financial%20Performance%20Of%20Su

McCombes, S. (2021). *What Is a Research Design / Types, Guide & Examples*. Retrieved from scribbr.com: <https://www.scribbr.com/methodology/research-design/>

Mugenda, O.M. and Mugenda, A.G. (2003). *Research Methods, Quantitative and Qualitative Approaches*. ACT, Nairobi.

Mwangi, L. (2018). *The effect of inventory management on firm profitability and operating cash flows of Kenya breweries limited, beer distribution firms in Nairobi County* (Doctoral dissertation).

Nalini, (2023). *The Future of Inventory Controls: How Automation Is Revolutionizing Manufacturing Operations*. Retrieved from: <https://www.deskera.com/blog/future-inventory-control/>

Novais, L., Maqueira, J. M., & Ortiz-Bas, A. (2019). *A systematic literature review of cloud computing use in supply chain integration*. Retrieved from sciencedirect.com: <https://www.sciencedirect.com/science/article/abs/pii/S0360835219300701>

Obadire, A.M., &Boitshoko, B.L., &Moyo, N. (2022).Analysis of the Impact of Inventory Management Practices on the Effectiveness of Retail Stores in South Africa.*GlobalJournal of Management and Business Research*. 22(5), DOI:10.34257/GJMBRCVOL22IS5PG1

Oh, S., Ryu, Y. U., & Yang, H. (2018). *Interaction effects between supply chain capabilities and information technology on firm performance*. Retrieved from springer.com: <https://link.springer.com/article/10.1007/s10799-018-0294-3>

- OpenText. (2017). *Understanding the benefits of EDI (Electronic Data Interchange)*. Retrieved from blogs.opentext.com: <https://blogs.opentext.com/understanding-benefits-electronic-data-interchanges-edi/>
- Özerand, Ö., & W. Wei. (2006). Strategic Commitments for an Optimal Capacity Decision. In *Decision Under Asymmetric Forecast Information*. 52(8) (pp. 1239-1258).
- Peteraf, M. (2015). *Resource-based theories*. In M. Augier & D. Teece (Eds.). Retrieved from Palgrave Macmillan: <http://www.palgraveconnect.com/doi/10.1057/9781137294678.0588>
- Reddy, P., Kurnia, S., & Tortorella, G. L. (2022). *Digital Food Supply Chain Traceability Framework*. Retrieved from mdpi-res.com: https://mdpi-res.com/books/book/6503/International_Academic_Symposium_of_Social_Science_2022.pdf?filename=International_Academic_Symposium_of_Social_Science_2022.pdf#page=438
- Salahudeen, L.A., & Abraham O. A. (2018). Effect of Inventory Management System on Operational Performance in Manufacturing Firms: Study of May and Baker Manufacturing Industry Nig Ltd, Lagos. *Iconic Research and Engineering Journals*, 2(5), 156-171.
- Setyawan, D., Makhfiroh, I. L., & Noor, F. M. (2020). *USING OF BARCODE SYSTEM TO REDUCE HEALTH SERVICE ERRORS*. Retrieved from jurnal.stie-aas.ac.id: <https://www.jurnal.stie-aas.ac.id/index.php/IJEJAR/article/view/1405/752>
- Shetty, J. P., & Panda, R. (2021, April). *An overview of cloud computing in SMEs*. Retrieved from www.researchgate.net: https://www.researchgate.net/publication/351154090_An_overview_of_cloud_computing_in_SMEs

Simplilearn. (2023). *What Is Data Collection: Methods, Types, Tools, and Techniques*.

Retrieved from simplilearn.com: <https://www.simplilearn.com/what-is-data-collection->

article#:~:text=The%20main%20techniques%20for%20gathering,questionnaires%2C%20schedules%2C%20and%20surveys

Sirk, C. (2020). *Diffusion of Innovation: How Adoption of New Tech Spreads*. Retrieved from

crm.org: <https://crm.org/articles/diffusion-of-innovations>

StudyCorgi. (2020). *Supply Chain Management Theories*. Retrieved from studycorgi.com:

<https://studycorgi.com/supply-chain-management-theories/>

Taherdoost, H. (2023). *Validity and Reliability of the Research Instrument*. *Encyclopedia*.

