INFORMATION TECHNOLOGY AND INVENTORY MANAGEMENT IN STEEL MANUFACTURING FIRMS IN NAIROBI

BY

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

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This research project has been submitted for examinations with my approval as the university supervisor.

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DEDICATION

I dedicate this project to my parents Andrew Nyakiongana and Grace Nyaboke for the unending sacrifices you have made to ensure I got the best education you could offer.

ACKNOWLEDGEMENT

I pay glowing tribute to God for His grace and strength throughout this course.

My Sincere thanks to my supervisor Dr. J.T Kariuki and Mr. Joel Lelei for their guidance and critique which have been instrumental to completion of my project.

I thank my siblings for their continuous encouragement and their unwavering trust in my abilities.

To my fellow students who kept pushing me, I say thank you.

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LIST OF ABBREVIATION AND ACRONYMS

CIPS   Chartered Institute of Purchasing and Supplies

COMESA   Common Market for East and Southern Africa

DRP   Distribution Requirement Planning

EAC   East Africa Community

EOQ   Economic Order Quantity

ERP   Enterprise Resource Planning

ICT   Information Communication Technology

IT   Information Technology

JIT   Just-In Time

KAM   Kenya Association of Manufacturers

KNBS   Kenya National Bureau of Statistics

LAN   Local Area Network

LAPSSET   Lamu Port and Lamu-Southern-Ethipoia Transport Corridor

MRP   Material Resource Planning

RBV   Resource-Based View

RFID   Radio Frequency Identification

TCE   Transaction Cost Economics

TMA 2   Technology Acceptance Model 2

VMI   Vendor-Managed Inventory

WMS   Warehouse Management System

ABSTRACT

The study sought to measure the influence of information technology on inventory management in Kenya's Steel manufacturing sector. The specific objectives were to establish IT enabled inventory management systems used by steel manufacturing firms in Nairobi and to establish the effect of adopted IT systems on inventory management of steel manufacturing enterprises in Nairobi. The study used descriptive research design. The study population was all the 35 steel manufacturing companies in Nairobi. Primary data was gathered using a semi-structured questionnaire. Data collected was analyzed through descriptive statistics and regression analysis. The study findings indicate that 52.1% of the variation in inventory management can be explained by warehouse management, material management, distribution requirement and vendor management. From the ANOVA table the F value (5.434) at significance level (0.004) implies that the model is fit to predict inventory management. The results further revealed that material resource planning, distribution requirements planning and warehouse management system predicted inventory management positively. Vendor managed inventory system was the least adopted by firms in the steel sector. The warehouse management system and distribution requirement planning system were adopted to a greater extent. This could be explained by the fact that most steel firms sell their products through distribution points. The firms also keep relatively large stocks, apart from steel fabricators who mostly use J.I.T inventory system. The research was limited by strict non-disclosure policies which was a constraint in release of real time data on inventory carrying costs, an important indicator of inventory management. The study recommends that future researchers concentrate on measuring cost of carrying inventory.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In every competitive industry, firms that attain competitive advantage are the ones that stay afloat; hence firms need to have strategies that give them a competitive edge over others in the industry (Dash, 2013). Information Technology (IT) has emerged as a key component in decision making tasks such as online analytical processing and information processing tasks (Maumbe & Okello, 2010). Inventory is a book-keeping word referring to the amount of raw materials, constituents, assemblies, consumables, work-in-progress and finished stock that are held and used when necessary (Ngumi, 2015). Firms are adopting IT enabled inventory management techniques to improve efficiency through integration among suppliers and buyers (Zengwa & Choga, 2016). The inventory management practices that mainly apply information technology include; material resource planning, warehouse management system, distribution resource planning and Vendor-Managed Inventory. These inventory management techniques enhance efficiency by ensuring goods are dispatched at the correct amounts, place and time at minimal cost.

Various concepts have been put forward to describe the importance of information technology use for better performance. This study relied on the Technology Acceptance Theory, Transaction Cost Economics (TCE) and Resource- Based View (RBV) Theory to illustrate IT adoption in inventory controlling. The technology acceptance model states that the reception of IT by users is impinged by its supposed convenience and user-friendliness (Davis, 1986). Therefore, firms should focus on demonstrating the ease and usefulness of adopted technology. Resource based theory states that a firm assesses the available resources and efficiency in their application to enhance its performance (Barney, 1991). TCE Theory maintains that the utilization of information communication technology (ICT) cause reduced costs of transaction in relation to transactions management, by efficient coordination (Aubert, Rivard, & Patry, 1996). TCE theory illustrates the significance of digitally supported inventory management in competitive settings.

Kenya Vision 2030 is Kenya`s development plan between 2008 and 2030 inaugurated by President Mwai Kibaki. Under the economic pillar, Business Process Outsourcing emphasizes on ICT, infrastructure, technology and innovation. The administration by President Kenyatta picked on key economic deliverables in the vision which he characterized as `The Big Four`. Expansion of the manufacturing sector and affordable housing are key in the agenda. Recent developments on infrastructure in Kenya include, phase 2B of standard gauge railway, the LAPSSET project, the Itare and Thiba dams and various road constructions. One of the main raw materials to be consumed by these projects is metal and steel. According to KAM (2015), steel goods were among Kenya's biggest mass-produced products in the COMESA as well as EAC. This study, therefore, seeks to focus on steel manufacturing firms because of the increased use of steel products.

1.1.1 Information Technology

Gall (2013) defines information technology (IT) as a system that uses computers, networking, and processes to store, process, retrieve, transmit and secure data. IT consists of decision support, business software and computational data processing. Information technology, according to Haag and Cummings (2013), is set of tools, processes and methodologies that give access to information through telecommunications, wireless networks, mobile phones among other medium of communication. IT also refers to processing of information with the aid of an electronic device (Tseng, Wu., & Nguyen, 2011).

Information technology (IT) systems is among the key tools for enterprises. IT is considered important as it enables firms to handle inventory more efficiently by improving the speed of communication, electronic storage and protection of records. Organisations that have embraced information technology have become more efficient compared to organisations that are reluctant to adopt IT (Yegon, 2012). According to Gerald and Anderson (2012), IT supports the organisational information flow and its interaction with the external environment efficiently in a way that reduces the costs associated with purchasing and disposing of inventory. Tseng, Wu and Nguyen (2011) argue that information systems provide solutions to business problems through design,

creation and adoption of technology related systems and processes to boost efficiency and effectiviness of knowledge in strategic, tactical and operational circumstances. Firms also use IT in processing basic transactions, and allow tailor-made customer interaction.

1.1.2 Inventory Management

Chartered Institute of Purchasing and Supplies (CIPS) dictionary defines inventory as merchandise stored in store or on the asset register of an enterprise for the purpose of resale and for production of finished goods. Cannella and Ciancimino (2010) define inventory management as a process that entails every feature of controlling inventories such as shipment, delivery, tracing, warehousing, turnover, as well as reordering. Dobler and Starling (2006) define inventory management as an ongoing process of ensuring a firm maintains the correct level of inventory by monitoring and supervising checking inventory, inventory storage, and monitoring the quantity of goods for sale. Therefore, inventory management involves the organization and coordination of activities to ascertain the current and impending necessities for inventory to circumvent under stocking and overstocking.

The objective of inventory management is maximization of customer service, profit, efficiency of purchasing and production. Chase and Jacobs (2006) noted that understocking at any stage of the production process may lead to stock out costs, on the other hand, overstocking leads to higher storage cost. Inventory may also become obsolete when inventory at hand is not completely sold. Keeping excess inventories can lead to excessive holding down of resources and resources loss as a result of damage and pilferage while maintaining small amount of inventories makes companies unable to encounter production as well as sales necessity. Chase, Bai and Zhong (2009) explain that the idea of inventory management carries inside the overall systems technique to manage substances and services from suppliers of raw materials, by way of industrial units and store room to the final consumer. A company's fulfillment depends on how successfully they manage their supplies. Chase et al. (2009) noted that it is key for stock exhibition at each level as it holds up resources. As a result, effective management of stock is key to enterprise's, industry as well as economy survival.

