STRATEGIC INVENTORY CONTROL AND OPERATIONAL PERFORMANCE OF MANUFACTURING FIRMS IN MOGADISHU, SOMALIA

BY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE (MSC) IN SUPPLY CHAIN MANAGEMENT, SCHOOL OF BUSINESS UNIVERSITY OF NAIROBI

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DECLARATION

STUDENT'S DECLARATION

I would like to make a declaration that this is my novel project which has not been submitted to any learning organization apart from the University of Nairobi for the sole purpose of examination.

Signature _____   **Date 08/12/2020**

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SUPERVISOR'S DECLARATION

This project has been submitted with my authorization as the University Supervisor for examination purpose.

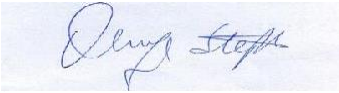**Signature**_____   **Date 08/12/2020**

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DEDICATION

To my beloved Parents, Mr. Mohamed Abdullahi and Mrs. Jamad Mohamed for their patience, understanding, support and encouragement both economically and financially. Their never wavering support in the journey of pursuing this programme and being a source of inspiration to me can never be taken for granted it wouldn't be achievable without them

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

JIT   Just-In-Time

ABC   Activity Based Computing

EOQ   Economic Order Quantity

GDP   Gross Domestic Product

UNDP   United Nations Development Programme

KPI   Key Performance Indicators

SMEs   Small and Medium Enterprises

TCA   Total Cost Analysis

WMS   Warehouse Management System

VMI   Vendor Managed Inventory

ABSTRACT

The aim of the study was to determine how Strategic Inventory Control Techniques influence Operational Performance of Manufacturing Firms in Mogadishu, Somalia. The study objectives were; To determine the extent of adoption Strategic Inventory Control Techniques that are commonly used by Manufacturing Organizations and to establish the relationship between Strategic Inventory Control Techniques and Operational Performance of Manufacturing Firms in Mogadishu, Somalia. Methodology that was adopted was descriptive design with the target population of all Manufacturing entities who are registered members by Ministry of Commerce and Industry (2018) of Somalia. The listed members are 35 and thus census was carried out to study the entire population. The study adopted Primary data. Drop and pick later and use of mails was used to administer the questionnaire. The findings show EOQ, Just-In-Time, ABC Analysis, Warehouse Management System and Demand Forecasting were all adapted to a large extent by the Manufacturing Firms in Somalia. Descriptive statistics was used to analyze the first objective and regression analysis was used to analyze the second objective. The findings also reveal that the independent variable (Strategic Inventory Control) had a positive influence on the dependent variable (Operational Performance) and that the adoption of Strategic Inventory Control affected Efficiency, Speed and Quality to a large extent. It is recommended that all the manufacturing firms should adopt Strategic Inventory Control Techniques to a large extent since it has been established that the Techniques influence Operational Performance. The study was limited as it only focused on the Manufacturing firms in Mogadishu only and thus the results cannot be conclusive to other Manufacturing Firms which are not in Somalia. Future research should focus on other Strategic Inventory Control Techniques which are not commonly used and establish the reason as to why they are not being adopted, not only by manufacturing firms in Mogadishu but also by other firms.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

In business, it is common to keep inventory for future sale or use. According to (Sandeep, 2007), companies are to keep stock of goods that awaits sale to be able to meet demand on time. Strategic Inventory Control bears a significant purpose of enabling management come up with rules to minimize costs which are associated with maintenance of inventory and meeting demand from customers Eckert (2012). The purpose of studying inventory is to enable companies to save money. In the contemporary world of today, majority of the entities are after mitigation of system-wide costs and sustaining minimum amounts of inventory across the supply chain while at the same time maximizing on the required customer service levels (Sandeep, 2007). According to Lambert (2008), advanced innovation and technology have made the product life cycle shorter as a result of enhancing the firm's inventory control mechanisms. (Lambert, 2008) further posits that proper strategic inventory control has resulted to cost reduction, high-efficiency levels boosting the firm's performance level.

Based on history, a firm's inventory management was based on either having very little stock of goods or having too much-stocked goods in the company's warehouse. According to Tersine (2009), strategic inventory controls has enhanced the speed of operations and resulted in the production of an increased volume of products produced within the required levels. For a long period, the practice of effectively controlling inventory has been perceived as a significant strategy to realize competitive advantage through an effective and efficient manufacturing and distribution process. Effective management of a company's supplies has also been a key reason why the majority of the firms have realized the required levels of inventory management. Companies only manufacture what is needed when their stocks are controlled through strategic inventory control measures resulting in a reduction in manufacturing costs. According to Robert (2011), strategic inventory controls mechanisms are significant in the improvement of customer satisfaction levels as the needs of various customers are met on time. Excess stock of goods in a company's supply chain hinders the flow of cash and negatively affect their performance according to Dryden and Brownell (2012). According to Bicheno (2011), a close examination of relationships across the supply chain involving the flow of products indicates they are all based on inventory storage and movement.

The research was based on two significant theories; the Stochastic Inventory and Transaction cost Analysis (TCA) theories. The Transaction Cost Analysis is essential as it helps explain the significance and relevance of cost that is incurred in the daily activities in the management of inventory by companies engaging in manufacturing. Evan (1990) developed the stochastic inventory theory which is about the management of the levels of stock held by a company. The theory helps explain the levels of stock firms engaging in manufacturing are to hold at any given time and the significance of stock replenishment.

1.1.1 Strategic Inventory Control

Companies often hold four significant types of goods in their warehouses. These are; Raw materials, work-in-process, maintenance/repair/operating supply (MRO) and final pr0oduct (Waters, 2003). To be able to meet clients need, companies are supposed to know how they are to balance the four types of inventory at all times. According to Pandey (2005), to ascertain the level of stock that a firm has to have in their warehouses at any given time, there is a need for companies to institute a strategic inventory control mechanism. The control mechanisms are to be made up of company policies, procedures, processes and controls which would help monitor the level of inventory that is to be stocked. The instituted control mechanisms help to properly manage inventory as they determine the volume of inventory to be stocked and the manipulation of the existing stock in the stores. According to Brigham et al. (2013), companies are to develop and design strategic inventory control mechanisms which are to balance the supply and demand to cut down on inventory costs, improve information sharing and reduce cycle time. As a result, firms can manage their inventory levels effectively and properly coordinate their supply chain systems resulting in the performance of their operations improving significantly.

Strategic Inventory Control are a set of controls and guidelines that monitor inventory levels ascertaining the levels to be maintained, the best time to do stock replenishment and determine how large orders are to look like (Waters, 2003). Inventory control is made up of all the activities instituted to ensure the required product or service is availed to customers as opined by Miller (2010). It provides for the coordination of the acquiring, making and distribution to meet the target market requirements and subsequently realize the organizations needs by availing the product to the customers. Inventory control is about making an order, receipt of the order, storage of items, issue of stock, and reordering items that are limited in the stores. Companies often keep stock of items in their warehouses to ensure continuity in their operations, meet the demand of the product,

allow flexible production scheduling, safeguard against variations in the delivery time of the raw material, anticipate for change in prices and take advantage of economies of scale based on purchase order sizes. To make a correct decision which affects the size of inventory to stock there is need to consider the cost of holding stock that is composed of costs of storing facilities, insurance of the goods, depreciation, obsolescence, pilferage and opportunity cost of capital; change in production costs; the cost of ordering and cost of stock-outs (Zipkin, 2000).

According to Wisner and Leong (2011), strategic control of inventory is overseeing efficiency in the flow of materials constantly in and out of the inventory that exists. The process is based on the control of products coming into stores to prevent overstocking or maintaining low inventory levels that may put operations continuity at risk. According to Agus and Noor (2010), strategic controls for inventory management should also seek to regulate inventory costs from the total value of goods perspective and the burden of tax that is subsequently generated from cumulative inventory value. According to Dryden et al. (2012), strategic inventory control is about keeping accurate records for finished items ready to be shipped out. This is done by adding the number of newly produced and completed items to inventory and subtracting the stock of goods shipped out of the stores to the buyers any given time. Inventory control practices are significant as they enable the conveyance of the information on the number of materials that are available in stores at any given time. The research focused on the following strategic inventory control techniques; Economic-Order-Quantity, Just-In-Time, ABC analysis, Warehouse Management System and Demand Management.

1.1.2 Operational Performance
The concept looks at an entity's performance in comparison to set standards including aspects like reducing waste, complying with regulations, efficiency, cycle time and environmental responsibility (Vencataya, 2011). Operational performance focusses on a firms internal operating capacity in relation to cost reduction and waste minimization, product quality enhancement and developing new product, improved delivery capacity as well as growing productivity as explained by (Riyadi & Munizu, 2013). Operational performance also represents the measurable elements of an entity's system including production cycle time, reliability and stock turns. It further reflects business performance attributes like market share and consumer satisfaction as opined by Voss, Åhlstrom and Blackmon, 1997).