Retrieved from encyclopedia.pub: <https://encyclopedia.pub/entry/20511>

Tan, W. C., & Sidhu, M. S. (2022). *Review of RFID and IoT integration in supply chain management*. Retrieved from sciencedirect.com:

<https://www.sciencedirect.com/science/article/pii/S2214716022000070>

Unacademy. (2022). *Understanding About Basic Concepts of Cloud Computing* . Retrieved

from unacademy.com: [https://unacademy.com/content/bank-exam/study-](https://unacademy.com/content/bank-exam/study-material/computer-knowledge/understanding-about-basic-concepts-of-cloud-computing/)

[material/computer-knowledge/understanding-about-basic-concepts-of-cloud-computing/](https://unacademy.com/content/bank-exam/study-material/computer-knowledge/understanding-about-basic-concepts-of-cloud-computing/)

Velthoen, J. (2016). *Barcode Benefits No One Talks About*. Retrieved from

qstockinventory.com: <https://www.qstockinventory.com/blog/barcode-benefits-no-one-talks-about/>

Vinz, S. (2022). *What Is a Theoretical Framework? | Guide to Organizing*. Retrieved from

scribbr.com: <https://www.scribbr.com/dissertation/theoretical-framework/>

Writing Intern. (2018, July 16). *History of Inventory Management Technology*. Retrieved from citycleanandsimple.com:

<https://www.citycleanandsimple.com/2018/07/16/history-of-inventory-management-technology/>



APPENDICES

Appendix I: Introduction Letter

To whom it may concern

RE: REQUEST FOR ACADEMIC RESEARCH DATA COLLECTION.

As a postgraduate student at Mount Kenya University, I'm researching on; **'INFLUENCE OF E-INVENTORY MANAGEMENT SYSTEMS ON PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA'** Your supermarket has been selected as a likely respondent for the examination as part of the requirements for my postgraduate course. I would like permission to obtain information because it will be very helpful in reporting this test. The top management team will receive the information gathered from this investigation via questionnaires. The information obtained will be handled with privacy and used for academic purposes only. If necessary, the examination's findings and recommendations will be directed towards you.

Thank you.

Yours faithfully,

STEPHANIE KADAJI MUDANYA

Appendix II: Consent Form for Participation on Research

Dear Participant,

I invite you to participate in a research study entitled **(INFLUENCE OF E-INVENTORY MANAGEMENT SYSTEMS ON PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA)** at Mount Kenya University and am in the process of writing my Master's research project. The purpose of the research is to determine: **(Influence of E-Inventory Management Systems on Performance of Supermarkets in Nairobi County, Kenya)**

The enclosed questionnaire has been designed to collect information on: **(Influence of E-Inventory Management Systems on Performance of Supermarkets in Nairobi County, Kenya)**

Your participation in this research project is completely voluntary. You may decline altogether, or leave blank any questions you don't wish to answer. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept under lock and key and reported only as a collective combined total. No one other than the researchers will know your individual answers to this questionnaire. There are no direct benefits to you for participating in this research. However, you may find it interesting to talk about the issues addressed in the research and it may be beneficial to the field and to future clients or individuals who have experienced similar concerns.

If you agree to participate in this project, please answer the questions on the questionnaire as best you can. It should take approximately *(5 min)* to complete. Please return the questionnaire as soon as possible to enable me complete the project report.

If you have any questions about this project, feel free to contact the **INVESTIGATOR, (Stephanie Kadaji Mudanya) contact TEL 0724570361, and (Dr. Jackson Ndolo, PhD as the supervisor)**. If you have questions about your rights as a research participant, please be in touch with the Chairman, Mount Kenya University, Ethical Review Committee, P.O Box 342-01000, Thika

Thanks for your assistance in this important endeavour.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Appendix III: Questionnaire

SECTION 1: RESPONDENTS BACKGROUND INFORMATION

1. Gender

- Male
- Female

2. Age:

- 21- 31years
- 32-40 years
- 41 –50 years
- 51 years and above

3. Highest Education Level

- Secondary level
- College level
- University level
- Postgraduate level
- Professional Qualification

(Others specify.....)

4. Working Experience

- Below 3 years

- 4-8 Years
- 9-12years
- 13-18 years
- 19 years and above

SECTION 2: INFORMATION ON VARIABLES

A. Bar Coding and supermarkets’ performance.

Please indicate the extent to which you agree with each statement in context of influence of bar coding on performance of supermarkets, using a scale of 5-1, rate, where; 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.

| Item | 5 Strongly Agree | 4 Agree | 3 Neutra l | 2 Disagr ee | 1 Strongly Disagree |
|--|------------------------|------------|------------------|-------------------|---------------------------|
| i. Your organization has fully integrated barcoding into its daily operations. | | | | | |
| ii. Barcoding has led to improved sales and tracking. | | | | | |
| iii. Barcoding influences inventory turnover positively. | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| iv. Employees approve of the efficiency brought by barcoding. | | | | | |
| v. Management is able to use the analysed data from barcoding to make decisions. | | | | | |
| vi. Operations have become effective and efficient due to use of barcoding. | | | | | |

B. Radio Frequency Identification and Supermarkets' Performance

Please indicate the extent to which you agree with each statement in context of influence of radio frequency identification on performance of supermarkets, using a scale of 5-1, rate, where; 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.