1.1.3 Steel Manufacturing Industry in Kenya

The steel manufacturing business dates back to 1949 when Kenya United Steel Ltd was registered. The number of steel companies began to rise in Kenya following the country's independence; such companies include Kenya's corrugated sheets and the Safal Group (Mumero, 2016). The steel manufacturing industry in Kenya consist of companies that deal majorly in steel plates, roofing sheets, nails, deformed bars, round bars, square bars and ribbed bars for use in construction of domestic and industrial structures. Major steel manufacturers in Nairobi include Tuffsteel, Doshi, Mabati Rollings Mills and Steel Structures among others hence the extent of competition increases in the industry as more and more steel companies emerge.

According to Kenya National Bureau of Statistics (2016) the steel industry is facing an increased level of competition due to the high number of local steel manufacturers and imports from countries such as India, China, Egypt and Turkey. Steel imports in 2015 was KES 43.662 billion which later rose by 73% to about KES 75.536 Billion in 2017, while export values stood at KES 12.839 Billion which rose by 63% over the same period to KES22.212 billion (Big project drive, 2018). Domestic consumption for steel range between 760,000 metric tonnes to 830,000 metric tonnes. Kenya's annual demand for steel has been on the rise in last decade due to factors such as housing projects, Lamu port development, railway and road projects and industrial projects. Steel manufacturers should therefore, ensure that the existing and expected demand is met by having efficient inventory management.

1.2 Research Problem

Information technology in management of inventory ensures visibility and accountability. There is better control over product and information flow across the supply chain. Through IT, firms strive to automatically identify when stock reaches the established warning threshold, and then processes an order to restock, send a notification to the finance division and give out purchase orders (Harland, 2016). IT similarly improves inventory management by reducing inefficiency by enabling a firm to fulfill customer's expectations of product availability while enhancing the organization to achieve the

balance between goods available for sale and customer demand. Getting it right leads to enhanced profitability as well as loyal customers (Pathak, 2018).

The steel manufacturing industry in Kenya consists of companies that deal majorly in steel plates, roofing sheets, nails, deformed bars, round bars, square bars and ribbed bars for use in construction of domestic and industrial structures. The industry is facing an increased level of competition due to the high number of local steel manufacturers and imports from countries such as India, China, Egypt and Turkey (KNBS, 2016). Consumption of steel has been anticipated to rise due to major projects such as LAPSET, Lake Turkana Wind power project, Standard gauge railway Phase 2B and the government agenda on constructing more affordable housing. This makes the steel industry a relevant area of study.

Various studies have been carried out on information technology and inventory management both globally and locally. Globally, Namagembe (2010) examined information sharing, inventory control as well as client satisfaction in the lower chain of in Ugandan manufacturing enterprises. The research concluded that the information systems installation as well as customer cooperation so as to safeguard information sharing as well as inventory control resulted in high customer satisfaction levels. Tseng, Wu and Nguyen (2011) studied information technology in supply chain management in the textile business in Vietnam. The research found that advanced IT is leading to improved supply chain performance and customer satisfaction. Zengwa and Choga (2016) studied the significance of ICT in enterprise inventory management in Zimbabwe. According to the study, companies had adopted Enterprise Resource Planning (ERP) as an inventory management software which managed to integrate all the business processes, and improve transaction processes.

Locally, Kitheka (2012) studied automation of inventory management and supermarkets' performance in Western Kenya. The study found that automation of inventory management positively influenced supermarkets' performance. Kithinji (2015) studied the influence of IT on inventory management in Nairobi City County supermarkets. The study noted that information technology in inventory management is essential in boosting

efficiency as well as lowering costs. According to the study, IT resulted in integration, minimized communication costs, enhanced efficiency and increased information sharing. Ontita (2016) studied inventory management approaches and performance of textile Kenyan manufacturing enterprises. The results revealed a strong positive link between inventory management practices and textile manufacturing enterprises' operational performance.

The analysis of the previous research above shows studies have been done with regard to the concept of IT in the textile industry, large manufacturing firms and supermarkets. No research has been done in the steel industry. This presents a contextual research gap which this research attempted to fill by answering the question: what is the effect of information technology in inventory management in steel manufacturing firms in Nairobi?

1.3 Research Objective

The aim of the study was to measure the influence of information technology on inventory management in Kenya's Steel manufacturing sector.

1.3.1 Specific Objectives

a. To establish IT enabled inventory management systems used by steel manufacturing firms in Nairobi, Kenya.
b. To establish the effect of adopted IT systems used on inventory management of steel manufacturing enterprises in Nairobi, Kenya.

1.4 Value of the Study

Policy makers are usually informed by research findings that attempt to demystify an idea with which they are concerned. The findings of this research will be used by policy makers in creating policies and mechanisms that guide firms accordingly in relation to information technology, its role and impact, in inventory management and thereby foster competitive advantage in these firms.

To the scholarly field, the findings of this study bring new insights with regard to information technology and inventory management. This research helps to add to the

pool of literature available on the subject from which future research will be based and from which areas for further research may also be identified.

Finally, the study will help practitioners become aware of the impact of information technology on inventory management which leads to enhanced performance of firms, hence competitive advantage. This study will also help them understand the place of information technology adoption as a competitive strategy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part illustrates the theoretical foundation of the research and empirical review of available literature that exhaustively describe the key aspects of the research variables and past studies relating to the subject of study. It highlights the methodologies and the findings of such studies and the knowledge gap.

2.2 Theoretical Framework

This research is based on the technology acceptance theory, the transaction cost economics (TCE) theory and resource based view (RBV) theory.

2.2.1 Technology Acceptance Theory

Technology acceptance model was familiarized by Davis (1986) from the reasoned action theory advanced by Fishbein and Ajzen (1975). The concept is among the most common concepts in comprehending computer technologies use. The model argues that the acceptance of innovation or technology by users is determined by its seeming usefulness and its user-friendliness. Apparent benefits and the apparent simplicity of application decide the attitudes to adopt new innovations. The attitude towards adoption will be determined by the adopter's positive or negative behavior in the future concerning technology. This theory is relevant to this study as successful adoption and implementation of new technology depends on whether users are ready to embrace it or not. Therefore, it is crucial that firms develop systems that are organization specific by considering its culture and preferences.

Technology acceptance model was further developed by Venkatesh & Davis (2000) to Technology acceptance model 2 (TAM 2) and later Venkatesh, Morris, Davis and Davis (2003) presented Unified Concept of Technology Acceptance and Adoption. TAM 2 in added two factors in the model: social influences processes such as image and voluntariness, and rational contributory procedure such as output quality and job applicability). Unified Concept of Technology Acceptance and Adoption argues that behavioral pattern towards adoption of technology is influenced by social influence, performance prospect, effort prospect and expediting situations (Venkatesh et al., 2003).

Therefore, firms should demonstrate to the users how systems improve task performance. Proper organizational and technical infrastructure should be put in place to motivate users to embrace the systems.

2.2.2 Transaction Cost Economics Theory

TCE theory, also known as social cost hypothesis, originated from Coase (1937) and later improved by Williamson (1975). The theory states that the costs and challenges linked with market relations occasionally support hierarchies and at times markets as an economic authority structure. Transaction cost include bargaining costs, searching and information cost and policing and information costs. An organization can become efficient by minimizing its waste or costs. Clearly identifying the coordination costs amongst economic units in markets, the concept maintains that an enterprise's primary responsibility is to safeguard efficient coordination of transactions (Williamson, 1985).

TCE concept is applicable to this research as it supports cost reduction. Information technology (IT) use can ensure reduced transaction costs and lower management costs. With regards to supply, digitally enabled incorporation ability can substantially improve transactional effectiveness through enhanced information sharing as well as interactions capacities, leading to enhanced performance of supply chain (Zhu & Kraemer, 2005). Additionally, Lopez (2013) maintains that IT resources impact on internal and external interactions as well as activities coordination which result in an improved and more effective information utilization within the enterprise as well as with outside agents, for instance clients and suppliers. TCE sheds light on the significance of digitally supported supply chain management in competitive settings.

