

EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL
PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED

by

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APPROVAL

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DECLARATION

EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL
PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED

I declare that this thesis is my original work and has not been submitted to any other
college or university for academic credit.

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I want to acknowledge God's sufficient grace that enabled me to complete this academic work. I thank my parents for life and encouragement, my family members, for their constant support and understanding and my classmates for the cooperation and support they gave me. I make special mention of my supervisors, Dr Moriasi Maranga and Dr. Dorothy Kagwaini, for their advice, help, and guidance throughout this thesis journey.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
EOQ	Economic order quantity
IT	Information technology
JIT	Just-in-Time
ROA	Return on assets
ROE	Return on equity
SPSS	Statistical Package for Social Sciences
TCA	Transaction Cost Analysis
VMI	Vendor management inventory

ABSTRACT

Sound management of inventory can be a source for increased performance and ultimately a basis for competitive advantage for organization(s). The purpose of this study was to establish the effect of inventory management practices on operational performance of cement manufacturing firms in Kenya, with a focus on Bamburi Cement Limited. The objectives were to establish the inventory management practices adopted by Bamburi Cement Limited, determine the measures of operational performance at Bamburi Cement Limited, and assess the effect of inventory management practices on operational performance at Bamburi Cement Limited. The study was guided by the following theories: technology diffusion theory, transactional cost analysis theory, inventory control theory, and lean theory. The exploratory study design was adopted. The study population was all 851 employees of Bamburi Cement Limited with the target population being 198 employees in the operations, stores, and procurement departments. The sample size was 99, which was 50% of the target population. The questionnaire as the data collection instrument was pilot tested to ensure it yielded valid and reliable data. Descriptive and inferential statistics was conducted under data analysis and the findings were presented in tables, charts, and figures. The findings revealed that Bamburi Cement Limited had adopted inventory management practices in its operations and that the organization measured its performance in terms of reduction of production cycle, production costs, production line and wastages. Inventory management practices had an effect on operational performance. The study recommends that cement manufacturing companies should study their customer purchasing patterns and demands so that they can ensure that they have sufficient stock in their warehouses. Further, the management of these companies can invest in purchase of high producing cement machineries so as to produce sufficient cement.

DEDICATION

I dedicate this project to my children; and my husband, Eric, who has been a constant source of support and encouragement during the challenges; and my classmates for their support throughout my study period.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

Introduction

Inventory management is the process that oversees all flow of units and materials in and out of functional and operational areas of an organization (Muller, 2019). Effective flow of operations needs controlled transfer of units and flow of orders to prevent too much inventory that may create space for wastage, loss and theft or too little inventories that stalls the production processes. According to Dobson, Pinker, and Yildiz (2017), inventory management aims at having the right quantities of materials at the right time and place for continuous

Production processing and proper inventory management aims at cutting inventory costs. Similarly, Singh and Verma (2018) shared that under inventory management all internal activities that cover; acquisition, storage, issue, use, and internal distribution of inventory used in the production and provision of services enhances operational efficiency and performance.

Inventory management techniques may be described as the procedures followed by a company to keep track of its inventory investment (Stevenson, 2015). The fundamental objective of inventory management methods is to ensure that sufficient quantities of high-quality products are available to meet consumer demands while keeping inventory expenses to a minimum (Brigham & Ehrhard, 2015). There are various inventory management practices that are used by large manufacturing units, including Just In Time, economic order quantity model, perpetual inventory system and ABC inventory model, vendor managed inventory and strategic supplier relationship. The type of model adopted by a manufacturing unit depends on their level of knowledge on the

system and ability or capability of technological use and techno-how of the practices (Tejesh & Neeraja, 2018). The ultimate goal of adoption of any of these inventory management practices, is to cut inventory costs and realize higher productivity through increased operational performance. Any firm and its leadership should be able to choose the ideal inventory management system based on their functionality and through comparing cons and pros.

Operational performance is a measure of how a firm performs in terms of cost of operations, flexibility and dependability to create reliability on the outcome. It also covers aspects of speed and quality of the products (Wafula, 2016). The operational units must carry the aspects of efficiency, effectiveness, production levels, and cost reduction. It is also important for the management of an organization to conduct frequent analysis to have a clear understanding of the operational position and performance of the firm.

The independent variable was inventory management practices that were measured in terms of economic order quantity model, vendor managed inventory, Just-In Time, and ABC Analysis (Singh & Verma, 2018). The dependent variable was operational performance that was measured in terms of costs reduction, waste reduction, optimal use of machines and continuous production (Opoku, Fiati, Kaku, Ankomah, & Opoku-Agyemang, 2020).

Background to the Study

Inventory in any organization is important as it ties down a lot of the resources, hence need for installing proper systems that guarantees proper and sound management. Sound management of inventory can be a source for increased performance and ultimately a basis for competitive advantage for any organization (Tiwari, Daryanto, &

Wee, 2018). Many organizations across the globe suffer a lot in terms of inventory management which affects their production, processing and operation timelines which eventually leads to losses. Njoroge (2017) indicated that for the success of operations within any organization, the management must set prudent measures to control the inventories of that firm so as to engender increased performance.

Inventory management simply looks at the control measures put in place during the ordering phase, the storage, and usage of component that the firm uses during the production process (Muyundo, 2018). It also covers the supervision and control of the quantities in the finished products at the production line in an organization. The management practices put in place in an organization is to ensure that there is no shortage in supply of production units or over-supply leading to increase in storage costs and maybe misuse of the components. According to Radzuan, Rahim, Anuar, Nawi, and Osman (2015), too much stock leads to organizational funds being tied down, deterioration of products, products becoming obsolete, misuse, and robbery of the products.

However, on the other hand, shortage in supply of stocks may lead to interruption of production process, underutilization of equipment, machines and staff, unsatisfied customers, and poor consumer relations. Therefore, there is need for initiating a proper inventory management system to ensure efficiency in operations as guided by the balance in raw material and facilities stock. The inventories largely refer to stocks but also include work-in-progress; consumables like spare parts, unused materials and finished goods that are critical element in ensuring that the operations and processing units flow seamlessly. This study looked into the aspects that cover the inventory management practice and include vendor management, strategic supplier partnerships, information technology and economic order quantity (Kamakia, 2015).

Inventory Management Practices

The management of inventory is a discipline of preserving the levels of stock at a minimal cost. Good inventory management adds value to an organization by reducing costs through adoption of lean inventory measures. When it comes to inventory, Boche, Mulugeta, and Gudeta (2020) opined inclusion of raw materials that are used to make firm products, parts for machines, work-in-progress, or finished products. The type of inventory is of no cause but it must be well managed to realize the organizational goal including; cutting operational costs, ensuring continuous flow of operation, and improved production. Ultimately, inventory management is about improving the performance of an organization (Njoroge, 2017).

According to Ahmad and Zabri (2018), inventory management is the systematic approach adopted during the sourcing, storing, selling and utilization of inventories either as raw materials, work-in-progress or finished goods and use of common inventory management practices including Just-In-Time, ABC model, vendor managed inventory, economic order quantity and materials requirement planning. These practices are adopted to ensure that the organization keeps the right stock, the right volume of stock, in the right place and time and at the right cost and all are done to ensure increased production and performance of the firm.

Sharma and Arya (2016) did a study on inventory management of manufacturing industry in India, revealing that sound inventory management practices are necessary tools in efforts to increase productivity, effectiveness and right controls by minimizing cost of production and thus maximizing revenue returns. Every manufacturing firm needs inventory for smooth running of its operations and processes, since the inventory is the link between the production process and distribution of the final product. Managing inventory involves checking the availability of resources and materials, its

quantities and quality as when and where it is required in the production process. Properly executing and following the inventory management techniques enhances profits and minimizes production costs such as storage by providing materials when and where they are needed. Through the study, the manufacturing companies that adopted economic order quantity technique were able to optimize their purchases, avoided stock-outs, maintained safety of materials and stocks and continuous flow of production.

In China, Shen, Deng, Lao, and Wu (2016) investigated inventory management in the manufacturing companies and noted that excellent record keeping leads to cutting down of operational costs and helps in solving company inventory problems and reduces holding of huge amounts of money in stocks. In the competitive world, manufacturing companies are in search of new methods to improve production processes, cut unnecessary expenditures, satisfy customers, and stay ahead of the competition. In order to increase profits and reduce costs, the manufacturing firms should have a tight control and follow the ABC analysis in managing inventories. Iasya and Handayati (2015) revealed that firms have huge amounts held up in inventories, and those that neglect having a sound inventory management technique risks failure of its operations and ultimately long-term profitability and its sustainability. It is therefore imperative to manage inventories efficiently and effectively in order to ignore the unnecessary investments. Reduction of excessive inventories has a direct positive impact on performance and profitability of a company.

Effectively managing stock in organizations is important and more so in hospitals as revealed by Osei-Mensah (2016) when looking at service delivery at St. Martin's hospital. Since health facilities provide 24-hour services to its customers who are patients, then it is important for the management to develop a system of inventory

management, if they fail in proper dispensation of stocks and other inventories, the operations will come to a halt, and for the case of hospitals, worsening health conditions or even death of some patients. In Nigeria, John, Etim, and Ime (2015) revealed that there was significant difference between firms that use scientific inventory management approaches and those that do not in terms of optimizing their operations. The authors advocated for adoption of time-tested scientific models in determining the inventory quantities to avoid or reduce material shortages, product stock-outs and piling up of components.

In Ethiopia, Atnafu and Balda (2018) noted that in general inventory covers raw products, work-in-progress, and finished goods. The research that looked at the micro and small enterprises noted differences in productivity between the micro and small enterprises (MSEs) that had adopted inventory management systems and those who had not. Furthermore, many of the MSEs used stock re-order process, economic order quantity model and re-order point which has improved their performance and helped them gain competitive advantage. In Durban, Nzuzi (2015) shared on the failure of the eThekweni Municipality to perform its duties and achieve its mandate due to inability of controlling inventories and delays and processing of inventory orders. It posits that the lack of sound inventory management system led to poor performance and inability to achieve its mandate.

In Kenya, Onyango (2017) shared that there is intense competition, globalization actions and minimal resources for manufacturing firms to use, which then forces these firms to make products at a lower cost which has led to introduction of inventory management practices. Inventory management practices have gained recognition due to its ability to cut operational costs, maximizing profits and improved efficiency on the supply chain. Dobler (2016) noted that 10% of inventory accounts for up to 30% of

capital investment and almost 90% of working capital hence the need for putting in place a sound inventory management system. Ballou (2015) revealed that loss in inventories is a result of poor inventory management system may have a big impact on the entire organization. For purely manufacturing companies, too much stock ties down capital, increases storage costs, and increases chance of deterioration of goods. Additionally, theft and robbery, products becoming obsolete; and on the other hand, shortage of materials leads to disruption of production process and underutilization of organizational equipment, staff, and machines.

In the textile manufacturing firms in Kenya, Musau, Namusonge, Makokha, and Ngeno (2017) noted that the use of vendor managed inventory, just-in-time, re-order level and economic order quantity methods has led to improved performance and advocates for its applicability in other manufacturing-based companies. Similarly, Joseph (2018) showed that inventory management practices such as vendor management inventory, just-in-time, material requirement planning, and economic order quality have a positive impact on performance of the firm. Other sectors should also adopt these components of inventory management practices to realize increased performance in their supply chain line.

Operational Performance

Operational performance is a measure of how well the organization has aligned its processes and units to work in tandem and deliver the objective of the firm. Marodin, Frank, Tortorella, and Fetterman (2019) defined operational performance as all activities undertaken within an organization to achieve the stated goals, using available resources and as per the timelines indicated. Any shortfall in attainment of the firm objectives and goals will call for the management of the organization to take remedial actions to avert bigger crises and losses and lead to delivery of high-quality

products and services. As revealed by Chahal and Narwal (2017), operational performance also draws linkage between operational key performance indicators and business metrics.

Measures of operational performance consider aspects of efficiency of the production unit of a manufacturing organization. It is calculated as the ratio of input expended and the output gained. It is also measured by looking at indicators of quality of finished product, operating speeds, flexibility such that it can adapt to changes, dependability, and reliability of the processing unit of a firm. Operational performance considers overall cost of production versus returns or earnings and customer satisfaction (Muyundo, 2018).