A firm's operations performance is often measured against a predetermined standard of efficiency, effectiveness and the obligation like productivity, reduction of waste and adhering to regulations (Slack et al., 2004). According to Vencataya, Keshwar and Deveshika (2015) performance objectives are five in number and they include; Quality, Cost, speed, flexibility and dependability. Operational performance is relevant to organizations as it enhances production effectiveness, builds high quality products, have satisfied customers and consequently, the entity enjoys higher profits and revenues (Kaynak & Harley, 2008). The firm's operational performance determines the extent to which its producing products as well as services both efficiently and effectively and the degree to which the product as well as the service satisfies customers' expectations and requirements (Vencataya, 2011). Hwang, Han, Jun and Park (2014) view Operational performance as vital in the management of an entity's process and its key in paving the relevant pathways for sustainable competitiveness. It further fosters the organizations performance to reach its basic objectives including service delivery, quality and productivity (Bayo-Moriones & De Cerio, 2002).

Hwang et al. (2014) point out that Evaluation of operational performance is a fundamental exercise and a key function in the maintenance of competitive advantage for a given firm. Birech (2011) further posits that operational performance is measured using various approaches including utilization, lead time measuring inventory, cycle time, measuring quality, time, speed, cost, efficiency and effectiveness. Considering the overall scope of this study, the focus of operational performance has been placed on Efficiency, Quality and Speed. To achieve high operational performance, firms need to consider the effective and efficient adoption of all the resources at their disposal. Entities need to consider employees as assets who needs to be deployed in the most effective and efficient way to achieve maximum productivity and maximum employee motivation. Efficiency descries the best possible use of an entity's resources to achieve maximum benefits. This leads to low cost products due to waste minimization and value-added activities along the production line (Vencataya, 2011). Quality is viewed with regards to conformance to specifications and therefore quality aspect of performance seeks to address matters relating to the number of defects produced and the cost of quality. time and speed entails on time delivery and has the capacity to significantly determine consumer satisfaction. It also focusses on cycle and lead times.

1.1.3 Manufacturing Industry in Mogadishu, Somalia

Levinson (2018) defines Manufacturing as the process of conversion of materials into complete products that are ready for consumption trough a system of production. In the manufacturing process, inputs are taken through a system that transforms them into final products which are to be sold to consumers. The industry plays a substantial purpose in the growing of a country's economy. The significant changes in technology, however, has resulted in a change in paradigm from product to service economies causing the stagnation of the industry. A stable sector in manufacturing is a strong indicator of a resilient and growing economy. Moreover, the manufacturing sector is closely interrelated to all the other sectors of the economy.

In Somalia, there were fifty-three small, medium, and large publicly owned manufacturing entities before the civil war broke out in 1991. As a result, the war left none of them operational according to Tybout (2000). The sector, however, has gained significant traction with Somali Diasporas who are making significant investments in plants that are small scale in nature. There is a total of thirty fie manufacturing entities in Mogadishu that are in charge of the production of soap, foam mattresses, plastic bags, aluminium, processing stone, developing fishing boats and mineral water (Ministry of Commerce and Industry, 2018). The manufacturing sector in Somali contributes 10% of the country's GDP and is responsible for the 2% formal employment and the 0.01% export from Somali. (Ministry of Commerce and Industry (2017). Based on UNDP (2018) Somali investment in bright manufacturing has significantly grown in Mogadishu and the repot expresses confidence in their economic performance as a plant worth $8.3 million for Coca-Cola products bottling was set up in 2004 in Mogadishu investment in the economy by investors are encouraged as their Somali government continues to attract foreign direct investments including general motors. The Somali government encourages manufacturing through offering grants on customs, duty reliefs for the establishment of tools and machines and 50% duty reduction on the importation of raw materials through the Mogadishu port (Mohamed, Isak & Roble, 2019)

1.2 Research Problem

To be able to serve customer demand, the majority of companies have come to terms with the need to institute Strategic inventory controls techniques. A Strategic inventory control technique in a firm enables mitigation of inventory costs, reduction of lead times and timely delivery of goods. Wisner et al. (2011) argue that companies which strategically hold vital stock of raw material are likely to complete the production of finished items as scheduled. To be able to maintain production

continuity in production operations through the maintenance of a smooth raw material flow without shortages, Strategic inventory controls are essential in stock management (Shapiro, 2009). There are a significant number of reasons to manage inventory according to Buffa and Sarin (1987). Overstocking results in cash tied in stock, increases costs of holding stock and may cause theft and obsolescence of stocked items. Furthermore, the shortage of materials in stores causes production schedule interference, poor customer relation and equipment operating below capacity. There is a significant challenge in Strategic inventory control that exists in manufacturing firms in Somalia.

The Somali manufacturing industry faces a myriad of challenges that include demand management, overstocking, theft of stock, stock-outs, determination of how and when to undertake stock replenishment and Strategically controlling inventory costs (Anshur, Ahmed, & Dhodi, 2018). As a result, management may not have the capability to determine and predict with certainty the delivery date of significant materials. Management is often faced with the question of how best to ensure there is no hitch as well as delay in the supply of raw materials in order to satisfy their daily requirements without excessive stocking of materials. Inventory management systems are to be maintained by manufacturing firms to enable the supply of equipment and facilities are done at the right time (Flanigan & Schulz, 2016). Companies are supposed to consider the implementation of Strategic inventory control techniques to be able to reduce the costs and improve performance in operations.

Several studies have been undertaken locally and globally on the topic of inventory management controls and their subsequent impact on a firm's operations performance. Orobia, Nakibuuka, Bananuka and Akisimire (2020) undertook their study focusing on the management of Inventory, the competence of management and performance financially of small businesses. The study ascertained that managing inventory measures affect significantly the small business financial performance. Gołaś (2020) on the outcome of inventory management on profitability established that significant management of inventory reduces the overall production costs. Singh, Ghosh, Saraf, & Nayak, (2020) study sought to identify KPIs for Optimization of systems of inventory management ascertained that systems for inventory management lower operating costs and enhance the efficiency in sales benefiting the organization.

A study was undertaken by Anshur, Ahmed and Dhodi (2018) on the purpose of management of inventory on the economic performance of Designated Manufacturing firms based in Mogadishu ascertained that management of inventory influenced their financial performance through cost reduction and increasing profits. A study by Muchaendepi, Mbohwa, Hamandishe and Kanyepe (2019) on the management of inventory and the performance of SMEs in Harare manufacturing sector ascertained JIT was the most used inventory management concept and it improved dependability, quality, flexibility and cut down on the costs of inventory. Based on the highlighted studies above, the majority of researches focused on the financial aspect of performance that inventory management affected and not operations performance. This developed a gap for the study. The paper's purpose, therefore, was to examine the effect Strategic inventory control Techniques have on Operations Performance of manufacturing entities based in Mogadishu, Somalia. The study questions therefor were; To what extent has manufacturing entities in Mogadishu adopted Strategic inventory control techniques? And what relationship exists between Strategic inventory control and operations performance of manufacturing organizations in Mogadishu Somalis?

1.3 Research objectives
The study was steered by dual objectives namely;

i.   Establish the extent of adoption of Strategic inventory control by manufacturing companies in Mogadishu Somalia.

ii.   To discover the correlation that exists between Strategic inventory control and performance in operations of manufacturing companies based in Mogadishu, Somalia.

1.4 Value of the study
Techniques used in Strategic inventory control are essential in business operations as they significantly reduce the company's expenses improving their performance in operations and enhances employee knowledge of the same (Lambert, 2008). The control systems are essential and having a significant knowledge about them is essential and highly dadvantageous among managers and warehouse who will gain significant knowledge that enables them to make informed decisions that will improve performance (Fellows & Rottger, 2005).

The study results are quite significant as they provide for a improved grasping of the Strategic control of inventory and its effect on performance in operations of warehousing entities. The study is significant to policymakers as it provides the basic knowledge from staff who Strategically

control inventory to come up with policies and procedures that are friendly to receive and control their stock levels.

The findings are significant to the manufacturing industry as they provide for the institution of Strategic inventory control to guide the formulation of strategies that deal with issues to do with the management of inventory. The study findings would highlight areas where costs can be reduced while maintaining high-efficiency levels. The research findings are to be a basis for future researchers to find literature to research in the field of Strategic inventory control.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section reviewed the past literature, covered the theories related to Strategic inventory control, explored the Strategic inventory control techniques and illustrated the conceptual framework of the study.