2.2.3 Resource Based View Theory

The concept of RBV can be traced back to the scholarly works published by Wernerfelt (1984) on the RBV of the firm, Barney (1991) on resources of the enterprise and sustained competitive edge. This theory states that a firm assesses the available resources and efficient application of these resources would help the firm enhance its performance. The importance of the resource viewpoint as a new course in the area of operations management was largely familiarized in the piece by Wernerfelt (1984) who put forward

that assessing enterprises according to resources they possess may give understandings that vary from conventional standpoints.

The resource-based view (RBV), puts forward that competitiveness may possibly be realized through innovative unsurpassed value delivery to clients. The current literature by Wernerfelt (1984) and Barney (1991) majorly lays focus on strategic link and resources utilization by the enterprise in creating a sustained competitive edge (Rumelt, 1991). The RBV concept is used to explain how institutions use their resources to gain competitive edge through innovative unsurpassed value delivery to clients; Firm resources include: expert human capital, technical knowhow, or managerial proficiency. These can probably create value when shared across businesses (Priem & Butler, 2001).

The RBV concept is adopted by this research since it explains how institutions use their resources to improve its service delivery via: innovatively delivering superior value to customers by delivery of goods on time, in good condition and at the least possible cost. Therefore, a sustained competitive advantage is achieved through increase in profit margins and continued cost.

2.3 Empirical Review

Several studies have been conducted with regard to information technology and inventory management. These studies range from global and local studies. The global studies include: Namagembe (2010) studied the link between information sharing, inventory management and client satisfaction in the lower chain of Ugandan manufacturing enterprises. The target population was 2048 firms consisting of 1545 retailers and 503 distributors. The sample size composed of 523 of which 305 were retailers and 218 distributors. The study findings revealed that there exists a substantial positive link between information sharing, inventory management and client satisfaction. To ensure better information sharing and inventory management, installation of information systems and customer collaboration is necessary.

Tseng, Wu and Nguyen (2011) conducted research on the effect of IT in supply chain management in the textile industry in Vietnam. The study population comprised of 423 firms which were reduced to 201 through simple random sampling method. The findings were that Enterprise Resource Planning and material necessity planning systems were mostly adopted to a huge level by the textile enterprises. The use of IT, therefore, lead to better supply chain performance and client satisfaction. Thus, there exists a high positive correlation between IT use and high enterprise performance.

Zengwa and Choga (2016) studied the significance of ICT in Zimbabwean enterprises' inventory management. The population of study comprised of 300 participants who were reduced to 186 by random selection. The study took place between the years 2011 to 2013. The study achieved 88% response rate. The study findings revealed that the companies had used information technology to incorporate all business processes through an Enterprise Resource Planning (ERP) based on inventory management system. The ERP software managed to improve transaction processes and supported information sharing among different users.

Kitheka (2012) strived to measure the influence of automation of inventory management and of supermarkets' performance in Western Kenya. A survey design and targeted every supermarket in Kisumu, Kakamega and Bungoma was adopted. The population of study considered was 12 supermarkets that were located in Bungoma, Kakamega and Kisumu towns. The study found that automation of inventory management positively enhanced the supermarkets' performance. The linear regression model employed suggested that 56.7% of the supermarkets' performance may possibly be as a result of automation of inventory management. Supermarkets should therefore, consider adopting inventory management systems to enhance delivery of customer service as well as minimize operational costs.

In 2015, Ngumi studied inventory management approaches and efficiency of big manufacturing enterprises in Nairobi. The population of study comprised of 499 large manufacturing companies that are based in Nairobi. 50 firms constituted the sample size was picked through stratified random sampling. Data analysis was by descriptive

statistics comprising mean as well as standard deviation. The study found that inventory management approaches positively influence the efficiency of big manufacturing companies in Nairobi. The study recommends the use of IT in inventory management so as to increase efficiency and reduce costs.

Kithinji (2015) sought to establish the impact of IT on inventory management in Nairobi City County supermarkets. The population comprised of 136 supermarkets. A sample of 66 supermarkets was established through stratified random sampling. Collected data was analyzed through descriptive statistics as well as regression analysis. The research notes that IT in inventory management is key in boosting efficiency as well as minimizing cost. The research ascertained that vendor-managed inventory systems and warehouse management systems were adopted to a higher degree in Nairobi's supermarkets. The study also noted that IT usage in inventory management led to improved overall firm performance.

Ontita (2016) studied the role of inventory management approaches and performance of Kenyan textile manufacturing enterprises. The population of study involved 35 Kenyan textile manufacturing enterprises. The research findings revealed that the manufacturing firms use information technology, lean inventory system and strategic supplier partnership as inventory management approaches. The study found strong positive link between inventory management practices and textile manufacturing enterprises' operational performance. The researcher recommended investment in technology and approaches such as JIT, VMI and MRP for improved performance.

The empirical review has highlighted a number of studies. These studies covered the following concepts information technology, information sharing, inventory management, supply chain management, performance, productivity and customer satisfaction. The contexts and areas of study included manufacturing firms in Uganda, textile industry in Vietnam, companies in Zimbabwe, supermarkets in Western Kenya, large manufacturing firms in Nairobi, supermarkets in Nairobi City County and textile manufacturing firms in Kenya. Therefore, there exists a contextual research gap since none of the mentioned studies covered steel manufacturing companies in Nairobi.

2.4 Application of Information Technology in Inventory Management

Efficient inventory management is majorly grounded on information system (IS) applications that provide a record for storing and administering all types of data (Harland, 2016). Enterprise resource planning (ERP) is used by businesses to integrate all department functions of an enterprise. ERP management systems may improve costs, efficiency, lessen time lags and waste, enhance customer service as well as overall output (Sheilds, 2005). ERP has been extensively utilized in inventory management with varied approaches applied inventively ranging from vendor-managed inventory, material resource planning, warehouse management system and distribution requirements.

2.4.1 Vendor-Managed Inventory

Vendor managed inventory allows companies to eradicate the necessity client to reorder, decrease or eliminate inventory as well as stock outs. In this kind of arrangement, the vendors get store room or information on point-of-sale from the organization and utilize it to make decisions pertaining inventory-replenishment (Bailey, 2015). Under this collaboration, the supplier makes the key decisions on inventory restocking for the consuming enterprise. The acceptance of purchase order from the vendor could possibly be the primary signal that a transaction is happening: an advance shipment notification updates the customer of goods in shipment.

Companies agree to take possession of the inventory management on behalf of their customers. According to everyday information that is automatically sent from the customer to the supplier, the supplier restocks the clients' stocks as demanded. The suppliers consider what is selling and puts together all needed preparations deliver new products to client automatically. Every party encounters a good use of labor and time. The client can hold less goods in stock and may possibly depend on a solid flow of goods or components. The vendor or supplier benefits in two means.

A supplier can well anticipate production necessities and gains from a solid association with the client. Inventory tracking can be done using Radio Frequency Identification (RFID) which boosts inventory management efficiency and restocking approaches. RFID

enhance management of inventory through reading in bulk and in a very long range (Gerald & David, 2013).

2.4.2 Material Requirement Planning

Material resource planning (MRP) is a practice that determines materials needed for production by looking at the customer orders and then initiate their purchase (Ptak & Smith, 2016). It allows tracking of orders in the whole manufacturing process as well as aid procuring and control divisions to go to correct suppliers at the appropriate time to the manufacturing process and aid procuring and control divisions to move the correct supplies at the appropriate time to production or distribution areas.

It can help maximize productivity by improving coordination efforts of manufacturing, engineering, procuring, marketing and human resource to achieving a common strategy or business policy (Gerald & David, 2013). It similarly enables the inventory management team to analyze consequences of their decisions, for instance rush purchases and harmonization of production with procuring, marketing as well as human resources in such away as timing of delivery of supplies through sales forecast to establish master budget and planning hiring or run-down of staff.

2.4.3 Warehouse Management System

A warehouse management system is aimed at controlling the movement as well as storing supplies in a warehouse by controlling processes linked transactions, comprising shipment, delivery, storage as well as picking (Dobler & Starling, 2006). Warehouse management systems usually employ automatic identification and data capture technology, for instance barcode scanners, mobile computers, wireless Local Area Network (LANs) and possibly (RFID) to effectively control the flow of goods.