As noted by Mbah, Obiezekwem, and Okuoyibo (2019), under excellent inventory management practices within an organization, such that machines are optimally utilized, costs are kept low by reducing warehousing costs and efficiency of operations since raw materials are available to ensure continuous flow of processing activities of the firm; the result is high quality operational efficiency and overall performance. Panwar, Jain, Rathore, Nepal, and Lyons (2018) called for adoption of inventory management practices since it has a direct impact on operational performance of a firm. According to Mbah et al. (2019), having sufficient inventory in an organization reduces instances of stock outs thus allowing continuous production and optimal machine and other organizational resource usage. Sufficient inventories mean that there is no over-production that may lead to theft, loss and wastage from some products becoming obsolete or under-production that may mean customers and the market are not satisfied as their needs are not met. Operational performance was measured in terms of rate of reduction in costs and wastes, optimal machine use and continuous processing in the production unit.

Bamburi Cement Limited is facing challenges with efficiency in its production and processing element and high competitiveness in the cement production sector since the firms produce similar products. It has also had issues with its inventories like overstocking which increases operational costs through high storage and creates a chance for theft and wastage of resources. At the same time under-stocking causes instances of stock-outs that means the production processing area halted and machines are not fully utilized (Lafarge, 2019). Therefore, it is important to enhance implementation of inventory management practices so as to improve operational performance and gain competitive advantage in the economic sector. This study explored the effect that inventory management practices have on operational performance of the company.

Bamburi Cement Limited

Bamburi Cement Limited (BCL) is an entity of Lafarge Holcim (after the merger of Lafarge and Holcim—two of the world’s largest cement giants) supported in 1951 with its first urban center plant starting in 1954. It is Kenya’s largest cement manufacturer with native and regional dominance in terms of market share and production capacity (Kenya Cement Business, 2012). Its active subsidiaries: Bamburi Special merchandise Limited, Hima Cement Limited, and Lafarge Eco Systems Limited below that the globe’s remarkable restored quarry turned conservation space—Haller Park (Lafarge, 2019).

Bamburi Cement Limited was listed at the Nairobi Stock Exchange in 1970 under the construction and allied sector. The earnings from shares of the company have been on downward trend declining by 44% and current share prices averaging at 25.95 shillings. The firm has had a high of sh.187 per share when it was doing well at the Nairobi Stock Exchange but its performance has been on the decline and stood at sh.28.21 as at November 20th 2020 (Lafarge, 2020).

The construction industry has grown so much in the last couple of years as many construction projects are being done in the country, both by the national government, county government, corporates, and private individuals. The trend is upward as many large projects are initiated in the country including the Lamu Port and extension of the standard gauge railway. As such there is growth and expansion opportunities for Bamburi cement limited as it produces key construction materials – cement and ballast that are key products for any construction project. It then calls for the company to ensure that it has sufficient inventories to ensure continuous production, optimal use of machines and increased production to meet the demand (Ramalho, 2017). Having highly efficient processing unit at Bamburi cement would increase its performance and enable the firm to achieve competitive advantage over the increasing competition in the sector. Its expansion in terms of branches, such that there is a grinding plant in Nairobi, Athi River and the Mombasa means increased market presence, market share and improved customer satisfaction.

The entrance of new players in the cement manufacturing like Rai Cement and Ndovu have increased competition in the sector, hence the need for the management to come up with measures to improve its operational performance. The management is alive to the loss of market share to new market players and decreased income from export of cement product, the response was to develop new technologies in operations and operation management techniques (Ramalho, 2017). The BCL has made capital investments including replacement plant in Uganda, integrated plant in Tororo, over de-bottlenecking project in its urban center plant, cement-grinding plant in Nairobi and road schedule and urban center road serving plant, which is in collaboration with KeNHA. All these projects demand inventories for its success, hence the need to

investigate the type and effect of the inventory management system to operational performance at the BCL (Lafarge, 2019).

Statement of the Problem

Challenges in inventory management means that processing is stopped when raw materials are used up, instances of excess production leads to high storage costs, machines and human resource are not optimally used leading to wastages and loss that negatively impacts on the operational performance of firm (Mbah et al., 2019). Organizations have implemented inventory management practices because of the advantages gained from it. These inventory management practices are considered a valuable asset to an organization as it helps in reducing operational costs, maximizes revenues gained and increases sales. At times, as noted by Nzuza (2015), organizations fail in managing its inventories that lead to reduced productivity, increase in production costs and resource wastages. Furthermore, lack of inventory management practices negatively affects the performance of the firm in terms of its operations, and it also becomes difficult to accurately and transparently follow inventories across the operational units and line.

Cement manufacturers in Kenya are going through turbulent times, with profits falling and some going into loss territory, as a result of stiff competition from cheap imports, high power costs and low demand in the housing and construction sectors. Cement consumption in Kenya dropped for the second year in a row to 5.49 million tonnes in 2018, pointing to a sluggish growth in the real estate sector (Kenya National Bureau of Statistics, 2018). The entrance of new players in the cement manufacturing industry have reduced Bamburi Cement Limited market share in the industry which has also reduced its turnover a case in point in the first half of 2020 was KShs 16.2 billion which is 13% behind prior year 2019, which was KShs 18.7billion (Lafarge, 2020). Thus, it is

important to establish whether inventory management practices could help improve operational performance and in turn overall performance at Bamburi Cement Limited. Several studies have been done on inventory management practices and operational performance, for instance Musau et al. (2017) assessed the effect of inventory management on organizational performance in the textile manufacturing firms. The findings show that inventory management positively influenced performance of textile firms, this study covered organizational performance in general and did not concentrate on operational performance, creating a conceptual gap. Joseph (2018) investigated the inventory management practices and supply chain performance of construction firms in Nairobi and established inventory management practices positively impacted on the supply chain performance. The study was sector specific to the construction sector and the findings may not apply to the cement-manufacturing sector. Rapario (2019) studied the effect of logistics management practices on supply chain performance of cement manufacturing firms in Kenya and established that logistics management practices had an effect on supply chain performance. However, a contextual gap exists as the study focused on logistics management practices and supply chain performance. The researcher deemed it important to fill the research gap that exists in the effect of inventory management practices on operational performance among cement manufacturing firms in Kenya using a case of Bamburi Cement Limited.

Purpose of the Study

To establish the effect of inventory management practices on operational performance of cement manufacturing firms in Kenya, with a focus on Bamburi Cement Limited.

Objectives of the Study

The following were the objectives of this study:

1. To establish the inventory management practices adopted by Bamburi Cement Limited.
2. To determine the measures of operational performance at Bamburi Cement Limited.
3. To assess the effect of inventory management practices on operational performance at Bamburi Cement Limited.

Research Questions

The following were the research questions for this study:

1. What are the inventory management practices adopted by Bamburi Cement Limited?
2. What are the measures of operational performance at Bamburi Cement Limited?
3. What is the effect of inventory management practices on operational performance at Bamburi Cement Limited?

Rationale for the Study

There is increase in demand for cement products as the country becomes a middle-class economy, from the corporate sector as millions of high-rise buildings are being constructed across the country, from the government side with heavy investment in developmental projects like SGR, road network and Lamu Port among others and the individual demand for their various construction needs both for commercial and residential property. These demands can only be met when the biggest cement manufacturing in East Africa - Bamburi cement is operating at full capacity as the key player in meeting the demand. It therefore becomes necessary to look at enhancing operational performance through inventory management practices and how effective these practices are in terms of operational performance at the company.

Significance of the Study

The study was considered significant in different ways to different stakeholders including management team at Bamburi Cement Company together with other Cement manufacturing firms in Kenya, Kenyan Government in terms of formulation and enforcement of policies and regulations and the academic fraternity. The exact ways that each of these stakeholders will benefit is highlighted in the proceeding sections.

This study was deemed to provide information to persons charged with the responsibility of formulation, implementation and enforcement of rules and regulations in inventory management and operational performance in the country. The study also provides key information on what is working, what has challenges and how the challenges may be overcome. The study will also provide information on the existing gaps in policies and regulations that can be filled for efficient cement industry operations.

It was hoped that the study would avail information relevant for formulation of strategies to guide the day-to-day operations at the company so as to minimize inventory holding costs and at the same time eliminate chances of experiencing shortages hence promise smooth operations flow. Through this study, management team at the company will understand the benefits of maintaining appropriate inventory levels for optimal operational performance.

The findings of this study can serve as reference for future researchers in the field of inventory management, procurement of materials and operations management by acting as an empirical source of literature for their studies. In addition, the study will contribute to future discourse on operational performance by identifying existing

gaps that future scholars can concentrate on. This will help promote the growth of literature and knowledge on inventory management and operational performance.

Assumptions of the Study

It was assumed that the issue of operational performance was an issue of concern at Bamburi Cement Limited, which needed to be evaluated, and that the necessary approval to gather information from the organization would be acquired. The researcher assumed that the respondent tried to answer the questions contained in the questionnaire appropriately, fairly and offer all the necessary information so as to enable the study to achieve its objectives. It was further assumed that the samples selected were satisfactory and represented the required population hence reliable in coming up with valid conclusions.

Scope of the Study

The study used exploratory design in evaluating the effect of inventory management practices on operational performance: a case of Bamburi Cement Limited. The target population of the study was 198 employees from operations and production department, warehousing/stores department and procurement department because they are the ones directly involved in inventory management and movement of inventory and materials. The study was limited to questionnaires for the acquisition of primary data. The research was carried out between January 2021 to May 2021.

Limitations and Delimitations of the Study

The researcher had some difficulty in accessing the staff at Bamburi Cement to respond to the research questions due to their busy work schedules. This was mitigated through using of e-mails to send and receive the questionnaire and allowing them one-week allowance to fill before collection of questionnaires for analysis.

Some respondents were unwilling to share information that they deemed sensitive like operational performance levels and the effect of the inventory management practices. To curb such fears, the researcher carried an introduction letter from the university and explained on confidentiality of the information and the purpose being strictly academic.

Definition of Terms

Inventory management: It is the control measures put in place during the ordering phase, the storage and usage of components, materials, and parts in a firm. It also involves supervision and control of quantities of raw materials, work-in-progress and finished products within the production line of an organization (Muyundo, 2018). In this study inventory management was the supervision and control of quantities of raw materials, work-in-progress and finished products at Bamburi Cement Limited.

Inventor management practices: It is the systematic approach adopted during the sourcing, storing, and utilization of inventories, some of common inventory management practices including Just-In-Time, ABC model, vendor managed inventory, economic order quantity and materials requirement planning (Ahmad & Zabri, 2018). In this study inventor management practices were the systematic approaches adopted during the sourcing, storing, and utilization of inventories at Bamburi Cement Limited.

Operational performance: It considers the overall cost of production versus returns or earnings and customer satisfaction (Muyundo, 2018). Operational performance was measured in terms of rate of reduction in costs and wastes, optimal machine use and continuous processing in the production unit. In this study operational performance was the cost of production versus returns or earnings and customer satisfaction at Bamburi Cement Limited.

Manufacturing firms: This are business entities that convert raw materials and parts into finished goods that they sell directly or indirectly to consumers and markets. Many of these manufacturing firms incur heavy capital outlay and investment in technologies and innovations to improve their production (Hue, 2019). In this study manufacturing firms was the cement manufacturing firms and in particular Bamburi Cement Limited.

Effect: This is a change which is a result or consequence of an action or other cause. The effect was estimated using the regression model and correlation analysis so as to determine how the independent variables affect the dependent variable (Mcleod, 2019). In this study effect was the relationship between inventory management practices and operational performance of cement manufacturing firms in Kenya, a case of Bamburi Cement Limited.

Summary

This chapter gas outlined the background of the study, statement of the problem and the purpose of the study. The main objective of this study was to establish the effect of inventory management practices on operational performance. It has also covered the research questions that the study aims at answering, the rationale and significance of the study. The assumptions, scope and limitations/delimitations of this study have also been articulated. The definitions of key terms as used in the study have been clearly outlined.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This section provides a review of past studies on topics related to this study on the effect of inventory practices on supply chain performance. The chapter has a section on theories that anchor the study; the conceptual framework shares a graphical representation of the relationship between the study variables and the empirical literature on all the study variables. There is also a section of summary and the research gap section that show what is missing lending credence to the need of carrying out this study.

Theoretical Framework

Theoretical frameworks provide the basis for understanding science. The aim of a theoretical framework is to consider, predict, and explain phenomena (Cooper & Schindler, 2013). This part looked at ideas that have been proposed in the literature to explain the phenomena under investigation (Cooper & Schindler, 2013). Technology diffusion theory, transactional cost analysis theory, inventory control theory, and lean theory led the research.

Technology Diffusion Theory

Technology diffusion theory was developed by Rogers (2003) to help explain how individuals go about adapting to new technology and the manner in which it diffuses to other people in society. Diffusion refers to the process by which an innovation is adopted and gains acceptance among members of a given societal settings. The Diffusion theory represents a complex number of sub-theories that collectively study the processes of innovation and new technology adoption (Beaman, Benyishay,

Magruder, & Mobarak, 2018). Diffusion comprises of four elements; innovation, an idea, practices, or object perceived as new.