2.2 Theoretical Literature Review

This area covered the relevant theories which best explain the inventory management control practices and performance. The theories under study were the Stochastic Inventory Theory and the Transaction Cost Analysis (TCA) Theory.

2.2.1 Total Cost Analysis Theory (TCA)

The transactional cost analysis theory (TCA) emanated in the 1970s as it was formulated in 1974 by Williamson a mathematical economist. Halldorsson et al. (2007) provide the Transaction Cost Analysis (TCA) theory as a theory which tries to ensure all the costs across a company's supply chain are maintained at their minimum. The theory has been made use of in a variety of areas specifically in organization study and economics. Williamson in the early 1970s incorporated the theory into a general model of equilibrium and begun his economics of transaction cost in a new theory of the entity. The mathematical economist suggested that companies can cut their transaction costs by integrating vertically and enhancing their trust levels simultaneously. The integration can reduce costs in the management of inventory and significantly boosting the level of service of external and internal and discharging the tied investment to be of use to the other operation areas of the entity.

An entity's supply chain may not only lower their costs by integrating vertically and enhancing their trust levels but also by integrating horizontally and gaining from demand aggregation to benefit from economies of scale. Inventory management study requires a company's management ensures that all their costs are maintained at their bare minimum providing for the need to make use of the Transaction cost analysis theory. The theory also allows us to understand the costs associated with keeping inventory like the setup, carrying, handling and shortage costs. Implementation of TCA will help the manufacturing firms in facilitating its ability to cut on all costs to a minimum level across the supply chain as opined by Halldorsson (2007).

2.2.2 Stochastic Inventory Theory

Stochastic Inventory Theory by Porteus Evan (2002) is about the management of the level of stock with a clear intention of meeting the demand of the goods held in store. Does stochastic Inventory theory aid an entity in answering questions like when an order for the product has to be initiated? And how bulky can an individual order be? Porteus (2002) Points out that the answers to these questions are jointly referred to as an inventory policy. Firms save cash by coming up with mathematical models explaining the inventory system that derives inventory policy. Laan, Kiesmüller, Kuik, Vlachos and Dekker (2004) state that to meet the demand for a specific volume of goods, they have to be transferred physically to the buyer from the seller. Shortage of goods emanate from backlogged demand or lost sales as a result of customer's impatience and orders yet to be fulfilled for patient customers (Laan et al., 2004). Beamon et al (2006) argue that the stochastic models are relevant because they are more realistic. They try to formulate the optimal inventory plan by regarding the shortfall costs, cost of arranging and stacking away stock.

In the current study, the theory is relevant as it will aid the manufacturing firms in ways that they can be able to avoid shortages of inventory and be able to meet customer demand on time. The theory will also help the firm in knowing how to keep records of stock when to replenish the stock and how much to replenish to meet the demands of their clients effectively and efficiently.

2.3 Strategic Inventory Control Techniques

Management of Possessions in entities leads to an inventory problem. The main aim of engaging in Strategic Inventory Control Techniques is cost minimization or capitalize on profit with regard to having satisfied clients. Excess inventory takes up physical space, boosts chances of damage, a creates an economic problem and boost the probability of loss and spoilage. Strategic Inventory Control Techniques play a big role in ensuring that the entities avoid the above-mentioned problems. Strategic Inventory Control Techniques that were covered in this paper include, Economic Order Quantity (EOQ), Warehouse Management System (WMS), ABC Analysis, Demand Forecasting and Just-In-Time (JIT)

2.3.1 Economic Order Quantity (EOQ)

Bachetti et al., (2010) argue that Strategic inventory control needs to be systematized logically so to enable the company to be in the know of what to order and how much of it to order. It can be realized through the use of the computation of EOQ. An economic order quantity would allow firms to schedule replenishment of the stock of their inventory on a timely base like quarterly or

half annually. This enables the companies to maintain minimum costs of storage in their stores as immediately the inventory comes in it is assorted and is taken out almost immediately. This leans towards the just in time concept that was adopted by the Toyota corporation in Japan that aids in upholding cost associated with holding stock as observed by Schonberger (2008). For an organization to maintain and improve inventory, economic order quantity and the reorder points are significant mechanisms which companies make use of to ensure the inventory supply doesn't result to lack of stock as ascertained by Beamon et al. (2006). EOQ replenishment reduces total cost of inventory. The backorder is caused when the level of inventory reaches a point that needs reorder. The main aim of EOQ is to reduce costs like buying cost, keeping cost and cost associated with ordering (Schonberger, 2008).

2.3.2 Just-In-Time

Just-in-time (JIT) has a significant positive contribution to the positive performance of a company as a result necessitating the control of inventory to be undertaken with keenly to take into consideration good practices for procurement. Lai and Cheng (2009) noted that efficient companies often kept very little inventory in their stores while those operating an ineffective supply chain led too much stock of goods in their stores. As a result, it was ascertained that ordering what is need is effective as it provides for the organization to operate with minimum expenses on holding inventory, maintaining the cost of setting up at bare minimum, reducing lead time and provide goods based on an order by customers Eventually, it provides a way for the organization to minimize cost and have satisfied customers by meeting their orders promptly (Datta, 2007).

According to Monden (2011), Just in time inventory management system maintains low inventory levels through offering what is requested from customers and what is needed, resulting in the elimination of scrap costs and reduces the cost of holding stock. Through the use of the concept of Just in time, the need for work in progress and raw materials has reduced whereas the finished goods inventory is cut to almost none as production is on need basis. Lai and Cheng (2009) point out that JIT inventory helps entities in having lower inventory that does not add value as high inventory turnover rate leads to waste of resources in stocking. Due to short production runs, makes sense to stop production of one product and shift to a another one to meet fluctuations in client demand. Keeping low levels inventory translates to lower holding costs like security, pilferage, damages and insurance (Frazier, 2008).

2.3.3 ABC Analysis

The Pareto principle is the basis of the development of ABC analysis as an inventory control measure. The principle provides for a few critical and many trivial. Pareto Principle states that roughly 20% of the end products generate 80% of the income (Flores & Whybark, 2007). The basis of ABC analysis development as an inventory management measure is to develop policies of inventory which focuses on the few critical inventory resource and not the trivial ones ta are many. The ABC control for inventory operates as per the principle of a small percentage of the things in-store represents the big amount of the financial worth of the whole sum worth of the inventory used in manufacturing while a significantly large volume of items in the stores represents a very small percentage of the money value in the stores (Flores & Clay, 2012). This technique of inventory control involves inventory classification into three groups based on their value. Group A is composed of high-value items which make up 15-20% of the items in-store and they stand for 75-80% of the overall value of the inventory. The items are regularly monitored. Group B is made up of items with medium value as they make up 30-40% of the items in the stores and they account for 15%of total stock value. Class C items are low value representing only 5% of the total value but makeup to fifty-five percent of the total volume of inventory in store (Croom and Jones, 2010).

2.3.4 Warehouse Management System (WMS)

The warehouse system of management is a software application which aids in management and control of the daily warehouse operations (Mabert et al., 2001). The software guides inventory receipt and storage as a result optimizing the picking and shipping process of orders and provides significant insight and advice on replenishment of the inventory levels (Harland et al., 2007). The systems of warehouse management undertake tasks like tracking products, manufacture of resources providing for scanners that are held by hand, the software's used in computers, labelling printers, slip packaging printing along with the provision of other products to companies to enable them to track products and shipments with ease. The implementation of a warehouse management system can help companies to reduce their cost of labor, enhance accuracy in their inventories, enhance flexibility and company's responsiveness, reduction in the errors present during shipment and picking of materials and enhance their service levels to the customers as observed by Mason et al. (2003). The contemporary management system for warehouses often functions in real-time data, providing for the organization to better manage the real-time information on orders, their shipment, movement and the receipt of the goods. Forza & Salvador (2002) adds that WMS leads

to efficient controlling of product movement and storage, flexible handling of several product sizes and orders and enhanced efficiency and accuracy levels for the fulfillment of customer order, and Better production control. They further posit that WMS provides accurate inventory counts and tracking, eliminates the need for regular inventory counts, effective utilization of warehouse space, paperwork minimization as everything is digitalized, enhances cycle count, improve customer service by efficiently and accurately finding the item availability and exact delivery dates, reduce overall cost, increased transparency. Other benefits of WMS as listed by Guarnieri et al. (2006) entail a reduction in order fulfilment timelines, enhanced accuracy of inventory, strengthen customer service, improves on the utilization of space, enhances the productivity of warehouses and eliminates costs of labor.