Warehouse management solutions are basically strategic tools, acquired and utilized by enterprises to meet the distinctive client demand of their supply chain(s) as well as distribution channel(s). The WMS gets orders from the superimposing host system, usually ERP system, controls these in a record and, once there is a proper optimization, distributes them to the linked conveyor systems (Dobler & Starling, 2006).

2.4.4 Distribution Requirement Planning

Distribution requirement planning (DRP) is a planning approach that monitors inventory and adopts MRP standards to inventories distribution. It is an approach of management of restocking of stock in an enterprise. It looks at the anticipated demand, the scheduled receipts and inventory at hand at the start of period and the safety stock necessity for a period (Feigin, Katircioglu & Yao, 2011). DRP is key for both manufacturing enterprises for instance, steel manufacturers that sell their steel products through various distribution points, for instance regional and local distributors, and only merchandising enterprises, such as organizations (William, 2013). The objective of DRP is to lessen shortages and lower ordering costs, shipping and possessing goods.

2.5 Conceptual Framework

The variables to be studied are indicated in figure 2.1. The dependent variable is represented by inventory management, while independent variable is represented by inventory management

Independent Variable   **Dependent Variable**

Information Technology   **Inventory management**

• Vendor-managed Inventory system • Material resource planning system • Distribution requirements planning system • Warehouse management System

Inventory management **Measured by** ➢ Cost of Carrying Inventory ➢ Stakeholder relationships ➢ Receiving and Stocking Efficiency ➢ Order picking and processing
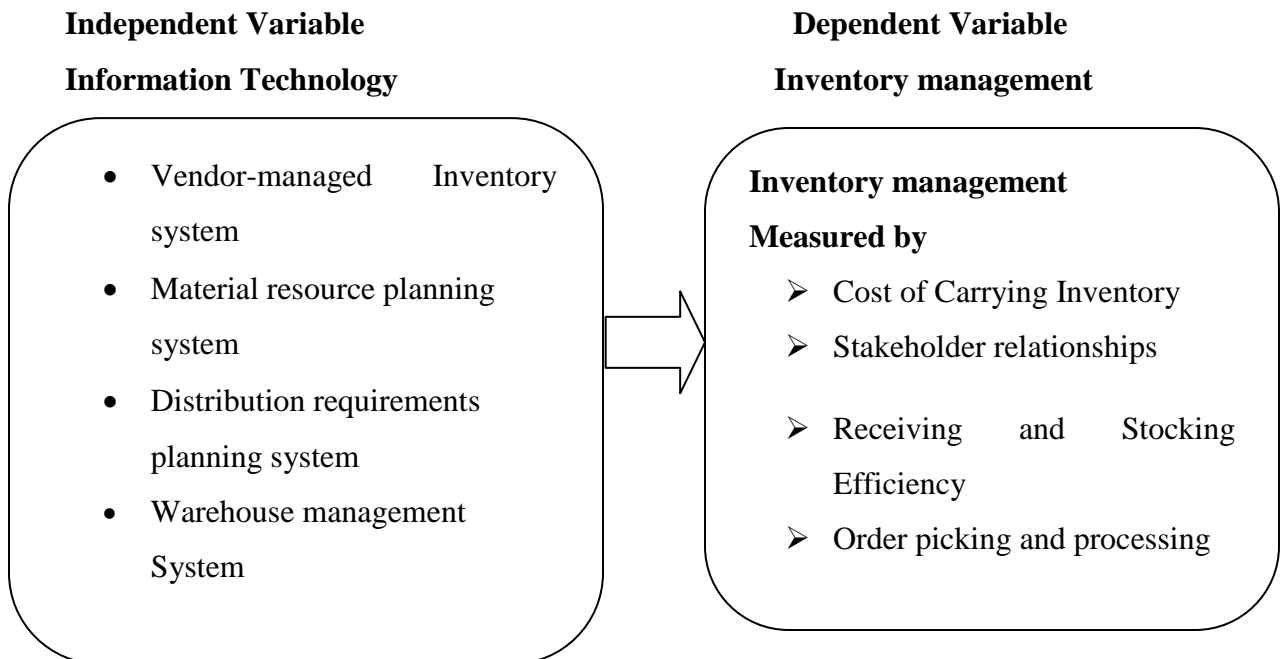
Figure 2.1: Conceptual Framework

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology, which was adopted in undertaking the research. It also outlines the type and data source, target population, data collection and analysis.

3.2 Research Design

This study used descriptive research design. Prem (1995) indicates that descriptive research studies give summaries, properties and observations. The design is the roadmap for the gathering, evaluation and analysis of data (Kothari, 2014).

3.3 Target Population

The study population was all steel manufacturing companies in Nairobi, Kenya. There were 35 steel manufacturing companies (Appendix II) adopted from Kenya Association of Manufacturers, (2018). Due to the small number of steel manufacturing firms, the study was a census.

3.4 Data Collection

Primary data, which was gathered using semi-structured questionnaire was used in the study. The questionnaire had two sections. Section A captured the type of systems adopted in the firm. Section B gave information on the effect of IT on inventory management. Data was gathered from one respondent from each company, that is, the inventory manager or stock controller or the stores manager. The researcher administered the questionnaires through drop and pick. Some questionnaires were sent on mail on respondent`s request.

3.5 Data Analysis

Data gathered was analyzed through descriptive statistics and regression analysis. Descriptive statistics used mean and standard deviation to show systems used and the

extent of usage. A linear regression model was used to measure the effect of adopted IT systems on inventory management in steel manufacturing firms in Nairobi.

The regression model is as follows:

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

Whereby: β_0 was the regression intercept;

$\beta_1 - \beta_4$ are the regression coefficients;

Y was the dependent variable (inventory management);

X_1 = Vendor Managed Inventory system;

X_2 = Material Resource Planning system;

X_3 = Distribution Requirements Planning system

X_4 = Warehouse Management System.

ε = Error term

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter discusses data analysis, interpretation and presentation of the findings from the study. The study sought to establish the effect of information technology on inventory management in Kenya`s steel manufacturing sector.

4.2. Response Rate

Out of the 35 questionnaires administered, 25 questionnaires were dully filled and returned to the researcher. This represents 71.43% of the total target population. According to Mugenda and Mugenda (1999) a response rate of above 70% and over is excellent since it takes into account the maximum variability in a population, hence representative of the population.

4.3 General Information

In this section, the demographics of both the respondents and the organization are presented.

4.3.1 Job Designation

Respondents were asked to indicate their job designation in order to establish whether they could give relevant information for the study. The findings are shown on Figure 4.1
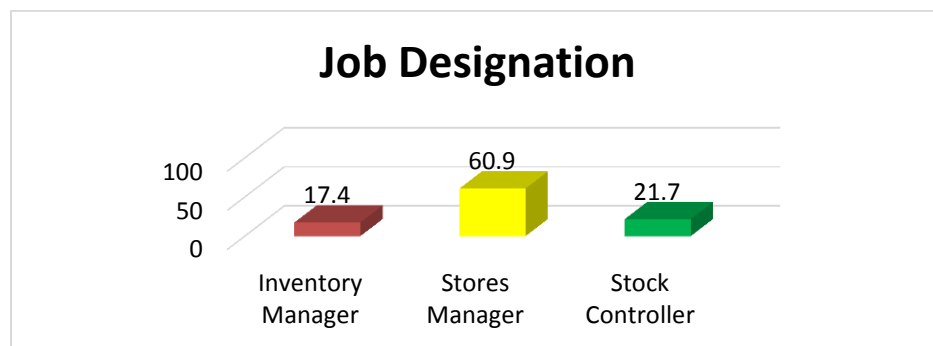
Figure 4.1: Job Designation Source: (Primary Data, 2018)

A majority of the respondents indicated that they were stores managers representing 60.9% of the total respondents. Stock controllers contributed to 21.7% of the total respondents' while 17.4% of the respondents were inventory managers.

4.3.2 Work Experience in Current Position

The study sought to determine the length of period the respondents had worked in their current positions. Figure 4.2 presents the findings.