Application of technology diffusion theory to explanation of unfolding of events in technology related aspects has been examined by Lai (2017) while examining the literature review of technology adoption models and theories for the novelty technology. Lai suggested that technology diffusion and acceptance among users determine the level of efficiency and effectiveness in operations. In another study, Marsden (2011) examined innovation and diffusion theory by looking at application to local transport planning policies. It is noted that application of technology improves organizational performance. This theory was relevant to the study as it helps in exploring how different technologies can be adapted in the firm for purposes of inventory management which improve the operational functioning of an organization as well as its performance. Adoption of technologies can be included in inventory management practices like economic order quantity model, where an internal technological system can be installed to inform the firm the ideal volume of inventories to be kept by the firm.

Critics of the theory like Ekdale, Singer, Tully, and Harmsen (2015) shared that human, and the human network are complex such that it is nearly impossible to measure what causes adoption of a new technology and what factors prompt its spread across the organization. At the same time, the reasons that will make one individual accept and adopt a new technology cannot be generalized to explain a specific group of people. Furthermore, the theory is unable to account for all variables, factors and reasons for adoption of new technologies; and as such the theory might miss the key predictors of technology adoption (Abrahams, 2010). The theory assumes that individuals have similar reasons for accepting and adopting new technologies and diffusing it across the

entire organization. The theory thus exposed how different inventory management practices can be adopted in organizations and how they can be linked to various technologies, systems, and applications to improve the inventory management practices and improve operational performance.

Transactional Cost Analysis Theory

Transaction Cost Analysis (TCA) is a theory that ensures that supply chain costs are kept to a minimum level (Vega & Keenan, 2014). In a number of fields, TCA is commonly accepted, particularly in the research of economics and organizational structures and performance. In the early 1970s, Williamson, the mathematicians and economist, integrated TCA into the general equilibrium model and established economics of its transaction costs in an organization's novel theory. Companies can decrease their transaction costs through vertical integration and at the same time increase the degree of confidence (Zimmermann & Rentrop, 2014). This type of inclusion is expected to save inventory management expenses while also improving the level of service provided to internal and external clients and freeing up assets for use in other areas of the firm.

The idea of transaction costs is founded on two basic assumptions about human behavior: opportunism and bounded rationality (Vega & Keenan, 2014). Opportunism is defined as providing inadequate and/or incorrect information during the formulation and implementation of effective transactions; a specific example is contracts that allow intermediaries to put their own interests ahead of others (Zimmermann & Rentrop, 2014). The third major behavioral premise of transaction cost theory, after opportunism, is bounded rationality. Due to the flaws inherent in humans' development, and therefore in their capacity to reason, this assumption claims that people are more rational in their goal than in their ability to justify. In practice, transaction cost theory's

premise of "opportunism" implies that agreements based on inaccurate promises may put persons in uncomfortable circumstances, whereas bounded rationalism suggests that all contracts will be imperfect, without exception (Marsden, 2011).

Cost reduction, including transaction costs encountered throughout the supply chain, is one of an organization's main goals. Reducing transaction expenses usually leads to a rise in profitability rate. Inventory management practices are anticipated to play a significant role in improving the effectiveness of supply chain management. Placing orders frequently might mean that the organization incurs huge transaction costs hence the need to employ inventory management practices like Just-In-Time or allow the vendors and suppliers to manage the organizational inventories.

Most of the assumptions in TCA, according to detractors, are not unique to transaction cost analysis, but are common throughout game-theoretical microeconomics. As a result, TCA opponents may appear to be attacking contemporary microeconomics. While this may be true for certain critics, TCA's major explanandum, that is, the firm's mission statement, may be the source of specific criticism. While some opponents may disagree to rational behavior and assumptions of complete, rationality in principle, they are likely to oppose much more to such assumptions when applied to company theory (Freeland, 2002).

This theory is relevant to the study as it helps us understand how firms can reduce their transaction costs in an organization and in the end increase their level of confidence in terms of profit maximization. The use of different components of inventory management practices can be adopted at Bamburi Cement Limited to reduce costs. The use of Just-In-Time can be adopted by the firm such that there are no storage costs incurred, since all the materials are purchased when they are just needed. ABC analysis ensures that the management of the organization orders the correct volume of materials

as based on the value such that there are no excess stocks for certain products. The theory is then useful in considering the inventory management practices that work in reducing transactional costs for the firm and improve the organizational operational performance.

Inventory Control Theory

This theory was established by Arrow, Karlin, and Scarf (1958) and its key principle is such that organizations have a lot of assets and managing it becomes quite a challenge. In the case of large companies, with huge branch network and multiple processing plant and units that demand a wide range of assets and inventories (raw materials and its components and finished products); there is need to have strategy. The strategy will help to control and optimize the production and storage of the hundreds of units of inventory while working hard to minimize costs. For the small business units, the owners or managers can easily borrow some ideas on inventory controls, increase their production and cut costs of storage through cost-containment measures and customer service needs (Taskin & Lodree, 2010). The assumptions of inventory control theory is that there is a known, continuous, and constant demand; costs are known and constant; shortages are not permitted; the lead time between placing and receiving orders is zero, and replenishment time can be ignored (Chen & Simchi-Levi, 2004).

All organizations and its leadership aim at cutting costs of operation and maximizing returns while meeting and exceeding the demands of the customers, since satisfied customers become loyal to the brand and the business. According to Zappone (2014), having too much inventories raises operational costs, such as consumption of physical space, increase chances of damage, loss, theft and spoilage on top on holding down money in terms of stocks which might lead to cash-flow crises unless the management gets it under control. Often an excess inventory compensates for inefficient and slow

leadership, bad estimation, haphazard preparation, and insufficient process and operational attention. In addition to delaying manufacturing, having insufficient stock raises the likelihood of bad customer service. When a needed service is not accessible right away, good consumers might grow upset and leave your firm. Companies with high inventory ratios are more likely to have poor financial performance (Ortega & Lin, 2004).

Critics show that inventory control is all about coordination between the different organizational units and departments by ensuring communication channels are efficient to allow free flow of information. But it is impossible to have an excellent coordination and communication activities (Chen & Simchi-Levi, 2004). Another criticism is that costs of carrying inventory is high and in most instances likely to be underestimated, as direct and indirect costs are left out. It is also very easy to measure costs like storage costs and insurance costs but some elements their costs cannot be easily calculated like decreased flexibility, heightened variables, and complexities of an enterprise. Zomerdijk and De Vries (2003) noted that the theory assumes that coordination is the only key aspect to handling the different complexities in inventory management.

Firms with abnormally high inventories have abnormally poor stock returns, firms with abnormally low inventories have ordinary stock returns while firms with slightly lower than average inventories perform best over time. There is also a strong negative relationship between profitability index and cash conversion cycle and at the same time reducing inventories have a significant and positive with financial and operational performance (Jackson, Tolujevs, & Kegenbekov, 2020).

The theory exposes on the implication of controlling of inventories within an organization and linking it to improved and efficient processing units, which impacts on performance in terms of financial and operational. Adoption of different inventory

management practices dictates the ideal quantities of inventory that a firm must keep such that there is no over-stocking or under-stocking with the aim of increasing operational performance. As such the theory exposed the inventory control measures that are adopted at Bamburi Cement Limited and effect it has on operational performance.

Lean Theory

Krafcik (1988) created the term "lean theory," which was later articulated by Womack and Jones (1996). The goal of lean theory is to reduce costs in inventory systems. It is proposed that by employing this theory, choices on production, warehousing, and other supply chain issues may be made more quickly (Tempelmeier, 2011). The idea is based on the economic order quantity (EOQ) model, which aims to maximize the quantity of each ordered item. The need to investigate how inventory management impacts on operational performance, therefore arguing for the adoption of alternative methods and techniques to inventory management in companies, led to the selection of lean theory for this study. As a result, the theory highlights the potential of a variety of operating systems being used to monitor stock levels, as well as the differences in products that may require alternative treatment. Lean theory is a development of the Just-In-Time concept. Just-In-Time was defined by Falasca, Kros, and Nadler (2016) as a pull-based system that aligns manufacturing and business operations throughout the supply chain so that certain inventories are made accessible only when needed at various processing locations.

Inman and Green (2018) examined the influence of combining lean and green practices on operational and environmental performance, claiming that the approach may remove buffer stock and reduce waste in the manufacturing process. According to Eroglu and Hofer (2011), leanness has a beneficial impact on a company's profitability since it

allows it to decrease operating expenses, waste, and losses. Inventory leanness, they claimed, is the ideal inventory control technique since it leads to optimal resource usage. The theory explains how producers may improve ordering flexibility, minimize on-site inventory, and eliminate inventory carrying costs by using the idea. The empirical efficacy of the lean explanation is found at the aggregate level in the timing and amount of adoption. In principle, though, inventory limits a company's capacity to respond to demand changes. According to academic research, organizations that use lean techniques and systems to optimize inventory obtain greater levels of resource utilization and customer satisfaction, which leads to increased organizational growth, profitability, and market share (Po-Lynn, 2019).

One of the criticisms of lean theory is that it eliminates the margin for mistake by eliminating extra inventory and the buffer period that is frequently put into operations. When issues arise, they have a far greater influence on output than they would otherwise. Another criticism is that lean does not self-check; although lean encourages the use of facts and data to assist decision making, there is a paucity of knowledge regarding the success of Lean, particularly when it comes to selecting partners. Finally, lean devalues abilities; when working with inefficient processes, unique skills such as modifying manufacturing procedures or cajoling machines are useful. Because as processes improve, individuals who used to be the superstars who smashed production barriers are required less and less, Lean forces people to divulge all of their secrets (Tempelmeier, 2011).

Inventory management, according to lean theory, is a critical component of any supply chain, regardless of whether that is a product or a service for a company. Inventory management is critical for harmonizing demand and supply across the whole supply chain, allowing for flexibility in dealing with the external and internal incidents that

characterize today's unpredictable, globalized corporate environment (Domínguez-Pérez, Lopes-Martinez, Felipe-Valdes, Vallín-García, & Cruz-Ruiz, 2018). Ineffective inventory management is a serious issue for developing-country businesses, and the majority of the enterprises surveyed do not employ even the most basic inventory control principles and procedures. The lean principle is critical to good inventory management, which leads to enhanced profitability, adaptability, flexibility, economic viability, and asset management. It is also beneficial as a performance measuring tool for commercial government agencies. The theory is effective in setting the standard for how much or little inventory is adequate for effective and efficient operations of an organization and yield high returns. This theory did the linkage between Just-In-Time and operational performance of the firm.

General Literature Review

General literature is intended to give readers a summary of the sources used when studying a specific subject and to show how the analysis fits into a broader field of study (Hancock & Algozzine, 2016). The general literature review include literature in regard to inventory management practices which is a key component in organizations as it works to reduce costs and increase returns and profits of the firm. It includes literature in regard to operational performance, organizational leadership, government regulations and finally the effect of inventory management practices on operational performance.

Inventory Management Practices

Inventory management is a key component in organizations as it works to reduce costs and increase returns and profits of the firm. The concept also works in a manner to guarantee that the customer demands are met and fully satisfied since it operates in a way to sustain right quantities and quality of stocks that allows continuous processing. Inventory management also ensures that inventories are at the right place and at the right time such that there is efficiency in the processing and production sections of manufacturing entities (Chan et al., 2017). Simply put, inventory management is about putting in place control measures during the ordering, storage and utilization of resources and components within the organization and its production process. It further covers the supervision and control of the quantities in the finished products at the production line in an organization. The management practices put in place in an organization is to ensure that there is no shortage in supply of production units or over-supply leading to increase in storage costs and maybe misuse of the components.

According to Radzuan et al. (2015), high stock level leads to organizational capital and resources are tied down and cash-flow issues may arise, deterioration of products, products becoming obsolete, misuse and robbery of the products. However, on the other hand, shortage in supply of stocks may lead to interruption of production process, underutilization of equipment, machines and staff, unsatisfied customers, and poor consumer relations. Therefore, there is need for initiating proper inventory management practices to ensure balance in terms of stocks and inventories held in a firm at any one moment. These inventories cover work-in-progress, raw materials, spare parts, and finished goods.