2.3.5 Demand Forecasting

It is a management in the supply chain responsible for balancing the customer needs with the supply chain capability of the firm. Management can match the supply with demand proactively and expediter the plan without disruptions as long as they have the right process in place. Basing operations on-demand refers to maintaining the correct volume of products at the right time and the correct place at a significantly high ratio of the total landed costs to the cost of the service level (Larsen, 2003). Zinn, Walter and Peter (2001) defines demand forecast as a process that is systematic involving the anticipation of demand for a product and service in an organisation in the future based on competitive forces and circumstances that are uncontrollable. Evan (1996) considers the estimation of demand (forecasting) as the process of identifying demand values for the time to come in future. This entails sales estimation during a stated period in future as per the projected marketing schedule and a set of competitive factors that cant be controlled.. Lambert et.al (1998) further posit that forecasting of demand is essential in an organisation as it helps in fulfilling an entities objectives, helps in budgeting, evaluating and improving performance, customer satisfaction and improves an entire supply chain efficiency.

Since demand for clients is unknown, decision makers should try to foresee future demand founded on statistical data using multiple criteria. It is relevant to establish a way to compute how closely demand predictions coincides with the definite demand translating to an accurate forecast (Fellows & Rottger, 2005). Lambert (2008) points out that a significant difference that exists between forecasted and actual data as there is a significant error in the forecast. This is because forecasts are calculated and not predicted and may make an accurate driver for the management and control

of inventory. Laan et al. (2004) argue that the goal of demand forecasting is to maintain just as much stock as it is required and by keeping in mind that there is a static error in the approximation, one can carefully take it into consideration and add up a bit of additional stock to their inventory to reimburse for this misalignment. This is referred to as Safety Stock and its aim is to shield the error of the approximation and to guard the firm against an unexpected stock out (Lambert, 2008).

2.4 Operational Performance

A firm's performance of operations refers to the company's performance levels that can be measured against a predetermined standard of efficiency, effectiveness and responsibility to their environment such as their productivity levels, order cycle timelines, reduction in wastage and compliance to regulatory measures (Slack et al., 2004). Vencataya, Keshwar and Deveshika (2015) state that there exist only five performance operation purposes and they entail; dependability, quality, flexibility, cost and speed. The study, therefore, adopted these operational performance measures.

Quality refers to the ability of the product to conform to the expectations of the customer. It entails doing things right from the design stage throughout the operations involved in production although what is right varies from the form of operation undertaken in production (Slack, Chambers & Johnston, 2010). Quality is regarded as a significant objective in all operations. It may be perceived as the most significant and visible part of whatever goes on under production operations. Quality, as a result, bears a significant effect on the satisfaction or dissatisfaction of customers (Slack et al., 2010). Quality is made up of a significant number of dimensions in delivery of both goods and services as it entails; durability, aesthetics, conformance of the product package, reliability and the perceived quality of the product or service (Gronroos, 2000).

Speed refers to the waiting time between an order being made by a customer and the receipt of the product ordered (Slack, 2007). Robert Lowson (2002), however, is of the idea that any response to an order request that has a significant relationship to speed, time, flexibility and is bound by time often dominates the majority of the sectors. Moreover, speed is a short form of saying the peed of purpose and it refers to the time interval between an internal and external customer requesting a product or service and the receipt of the same (wps.pearsoned.com). According to Slack (2007), the most significant benefit of quick delivery of materials and series to an entity's external operations is based on how it enhances the operations the end customer is offered. As a result, the quicker the customer receives the product or service the highly likely they are to

purchase them or they will be willing to pay more to acquire it or the higher the benefits they obtain (Slack, 2007). To the external business operations, speed is essential as it helps in the quick response to the customer needs. Moreover, customers highly value speed as they are highly likely to come back for more increasing the business revenue for the company. It is acceptable at times to charge even higher prices for fast availing of products by the company to the customers.

Dependability is how customers receive their service or goods at the required time whenever they are needed and as promised by the entity (Indran, 2007). The customers often judge a company's operation dependability after they have delivered the service or product. In the previous times, this would not have necessitated the required alertness on the emergency of service as the retail authority would have easily thought that the supplied products would not have been enough for their customers providing for the least important to be directed to operations in the retail services offered in the stores. Being dependable means being right on time as customers are availed their service and products at the required time. The definition is quite simple but in practice, it may be quite hard to measure as customer loyalty is based on the firm's dependability. The customer bears the ability to ascertain whether the service or product was availed at the required time or not. In addition, dependability can be in terms of a supermarket availing the expected items to the customer's residence. There are several retail stores which o promise to affect the second delivery after failing to make the first delivery and this provides a measure for customers to determine whether they would remain loyal to the retail outlet or not. As a result, both the internal and external factors bear a significant impact on delivery (Slack et al., 2010). Dependability provides for stability and saves money for the company.

A company's ability to adapt reversibly to a prevailing situation compared to evolution that is often irreversible is known as flexibility (Bucki & Pesqueux, 2000). Flexibility involves a company having the ability to alter their operations in some ways based on what the operation is to accomplish, how the operation is undertaken and when to undertake the specific operation. The customers are often keen to see the operations being altered to guarantee the provision of their required product and service flexibility, flexibility in product mix, and flexibility in delivery. Flexibility ascertains the measure of how a good supplier can shorten the lead time agreed whenever they are asked (Roy, 2009). The advantages of Flexibility are that it speeds up response, saves time and maintains dependability (Slack et al., 2010).

2.5 Empirical literature review

Most studies have been done both globally and locally in the related field of Strategic inventory control and performance. Orobia, Nakibuuka, Bananuka and Akisimire (2020) study on Inventory management, managerial competence and small business financial performance. The methodology employed was cross-sectional and correlational research designs whereby they carried out a survey of 304 small businesses in Uganda. They established that competence in management and management of inventory is associated significantly to the financial performance of the small businesses and play a very vital role in saving cost for small businesses. Gołaś (2020) focused on the effect of inventory management on profitability based on the polish food industry to verify the link between inventory management and profitability. It was determined that inventory management contributes to the profitability of the polish food industry and achieving customer satisfaction by reducing the inventory costs, improving quality and dependability and enhancing flexibility. The study was undertaken by use of the panel data methodology in the industrial subsectors of polish food.

Chebet and Kitheka (2019) studied on the Effects of Inventory Management System on Firm Performance–An Empirical Study with the sole purpose of establishing how the systematic application production in data processing (SAP), just in time system and economic order quantity affect the organization performance. The methodology used was the literature review as secondary data was used to examine past empirical literature. It was established that EOQ and JIT positively affect organizational performance specifically cost reduction, quality improvement and dependability. Atnafu and Balda (2018) on the inventory management practices effect on the firm's organizational performance and competitiveness established that the adoption of inventory management practices EOQ VMI and ABC gives micro and small enterprises a competitive edge over the others. They further posit that the competitive advantage gained can impact on the operational performance of the SMEs. The study data were obtained from 188 small and micro enterprises that operate the manufacturing sector and the hypothesis was tested through the use of structural equation modelling (SEM). Muchaendepi, Mbohwa, Hamandishe and Kanyepe (2019) concentrated on Inventory management and Harare's SME performance in manufacturing. The research assessed the strategies used in managing inventory in Manufacturing in SMEs in Harare, Zimbabwe. The methodology adopted was qualitative research design which was descriptive in

nature with a sample of 244 respondents. JIT was found to be the most adopted practice and enhanced dependability, flexibility, improved quality and reduced the inventory cost.

Zare, Chavez, Raymundo and Rojas (2018) focused on Collaborative culture management model to improve the performance in the inventory management of a supply chain in. The ceramic tile market in Peru. The descriptive research design was used and it was established that collaborations between the suppliers, customers and the focal company are vital for having an efficient and effective inventory managed system and that a properly managed inventory directly improves a firm's performance. VMI had a great impact on cost reduction, dependability and customer satisfaction. Anshur, Ahmed and Dhodi (2018) did a study on The Role of Inventory Management on Financial Performance in some Selected Manufacturing Companies in Mogadishu. The study employed descriptive and correlational analysis and the findings indicate that inventory management influenced financial performance specifically reducing cost and improving the overall profit.

2.6 Conceptual framework

A conceptual framework refers to the figurative representation of the variable identifiers which are put together to provide an explanation of the issue under study (Peters et al., 2000). The studies conceptual framework (Figure 2.1) illustrates the ideas under study and it explains the relationship that exists between the dependent and independent variables as explained by (2004). This study's conceptual framework shows the independent variable was Strategic Inventory Control Techniques (Economic Order Quantity, Just-in-Time, ABC Analysis, Warehouse Management System and Demand Forecasting) and Operational Performance (Efficiency, Dependability, Flexibility, and Speed) was the dependent variable. This is shown in figure 2.1 below

Figure 2.1 Conceptual Framework

Independent Variable   **Dependent Variable**

| Strategic Inventory Control |

| Operational Performance |

Economic Order Quantity

Just-in-Time

ABC Analysis

Warehouse Management System

Demand Forecasting

Efficiency

Quality

Speed

Source; Researcher (2020)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered the research design, the study target population discussion, the tools of data collection that was used and the data analysis techniques for data collection.