Work experience in current position
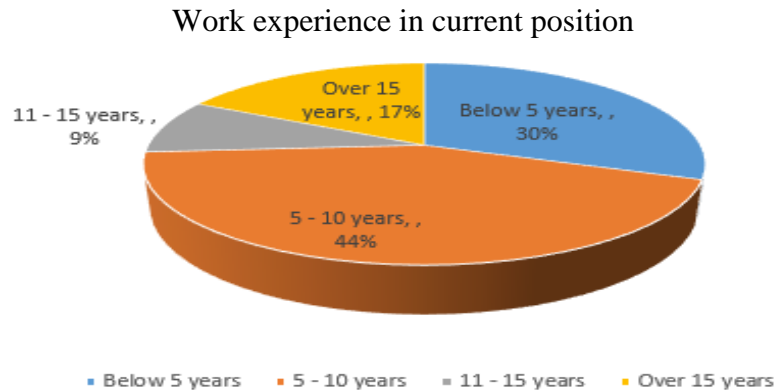
Figure 4.2: Work Experience in Current Position Source: (Primary Data, 2018)

The largest number of respondents 43.5% acknowledged that they had worked in their current positions for a period between 5-10 years. Further, 30.4% of the respondents had worked in their current position for a period below 5 years.17.4% of the respondents had over 15 years working experience in their current working position while only 8.7% had 11-15 years working experience in their current job designation. Thus, respondents with 5 and more years working experience collectively accounted for 56.5%. This implied that these respondents were in touch with the working systems of their companies and thus best suited to give information on the inventory systems that are used in the companies.

4.3.3 Highest Education Level

The highest level of education of the respondents was sought and was categorized under primary level, secondary level, tertiary/college level and university level. Figure 4.3 presents the findings.
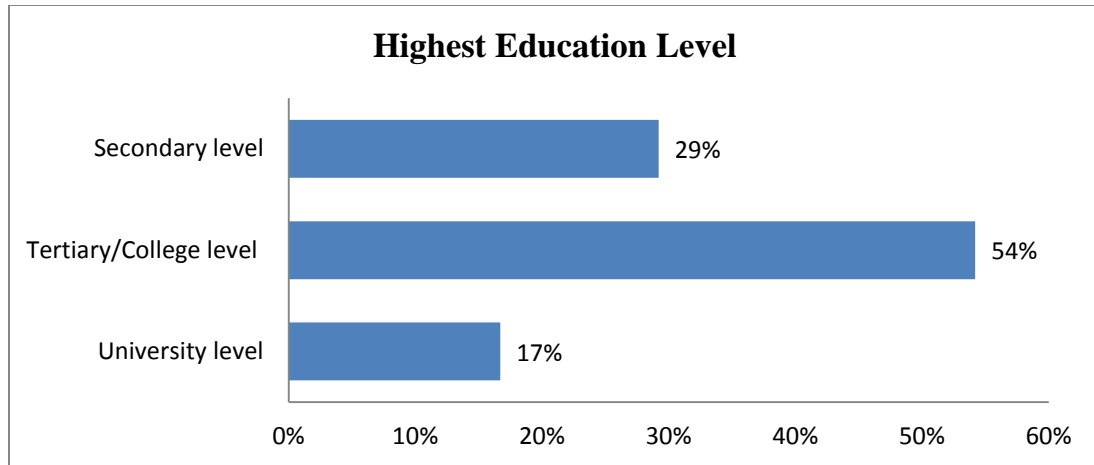
Figure 4.3 Highest Education Level Source: (Primary Data, 2018)

From the findings, 54.2% of respondents indicated they had attained tertiary /college level as their highest education. Those with university level represented 29.2% of the total respondents and a further 16.7% had secondary level as their highest level of attainment. None of the staff had primary level as their highest education level attainment. It can therefore be safely assumed that all the respondents were in a position to understand the parameters that the study sought to investigate.

4.3.4 Inventory System Currently Used

The respondents were requested to indicate which inventory system they used. Figure 4.4 presents the findings.
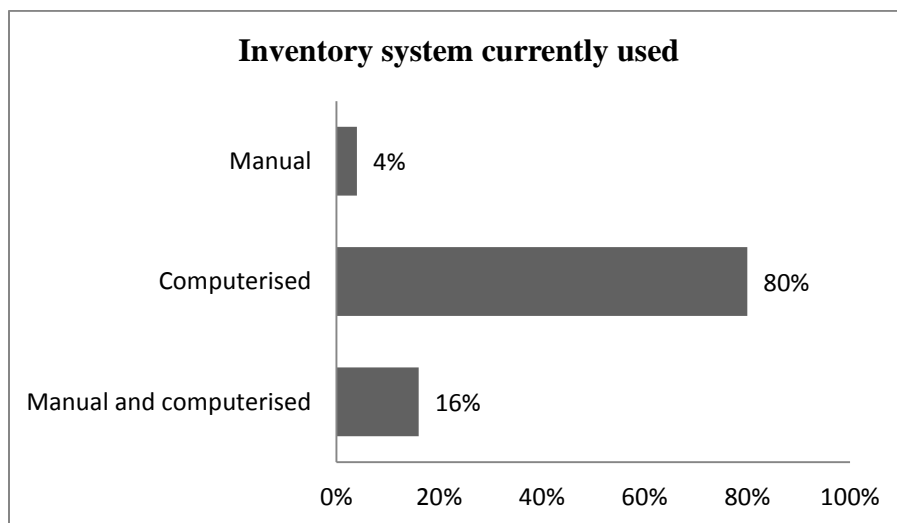
Figure 4.4: Inventory system currently used, Source: (Primary Data, 2018)

The figure 4.4 above indicates 80% of the respondents acknowledged to be using a computerized inventory system. This group was followed closely by those that use both a manual and computerized inventory system at 16%. Only 4% of the respondents used manual inventory system. It can be deduced that 96% of the companies had a computerized inventory system and thus they are able to tell the effect of IT enabled systems on inventory management.

4.3.5 Length of Inventory Management System Use

The respondents were requested to indicate the duration of time they had used a computerized inventory system. Figure 4.5 represents the findings.
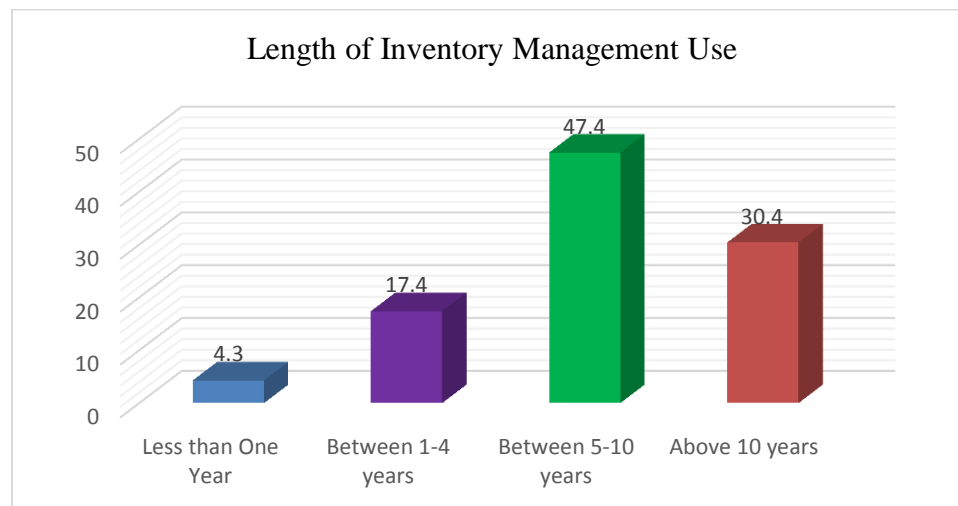
Figure 4.5: Length of Inventory Management Use Source: (Primary Data, 2018)

From the findings, 47.4% of the respondents indicated that they had used a computerized system in their companies for a period of time between 5-10 years. Further, 30.4% of the respondents also acknowledged to have used the inventory system for a period above 10 years while 17.4 % had used the inventory system management for a period between 1-4 years. Only 4.3% of the respondents had used the system less than a year. Thus, it implies that most of the respondent's companies had been using the computerized inventory management system for a while.