When it comes to the policies and procedures under inventory management, Singh and Verma (2018) noted that this will include the inventory management approaches and

practices, which cover the Just-In Time (JIT), economic order quantity model, perpetual inventory system and ABC analysis, First-in-First-Out (FIFO), vendor managed inventory and re-order point level. These practices are adopted for ensuring there is a balanced stock level amount to encourage continuous processing. According to Muyundo (2018), the cement manufacturing companies mostly use economic order quantity (EOQ) model, ABC analysis, vendor managed inventory (VMI) and Just-In Time (JIT) to ensure efficiency in their operations and effective processing units that can deliver timely and quality products to the market. These practices were then discussed in the subsequent sections.

Economic order quantity model

This model operates on the concept of reducing ordering costs such that with inventory holding the ordering costs decline which is beneficial to the organization in its quest of reducing operational costs (Sebatjane & Adetunji, 2019). The EOQ is the re-order level for the organization allowing the management team to be able to plan for timely replenishment of inventories that ensures continuous operations. The organization is also able to further cut costs since there are no storage costs incurred, the materials are in constant movement in and out of the firm immediately. According to Li, Ghadge, and Tiwari (2016), this model is premised on having predictable holding, purchase, and ordering costs at any specific time and as per the quantities demanded by the customers/market. Similarly, Kazemi, Abdul-Rashid, Ghazilla, Shekarian, and Zaroni (2018) shared that the EOQ model concentrates on the ordering measures that ultimately minimize the costs of holding inventories versus the cost of conducting re-orders.

The EOQ operates under some level of certainty of the quantities demanded by a customer over time and this is based on history of handling the customer; this then

means that the firm being fairly certain of the demand quantities can keep certain amounts of inventory that can fulfil the demands of the specific customer. Sremac, Tanackov, Kopic, and Radovic (2018) shared that when a firm knows that their client orders 5,000 tons of material every week, then there is no need to have 10,000 tons of the same materials in storage which would increase holding and storage costs. EOQ models can only work if the organization has all the information about the customer and this is done by building relationships and keeping records of demands, the quality, quantity, and timelines (Mokhtari, 2018). Poor record keeping is likely to compromise the quality of products and thus have a negative impact on operational and processing efficiency and performance (Cárdenas-Barrón, Chung, & Treviño-Garza, 2014).

Vendor managed inventory

Vendor Managed Inventory (VMI) is also be referred to as Supplier Managed Inventory (SMI) or direct replenishment and it is coordination between the supplier and the manufacturer, where the supplier undertakes control and management of the inventory (Sainathan & Groenevelt, 2019). Under this technique, the supplier that makes decisions on behalf of the firm in terms of inventories. As explained by Kinyua (2016), the decisions cover frequency of replenishment, quantities, and quality of the inventory. This only works through constant monitoring of the inventories and tracking their movement. According to Maina and Were (2018), the information the supplier obtains will factor in the decision being made on periodic re-supply decision on matters such as order quantities, shipping mode and timing. At the same time, the organization seizes all control on inventory replenishment decisions and transfers the financial responsibilities for inventories to the supplier.

The VMI arrangement means that the supplier is responsible for managing all the organizational inventories and includes activities like monitoring, planning, and

replenishing inventories and making payments for the inventories to ensure effective processing and manufacturing unit (Park, Yoo, & Park, 2016). The supplier usually receives real-time data from the company on inventory, sales, and demand forecasting via digital data interchanges. Depending on the data and information, the supplier will estimate the maximum and minimum inventory levels that should be present at any given moment at the firm's location or warehouse. This restriction will almost always be established in a VMI agreement countersigned. Until the items are sold to the client, the businesses would not pay again for goods that were sent by the supplier. Instead of reacting passively to purchases made by the company, the VMI arrangement allows the supplier to decide when and how much stock should be supplied. This arrangement is normally led by a contract, according to Maina and Were (2018), which outlines the financial conditions, inventory limitations, and performance targets and expectations, including such service measurements, firm and supplier obligation and program length.

Just-in time (JIT)

Just in time is a Japanese philosophy whose use is associated with increased quality, efficiency, and effectiveness. The JIT system ensures the organization has minimum inventory levels to cut on wastages, losses, and costs. According to Gao (2018), JIT is arranging for items to be supplied from a supplier just when they are required, eliminating the need for stock keeping. For this to function, the client and supplier must work closely together and communicate reliable information. The cooperation involves collaborative planning meetings when the customer's requirements and the supplier's delivery schedules are discussed, harmonized, and agreed upon.

A JIT system encourages efficiency in the operations using the least number of resources to resolve immediately issues that arise, which works to motivate the employees to be always on their toes. According to Ngugi, Kimutai, and Kibet (2019),

the concept of JIT works on elimination of wastes and zero costs and operates on the idea of only producing goods when needed and delivering it when and where needed such that there is no storage and holding costs. Furthermore, JIT deals with order frequency of materials, reduced warehouse spaces as the inventory is moved from supplier to the manufacturing company and its production sector once the good is ready it is delivered to the customer (Bagshaw & Peters, 2019).

ABC analysis

ABC Analysis is a strategy for inventory control in which inventory items are divided into three groups based on their worth. Group A: Items with a high monetary worth. These items make up 15-20% of the inventory and account for 75% of the overall value. This category of items should be checked on a frequent basis. Group B consists of things with a medium monetary worth. This represents 30-40% of the products and accounts for around 15% of the total worth. Group C: Low value items. These items are in great volume 60-80% and account for less than 10% of the total value. Inventory prediction, product classification, and safety stock are the four-inventory metrics used by the ABC inventory model (Ravinder & Misra, 2016).

Effective inventory management may be costly, time-consuming, and labor-intensive; nevertheless, not all products retained in inventory necessitate such thorough and close-study monitoring, especially if they are low-value products that are employed at random in the production process - the Group C items (Douissa & Jabeur, 2020). The ABC inventory management approach is based on the idea that a small number of goods make up the majority of the money worth of the overall inventory employed in the manufacturing process, whereas a big number of things make up a little percentage of the store's money value. The money value is calculated by multiplying the volume of product in each item by its unit price, according to Osei-Mensah (2016). Based on the

quantity spent for that particular product, each product of inventory is assigned an A, B, or C denomination. The “A” or highest-value goods should be tightly controlled and supervised by the most experienced staff, but the “C” or lowest-value things may be subject to basic physical control.

Operational Performance

Every firm uses its resources with the main aim of making returns that ensures its survival and success. In that regard, the managers plan and strategize on techniques and methods of improving their performance (Wild, 2017). For manufacturing firms, their overall organizational performance largely depends on how the operations work and performance measurement. Opoku et al. (2020) defined operational performance as measuring processing and operations of the firm in terms of efficiency, effectiveness, and speed of delivery against the set standard. At the same time, it is measured in terms of cycle time/processing time, productivity rates, and waste reduction, optimum utilization of machines and systems, and compliance with the regulatory standards.

The main objectives under operational performance include aspects of speed of processing that affects production cycle timeline; cost of production, quality of products in line with standards and regulations; aspects of dependability and reliability of the production unit and, flexibility to respond to changes in production and processing line (Opoku et al., 2020). Operational performance in this study is a measure of production cycle timeline, reduction of costs and wastes, and reliability and flexibility.

Production cycle timeline

The production cycle timeline is a long-term planning exercise carried out by the manufacturing company's senior management. The goal of the production cycle schedule is to make decisions that will result in the company's greatest overall

performance. As a result, the production cycle timetable process should include important core processes of the manufacturing organization (Vollman, Berry, & Whybark, 2005). The production cycle timeline generates plans for all of the manufacturing company's functional areas, not just the manufacturing function. The manufacturing portion of the production planning is the production cycle timetable (Wild, 2017). Based on the production planning process, other functional groups will create their own plans. The capacity of production planning to react to changes in the operating environment is critical. Studying the supply chain and its causal relationships is the best method to prepare for changes. From a corporate standpoint, change management of production planning comprises both internal and external components (Shin, Ennis, & Spurlin, 2015).

Reduction of costs and wastes

Operational performance is also a measure of reduction of costs and wastage of resources such that by maintaining the right volume of stock, the company does not incur additional costs for production (Muyundo, 2018). Having the right amounts of stock mean that there are no instances of theft, misuse of resources and goods can be damaged by natural elements like light and water. Products cannot be obsolete when correct number of inventories are kept in an organization. Correct stock levels ensure there is no cases of stock-outs that stall the production process as the people have to order and replace the replenished stock. This means that production process is continuous and as such the machines are optimally utilized (Mbah et al., 2019).

Optimization of machines and reduction in stock outs

The most prevalent inventory management issue is achieving appropriate inventory levels. Decisions as to how many of which items to keep in the warehouse, when to

make the next purchase, and the amounts to order are just a few of the issues that arise on a daily basis (Shawe-Taylor & Sun, 2011). Customers, on the other hand, lose faith in the firm and hunt for alternatives if it is not available. In the field of inventory management planning, defects in inventory and inconsistent inventory levels are a prevalent concern. They have an impact on the inventory system's optimal performance (Dorigo & Blum, 2015). The use of optimization necessitates a shift in mindset, one that analyzes the influence of losses on machine-specific variables like energy consumption, yield, and dependability. One machine may indeed be able to shut down fully on demand, while another consumes energy and resources, while a third generates significant amounts of scrap as it re-establishes control of its operations following the interruption (Shin et al., 2015).

When all units of raw material are depleted, stockouts occur, forcing activities to halt. Keeping your online retail business's inventory levels at optimal levels is frequently easier said than done. At the best of times, customer demand may be erratic and unexpected (Chung & Hou, 2019). If you stock too much, you risk raising your costs, but if you stock too little, you risk completely running out of a product. It's no simple task to achieve the proper balance. Stockouts can occur due to a variety of factors, including underordering or an unexpected rise in demand (Mbah et al., 2019). This can result in lost revenues as a result of insufficient inventory, as well as low customer satisfaction as a result of unfilled and delayed orders. A stockout can also happen when a producer is unable to create a product owing to supply chain problems, mechanical flaws, or technological challenges (Shih, 2018).

Flexibility and reliability

Operational performance considers the aspect of flexibility. Uhrin, Bruque-Cámara, and Moyano-Fuentes (2017) stated that flexibility requires that a company produces

products and services of different levels of quality and with various design modifications. Flexibility further requires that a company adapts operations to meet new or changing delivery schedules and production volumes. It is also measured in terms of the quality of the service/product is more than conformance to a specification. It's also how well a product/service performs its intended function, the desirability of the features and the reliability of a product/service (Qrunfleh & Tarafdar, 2014).

On speed, Panwar et al. (2018) mentioned that is about the amount of time needed to produce a single unit of product and for planning purposes the management needs to know for relaying the information to the clients. The speed should be sufficient to deliver the market demands so as to retain the clients. On cost, operational performance is about the variation in the unit of cost as arrived by due to changes in volume of products. When the variety of products/services being processed is high, then the volume produced will be low, which makes production cost per unit to be high (Dillon, Oliveira, & Abbasi, 2017). This then calls for the management in organizations to increase production volumes by reducing varieties to reduce cost of production. It might mean that an organization does specialization of few specific products.

Operational performance can also look at aligning the all the business operational units within the organization to ensure they work in sync to deliver the core business goals and objectives (Shin et al., 2015). The outcomes of the organizational processes may include aspects like reliability of the system, production cycle time and inventory in turns, which affect customer satisfaction, customer loyalty, and market share that has an influence on earnings and incomes.

Moderating Variable

A variable that can enhance, reduce, cancel, or otherwise change the relationship between independent and dependent variables is referred to as a moderating variable. Moderating factors can potentially shift the relationship's direction. The usage of moderating factors is beneficial because they aid in the explanation of the relationships between the independent and dependent variables (Vij & Farooq, 2017). The moderating variables were organizational leadership and government regulations.

Organizational leadership

Doz (2020) indicated that leadership is an important subject that many organizations use to realize increased productivity, increased profitability, efficiency, and effectiveness in organizational operations. Chen, Zheng, Yang, and Bai (2016) defined organizational leadership style as a way of providing motivation, direction, and implementing plans. Management styles are viewed as approaches that a particular leader uses to lead and manage organizations. Organizational leaders are known to reduce the effects of uncertainty and changes in inventory management practices and in turn performance. Leadership style is a key determinant of the success or failure of any organization in its inventory management practices (Muchiri & Hazel, 2019). A leader is a person who influences, directs, and motivates others to perform specific tasks and inspire his subordinates for efficient performance towards the accomplishment of the stated corporate objectives. Leadership is about establishing direction, aligning people, motivating, and inspiring others (Attar & Abdul-Kareem, 2020).