3.2 Research Design

The study adopted quantitative approach and used descriptive research design to realize the study objectives. This design gives the researcher primary information that is first hand with full control of the different variables limiting biased information which would jeopardize the validity of the findings and avoid the secondary data which may be outdated (Burns, 2003). The descriptive research design provides for the description of events as they occur and tries to provide explanations for what is happening as stated by Cooper and Schindler (2008). The design provides ample time for the researcher to enable consideration of several different dimensions of the given problem under study (Zikmund, & Babin, 2010). According to Dulock (1993), descriptive research design helps establish the relationship which exists between variables.

3.3 Population of the Study

This study target population was the manufacturing companies operating in Mogadishu that have been duly registered by the government's ministry of commerce and industry (2018). According to the documentation by the ministry, the number of manufacturing companies is thirty-five (Appendix II). A census was undertaken by the researcher as the entire population was studied as a whole as the population was relatively small (Mugenda & Mugenda, 2004). According to Kothari (2004) population is defined as the entire group of persons or items that a researcher would use in the research to generalize the study findings.

3.4 Data Collection

The study respondents were the supply chain officers, inventory personnel, warehouse and equivalent positions. The study adopted structured questionnaire as the main tool for the collection of primary data from the target population. The questionnaires were administered on a drop and pick later method while others were sent via the mail. The questionnaire was structured into three sections namely: Section A which constituted the background information, section B that covered Strategic inventory control Techniques adopted by manufacturing companies in Mogadishu and

section C which constituted metrics of operating performance that are linked to the adoption of Strategic inventory control Techniques.

3.5 Data Analysis

Primary data from the questionnaire was analyzed by using the statistical package for social sciences (SPSS). The first objective was analyzed by the use of descriptive statistics through the use of mean, mode, median and standard deviation. The second objective of the study was analyzed by the use by regression analysis to brings out the relationship that exists between the variables. The subsequent regression analysis equation that was used is;

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where;

Y= Operational Performance

X_1=Economic order quantity

X_2= Just-In-Time

X_3= ABC analysis

X_4= Warehouse Management System

X_5= Demand Forecasting

a = constant

β_1 β_2 β_3 β_4 β_5 are the coefficients of the independent variables.X_1, X_2, X_3, and X_4, respectively

e is the error term.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the data analysis results, interpretations and discussion of Strategic Inventory Control Techniques adoption and the regression analysis showing the relationship between Strategic Inventory Control Techniques and Operational Performance.

4.2 Response rate

This study targeted 35 Manufacturing firms in Mogadishu, Somalia and the complete data was obtained from 31 Manufacturing Firms which represented 88.57% of the respondents.

4.3 General Information

This was divided based on the respondent's positions in the organization, length of service in their current position and the period which the Manufacturing firms have been operational in Mogadishu, Somalia.

Table 4.1 General Information

Table 4.1 below presents the general information of Manufacturing firms in Mogadishu, Somalia

Position in the organization	Frequency	Percentage (%)
Supply chain managers	9	29.03
Warehouse Managers	10	32.26
Procurement Officers	5	16.12
Logistics Manager	7	22.58
Length of service(years)		
1 -2	5	16.12
3 -5	8	25.81
5 -10	11	35.48
Over 10	7	22.58
Total	**31**	**100**

Source; Research Data (2020)

The above results show that 29.03% of the respondents were supply chain managers, 32.26% were Warehouse Managers, 16.12% were Procurement Officers while the other 22.58% of the respondents Logistics Managers. The findings conclude that majority of the respondents (83.57%) were in the managerial positions (Supply Chain Managers, Warehouse Managers and Logistics Managers) and were better suited to give information that can be relied upon and had knowledge on the subject under study.

On the length of service, 16.12% of the respondents had worked in the manufacturing firms for less than two years (1-2). 25.81% had worked for periods between 3-5 years while 35.48% had worked for 5-10 years. The remaining 22.58% had worked for 10 years and above. Thus 83.87% of the respondents had worked for more than three years which shows that they had experience and knowledge of answering the questionnaires.

4.4 Period of Existence

The respondents were asked to answer for how long their Manufacturing firms had been operational and the table (4.2) below shows their response.

Table 4.2 Manufacturing firm Existence

Period of existence (years)	Frequency	Percentage (%)
1 -5	10	32.26
5 – 10	12	36.59
Over 10	9	29.03
Total	**31**	**100**

Source: Research Data (2020)

The findings indicated that 32.26% of the Manufacturing firms have been operational for period of one to five years while 36.59 % have been operating for a period between five to ten years and the remaining 29.03% have been operational for over ten years. This indicates that majority of the Manufacturing firms (67.74%) have been operational for more than five years which is a significant duration showing that they were qualified to give relevant feedback to this study. This indicates that they have been long enough in the field to understand the best Strategic Inventory Control Techniques.

4.5 Extent of Strategic Inventory Control Adoption

The study sought to determine the extent to which the Manufacturing firms in Mogadishu had adopted Strategic Inventory Control Techniques. The rating was done on a Likert scale where 1= to a very small extent, 2= to a small extent, 3= to a medium extent, 4= to a large extent and 5= to a very large extent. The subsequent sub sections present the Strategic Inventory Control Techniques which were further subdivided into five categories of Economic Order Quantity, Just-in-Time, ABC Analysis, Warehouse Management System and Demand Forecasting. The tables below summarize the mean scores with a low margin above 3 and average of 4/5 to a very large

extent affirming that Manufacturing firms have adopted Strategic Inventory Control Techniques from medium to a large extent.

4.5.1 Economic Order Quantity

The respondents were asked to rate the adoption of Economic Order Quantity on a Likert scale of one to five and table 4.3 gives their response.

Table 4.3 Economic Order Quantity

Economic Order Quantity	Mean	Std. Dev
The organization adopts a classical economic order quantity model.	3.52	1.06
The organization observes periodical replenishment of stocks	3.71	0.86
The organization maintains minimum stock levels	3.55	1.12
The organization adopts EOQ Model to minimize storage	4.00	0.89
Overall score	**3.69**	**1.08**

Source: Research Data (2020)

From the table, respondents to a large extent (M= 4.00, SD= 0.89) agreed that the Manufacturing firms adopts EOQ Model to minimize storage. Periodical stock replenishment (M= 3.71, SD= 0.86), maintaining Minimum Stock Levels (M= 3.55, SD= 1.12) and adopting a classical EOQ Model (M= 3.52, SD= 1.06) were adopted to a large extent as reflected by their respective mean and standard deviation.

Overall score indicates that Economic Order Quantity has been adopted to a large extent by the manufacturing firms as shown by the mean of 3.69 and standard deviation of 1.08. The findings are in line with that of Ramanathan (2006) who established that for an organization to maintain and improve inventory, economic order quantity and the reorder points are significant mechanisms which companies make use of to ensure the supply of inventory does not result to stock out. Schonberger (2008) argues that inventory management need to be organized in a logical way so that the organization can be able to know when to order and how much to order and can only be achieved by an efficient EOQ.

4.5.2 Just-in-Time

The mean and the standard deviation for Just-In-Time were calculated and are shown in table 4.4 below. The Techniques were rated on a Likert scale of 1 to 5.

Table 4.4 Just-In-Time

Information sharing	Mean	Std. Dev
The organization uses JIT stock control system	3.87	0.88
The organization uses the JIT system to eliminate waste	3.52	1.06
The organization uses JIT to maintain enough materials in just the right place and time	3.71	0.86
The organization uses JIT to reduce mishandling of raw materials	3.55	1.12
Overall score	**3.66**	**0.75**

Source: Research Data (2020)

From the table, use of Stock Control System (Mean= 3.87, SD= 0.88), maintaining enough materials in the right place and at the right time (Mean= 4.05, SD= 1.07) and having a proper information flow within the organization (Mean= 3.71, SD= 0.86) were all adopted to a large extent. Use of JIT to reduce mishandling of raw materials with a mean of 3.55 and Standard Deviation of 1.12 and using JIT to eliminate waste (Mean= 3.52, SD=1.06), were also adopted to a large extent.