| Item | 5 | 4 | 3 | 2 | 1 |
|---|----------------|-------|---------|----------|-------------------|
| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| i. Your organization uses RFID as an inventory management system. | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| ii. RFID improves tracking thus loss of products is minimal and there is greater visibility. | | | | | |
| iii. Management is able to use the analysed data from RFID to make decisions. | | | | | |
| iv. RFID optimizes transportation and routing. | | | | | |
| v. RFID reduces costs over a period of time. | | | | | |

C. Electronic Data Interchange and Supermarkets' Performance

Please indicate the extent to which you agree with each statement in context of influence of Electronic Data Interchange on performance of supermarkets, using a scale of 5-1, rate, where; 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.

| Item | 5 | 4 | 3 | 2 | 1 |
|---|----------------|-------|---------|----------|-------------------|
| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| i. Management uses EDI for decision making. | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| ii. EDI enhances communication among vendors, employees and customers. | | | | | |
| iii. EDI promotes shorter lead times thus ensuring customer satisfaction. | | | | | |
| iv. Automation promotes efficiency and effectiveness of supermarket operations. | | | | | |
| v. EDI promotes minimal errors in operations. | | | | | |

D. Cloud Computing and Supermarkets' Performance

Please indicate the extent to which you agree with each statement in context of influence of cloud computing on performance of supermarkets, using a scale of 5-1, rate, where; 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.

| Item | 5 | 4 | 3 | 2 | 1 |
|---|----------------|-------|---------|----------|-------------------|
| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| i. Cloud computing gives companies the opportunity to store large amounts of data for future use. | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| ii. Efficiency is achieved due to easy access of processed and unprocessed data. | | | | | |
| iii. Cloud computing aids in management decision making. | | | | | |
| iv. Cloud computing enhances security of the organisation both online and physically. | | | | | |
| v. Customer satisfaction is achieved due to targeted marketing from the data obtained from cloud computing. | | | | | |

E. Supermarkets' Performance


Please indicate the extent to which you agree with each statement in context of performance of supermarkets for the last 2 years, using a scale of 5-1, rate, where; 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree.


| | | | | | |
|------|---|-------|---------|---|---|
| Item | 5 | 4 | 3 | 2 | 1 |
| | | Agree | Neutral | | |

| | Strongly Agree | | | Disagree | Strongly Disagree |
|--|----------------|--|--|----------|-------------------|
| i. Customer loyalty and satisfaction has improved for the last 2 years | | | | | |
| ii. Gross margin for the supermarket has improved for the last 2 years | | | | | |
| iii. Inventory turnover has improved hence sustaining supply chain | | | | | |
| iv. Price perception in the supermarket has improved. | | | | | |
| v. Product availability has improved because of improved efficiency | | | | | |
| vi. Employee retention has improved | | | | | |
| vii. Supermarket profitability has improved | | | | | |

Thank you for your cooperation


Appendix IV: NACOSTI


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **738793** Date of Issue: **08/October/2024**


RESEARCH LICENSE



This is to Certify that Miss.. Stephanie Kadaji Mudanya of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: ANALYSIS OF E-INVENTORY MANAGEMENT SYSTEMS ON PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA for the period ending : 08/October/2025.

License No: **NACOSTI/P/24/40642**

738793
Applicant Identification Number


Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

Appendix V: Turnitin report

Proojecctt

by Stephanie kadaji

Submission date: 27-Apr-2025 11:17PM (UTC+0300)

Submission ID: 2641251704

File name: STEPHANIE_KADAJI_MUDANYA_PROJECT_20042025_3_.docx (1.55M)

Word count: 20143

Character count: 122335

Turnitin


2
**INFLUENCE OF E-INVENTORY MANAGEMENT SYSTEMS ON
PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA**

STEPHANIE KADAJI MUDANYA

1
**A RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF
REQUIREMENTS FOR THE AWARD OF MASTERS IN PROCUREMENT
AND SUPPLY CHAIN MANAGEMENT, SCHOOL OF BUSINESS, MOUNT KENYA
UNIVERSITY**

Mount Ke

Appendix VI: ERC Certificate



Mount Kenya University

REF: MKU/ISERC/4354 Date: 06 September 2024
TO: STEPHANIE KADAJI MUDANYA
REG: MPSM/2021/86206

Dear Sir/Madam,


RE: ANALYSIS OF E-INVENTORY MANAGEMENT SYSTEMS ON PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3074**. The approval period is **06/09/2024 - 05/09/2025**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

MOUNT KENYA UNIVERSITY
ETHICS REVIEW COMMITTEE
P. O. Box 342 - 01000,
THIKA

Appendix VII: Field Entry/Research Authorization