Many of these abilities and interests are put to good use by leaders, although they tend to concentrate on areas like finding solutions (rather than issues), managing change, succeeding despite organizational structure, and motivating employees to reach their

objectives. Leadership is a crucial managerial talent that entails the capacity to motivate a group of people to work together toward a similar objective (Sousa & Rocha, 2019). Leadership is concerned with the growth and requirements of followers. Managers that use a transformational leadership style focus on their employees' value systems, motivational levels, and moralities as well as their skills development (Groysberg, Lee, Price, & Cheng, 2018). Good leadership assists followers in achieving their objectives while working in an organizational context; it encourages followers to be communicative and adaptable to new and better techniques and environmental changes (Groysberg et al., 2018). Leadership has a clear cause and effect relationship on businesses and overall success, thus according to Attar and Abdul-Kareem (2020). Values, culture, change tolerance, and motivation of employees are all determined by leaders.

Government regulations

Not only should the government oversee inventory management techniques, but it should also regulate the repurposing of elements after the product's life cycle has ended (Xie & Ma, 2016). As a result, because the sustainability of companies and their supply chains is closely linked to government regulations, it is now widely assumed that the government must always be absolutely dedicated to the implementation of sustainable standards and monitoring their compliance, and as a result, the government has been designated as one of the key elements of supply chain management practices (Mani, Gunasekaran, & Delgado, 2018). Furthermore, government backing is a huge motivator for any company to try new things and modify its policies in order to benefit the environment and community (Mani et al., 2018).

Because it is required to construct a set of regulations or processes that allow for better management of the business and advantages that the government may give, the

government is critical to enterprises attaining sustainability (Mar Farinos, 2017). Avelar, Garca, Cedillo, and Jaimes (2018) stated that government assistance impacts market proximity while underlining the importance of government. It is simpler to discover suppliers, clients, and service providers to improve logistics operations in enterprises because to the region's infrastructure levels. Because it is a direct provider of improved regional connectivity and market accessibility levels to enhance operations, the government's policy decisions and support indirectly impact enterprises' economic growth. It also indirectly effects the responsiveness of inventory management methods (Dickson, 2018). In this sense, government assistance and the policies that result contribute in improving cash flow or sales, as well as value accumulation and cost reduction in operations (Avelar et al., 2018).

Effect of Inventory Management Practices on Operational Performance

Inventory management practices that are adopted by micro and small enterprises (MSEs), as shared by Atnafu and Balda (2018), have led to increased competitive advantages realized due to improved organizational performance. Although the micro and small enterprises owners and managers have been unable to adopt inventory management practices and reap its benefits mainly due to insufficient information and knowledge on the practices and benefits. As such, the authors advocate for training and information sharing to the MSEs owner and managers in inventory management practices such that they can gain benefits including improved performance and competitive advantage.

Implementing inventory management practices enable organizations to control their inventories that are essential to the operations of the business entity. According Agu, Obi-Anike, and Eke (2016), manufacturing firms that adopt inventory management practices have reported reduced investments on fixed assets as a way of managing their

cash flow and controlling inventories. Adoption of inventory control positively impact on customer satisfaction and productivity of the firm. Training of employees on inventory control allows for efficient and smooth running of operations at the firm.

In the competitive and volatile business environment, Dickson (2018) noted that with increased operational costs, firms are using inventory management practices to overturn the trend and cut operational costs. As such, inventory management practices are used to optimize operational sections, reduce resource wastage, and loss of stock. Ultimately, these optimizations improve operational efficiency, and performance. Inventory management is linked to operational performance through cutting costs and if handled poorly is likely to lead to firm failure.

John et al. (2015) revealed firms that adopt inventory management practices and especially those that use scientific inventory management approaches get better results shown through reduce material shortages, over-stocking and having adequate quantities of high-quality materials and inventories. With correct quality and quantities of inventory, the firms can better attend to the customers' demands through continuous processing of products. Inventory management practices lead to reducing of costs, higher customer satisfaction, continuous processing, efficient resources utilization, and overall improved operational and organizational performance. Since inventories constitute a huge part of current assets of organization, the management must then make budget allocation for funds and other resources to managing inventories.

According to Ouma and Mwangangi (2018), the capacity to maintain optimal supplies is influenced by the efficacy of inventory management systems such as just in time. Demand forecasting dependability, planning for production requirements, and shorter lead times all contribute to appropriate stock levels, which increases the firm's success. This is due to the company's capacity to estimate demand for raw materials and supplies

while keeping stockpiles to a minimum. The performance of manufacturing companies was influenced by material needs planning. The procurement function's performance is influenced by the control of materials entering the company. The efficacy of the receiving procedure was aided by the receiving facility's closeness. Inspection frequency would result in quality assurance. Handling time would be reduced, and traffic would be reduced as a result of the use of materials handling equipment, therefore boosting the firm's performance. Vendor management system aspects that have an influence on delivery were discovered to be as a consequence of inadequate communication with suppliers, which culminated in quantity and significant cost advantage, as well as a lack of supplier delivery assessments, which resulted in quality costs, according to the study.

Empirical Literature Review

Shin et al. (2015) investigated on the effect of inventory management efficiency on profitability in the US manufacturing industry. Inventory management is essential because the firm will be eager to guarantee that its assets and stock are well managed and demand forecasting is enhanced so as to prevent unplanned procurement. Inventory can double up as stock and assets respectively, hence, when an organization enhances demand forecasting, it allows both minimization of operating costs and customer satisfaction. When this is achieved, it allows a future organization plan to apply multiple variables that an organization can use to achieve its objective, which are demand and supply, costs, and personal requirements. The study explores the US manufacturing firms and the relationship that inventory management efficiency has on firm profitability. The findings reveal that low inventory ratio to sales is linked to high profit margin for the firm. The smaller sized manufacturing firms get higher benefits from

increasing inventory efficiency measures in terms of profits, compared to large and medium-sized manufacturing firms.

Osei-Mensah (2016) investigated the effect of inventory management practices on service Delivery at St. Martin's Hospital, Agroyesum, Amansie-West and found that inventory management practices entailed the organizations' activities and functions used to handle stocks of finished products, semi-finished products, and raw materials. Proper execution of these operations allowed the company to minimize waste and expenses and instead boost income. Some of the precision of inventory records can be accomplished by selecting and installing inventory tracking software, revising the design to enable optimum storage, creating rack location codes and assigning distinctive identification numbers, and locking warehouse and storage zones to restrict unlawful inventory removal or motion. The study sampled 60 staff and 30 patients and used questionnaires to collect data. SPSS was used to analyze quantitative data and qualitative analysis was also done, such that findings reveal that the hospitals used strategic supplier partnership and information technology as inventory management practice and led to improved service delivery. The study concluded that inventory management at the hospital was poor due to lack of well-trained staff in handling inventories and poor storage of inventories that led to losses.

Prempeh (2015) conducted a similar study only that in this case, the impact of efficient inventory management on profitability in the manufacturing firms in Ghana was examined. Investigated. Inventory management deals with the management of fixed and current assets and daily operational supplies. Inventory is also a critical asset in any organization and under the just-in-time (JIT) control scheme, it is considered as a liability. Regardless of whether it is for profit or not for profit organization, inventory appears under the organization's current assets in the economic position statement.

Inventory plays a significant role, and its leadership helps a company to develop as it refers to its external clients as well as inner clients. The researcher conducted a cross sectional data analysis for a ten-year period from 2004 to 2014 from 4 manufacturing firms listed at the Ghana Stock Exchange. Multiple regression analysis and ordinary least squares was conducted, and findings reveal adoption of inventory management practices led to profitability of these manufacturing firms. The study concluded that raw material inventory and inventory management practices is a key factor that these firms should consider in boosting their profits.

Oballah, Waiganjo, and Wachiuri (2015) conducted a study on the effect of inventory management practices on organizational performance in public health institutions in Kenya using Kenyatta National Hospital as the case study. Inventory management practices in their study involved keeping precise records of ready-to-ship finished products. The study was anchored on strategic choice theory, theory of economic order quantity (Wilson EOQ model) and transactional cost analysis. The study adopted a case study approach and had 74 respondents who filled the open and closed ended questionnaires. The quantitative data was analyzed using SPSS and Pearson's correlations with results showing inventory investment and records accuracy positively influenced organizational performance. The study concluded that the hospital needed to always keep the right amount of stock. Furthermore, the significance of inventory management procedures is that they enable sales staff to be promptly informed of what is accessible and ready for delivery at any specified moment. Companies should design and construct a supply and demand balancing inventory management scheme. This is aimed at reducing inventory expenses, reducing cycle time, and improving data sharing.

In another study by Samuel and Ondiek (2014), inventory management automation and the performance of supermarkets in Western Kenya was interrogated. Firms strive to

achieve effectiveness, cost efficiencies, and gain economies of scale and hence the need to hold inventory to meet market and customer demands. The study used descriptive survey design and data was collected from 11 supermarkets in Kisumu, Kakamega, and Bungoma using structured questionnaires. The collected data was analyzed using SPSS for descriptive and inferential statistics where findings revealed that automation of the inventory management process led to high performance by the supermarkets. The study advocated for the management of the supermarkets to automate its processes to reduce operational costs. At the same time the supermarket managers could not wish-away inventory management because it formed the basis of their overall performance through elimination of uncertainties in their management.

Operational performance in this study and as based on BCL was measured in terms of production costs and with the use of inventory management systems, should be as low as possible. Having a balanced stock level ensures the production line operates at full capacity hence high production cycle time to meet the speedy demands for the market. The quality of products is a measure of high operational performance of BCL where its products meet the set standards and regulations, which is a requirement for construction materials. The reliability and dependability of the production line is largely reliant on available raw materials at the production area when and in the right quantities. Lastly, operational performance is a measure of the ability of BCL to be flexible enough in instances where there is higher demand for its products; the management responds by increasing the operational speed to meet the increase in demand.

Conceptual Framework

Figure 2.1 presents the conceptual framework of the study.

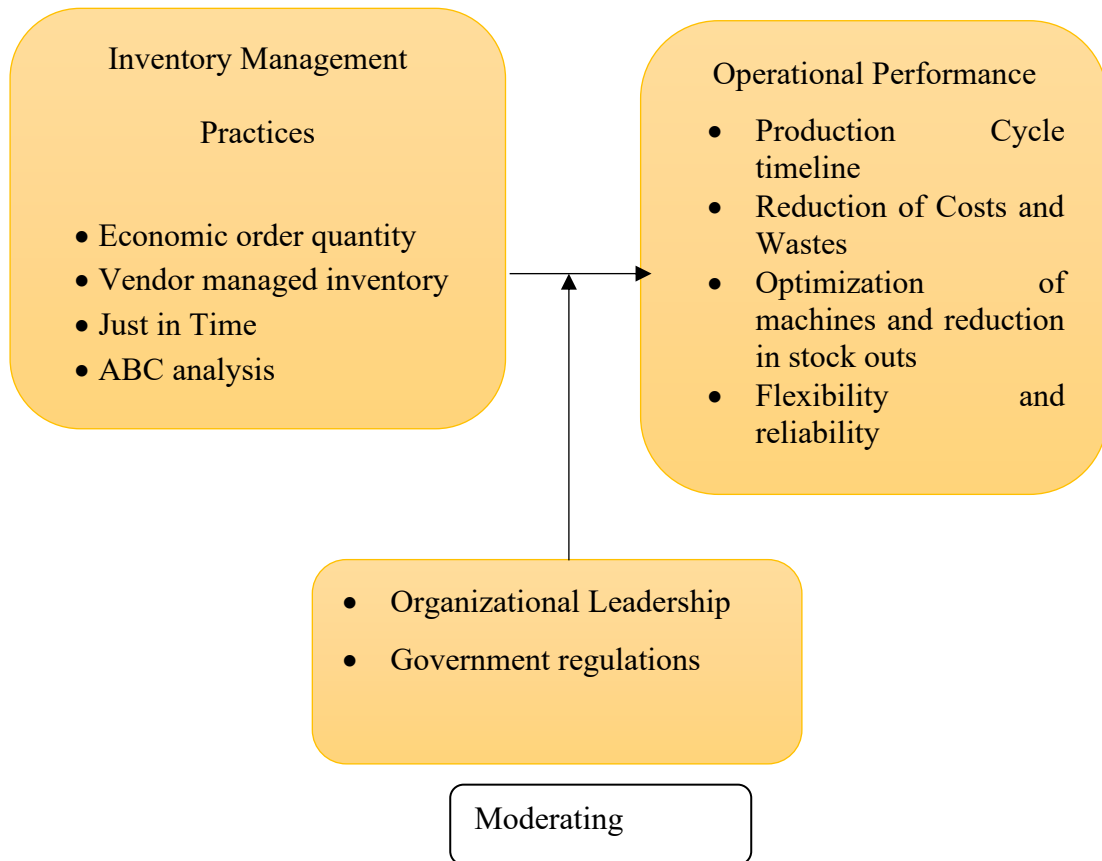


Figure 2.1: Conceptual Framework

Source: Author (2021)

Summary

This chapter has presented the theoretical, general, and empirical literature. Specifically, the three theories that the study was anchored on was discussed and various studies regarding inventory management practices and operational performance referred to and discussed at length. The chapter has also presented conceptual framework that guided the study has also been discussed. In the literature review, past studies and evidence available were inconclusive and have not focused on inventory

management practices and its impact on operational performance which informed the need for the current study.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

The research design, population, sample size & selection, sampling techniques and process, data collecting tools, data quality control, data collection procedure, data analysis, and quantification of research variables are all discussed in this chapter.