The overall score (Mean= 3.66, SD= 0.75) shows that Just-In-Time was adopted to a large extent by the Manufacturing firms in Somalia. The results are consistent with the study done by Schonberger (2008) who posit that JIT plays a big role in getting rid of holding cost. Monden (2011) also noted that Just in time inventory management system maintains low inventory levels through offering what is requested from customers and what is needed, resulting in the elimination of scrap costs and reduces the cost of holding stock. Muchaendepi et al. (2019) conclude that JIT was the most used inventory management concept and it improved dependability, quality, flexibility and cut down on the costs of inventory

4.5.3 Activity Based Computing (ABC) Analysis

The mean and the standard deviation for ABC Analysis are shown in table 4.5 below.

Table 4.5 ABC Analysis

ABC Analysis	Mean	Std. Dev
The organization uses ABC analysis to classify items according to their stock value	4.00	0.89
The organization uses ABC Analysis to reduce stock holding cost	3.97	0.88
The organization uses ABC Analysis to manage stock levels	4.02	0.97
The organization uses ABC Analysis to aid in setting of the prices strategically for different classification of items	4.01	0.91
Overall score	**4.00**	**0.88**

Source: Research Data (2020)

From table 4.5, use of ABC to manage stock levels (Mean= 4.02, SD= 0.97), use of ABC in setting prices for classified items (Mean= 4.01, SD= 0.91) and classifying items based on their stock value (Mean= 4.00, SD= 0.89) were all adopted to a large extent. Use of ABC to reduce stock holding cost was adopted to a large extent as shown by mean of 3.97 and standard deviation of 0.88.

Overall score reflects that ABC Analysis has been adopted by manufacturing firms to a large extent as shown by the mean of 4.00 and SD of 0.88. These findings concur with the findings of Ramanathan (2006) who found that ABC analysis is a well-established categorization technique based on the Pareto Principle for determining which items should get priority in the management of a company's inventory. Furthermore, Lyson (2003): Akitonye (2016) both established that implementation of ABC analysis is key in the management of inventory in a firm and facilitates cutting of cost through proper attention given specific classes of inventory in the order of priority.

4.5.4 Warehouse Management System

The respondents were asked to rate (on a scale of one to five) how their respective Manufacturing firms have adopted Warehouse Management System Technique. The mean and the standard deviation of the results are shown in table 4.6

Table 4.6 Warehouse Management System

Warehouse Management System	Mean	Std. Dev
Warehouse Management System helps in reviewing inventory levels on a timely basis	4.29	0.87
Warehouse Management System aids in detecting stock variance	3.91	1.06
Warehouse Management System helps in managing inbound and outbound logistics	4.13	0.86
Warehouse Management System helps in utilizing store space efficiently	4.25	0.81
Overall score	**4.15**	**0.87**

Source: Research Data (2020)

Table 4.6 presents Warehouse Management System techniques that have been adopted by manufacturing firms in Mogadishu and the response indicates that WMS aids in reviewing inventory levels on a timely basis to a large extent (Mean=4.29, SD= 0.87). WMS in managing outbound and inbound logistics (Mean=4.13, SD= 0.88) and WMS use in utilizing store space efficiently (Mean=4.25, SD= 0.81) have also been adopted to a large extent. Use of WMS in detecting stock variance has been adopted to a large extent as indicated by the mean of 3.91 and standard deviation of 1.06.

Warehouse Management System has been adopted to a Large extent (Mean=4.15, SD= 0.87) as reflected by the overall score. The results are in line with that of Forza & Salvador (2002) who found that WMS leads to efficient controlling of product movement and storage, flexible handling of several product sizes and orders and enhanced efficiency and accuracy levels for the fulfillment of customer order, and Better production control. They further posit that WMS provides accurate inventory counts and tracking, eliminates the need for regular inventory counts, effective utilization of warehouse space, paperwork minimization as everything is digitalized, enhances cycle count, improve customer service by efficiently and accurately finding the item availability and exact delivery dates, reduce overall cost, increased transparency. Guarnieri et al. (2006) also established that WMS leads to a reduction in order fulfilment timelines, enhanced accuracy of inventory, strengthen customer service, improves on the utilization of space, enhances the productivity of warehouses and eliminates costs of labor.

4.5.5 Demand Forecasting

The respondents were sked to rate (on a scale of one to five) how their respective manufacturing firms have adopted Demand Forecasting. The mean and the standard deviation are shown in table 4.7 below.

Table 4.7 Demand Forecasting

Demand Forecasting	Mean	Std. Dev
We ensure that we keep records for future reference	3.54	1.12
We anticipate the demand for our products in future	3.91	0.89
We estimate sales during a specified future period based on proposed marketing plan	3.87	0.88
We take into account forecast error while forecasting demand	3.55	1.12
Overall score	**3.72**	**1.33**

Source: Research Data (2020)

Table 4.7 presents Demand Forecasting Techniques where anticipating demand for future products was adopted to a large extent with the mean of 3.91 and SD of 0.89 while estimating sales for specified future period based on proposed marketing plan was also adopted to a large extent with the mean of 3.87 and SD of 0.88. keeping records for future reference (Mean=3.54, SD= 1.12) and taking into account forecast error (Mean=3.55, SD= 1.12) has been also been adopted to a large extent.

The overall score (Mean=3.72, SD= 1.33) means that Demand Forecasting Techniques have been adopted to a large extent by Manufacturing firms in Mogadishu. The results are consistent with those of Lambert et.al (1998) who posit that forecasting of demand is essential in an organization as it helps in fulfilling an entities objective, helps in budgeting, evaluating and improving performance, customer satisfaction and improves an entire supply chain efficiency. Forza & Salvador (2002 support this argument by positing that demand forecasting helps absorb the error of the estimation and to protect the company against an unexpected and unwanted stock out.

The first objective on determining the extent of adoption of Strategic Inventory Control Techniques has thus been achieved. The outcome of the first objective is supported by Stochastic Inventory Theory which puts more emphasis on Maintaining Certain Stock Levels. The

Techniques all aims at managing inventory and ensuring that the stock is maintained at certain levels. The management also uses the Technique in establishing when the stock should be replenished and how much should be replenished

4.6 Operational Performance outcomes of adopting Strategic Inventory Control

The respondents had to give feedback on how Strategic Inventory Control Techniques affects Operational Performance of their respective Manufacturing Firms. The outcomes focused on Efficiency, Quality and Speed. The Tables below summarizes the mean scores with a low margin above 3 and average of 4/5 who agreed that Strategic Inventory Control influences Operational Performance

4.6.1 Strategic Inventory Control and Efficiency

The respondents were asked on how Strategic Inventory Control Techniques influences Efficiency in their respective Manufacturing firms in Mogadishu. The results are shown in table 4.9

Table 4.9: Strategic Inventory Control and Efficiency

Efficiency	Mean	Std. Dev
The firm has improved inventory turns	4.47	0.97
The firm has improved throughput	4.19	1.09
The firm has improved schedule/ production attainment	3.94	1.01
The firm has improved capacity utilization	3.83	1.18
The firm has improved overall equipment effectiveness	4.11	0.93
Overall Score	**4.10**	**0.89**

Source: Research Data (2020)

Table 4.9 shows that improved inventory turnover (M= 4.47, SD= 0.97) , improved through put (M= 4.19, SD= 1.09) and improved equipment effectiveness (M= 4.11, SD= 0.93) were influenced by Strategic Inventory Control to a large extent as shown by their respective means and SD. Improved production attainment (M= 3.94, SD= 1.012) and improved capacity utilization (M= 3.83, SD= 1.18) were influenced to a large extent as well. The overall score indicates that Strategic Inventory Control Techniques Influence Efficiency of Manufacturing Firms in Mogadishu to a large extent as shown by the mean of 4.10 and SD of 0.89.

The results are consistent with those of Orobia, et al. (2020) who established that proper Strategic inventory control is associated significantly to the organizational performance of the small businesses and play a very vital role in saving cost for small businesses and increase efficiency. Muchaendepi et al. (2019) also found out that the adoption of JIT and ABC was the most used Strategic inventory Control concept and it improved dependability, quality, and increased efficiency in production and cost.

4.6.2 Strategic Inventory Control and Speed

Table 4.10 represents the Performance outcome on Speed due to the adoption of Strategic Inventory Control as per the respondents.