4.3.6 Types of IT Enabled Systems Used

The respondents were requested to indicate the type(s) of IT enabled inventory management system they use in their firm from: Vendor managed inventory, material resource planning, warehouse management system and distribution requirement planning systems. Figure 4.6 presents the findings.
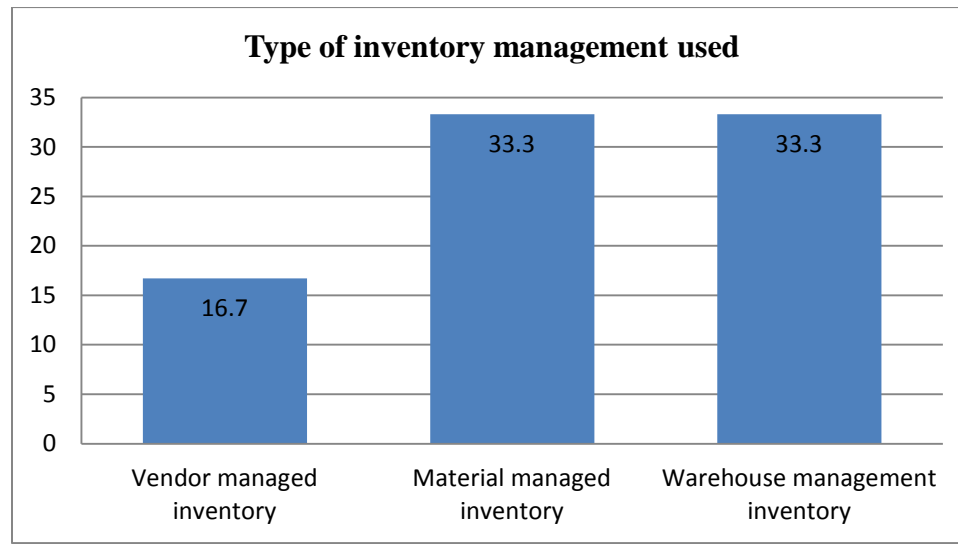
Figure 4.6: Inventory System Currently Used ,Source: (Primary Data, 2018)

An equal number of respondents attested that they use material managed inventory and warehouse management inventory IT systems each accounting for 33.3% of the total number of respondents each. 16.7% of respondents each also confirmed to be using vendor managed inventory and distribution requirement planning IT systems.

4.3.7 Other Types of IT Enabled Inventory Systems Used

The researcher also gave the respondents an opportunity to identify any other type of IT enabled inventory system they used other than the ones already pre-identified by the study. The results are on Table 4.1.

Table 4.1: Other Types of IT Enabled Inventory Systems Used

Other IT Systems Used	Frequency	Percentage
A252	1	4
C690	1	4
Excel	7	28
JIT	5	20
Oracle	2	8
R234	1	4
Sap	6	24
Sera system program	1	4
Solomon	1	4

Source: (Primary Data, 2018)

Table 4.1 shows that 28% of the respondents acknowledged that they use excel. A further 24% acknowledged to be using the Sap IT system. Another 20% of the respondents used the just in time IT system while 8% of the total respondents each acknowledged to be using the oracle systems. Respondents whose companies used A252, C690, R234, Sera system program and Solomon each accounted for 4% of the total respondents.

4.3.8 Extent of Use of the Types of IT enabled System

The extent of use of the various IT enabled systems used in the firms was also established. Table 4.2 shows the findings.

Table 4.2: Extent of Use of the Types of IT Systems

Statement	Mean	Std. Deviation
Distribution requirement planning	2.92	1.801
Warehouse management system	2.76	1.763
Material resources planning	2.52	1.806
Vendor managed inventory	1.92	1.579

Source: (Primary Data, 2018)

From the findings on Table 4.2, distribution requirement planning system and warehouse management system were adopted to a greater extent with a mean of 2.92 and 2.76. On the other hand, materials resources planning and vendor managed inventory adopted to a lesser extent with a mean of 2.52 and 1.92 respectively.

4.4 The Effect of Adopted IT Systems on Inventory Management

To meet the second objective of the study, the respondents were requested to rate their level of agreement with statements regarding the different systems adopted in their firm. A Likert scale was used where 1= Not used at all 2= little extent 3= moderate extent 4= great extent 5= very great extent.

4.4.1 Vendor Management Effect on the Inventory System

To investigate how the vendor management IT system had an effect on the inventory management system the study employed the use of a Likert scale. The findings are on Table 4.3.

Table 4.3: Vendor Management Effect on the Inventory System

Statement	Mean	Std. Deviation
VMI eliminates the need to re order hence minimized understocking	1.72	1.37
VMI has enhanced information sharing both internally and externally	1.72	1.37
VMI has enhanced working capital by minimizing inventory levels	1.72	1.37
VMI has reduced the product cost due to decrease in overall running costs	1.36	0.757

Source: (Primary Data, 2018)

The respondents acknowledged to a little extent that VMI eliminates the need to re-order hence minimized under stocking with a mean of 1.72 and standard deviation of 1.37, VMI has enhanced information sharing both internally and externally with a mean of 1.72 and standard deviation of 1.37 and VMI has enhanced working capital by minimizing

inventory levels with a mean of 1.72 and standard deviation of 1.37 that were some of the ways through which the vendor management affected the inventory system.

However, the respondents indicated to a little extent that VMI has reduced the product cost due to decrease in overall running cost with a mean of 1.36 and standard deviation of 0.757.

4.4.2 Material Resource Planning System Effect on the Inventory System

To understand how the material resource planning system influenced the inventory management system the study employed the use of a Likert scale. Table 4.4 presents the findings.

Table 4.4: Material Resource Planning System effect on the Inventory System

Statement	Mean	Std. Deviation
MRP has reduced material handling and conversion costs	2.32	1.701
MRP has ensured raw materials are available for the production process in good time	2.32	1.725
MRP has reduced idle time due to continuity of the production cycle	2.16	1.546
MRP has boosted order processing and completion	2.04	1.488

Source: (Primary Data, 2018)

The respondents agreed to a little extent (2.04<mean<2.32) that MRP has reduced material handling and conversion costs with mean 2.32 and standard deviation of 1.701, MRP has ensured raw materials are available for the production process in good time with mean 2.32 and standard deviation of 1.725, MRP has reduced idle time due to continuity of the production cycle with a mean of 2.16 and standard deviation of 1.546 , MRP has boosted order processing and completion with a mean of 2.04 and standard deviation of 1.488.

4.4.3 Distribution Requirement Planning System Effect on Inventory Management System

To understand how distribution requirement planning system has an influence on the inventory management system the study employed the use of a Likert scale. Table 4.5 presents the findings.

Table 4.5: Distribution Requirement Planning System Effect on Inventory Management System

Statement	Mean	Std. Deviation
DRP has helped the firm improve its credibility by giving customers reliable on lead times	2.84	1.7
DRP has ensured timely deliveries of both raw materials and finished goods	2.72	1.646
DRP is used to replenish stocks and ensure that there is a safety stock	2.64	1.551
DRP has assisted in demand forecasting	2.6	1.555

Source: (Primary Data, 2018)

The respondents attributed to a moderate extent (2.6<mean<2.84) that DRP has helped the firm improve its credibility by giving customers reliable with a mean of 2.84 and standard deviation of 1.7, DRP has ensured timely deliveries of both raw materials and finished goods with a mean of 2.72 and standard deviation of 1.646, DRP is used to replenish stocks and ensures that there is a safety stock with a mean of 2.64 and standard deviation of 1.551 and DRP has assisted in demand forecasting with a mean of 2.6 and standard deviation of 1.5555.

4.4.4 Warehouse Management System Effect on Inventory Management System

With the aim of understanding the effect of warehouse management system on the inventory system the study employed the use of a Likert scale. The Likert scale. The findings are on Table 4.6.