Research Design

A study design, according to Creswell & Creswell (2017), is a master plan and/or framework or blueprint that specifies the techniques and processes for gathering and interpreting the required data. The study investigated the impact of inventory management strategies on operational performance using an exploratory methodology. According to Creswell and Poth (2017), the design seeks to find out the ‘what’ is the issue of concern. It was ideal in exposing what impact does the inventory management practices have on the operational performance at BCL, by scoping out the problem that the company has and practical solutions that could be applied. This method was primarily preferred as it allows for an in-depth study of the subject matter and the data was collected from BCL employees.

Population

The population for this study included all the employees of Bamburi cement limited and from the records by the human resource management, the total number of employees were 851 across all its branches in the country (Bamburi Cement Limited, 2020). The fact that these employees worked at Bamburi cement means they have information on the workings of the company. Wang (2015) stated that population

includes all elements that meet certain criteria in the study and the study population is as shown in Table 3.1.

Table 3.1: Population of the Study

Branch	No. of employees
Head office-UpperHill	91
Nairobi Grinding plant	123
Bamburi Special Products Limited in Industrial Area	102
Bamburi Special Products Plant in Athi River	166
Lafarge Eco Systems in Mombasa	84
Bamburi Cement Mombasa Plant	285
Total	851

Source: Records from Bamburi Cement Limited Website (2020)

Target Population

Meyers, Gamst, and Guarino (2016) noted that the target group must have some visible features to which the study wants to generalize the findings. The target population is made up of all members of an actual or imaginary group of people, events, or things from whom a researcher seeks to extrapolate study findings, whereas the accessible population is made up of all persons who might reasonably be included in the sample (Lewis, 2015). The target population of the study was employees from operations and production department, warehousing/stores department, and procurement department because they are the ones directly involved in inventory management and movement of inventory and materials. From the HR records, 198 employees work in these three departments at Bamburi Cement Limited. Table 3.2 presents the target population.

Table 3.2: Target Population

Department	Branch	Target population
Operations department	Head office-UpperHill	8
	Nairobi Grinding plant	12
	Bamburi Special Products Limited in Industrial Area	10
	Bamburi Special Products Plant in Athi River	11
	Lafarge Eco Systems in Mombasa	7
	Bamburi Cement Mombasa Plant	16
Warehousing/stores department	Head office-UpperHill	2
	Nairobi Grinding plant	9
	Bamburi Special Products Limited in Industrial Area	12
	Bamburi Special Products Plant in Athi River	15
	Lafarge Eco Systems in Mombasa	6
	Bamburi Cement Mombasa Plant	25
Procurement department	Head office-UpperHill	7
	Nairobi Grinding plant	9
	Bamburi Special Products Limited in Industrial Area	10
	Bamburi Special Products Plant in Athi River	11
	Lafarge Eco Systems in Mombasa	10
	Bamburi Cement Mombasa Plant	18
Total		198

Source: HR records at Bamburi Cement Limited (2020).

Sample Size

A sample is a small group of items or individuals obtained from the available population under research (Mugenda & Mugenda, 2012). According to Mugenda & Mugenda, a sample that represents 10% or more of the population is preferable. The higher the sample size, the better for a particular study. The study chose 50 percent of the entire population from each stratum to create the sample, which totaled 99 people.

Table 3.3: Sample Size

Department	Branch	Target population	Percent	Sample Size
Operations department	Head office-Upper Hill	8	50	4
	Nairobi Grinding plant	12	50	6
	Bamburi Special Products Limited in Industrial Area	10	50	5
	Bamburi Special Products Plant in Athi River	11	50	6
	Lafarge Eco Systems in Mombasa	7	50	4
	Bamburi Cement Mombasa Plant	16	50	8
	Warehousing/ stores department	Head office-Upper Hill	2	50
Nairobi Grinding plant		9	50	5
Bamburi Special Products Limited in Industrial Area		12	50	6
Bamburi Special Products Plant in Athi River		15	50	8
Lafarge Eco Systems in Mombasa		6	50	3
Bamburi Cement Mombasa Plant		25	50	13
Procurement department		Head office-Upper Hill	7	50
	Nairobi Grinding plant	9	50	5
	Bamburi Special Products Limited in Industrial Area	10	50	5
	Bamburi Special Products Plant in Athi River	11	50	6
	Lafarge Eco Systems in Mombasa	10	50	5
	Bamburi Cement Mombasa Plant	18	50	9
	Total		198	50

Source: Author (2020)

Sampling Techniques

Sampling is a mechanism for gathering people, places, or things to research, as well as a method for picking a number of persons or items from a population such that the selected group has aspects indicative of the full group's features (Yin, 2017). In order to choose the samples, stratified random sampling was used. According to Cooper and Schindler (2011), this approach creates very accurate estimates of total population characteristics and ensures that a representative sample is created from a non-homogeneous demographic.

After that, stratified random sampling was used to choose responders from each stratum. Because the population of interest is heterogeneous and might be separated into clusters or groups to get a fair representation, a stratified random sampling approach was adopted. According to Erik and Marko (2011), stratified random sampling guarantees a more representative sample is obtained from a reasonably homogenous population and generates more precise estimations of general population characteristics.

Data Collection Instruments

A questionnaire is a tool for gathering, documenting, and storing information (Yin, 2017). Because it is affordable and allows responders to complete the questionnaire at their leisure, it is a self-administered approach for all correspondents. A questionnaire is a written form with a collection of questions for obtaining information that may be delivered or self-administered with or without supervision. The questionnaire had five sections: Section A dealt with general information of respondents so as to understand the demographic composition of the respondents. Section B dealt with effectiveness inventory management practices so as to understand their effectiveness in enhancing operational performance. Section C dealt with organizational leadership so as to establish its effect on operational performance. Section D dealt with the effect of inventory management practices and operational performance so as to determine the relationship between inventory management practices and operational performance. Section E dealt with operational performance so as to determine the level of performance of the organization. Generally, the questionnaire had closed-ended questions to allow for standard answers and make it easier for data analysis with the given limited time.

Types of Data

Data is either primary, which is collected directly from the source for the first time or secondary, meaning it was already collected from the field and can be accessed from available records (Mcleod, 2019). Data is also quantitative in nature or qualitative, for the later the data is non-numerical, and it is collected through interviews and observations and allows the respondent to freely express their views and opinions, but since the data is unstructured and answers are unstandardized, the analysis process is cumbersome. Time and cost constrain means that data cannot be collected from a large data set, but ideal when desiring in-depth information from respondents. The qualitative data was collected from participant observations and arranged in themes. On quantitative data, Creswell and Creswell (2017) mentioned it is about quantities thus numerical in nature that can be measurable. The data is collected using measurable things and through the use of rating scales and categories and analyzed by making comparisons and inferences. It is also possible to collect large volumes of data and using sophisticated software that eases the data analysis process (Mcleod, 2019).

The study made use of primary data that was collected using structured questionnaires and the collected data was quantitative in nature. The respondents were expected to fill the questionnaires where gathered data was analyzed and used in answering the research question on effect of inventory management system on operational performance.

Data Collection Procedures

The researcher first adhered to the ethical considerations. Then, an introductory letter was gotten from Bamburi Cement Company that assured confidentiality among the respondents to give authenticity of the survey. Creswell and Creswell (2017) defined

data collection as the precise and systematic way of gathering data useful to research questions. The questionnaires were self-administered such that it was delivered to the respondents, and they were allowed one to two-week period to fill and return the filled instrument. In order to collect data, the researcher employed the drop and pick approach. The technique was used to provide respondents ample time to answer to the questions that had been posed. At the same time, some questionnaires were e-mailed to the respondents in line with covid-19 regulations of social distancing and minimal contact.

Pretesting

Pretesting allows the researcher to become familiar with the research topic and the administration process, as well as identify issues that need to be changed (Cooper & Schindler, 2011). The researcher conducted a pre-test using 10% of the sample size - that is ten (10) respondents to ensure that the research instrument, the questionnaire, passes the test of validity and reliability. The testing was done on Simba Cement staff and their responses recorded and those who took part in the research instrument pre-testing were not included in the final study.

Reliability

Reliability refers to whether you get the same answer by using an instrument to measure something more than once (Bryman & Bell, 2015). When a measure is used to the same item of measurement several times and provides the same results, it is termed trustworthy (Bryman & Bell, 2015). The Cronbach Alpha measure of internal consistency is used to assess reliability using a test-retest reliability technique (Cooper & Shindler, 2011). Cronbach alpha was used to assess reliability in this study. It examines the internal consistency of the correlation values calculated from replies on

an evaluation instrument. Cronbach's Alpha is a measure of how well a group of measurement items may be used to measure a single dependent variable (Cronbach, 1951). The Cronbach alpha level that is acceptable is one above 0.70 since it ensures reliability of the responses (Bryman & Bell, 2015). Table 3.4 shows the reliability analysis results.

Table 3.4: Reliability Analysis Results

Factor	Cronbach's Alpha	Comments
Inventory management practices	0.836	Accepted
Operational performance	0.757	Accepted
The effect of inventory management practices on operational performance	0.742	Accepted
Organizational leadership	0.825	Accepted
Government regulations	0.788	Accepted

After the test, all the alpha characteristics were more than 0.7, inventory management practices had an alpha estimation of 0.836, operational performance had Cronbach's alpha estimation of 0.757 while effect of inventory management practices on operational performance had a Cronbach's alpha estimation of 0.742. Organizational leadership had Cronbach's alpha estimation of 0.825 while government regulations had Cronbach's alpha estimation of 0.788. This was an indication that there was consistency in responses in the questionnaire and thus the questionnaire was deemed to be reliable.

Validity

Validity, according to Cooper and Shindler (2011), is the measure with which the sample of test items accurately represents the content of the test. In this study, content validity was used to determine the extent to which data acquired via the use of certain instruments mirrored a given content or domain of a specific idea. To do this, the questionnaire was evaluated to ensure that there were no technical or format mistakes. It was important to pretest the questionnaire before utilizing it in order to evaluate its

validity. The study instruments were pretested to verify that they were valid in terms of measuring the concept(s) they were designed to measure. The researcher double-checked the questionnaire for technical and format issues, and if they were found, the questions were amended. The comments from the pretest were used to revise the questionnaire before its final distribution.

Data Analysis Plan

Data analysis, according to Yin (2017), is a process that begins immediately after the completion of data collection and continues until the data has been processed and interpreted. Following data collection, the questionnaires were examined to see if they were complete and filled out correctly. The data was then tallied after being coded and categorized in terms of similarity. Quantitative data was analyzed using descriptive statistics which include frequencies, percentages, mean and standard deviation. For simpler interpretation, the SPSS program was also utilized to analyze quantitative data, with the results displayed in the form of charts, graphs, and frequency tables. The degree of relationship between the studied variables was determined using correlation analysis.

The researcher carried out a Pearson Correlation analysis in order to measure the relationship strength between dependent and independent variable. Pearson Correlation analysis is a tool which can be applied in determining the association level of 2 variables (Cooper & Schindler, 2011). It was applied in determining the relationship strength of the independent variables on the dependent variable. Data was presented in tables.

Ethical Considerations

The research was done after permission was granted by the Daystar University Ethics Research Board (DU-ERB). This research did not involve any activity that could be

potentially harmful to the physical or psychological wellbeing of the respondents or others who may be in one way, or another involved in the research. Permission and approval to collect the data was obtained from the National Commission for Science, Technology and Innovation (NACOSTI).

Respondents were informed that their engagement in the research is voluntary. The researcher informed them of their right to not participate and right to withdraw before their responses in the study could be recorded. While participation in the study was voluntary, the researcher encouraged as many respondents as possible to participate in the study.