Table 4.10: Strategic Inventory Control and Speed

Speed	Mean	Std. Dev
Reduced cycle time	4.21	0.85
Predictable throughput time	4.13	1.06
Increased delivery frequency	4.05	1.10
Reduced time in serving customers	3.97	0.98
Increased order handling time	4.09	0.99
Overall Score	**4.08**	**0.92**

Source: Research Data (2020)

Table 4.10 shows that Strategic Inventory Control Techniques influence a firms speed to a large extent through reduced cycle time (M= 4.21, SD= 0.85), predictable through put time (M= 4.13, SD= 1.06) and increased delivery frequency (M= 4.05, SD= 1.10) as indicated by the respective mean and SD. Increased order handling time (M= 4.09, SD= 0.99) and reduced time in serving customers (M= 3.97, SD= 0.98) also influences performance to a large extent. The overall score (M= 4.08, SD= 0.92) indicates that Strategic Inventory Control Techniques influences Speed of Manufacturing Firms in Mogadishu to a large extent.

The results go hand in hand with those of Gołaś (2020) who notes that inventory management contributes to the profitability of the polish food industry and enhances customer satisfaction by reducing the inventory costs, improving quality and increasing the speed of production and delivery. Chebet and Kitheka (2019) established that EOQ and JIT positively affect organizational

performance specifically cost reduction, reduced cycle and lead time as well as increasing delivery speed.

4.6.3: Strategic Inventory Control and Quality
The table below shows the outcome of Quality due to the implementation of Strategic Inventory Control in Manufacturing Firms in Mogadishu.

Table 4.11: Strategic Inventory Control and Quality

Quality	Mean	Std. Dev
Conformance to specifications	4.08	1.06
Reduced number of defects	3.92	1.18
Customer satisfaction	4.00	1.08
Customer service improvement	4.10	1.10
Improved brand name and reputation	4.02	1.11
Overall Score	**4.01**	**0.99**

Source: Research Data (2020)

From table 4.11, Strategic Inventory Control Techniques influence a firm quality by having products that conform to specifications (M= 4.08, SD= 1.06), having satisfied customers (M= 4.00, SD= 1.08) and improving customer service (M= 4.10, SD= 1.10) as indicated by the respective mean and SD. Improved brand name and reputation (M= 4.01, SD= 0.99) and reduced number of defects (M= 3.92, SD= 1-18) were also influenced to a large extent through the adoption of Strategic Inventory Control Techniques. The overall score (M= 4.01, SD= 0.99) indicates that Strategic Inventory Control Techniques influences Quality to a large extent.

The findings align with that of Atnafu and Balda (2018) established that the adoption of inventory management practices like EOQ, Demand Forecasting and ABC gives micro and small enterprises a competitive edge over the others in terms of quality. Zare et al. (2018) established Demand Forecasting had a great impact on Quality, Speed and customer satisfaction. Anshur et al. (2018) concluded that inventory management influenced organizational performance specifically reducing cost and improving the Quality produced.

4.7 Relationship between Strategic Inventory Control and Operational Performance.

The research sought to examine the relationship between Strategic Inventory Control and Operational Performance A linear regression was fitted to the data and the results are as shown below.

4.7.1 Regression Coefficient Analysis

The coefficients of Pearson correlation take values from +1 to -1 (0= no relationship and 1= a strong relationship between the variables). The results show that there is high correlation between Strategic Inventory Control and Operational Performance with a value of 0.739 translating to 74% as shown in Table 4.12 below.

Table 4.12: Pearson Correlation Coefficient Matrix

Pearson correlation	Operational performance	Strategic Inventory Control
Operational performance	1.00	.739
Strategic Inventory Control	.739	1.00

Source: Research Data (2020)

4.7.2: Regression Analysis of Strategic Inventory Control and Operational performance

The regression model summary of the study is shown in table 4.13 below. From the table, the coefficient of determination (R square) is 0.693 which translates to 69%. This therefore means that 69% of Operational Performance is attributed to Strategic Inventory Control. This is thus a significant fit as only 30.7% of the variation in Operational Performance is not accounted for.

Table 4.13: Regression Model Summary

Model	R	R square	Adjusted R square	Std. Error of the Estimate
I	.891	.693	.715	.194

a. Predictors: (Constant), Strategic Inventory Control

b. Dependent Variable: Operational performance

Source: Research data (2020)

4.7.3 Analysis of Variance

Analysis of variance (ANOVA) provides statistical techniques which are used for testing the significance of a regression model. From the table 4.14 below, the model significant value is 0.015 (F=3.898) and is less than the alpha value of 0.05 (5%). This implies that the regression model is statistically significant and that Strategic Inventory Control Techniques have a significant relationship with Operational performance.

Table 4.14: ANOVA Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.392	4	1.233	3.898	.015[b]
	Residual	0.837	26	0.064		
	Total	8.229	30			

Source: Research data (2020)

4.7.4 Regression coefficients

Regression coefficients was used to determine the value of Strategic Inventory Control, the constant, the t values and the p value and results are as shown in table 4.15 below.

Table 4.15: Coefficients Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.595	1.745		2.633	0.01
	EOQ	0.509	0.143	0.344	3.559	0.01
	JIT	0.201	0.068	0.563	2.956	0.00
	ABC	0.397	0.08	0.439	4.963	0.02
	WMS	0.215	0.035	0.376	6.143	0.02
	Demand Forecasting	0.314	0.166	0.436	1.890	0.03

Source: Research Data (2020)

The established linear regression equation becomes:

Operational Performance = 4.595 + .509XEOQ + 0.201JIT + 0. .397ABC + 0. .215WMS +0.314 Demand Forecasting

From table 4.15, Strategic Inventory Control Techniques (Economic Order Quantity (t=03.559, P<0.05), Just-In-Time (t=2.956, P<0.05), ABC Analysis (t=4.963, P<0.05) Warehouse Management System (t=6.143, P<0.05) and Demand Forecasting (t=1.890, P<0.05) all have a positive and significant relationship with operational performance. The model shows that when all variables are held at constant, the value of Operational Performance would be 4.95.

From the above findings, Strategic Inventory Control Techniques were found to have statistically significant relationships with Operational Performance. These results are in line with that by Kitheka (2012) who resolved that there existed a statistically noteworthy correlation between inventory management automation and performance. Orobia, et al. (2020) established that proper inventory control is associated significantly to the Economic performance of the SMEs and play a very vital role in saving cost for small businesses and increase efficiency. Gołaś (2020) determined that inventory management contributes to the profitability of the polish food industry and achieving customer satisfaction by reducing the inventory costs, improving quality and dependability and enhancing flexibility. Chebet and Kitheka (2019) established that EOQ and JIT positively affect organizational performance specifically cost reduction, quality improvement and dependability. Atnafu and Balda (2018) established that the adoption of inventory management practices EOQ Demand Forecasting and ABC Analysis gives micro and small enterprises a competitive edge over the others in terms of quality and better performance. Zare et al. (2018) established Demand Forecasting had a great impact on Quality, Speed and customer satisfaction. Anshur et al. (2018) concluded that inventory management influenced financial performance specifically reducing cost and improving the Quality produced

The second objective on determining the relationship between Strategic Inventory Control Techniques and Operational Performance has thus been achieved. The outcome of the second objective is supported by Stochastic Inventory Theory. This is because the theory will aid the manufacturing firms in ways that they can be able to avoid shortages of inventory and be able to meet customer demand on time. The theory will also help the firm in knowing how to keep records of stock when to replenish the stock and how much to replenish to meet the demands of their clients

effectively and efficiently. Once this is done, there will be efficiency, speed and production of quality products which will lead to enhanced Operational Performance.

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section covers the summary of the findings based on the objectives, the conclusions of the findings, what limited the study, the recommendations and suggestions for studies to be carried out in future.

5.2 Summary of the Study

This paper sought to investigate the influence of Strategic Inventory Control on operational Performance by Manufacturing Firms in Mogadishu, Somalia. The main objectives of the paper were to find out the extent of Strategic Inventory Control adoption and to ascertain the correlation between Strategic Inventory Control and operational Performance by Manufacturing Firms in Mogadishu, Somalia. The theories used in the study were Total Cost Analysis Theory and Stochastic Inventory Theory. The methodology used was descriptive design and the population was 35 Manufacturing Firms hence census was adopted. Descriptive statistics analyzed Objective one of the study while regression analysis analyzed objective two.

Manufacturing firms adopted EOQ to minimize storage and used a classical EOQ model to a large extent. Periodical replenishments of stock and maintaining minimum stock levels were also in place. It was also noted that JIT Inventory Control system was put in place to minimize waste and to ensure that enough materials are maintained just at the right place and time so as to reduce mishandling of materials. ABC Analysis was also in place so as to classify items based on their stock Value and to be able to reduce stock holding cost. The Technique was also used to set prices and manage stock levels. It was also determined that WMS played an important role in reviewing inventory levels on a timely basis and in detecting stock variance. Warehouse Management System was also in place to manage inbound and outbound logistics and at the same time aid in utilizing space of the warehouse. Keeping records for future references and taking into account forecast error played a vital role in forecasting of the demand. All these Techniques played an important role in ensuring that Operational Performance has been enhanced in the Manufacturing Firms in Mogadishu, Somalia.