Table 4.6: Warehouse Management System Effect on Inventory Management System

Statement	Mean	Std. Deviation
WMS aids in promoting accountability in the warehouse	3.2	1.756
WMS has boosted stock and its accuracy	3.16	1.748
WMS helps in transactions management	3.12	1.691
WMS has enabled easy identification of raw materials and products	3.08	1.754

Source: (Primary Data, 2018)

The respondents attributed to a moderate extent (3.08<mean<3.2) that WMS aids in promoting accountability in the warehouse with a mean of 3.2 and standard deviation of 1.756, WMS has boosted stock and its accuracy with a mean of 3.16 and standard deviation of 1.748, WMS helps in transactions management with a mean of 3.12 and standard deviation of 1.691 and WMS has enabled easy identification of raw materials and products with a mean of 3.08 and standard deviation of 1.754.

4.4.5 Systems Use Effect on the Inventory Management Cycle

The study also sought to understand to what extent the systems used affected activities in the inventory management cycle. To do, the study employed the use of a Likert scale. Table 4.7.

Table 4.7: Systems Use Effect on the Inventory Management Cycle

Statement	Mean	Std. Deviation
Order picking and processing	4.08	1.47
Receiving and stocking efficiency	4.08	1.525
Management of stakeholders' relationships	3.46	1.25
Control of costs-carrying inventory	3	1.251

Source: (Primary Data, 2018)

The table above shows that respondents concurred to a great extent (3.46<mean<4.08) that order picking and processing with a mean of 4.08 and standard deviation of 1.47, receiving and stocking efficiency with a mean of 4.08 and standard deviation of 1.525 and management of stakeholders relationships with a mean of 3.46 and standard deviation of 1.25 that these were some of the ways through which systems use had an effect on the inventory management cycle. The respondents however acknowledged to a moderate extent that control cost carrying inventory was a way through which systems affected inventory management cycle.

4.4.6 IT Effect on the Inventory System

The study utilized the Likert scale to determine how IT enabled systems have influenced each of the activities in the inventory management cycle. Findings are shown on Table 4.8.

Table 4.8: IT on Inventory Management

Statement	Mean	Std. Deviation
IT has enabled faster and easier information sharing	4.29	1.517
IT has increased accuracy and accountability of stock reports	4.28	1.487
IT has ensured deliveries have become efficient and timely	4.12	1.536
IT has increased efficiency in distribution of inventory	4.08	1.501
IT has enhanced speed of service to customers	4.08	1.47
IT ensures orders are picked and tracked throughout the process	4.08	1.441
IT has ensured stock movements are easily identifiable and provisions can be made	4	1.5
IT has promoted timely and appropriate stock replenishment decisions	4	1.474
IT has promoted timely information and better communication between buyers and suppliers	3.96	1.457
IT has reduced spoilage and pilferage of inventory	3.96	1.517
IT has significantly reduced lead times	3.92	1.412

IT has enhanced long-term mutually beneficial relationships	3.8	1.384
IT has reduced costs due to removal of middlemen and intermediaries	3.79	1.444
IT has improved customer satisfaction through timely deliveries	3.72	1.339
IT has enabled better handling of complains and crisis like rejections	3.64	1.35
IT has reduced stocks outs	3.38	1.564
IT has promoted working towards zero defects	2.63	1.245

Source: (Primary data, 2018)

Table 4.8 indicates that IT has enhanced the following activities in the inventory management cycle: information sharing, timely and accurate stock decisions, timely deliveries, accuracy of stock reports and speed of service to customers. These activities had the highest means of between 4 to 4.29. It is important to note that IT had the lowest influence towards enhancing zero defects with a mean of 2.63.

4.4 Regression Model

The study conducted a regression analysis to help establish whether inventory management could be influenced by vendor managed inventory, material resource planning, distribution requirement planning, warehouse management system. The model summary, ANOVA table and coefficients table presents the findings.

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.722[a]	0.521	0.425	0.99788

a. Predictors: (Constant), Warehouse Management, Material Management, Distribution Requirement, Vendor Management

Source: (Primary Data, 2018)

The R square of the model above indicates that 52.1% of the variation in inventory management can be explained by warehouse management, material management,

distribution requirement and vendor management. Therefore, 41.9% of the changes is due to measurement errors or other variables that were excluded from the model and captured in the error term.

Table 4.10: ANOVA Table

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.642	4	5.411	5.434	.004[b]
	Residual	19.915	20	0.996		
	Total	41.558	24			
a. Dependent Variable: Inventory Management						
b. Predictors: (Constant), Warehouse Management, Material Management, Distribution Requirement, Vendor Management						

Source: (Primary Data, 2018)

From the ANOVA table the F value (5.434) at significance level (0.004) implies that the model is significantly fit to predict inventory management based on warehouse management, material management, distribution requirement and vendor management.

Table 4.11: Coefficients Output

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.181	0.512		4.259	0.00
	Vendor Management	-0.571	0.245	-0.506	-2.336	0.03
	Material Management	0.419	0.176	0.512	2.376	0.028
	Distribution Requirement	0.252	0.153	0.302	1.646	0.115
	Warehouse Management	0.324	0.136	0.418	2.386	0.027

a. Dependent Variable: Inventory Management

The coefficients output in Table 4.11 estimates the model for predicting the dependent variable given the value of the independent variable can be written as below;

$$Y = 2.181 - 0.571X_1 + 0.419X_2 + 0.324X_4 + \varepsilon: \text{where}$$

Y =dependent variable (inventory management);

X_1 = Vendor-Managed Inventory;

X_2 = Material Resource Planning;

X_4 = Warehouse Management System.

ε = Error term

The model illustrates that: for every unit increase in vendor managed inventory, inventory management goes down by -0.571 units, for every unit increase in material resource planning, inventory management goes up by 0.419 units and for every unit increase in warehouse management system, inventory management goes up by 0.324. The findings further show that material resource planning and warehouse management system had a positive effect (increase) on inventory management. On the other hand, vendor management inventory had a negative effect (decrease) on inventory management.

4.5 Discussion of the Findings

This section provides discussion of the study findings based on the descriptive and inferential statistics. The study`s aim was to establish the effect of information technology on inventory management in Kenya`s steel manufacturing companies. The results revealed that distribution requirements planning and warehouse management system were the most adopted systems. Material resource planning was moderately adopted. However, vendor managed inventory system was the least adopted.

These findings agree with those of Dobler & Starling (2006) who noted that warehouse management system effectively controls flow of goods and transactions which helps

enterprises to meet distinctive client demand of their supply chain(s) as well as distribution channels.

In the Kenyan scenario, the findings agree with those of Kithinji (2015) who established that the warehouse management system was highly adopted in Nairobi supermarkets leading to efficiency in their operations and general performance.

However, the findings contradict with those of Gerald & David, (2013) who highlighted that the vendor management system enhances management of inventory through reading in bulk as VMI was adopted to a very small extent in steel firms.

CHAPTER FIVE

SUMMARY, CONCLUSION AND   RECOMMENDATIONS

5. 1 Introduction

The chapter presents the summary, conclusion and recommendations of the study. In addition, it also presents the drawbacks of the study and the recommendations for further research. Summary of the findings has been highlighted as per the objective of the research which sought to establish the effect of information technology on inventory management in Kenya`s steel manufacturing sector.

5.2 Summary of the Findings

From the findings, distribution requirement planning systems and warehouse management were used to a greater extent. On the other hand, material requirement planning system and vendor managed systems were used to small extent.

The other types of inventory systems that were used by the companies included: Excel, sap, just in time IT, oracle, A252, C690, R234, Sera and Solomon IT systems.

Distribution requirement planning was statistically insignificant in explaining the effect IT systems adopted on inventory management.

5.3 Conclusion and Recommendations

It was concluded that firms in the steel sector had generally adopted IT in their inventory management process, which in turn enhanced activities in the inventory management cycle with order picking and processing and stocking and efficiency being the most affected activities.

Warehouse management systems and distribution requirement systems were the highly adopted. However, vendor management system was the least adopted system hence it is recommended that the firms should put more effort to put the system in place. The study also recommends that the firms in the steel sector should employ IT better in managing stock outs and reduction of zero defects.