The other ethical consideration that this research made is that of confidentiality. The researcher ensured that the confidentiality of the information and the respondents was maintained, ensuring that any information that could lead to conflict between the respondent and his/her employer was phrased in such a way that it could be traced back to the respondent. The researcher also cited the work to avoid instances of plagiarism and used the data for academic purpose only.

Summary

The methodology approach used in the study has been described in this chapter. The devices used to gather data as well as the techniques utilized to collect data are thoroughly specified. The study's ethical issues have been very effectively outlined.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Introduction

The data gathered, as well as the analysis and interpretation of data obtained from the field, are presented in the next chapter with the goal of attaining the study's objectives.

Analysis and Interpretation

Response Rate

The target population was 99 employees working with operations and production department, warehousing and stores, and procurement departments at Bamburi Cement Limited.

Table 4.1: Response Rate

Category	Frequency	Percent
Responded	73	73.7
Did not respond	26	26.3
Total	99	100

Table 4.1 shows that 73 of the 99 questionnaires distributed were correctly filled and returned, resulting in a response rate of 73.7 percent. This means that the 73.7 percent response rate was sufficient for analysis, drawing conclusions, and forming inferences. According to Mugenda & Mugenda (2012), a decent response rate is 50 percent, and anything beyond 70 percent is satisfactory.

Background Information

Gender of the respondents

The purpose of the study was to ascertain the gender of the participants. The findings are shown in Table 4.2.

Table 4.2: Gender of the Respondents

Gender	Frequency	Percent
Male	45	61.6
Female	28	38.4
Total	73	100.0

Table 4.2 shows that 45 respondents (or 61.6 percent of all respondents) were male, while 281 respondents (or 38.4% of total respondents) were female. These data show that, while the majority of the respondents in this study were male, the females were as important, indicating that there was no gender imbalance.

Age brackets

The purpose of the study was to look into the respondents' ages. The findings are presented in Table 4.3.

Table 4.3: Age Brackets of the Respondents

Age bracket	Frequency	Percent
20-30 years	15	20.5
31-40 years	28	38.4
41-50 years	23	31.5
Above 51	7	9.6
Total	73	100.0

Table 4.3 shows that 28 (38.4%) respondents were between the ages of 31 and 40, 23 (31.5%) respondents were between the ages of 41 and 50, 15 (20.5%) respondents were between the ages of 20 and 30, and 7 (9.6%) respondents were beyond the age of 50. These findings suggest that the Bamburi cement company has a diversified workforce, with the bulk of employees aged 31 to 40. Kithaka (2014) stated that age is an important component to consider while doing research in order to guarantee that all persons of all ages are included in the study and also that the study is inclusive of all people.

Period of service

Participants were asked to state how long they had worked for the organization. The findings are depicted in Table 4.4.

Table 4.4: Period of Service

Period of Service	Frequency	Percent
0-5 years	15	20.5
6-10 years	31	42.5
Above 10 years	27	37.0
Total	73	100.0

As shown in Table 4.4, the majority of the respondents 31 (42.5%) had served for 6-10 years. 27 (37.0%) had worked for more than ten years, whereas 15 (20.5%) had worked for less than five years. They were in a stronger position to provide accurate information on this study because of their extensive familiarity with the majority of the participants.

Educational qualification

The results were requested to indicate their highest educational qualification and the results are indicated in Table 4.5.

Table 4.5: Educational Qualification

Educational Qualification	Frequency	Percent
Diploma	26	35.6
Bachelor's degree	34	46.6
Postgraduate	13	17.8
Total	73	100.0

Results showed that 34 (46.6%) of the participants had bachelor's degree, 26 (35.6%) had diploma, while 13 (17.8%) had post graduate education. This implies that majority of respondents were well educated and therefore in position to comprehend research question and respond with ease.

Inventory Management Practices Adopted by Bamburi Cement Limited

The respondents were required to indicate the extent to which the organization had adopted inventory management practices in the organization and the results are presented in Table 4.6.

Table 4.6: Inventory Management Practices Adopted by Bamburi Cement Limited.

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Standard Dev
	F	%	F	%	F	%	F	%	F	%		
We are able to predict the ordering, holding and storage costs of cement in our organization	1	1.4	0	0	19	26.0	38	52.1	15	20.5	3.90	0.77
We are able to predict with certainty the quantities of cement demanded by our customers	1	1.4	0	0	7	9.6	49	67.1	16	21.9	4.08	0.66
Our organization works with our suppliers to plan for inventory replenishment	0	0	0	0	9	12.3	46	63.0	18	24.7	4.12	0.60
Our organization shares actual data with suppliers for replenishment of inventories	1	1.4	0	0	12	16.4	46	63.0	14	19.2	3.99	0.70
We usually order for inventories when they are required in our organization	0	0	5	6.8	19	26.0	32	43.8	17	23.3	3.84	0.87
Our organization holds a joint planning session in which customer's requirement schedule is discussed	0	0	6	8.2	0	0	49	67.1	18	24.7	4.08	0.76
Our organization holds a joint planning session in which supplier delivering schedules are discussed	1	1.4	2	2.7	6	8.2	46	63.0	18	24.7	4.07	0.75
Our organization classifies its inventories in regard to their importance	0	0	5	6.8	18	24.7	38	52.1	12	16.4	3.78	0.80

Results captured in Table 4.6 showed that 38 (52.1%) of the respondents agreed that Bamburi Cement Limited is able to predict the ordering, holding, and storage costs of cement in the organization. Further, 19 (26.0%) of the respondents were of moderate opinion, 15 (20.5%) respondents strongly agreed with the statement, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average

of 3.90 and a standard deviation of 0.77. This implies that Bamburi Cement Limited was able to predict the ordering, holding and storage costs of cement. These findings support the research findings by Chan et al. (2017) that inventory management is a key component in organizations as it works to reduce costs and increase returns and profits of the firm.

Descriptive results showed that majority of the respondents 49 (67.1%) agreed that the firm is able to predict with certainty the quantities of cement demanded by our customers while 16 (21.9%) of the respondents strongly agreed with the statement. Further, 7 (9.6%) of the respondents were of moderate opinion while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.08 and a standard deviation of 0.66. This implies that majority of the participants agreed that through inventory management practices adopted, the firm was able to predict with certainty the quantities of cement demanded by their customers. These findings support Domínguez-Pérez et al. (2018) findings that inventory management ensures that the customer demands are met and fully satisfied since it operates in a way to sustain right quantities and quality of stocks that allows continuous processing.

Further the study established that 46 (63.0%) of the respondents agreed that the organization works with its suppliers to plan for inventory replenishment, 18 (24.7%) respondents strongly agreed with the statement, while 9 (12.3%) respondents were of moderate opinion. The statement had a mean average of 4.12 and a standard deviation of 0.60. This implies that majority of the participants agreed that the organization works with its suppliers to plan for inventory replenishment. These findings support the study conclusion by Maina and Were (2018) that inventory management ensures that inventories are at the right place and at the right time such that there is efficiency in the processing and production sections of manufacturing entities.

Results showed that majority of the respondents 46 (63.0%) agreed that organization shares actual data with suppliers for replenishment of inventories, 14 (19.2%) strongly agreed, 12 (16.4%) were of the moderate opinion while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.99 and a standard deviation of 0.70. This was an indication that majority of respondents agreed that the organization shares actual data with suppliers for replenishment. This finding supports Radzuan et al. (2015) that inventory management is about putting in place control measures during the ordering, storage, and utilization of resources and components within the organization and its production process.

The study established that majority of the respondents, 32 (43.8%) agreed that the organization usually order for inventories when they are required in our organization, 19 (26.0%) were of the moderate opinion, 17 (23.3%) strongly agreed, while 5 (6.8%) disagreed with the statement. This implies that majority of respondents agreed that the firm usually order for inventories when they are required. This finding supports the research conclusion by Muyundo (2018) that noted that when proper inventory practices are adopted, a balanced stock level is ensured, hence encouraging continuous processing.

The study established that 49 (67.1%) of the respondents agreed that the organization holds a joint planning session in which customer's requirement schedule is discussed, 18 (24.7%) strongly agreed while 6 (8.2%) disagreed with the statement. The mean average was 4.08 while the standard deviation was 0.76. This implies that majority of respondents agreed that the organization holds a joint planning session in which customer's requirement schedule is discussed. This finding supports the research conclusion by Singh and Verma (2018) that there is need for initiating proper inventory

management practices to ensure balance in terms of stocks and inventories held in a firm at any one moment.

Descriptive results showed that 46 (63.0%) of the respondents agreed that the organization holds a joint planning session in which supplier delivering schedules are discussed, 18 (24.7%) of the respondents strongly agreed, while 6 (8.2%) of the respondents were of moderate opinion. Further, 2 (2.7%) of the respondents disagreed with the statement while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.07 and a standard deviation of 0.75. This implies that majority of the participants agreed that organization holds a joint planning session in which supplier delivering schedules are discussed. These findings support Tempelmeier (2011) that inventory management acts as a major component of any supply chain irrespective of whether it is product or service for a firm.

The results showed that 38 (52.1%) of the respondents agreed that the organization classifies its inventories in regard to their importance, 18 (24.7%) respondents were of moderate opinion, 12 (16.4%) respondents strongly agreed, 6 (8.2%) respondents were of moderate opinion, while 5 (6.8%) of the respondents disagreed with the statement. The statement had a mean average of 4.07 and a standard deviation of 0.75. This implies that majority of the participants agreed that organization classifies its inventories in regard to their importance. These findings back up Po-Lynn (2019) findings that inventory management is critical for matching producers and consumers within each and every partner in the supply chain, ultimately allowing for flexibility in dealing with the external and internal events of today's challenging globalized economy.

Measures of Operational Performance at Bamburi Cement Limited

The study sought to determine the measures of operational performance at BCL, and the results are presented in Table 4.7.

Table 4.7: Measures of Operational Performance at Bamburi Cement Limited

Statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Standard Dev
	F	%	F	%	F	%	F	%	F	%		
There has been a high production cycle timeline of cement manufacturing at Bamburi Cement Limited	1	1.4	4	5.5	16	21.9	29	39.7	23	31.5	3.95	0.94
Our organization has a way of reacting to the changes in its operational environment	1	1.4	0	0	12	16.4	39	53.4	21	28.8	4.08	0.76
There has been reduced production costs in regard to cement manufacturing at Bamburi Cement Limited	0	0	0	0	12	16.4	49	67.1	12	16.4	4.00	0.58
There has been reduction of wastages in regard to inventories at Bamburi Cement Limited	1	1.4	7	9.6	15	20.5	34	46.6	16	21.9	3.78	0.95
There has been optimal utilization of machines and equipment at Bamburi Cement Limited	0	0	4	5.5	17	23.3	36	49.3	16	21.9	3.88	0.82
There has been minimal cases of stock outs at Bamburi Cement Limited	1	1.4	6	8.2	2	2.7	47	64.4	17	23.3	4.00	0.85
Bamburi Cement Limited production line is flexible to respond to any changes when they occur	0	0	0	0	11	15.1	35	47.9	27	37.0	4.22	0.69

Results in Table 4.7 show that 29 (39.7%) of the respondents agreed that there has been a high production cycle timeline of cement manufacturing at BCL, 23 (31.5%) respondents strongly agreed, 16 (21.9%) respondents were of moderate opinion, 4

(5.5%) respondents disagreed while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.95 and a standard deviation of 0.94. This implies that majority of the participants agreed that there has been a high production cycle timeline of cement manufacturing at BCL. Opoku et al. (2020) indicated that production cycle timeline can help in making of decisions that would produce the best overall performance for the company.

It was established that 39 (53.4%) of the respondents agreed that the organization has a way of reacting to the changes in its operational environment, 21 (28.8%) respondents strongly agreed, 12 (16.4%) respondents were of moderate opinion, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.08 and a standard deviation of 0.76. This implies that majority of the participants agreed that the organization has a way of reacting to the changes in its operational environment. These findings concur with the findings by Vollman et al. (2005) that operational performance is also a measure of reduction of costs and wastage of resources such that by maintaining the right volume of stock, the company does not incur additional costs for production.

Based on the result findings 49 (67.1%) of the respondents agreed that there has been reduced production costs in regard to cement manufacturing at BCL, while 12 (28.8%) respondents either strongly agreed with the statement or were of moderate opinion with the statement. The statement had a mean average of 4.00 and a standard deviation of 0.58. This implies that majority of the participants agreed that there has been reduced production costs in regard to cement manufacturing at Bamburi Cement Limited. These findings support the results by Muyundo (2018) that operational performance is a measure of reduction of costs and wastage of resources such that by maintaining the right volume of stock, the company does not incur additional costs for production.