The study established that Economic Order Quantity, Just-In-Time, ABC Analysis, Warehouse Management System and Demand Forecasting were all adopted to a large extent by Manufacturing

Firms in Mogadishu, Somalia. This is an indication that the first objective of the study has been achieved. It has also been established that there is a positive and substantial connection between Strategic Inventory Control and Operational Performance by Manufacturing Firms in Mogadishu, Somalia. Specifically, Efficiency, Speed and Quality have all been influenced by Strategic Inventory Control Techniques to a large extent and all have a positive and significant relationship with Strategic Inventory Control Techniques. This means that there existed a direct and noteworthy relationship amongst Independent Variable (Economic Order Quantity, Just-In-Time, ABC Analysis, Warehouse Management System and Demand Forecasting) and dependent Variable (Efficiency, Speed and Quality) This is an indication that the second objective of the study has also been fulfilled.

5.3 Conclusions

The results from this paper clearly indicates that Strategic Inventory Control Techniques significantly and positively influence Operational Performance in entities that have adopted the techniques. To be able to increase efficiency, improve the speed of serving customers and production and improve the quality of products and services, firms need to integrate Strategic Inventory Control Practices in their Strategy as it has been established that it impacts on Performance to a large extent. The improved performance has been reflected though reduced lead and cycle time, conformance to specifications, reduced overall cost, reduced delivery time, improved brand image and increased customer base due to customer satisfaction.

Additionally, it can be resolved that entities that adopt EOQ, Just-In-Time, ABC Analysis, Warehouse Management System and Demand Forecasting are likely to achieve operational performance, gain competitive edge and minimize overall cost.

5.4 Recommendations

The findings established that most of the Strategic Inventory Control Techniques were adopted to a large extent by the Manufacturing Firms in Mogadishu. The study endorses that manufacturing firms should fully adopt Strategic Inventory Control Techniques as it has been established that it has a positive correlation with Operational Performance.

The study recommends that all manufacturing firms should adopt EOQ, Just-In-Time, ABC Analysis, Warehouse Management System and Demand Forecasting in their processes for them to be Efficient, have speed and improve their Quality. This is due to the fact that it has been

established that the adoption of Strategic Inventory Control Techniques influences Efficiency, Speed and Quality to a large extent. Therefore, firms who embrace Strategic Inventory Control Techniques are bound to enjoy these benefits.

There is also a need to create awareness on Inventory Management as a whole in the manufacturing industry and thus the study recommends that the government and stakeholders involved should create awareness on the relevance of Inventory Management to the manufacturing firms.

5.5 Limitation of the Study
This research could not achieve 100% response rate since not all the questionnaires were returned. The reason for this is that not all the respondents were available in answering the questionnaires and others had a policy of not sharing the company information and thus the questionnaires could not be filled. This limitation however did not hinder the researcher from obtaining the required information for the study since the returned questionnaire were enough to give a conclusive result on the position of the Manufacturing organizations in Mogadishu.

On the context, the study was restricted to the Manufacturing firms in Mogadishu and thus these results may not signify all Manufacturing firms in Somalia. The population however was big enough to represent the whole population and the results can give a clear indication on what other Manufacturing industries around the country are practicing.

The questionnaires were dropped and picked later and therefore it was hard to determine whether the targeted respondents are the one who filled them or they were delegated to other employees who did not have the knowledge on the subject matter

5.6 Suggestions for Further Research
Studies to be carried out in future need to explore why some practices are implemented to a large extent and why others are implemented to a medium extent. Other Strategic Inventory Control Techniques which are not covered in this study should also be investigated to establish the reason as to why they are not being adopted.

Another study should be carried out to establish how Strategic Inventory Control Techniques influences organizational or supply chin Responsiveness, Procurement Performance or even how the Techniques gives an entity a competitive edge over their competitors.

Future studies should also focus on Strategic Inventory Control Techniques in other sectors (retailing, third party logistics, service industry) apart from Manufacturing Firms.

Drivers and barriers of Strategic Inventory Control Techniques can also be another area for future studies.

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APPENDIX II: QUESTIONNAIRE

Kindly provide the needed information by filling in the spaces where provided or by marking on the most suitable answer.

SECTION A: Biographic information

1. Please tick your job title.

a) Supply chain manager   (   )

b) Warehouse manager   (   )

c) Procurement officer   (   )

d) Logistics Manager   (   )

2. How long have you worked for your firm?

a) 1 – 2 years ( )

b) 3 – 5 years ( )

c) 5 -10 years ( )

c) Over 10 years ( )

3. For how long has this Manufacturing firm functioned in Somalia?

a) Less than 5 years ( )

b) 5 – 10 years ( )

c) over 10 years ( )

SECTION B: Extent of adopting Inventory Control Techniques

4. Below are some of the strategies implemented by firms which are dedicated to Inventory Control. kindly mark the extent that these Strategic Inventory Control Techniques have been implemented in your firm. Use a Likert Scale of scale of 1-5 and tick appropriately.

Economic Order quantity	1	2	3	4	5
The organization adopts a classical EOQ model.					
The organization carries out regular replenishment of stocks					
The organization holds minimum stock levels					
The organization adopts EOQ Model to minimize storage					
Just In Time	1	2	3	4	5
The organization uses JIT inventory control system					
The organization uses the JIT for waste elimination					
The organization uses JIT to hold sufficient materials at the right time and place					
The organization uses JIT to reduce mishandling of raw materials					
Activity Based Costing (ABC) Analysis	1	2	3	4	5
The organization uses ABC analysis in items classification based on the stock worth					
The organization uses ABC Analysis to diminish stock holding cost					
The organization uses ABC Analysis to manage stock levels					
The organization uses ABC Analysis to aid in setting of the prices strategically for different classification of items					
Warehouse Management System	1	2	3	4	5
Warehouse Management System helps in reviewing inventory levels on a timely basis					
Warehouse Management System aids in detecting stock variance					
Warehouse Management System helps in managing inbound and outbound logistics					
Warehouse Management System helps in utilizing store space efficiently.					
Demand Forecasting	1	2	3	4	5
We ensure that we keep records for future reference					
We anticipate the demand for our products in future					
We estimate sales through a specified future time frame founded on projected marketing plot and a series of specific uncontrollable and competitive forces.					
We take into account forecast error while forecasting demand					

SECTION C: Performance outcomes of adopting Inventory Control Practices

5. below are performance statements that firms experience after adoption of strategic inventory control techniques.   On a sale of 1 -5 (where: 1- strongly disagree, 2- disagree, 3- not sure, 4- agree, 5- strongly agree)., show the level to which the subsequent outcomes are experienced in your firm. Tick as appropriate.

Efficiency	1	2	3	4	5
The firm has improved inventory turns					
The firm has improved throughput					
The firm has improved schedule/ production attainment					
The firm has improved capacity utilization					
The firm has improved overall equipment effectiveness					
Speed	1	2	3	4	5
Reduced cycle time					
Predictable throughput time					
Increased delivery frequency					
Reduced time in serving customers					
Increased order handling time					
Quality	1	2	3	4	5
Conformance to requirements					
Minimized defects numbers					
Satisfied customers					
Improves customers service					
Enhanced brand name and repute					

Thank you for your cooperation

APPENDIX III: LIST OF MANUFACTURING COMPANIES IN MOGADISHU

1	Zamzam Food Industry	21	Xalwo Boqolsoon
2	Daldhis Aluminum Factory	22	Warshada Isbuunyada Canshuur
3	Ijabo Water	23	XalwoXaajiCiise
4	Malab Dairy Products	24	Warshada biyaha Sahha
5	Jema Factory Mineral Water	25	Wadani Foods
6	Somali Plastic Factory	26	Jema Mineral Water factory
7	Somali Water Development	27	Shirkada qalabka dhismaha City
8	Som Tank	28	Dimond Furniture
9	Som Plastic Manufacture	29	Somali furniture Factory
10	Warshada biyaha Furat	30	Somali fruit
11	Warshada Isbuunyada Shaakir	31	AAranAgri Trade
12	Afi Pure Mineral Water	32	Somali Spices Industry
13	Udug Detergents Factory	33	Xalwo Baariyow
14	Man International Company	34	Horseed Soft Drinking
15	WarshhadaIbuunyadaMubaarak	35	Moonlight Tissue Paper
16	Bakery /FoornoUbax		
17	WarshadbiyahaDalsan		
18	Coco-Cola Company		
19	Kabaqori Furniture		
20	Al-buruuj Construction Company		

Source: Ministry of Commerce and Industry (2018)