5.4 Limitation of the Study

Although the study`s objectives were met, a few limitations were noted. Most of the firms were suspicious of the researcher posing as tax compliance proxy or a competitor even with presentation of the introductory letter. This slowed down the study as it took time for the respondents to establish rapport and fill the questionnaire comfortably. The other constraint was limiting the survey to the stock controller or stores manager and inventory manager. There were some firms where the supply chain manager and procurement officers could give more refined results.

5.5 Suggestion for Further Research

This study limited itself to Nairobi. However, from the data collection exercise it was noted that some companies have their plants in Mombasa, Kisumu and Machakos County, but what was in Nairobi were just distribution points. Future researchers should expand the study to these areas.

Inventory carrying cost could not be determined by use of real time figures, due to strict non closure policies by the steel sector. Future researchers can strive to measure this important aspect of inventory management.

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APPENDICES

Appendix I: Questionnaire

Part A: General Information

1. Name of the organization: (Optional)

………………………………………

2. What is your job designation?

    a) Inventory manager   [   ]

    b) Stores Manager   [   ]

    c) Stock controller   [   ]

3. How long have you worked in your current position?

Below 5 Years   [   ]   5 - 10 Years   [   ]

11- 15 Years   [   ]   Over 15 Years   [   ]

4. Highest Education Level Attained

Primary Level   [   ]   Secondary Level   [   ]

Tertiary / College Level [   ]   University Level   [   ]

5. What inventory system do you use currently?

    a) Manual   [   ]

    b) Computerised   [   ]

    c) Manual and computerised   [   ]

6. How long have you used an inventory management system?

Less than one year   [   ] Between 1-4 years   [   ]

Between 5-10 years   [   ] Above 10 years   [   ]

8. TYPES OF IT SYSTEMS USED IN INVENTORY MANAGEMENT

i) What are the types of systems used in inventory management in your firm? Kindly tick where appropriate.

Vendor managed inventory   [   ]

Material resource planning   [   ]

Warehouse management system   [   ]

Distribution requirement planning   [   ]

ii) Mention any other system used in your firm.

……………………………...…………………………………………

……………………………………………………………………………………….…

iii) Please indicate the extent to which the systems have been used in your firm.

System used inventory management	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
Vendor managed inventory					
Material resources planning					
Distribution resources planning					
Warehouse management system					

SECTION B: THE EFFECT OF IT SYSTEMS ON INVENTORY MANAGEMENT

This section assesses your rating on statements about the systems used in your firm in inventory management.

Kindly tick the appropriate digit where: 1 for Not used at all, 2 for little extent, 3 for Moderate extent, 4 for Great extent, and 5 for very great extent.

i) How has vendor managed inventory system affected inventory management in your firm?

Vendor managed inventory system	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
VMI has enhanced working capital by minimizing inventory levels					
VMI has enhanced information sharing both internally and externally					
VMI has reduced the product cost due to decrease in overall running costs					
VMI eliminate the need to re-order hence minimized understocking					

ii) How has material resource planning system affected inventory management in your firm?

Material resource planning system	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
MRP has ensured raw materials are available for the production process in good time					
MRP has reduced idle time due to continuity of the production cycle					
MRP has boosted order processing and completion					
MRP has reduced material handling and conversion costs					

iii) How has distribution requirement planning system affected inventory management in your firm?

Distribution requirement planning	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
DRP has ensured timely deliveries of both raw materials and finished goods					
DRP has assisted in demand forecasting					
DRP is used to replenish stocks and ensure that there is a safety stock					
DRP has helped the firm improve its credibility by giving customers reliable on lead times					

iv) How has warehouse management system affected inventory management in your firm?

Warehouse management system	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
WMS has enabled easy identification of raw materials and products					
WMS has boosted stock taking and its accuracy					
WMS aids in promoting accountability in the warehouse					
WMS helps in transactions management					

Kindly mention any warehouse management systems used in your company.

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………..

v) To what extent have the systems used affected the following activities in the inventory management cycle?

	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
Control of costs - carrying inventory					
Management of stakeholder relationships					
Receiving and stocking efficiency					
Order Picking and Processing					

vi) Kindly rate your level of agreement to the statements given below

Stakeholder relationships	Very great extent	Great Extent	Moderate Extent	Little Extent	Not used at all
IT has promoted timely information and better communication between buyers and suppliers					
IT has enhanced long term mutually beneficial relationships					
IT has reduced costs due to removal of middlemen and intermediaries					

IT has improved customer satisfaction through timely deliveries					
IT has enabled better handling of complains and crisis like rejections					
Receiving and stocking efficiency					
IT has increased efficiency in receiving and distribution of inventory					
IT has reduced spoilage and pilferage of inventory					
IT has increased accuracy and reliability of stock reports					
IT has ensured stock movements are easily identifiable and provisions can be made					
IT has promoted working towards zero defects					
IT has reduced stock outs					
Order picking and processing					
IT has enabled faster and easier information sharing					
IT has ensured deliveries have become efficient and timely					
IT has significantly reduced lead times					
IT has enhanced speed of service to customers					
IT ensures orders are picked and tracked throughout the process					
IT has promoted timely and appropriate stock replenishment decisions					

Appendix II: List of Steel Manufacturing Companies in Nairobi

NO.	NAME	ADDRESS
1	Adronit Enterprises	P.O.Box 40627 – Nairobi
2	Accurate Steel Mills Limited	Entreprise Road, P.O. BOX 74332, NAIROBI, KENYA
3	Alliance Steel Works	P.O.Box 72377 – Nairobi
4	Apex Steel	P.O.Box 18441 – Nairobi
5	ASL Ltd	Dar Es Salaam Road, Opposite Abc Bank Industrial Area, Nairobi, Kenya
5	Associated Steel	P.O.Box 18639 – Nairobi
6	Athi River Steel Plant Limited	Muthithi Place, 67 Muthithi Road, Nairobi
7	Bhambra Steel	P.O.Box 39829 – Nairobi
8	Brollo Kenya Ltd	Athi River Rd, Off Addis Ababa Rd, Nairobi, Kenya
9	David Engineering	P.O.Box 27722 – Nairobi
10	Desbro Engineering	P.O.Box 42469 – Nairobi
11	Doshi Co. Ltd	P O Box 40671-00100 GPO Nairobi Kenya
12	East African Foundry Works	P.O.Box 48624 – Nairobi
13	Insteel Limited	Ol Kalou Road, Industrial Area. P.O Box 78161 -00507, Nairobi Kenya
14	Iron Art	P.O.Box 27335 – Nairobi
15	Kamco Stainless	P.O.Box 41212 – Nairobi
16	Khetshi Dharamshi & C°	P.O.Box 43702 – Nairobi
17	Kenya United Steel Co. Ltd	Nairobi Kenya
18	Lovely Enterprises	P.O.Box 18886 – Nairobi
19	Mabati Rolling Mills	P.O.Box 78162 – Nairobi
20	Mild Steel	P.O.Box 78117 – Nairobi
21	Minal Enterprises Co. Ltd	North Airport Rd, Nairobi,Kenya.
22	Novus Engineering	P.O.Box 11894 – Nairobi
23	Regent Equatorial Holdings	P.O.Box 40943 – Nairobi

24	RLCO Steel Fabricators	P.O.Box 32138 – Nairobi
25	Sandvik Kenya	P.O.Box 18264 – Nairobi
26	Sarang Steel	P.O.Box 30609 – Nairobi
27	Scan Steel	P.O.Box 48247 – Nairobi
28	Secol	P.O.Box 18564 – Nairobi
29	Steel Africa	P.O.Box 46934 – Nairobi
30	Steelmakers	P.O.Box 44574 – Nairobi
31	**Steel** Structures Ltd	Kangundo Road, Off Outering Rd P.O. Box 49862-00100, Nairobi, **Kenya**
32	Tarmal Wire Products Ltd	Off Mogadishu Rd, Industrial Area,
33	Technosteel Industries	P.O.BOX 17512 – NAIROBI
34	Tononoka Group	P.O.BOX 44689 – NAIROBI
35	Tuffsteel Ltd	MOMBASA RD, NAIROBI

Source: Kenya Association of Manufacturers, (2018)