It was established that 34 (46.6%) of the respondents agreed that there has been reduction of wastages in regard to inventories at BCL, 16 (21.9%) respondents strongly agreed, 15 (20.5%) of the respondents were of moderate opinion, 7 (9.6%) respondents disagreed while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.78 and a standard deviation of 0.95. This implies that majority of the participants agreed that there has been reduction of wastages in regard to inventories at Bamburi Cement Limited. These findings support Panwar et al.'s (2018) findings that it is important to know the amount of time needed to produce a single unit of product for planning purposes.

It was clear from the findings that 39 (49.3%) of the respondents agreed that there had been optimal utilization of machines and equipment at BCL, 16 (21.9%) respondents strongly agreed, 17 (23.3%) respondents were of moderate opinion, while 4 (5.5%) respondents disagreed with the statement. The statement had a mean average of 3.88 and a standard deviation of 0.82. Oballah et al. (2015) opined that the significance of inventory management procedures is the optimal utilization of production machines and ability to maintain optimum stocks.

It was established that 47 (64.4%) of the respondents agreed that there have been minimal cases of stock outs at BCL, 17 (23.3%) respondents strongly agreed, 6 (8.2%) of the respondents disagreed, 2 (2.7%) respondents were of moderate opinion, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.88 and a standard deviation of 0.82. This implies that many of the participants agreed that there had been minimal cases of stock outs at BCL. Dillon et al. (2017) revealed that operational performance should look at aligning the all the business operational units within the organization to ensure they work in sync to deliver the core business goals and objectives.

Results showed that 35 (47.9%) of the respondents agreed that the BCL production line is flexible, 27 (37.0%) of the respondents strongly agreed, while 11 (15.1%) of the respondents were of moderate opinion. The statement had a mean average of 4.22 and a standard deviation of 0.69. This implies that majority of the participants agreed that Bamburi Cement Limited production line is flexible. These findings support research findings by Uhrin et al. (2017) that flexibility requires that a company produces products and services of different levels of quality and with various design modifications.

Effect of Inventory Management Practices on Operational Performance

The section sought to establish the effect of inventory management practices on operational performance at Bamburi Cement Limited. The results are presented in Table 4.8.

Table 4.8: Effect of Inventory Management Practices on Operational Performance

Statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Standard Dev
	F	%	F	%	F	%	F	%	F	%		
	Inventory management practices have led to high production cycle timeline which has in turn enhanced operation performance at Bamburi Cement Ltd	0	0	0	0	7	9.6	42	57.5	24		
Inventory management practices have enabled Bamburi Cement Ltd react to the changes in its operational environment which has in turn enhanced its operation performance	0	0	2	2.7	17	23.3	32	43.8	22	30.1	4.01	0.81
Inventory management practices have reduced production costs which has in turn enhanced operation performance at Bamburi Cement Ltd	0	0	5	6.8	13	17.8	40	54.8	15	20.5	3.89	0.81
Inventory management practices have reduced wastages in regard to inventories which has in turn enhanced operation performance at Bamburi Cement Ltd	0	0	0	0	3	4.1	36	49.3	34	46.6	4.42	0.58
Inventory management practices have enhanced optimal utilization of machines and equipments which has in turn enhanced operation performance at Bamburi Cement Ltd	1	1.4	4	5.5	11	15.1	31	42.5	26	35.6	4.05	0.93
Inventory management practices have reduced cases of stock outs which has in turn enhanced operation performance at Bamburi Cement Ltd	4	5.5	9	12.3	10	13.7	35	47.9	15	20.5	3.66	1.11
Inventory management practices have enhanced flexibility of production lines which has in turn enhanced operation performance at Bamburi Cement Ltd	0	0	3	4.1	0	0	49	67.1	21	28.8	4.21	0.64

Results in Table 4.8 showed that 42 (57.5%) of the respondents agreed that inventory management practices have led to high production cycle timeline, which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 24 (32.9%) of the respondents strongly agreed with the statement, while 7 (9.6%) respondents were of moderate opinion. The statement had a mean average of 4.23 and a standard deviation of 0.61. This implied that inventory management practices have led to high production cycle timeline which has in turn enhanced operation performance at Bamburi Cement Limited. These findings go hand in hand with research findings by Opoku et al. (2020) that revealed how inventory management practices when adopted by MSEs lead to increased competitive advantages realized due to improved organizational performance.

Inventory management practices have enabled Bamburi Cement Limited react to the changes in its operational environment which has in turn enhanced its operation performance as indicated by 32 (43.8%) of the respondents who agreed. Further, 22 (30.1%) of the respondents strongly agreed, 17 (23.3%) of the respondents were of moderate opinion, while 2 (2.7%) respondents disagreed with the statement. The statement had a mean average of 4.01 and low standard deviation of 0.81. This implies that majority of the respondents agreed that inventory management practices have enabled Bamburi Cement Limited react to the changes in its operational environment which has in turn enhanced its operation performance. These findings concur with research findings by Atnafu and Balda (2018) that managers in inventory management practices such that they can gain benefits including improved performance and competitive advantage.

It was established that 40 (54.8%) of the respondents agreed inventory management practices have reduced production costs, which has in turn enhanced operation

performance at Bamburi Cement Limited, 15 (20.5%) of the respondents strongly agreed, 13 (17.8%) respondents were of moderate opinion, while 5 (6.8%) respondents disagreed with the statement. The statement had a mean average of 3.89 and a standard deviation of 0.81. This implies that majority of the participants agreed that inventory management practices have reduced production costs which has in turn enhanced operation performance at Bamburi Cement Limited. These findings are in support of the research findings by Shin et al. (2015) that implementing inventory management practices enable organizations to control their inventories that are essential to the operations of the business entity

It was noted from the research findings that 36 (49.3%) of the respondents agreed inventory management practices have reduced wastages in regard to inventories which had in turn enhanced operation performance at Bamburi Cement Limited, 34 (46.6%) respondents strongly agreed, while 3(4.1%) respondents were of moderate opinion. The statement had a mean average of 4.42 and a standard deviation of 0.58. This implies that majority of the participants agreed that inventory management practices have reduced wastages in regard to inventories, which has in turn enhanced operation performance at Bamburi Cement Limited. Agu et al. (2016) supported that manufacturing firms which adopt inventory management practices have reduced the investments they make on fixed assets as a way of managing their cash flow and controlling inventories.

Inventory management practices have enhanced optimal utilization of machines and equipment which has in turn enhanced operation performance at Bamburi Cement Limited as indicated by 31 (42.5%) of the respondents who were in agreement. Further, 26 (35.6%) respondents strongly agreed, 11 (15.1%) of the respondents were of moderate opinion, 4 (5.5%) respondents disagreed, while 1 (1.4%) respondent strongly

disagreed with the statement. The statement had a mean average of 4.05 and a standard deviation of 0.93. This implies that majority of the participants agreed that inventory management practices have enhanced optimal utilization of machines and equipment which has in turn enhanced operation performance at Bamburi Cement Limited. These findings support the research findings by Dickson (2018) who noted that with increased operational costs, firms are using inventory management practices to overturn the trend and cut operational costs.

It was established that 35 (47.9%) of the respondents agreed inventory management practices have reduced cases of stock outs which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 15 (20.5%) of the respondents strongly agreed, 10 (13.7%) respondents were of moderate opinion, 9 (12.3%) respondents disagreed, while 4 (5.5%) of the respondents strongly disagreed with the statement. The statement had a mean average of 3.66 and a standard deviation of 1.11. This implied that majority of the participants agreed that inventory management practices have reduced cases of stock outs which has in turn enhanced operation performance at Bamburi Cement Limited. These findings go hand in hand with research findings by John et al. (2015) who revealed that firms that adopt inventory management practices and especially those that use scientific inventory management approaches get better results through reduce material shortages, over-stocking, and having adequate quantities of high-quality materials and inventories.

Results showed that 49 (67.19%) of the respondents agreed that inventory management practices have enhanced flexibility of production lines, which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 21 (28.8%) respondents strongly agreed with the statement, while 3 (4.1%) respondents strongly disagreed with the statement. The statement had a mean average of 4.21 and low standard deviation of

0.64. This implies that majority of the participants agreed that inventory management practices have enhanced flexibility of production lines, which has in turn enhanced operation performance at Bamburi Cement Limited. These findings back with Ouma and Mwangangi's (2018) conclusions that the efficacy of inventory management systems like just-in-time adds to the capacity to maintain optimal stock levels. Demand forecasting predictability, production planning, and shorter lead times all contribute to appropriate stock levels, which eventually enhances the firm's success.

Karl Pearson Correlation Analysis

The study sought to determine the strength of the relationship between inventory management practices and operational performance at Bamburi cement limited. The results are presented in Table 4.9.

Table 4.9: Karl Pearson Correlation Analysis

		Operational Performance	Economic order quantity X ₁	Vendor managed inventory X ₂	Just in Time X ₃	ABC analysis X ₄
Operational Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	73				
Economic order quantity X ₁	Pearson Correlation	.483**	1			
	Sig. (2-tailed)	.000				
	N	73	73			
Vendor managed inventory X ₂	Pearson Correlation	.510**	.250*	1		
	Sig. (2-tailed)	.000	.033			
	N	73	73	73		
Just in Time X ₃	Pearson Correlation	.442**	.289*	.263*	1	
	Sig. (2-tailed)	.000	.013	.025		
	N	73	73	73	73	
ABC analysis X ₄	Pearson Correlation	.446**	.295*	.233*	.286*	1
	Sig. (2-tailed)	.000	.011	.047	.014	
	N	73	73	73	73	73

According to the data in Table 4.9, there was a 0.483 correlation factor between economic order quantity and operational performance at Bamburi cement limited. Because the p value was 0.00, which was less than 0.05, this moderate association was

deemed to be statistically significant. Chan et al. (2017) noted that inventory management through economic order quantity is a key component in organizations as it works to reduce costs and increase returns and profits of the firm.

The study discovered a substantial positive link between vendors' inventory management and operational performance at Bamburi cement limited, as evidenced by a correlation coefficient of 0.510 while the significance level was 0.00. Radzuan et al. (2015) was of the view that inventory management is about putting in place control measures during the ordering, storage, and utilization of resources and components within the organization and its production process.

The study found a moderate positive correlation between Just in Time and operational performance at Bamburi cement limited shown by correlation coefficient of 0.442. The significant value was 0.000 which is less than 0.05. Domínguez-Pérez et al. (2018) revealed that inventory management ensures that the customer demands are met and fully satisfied since it operates in a way to sustain right quantities and quality of stocks that allows continuous processing.

The study found a moderate positive correlation between ABC analysis and operational performance at Bamburi cement limited as shown by correlation coefficient of 0.446. The significant value was 0.000 which is less than 0.05. Osei-Mensah (2016) noted that proper execution of these operations allows the company to minimize waste and expenses and boost income.

Organizational Leadership

The study investigated on the role of organizational operational performance at Bamburi Cement Limited. Table 4.10 shows the organizational leadership.

Table 4.10: Organizational Leadership

Statement	Strongly disagree		Disagree		neutral		Agree		Strongly agree		Mean	Standard Dev
	F	%	F	%	F	%	F	%	F	%		
Bamburi Cement Ltd organization's resources are effectively managed	0	0	5	6.8	16	21.9	31	42.5	21	28.8	3.93	0.89
The leadership at Bamburi Cement Ltd involve employees in goals setting and decision making	0	0	0	0	3	4.1	55	75.3	15	20.5	4.16	0.47
Leaders at Bamburi Cement Ltd has created an appropriate environment for creativity and innovation	5	6.8	5	6.8	0	0	26	35.6	37	50.7	4.16	1.18
Leaders at Bamburi Cement Ltd has serious consideration for teamwork	0	0	3	4.1	11	15.1	32	43.8	27	37.0	4.14	0.82
Leaders at Bamburi Cement Ltd has provided training opportunities for the employees	5	6.8	6	8.2	0	0	33	45.2	29	39.7	4.03	1.17

Results in Table 4.10 showed that 31 (42.5%) respondents agreed that Bamburi Cement Limited organization's resources are effectively managed, 21 (28.8%) respondents strongly agreed, 16 (21.9%) of the respondents were of moderate opinion, while 5 (6.8%) of the respondents strongly disagreed with the statement. The statement had a mean average of 3.93 and a standard deviation of 0.89. This implies that majority of the participants agreed those Bamburi Cement Limited organization's resources are effectively managed. These findings support research findings by Ireland and Hitt

(2018) that leaders ensure quality allocation of organization resources to support operations towards achieving of strategic goals.

The leadership at Bamburi Cement Limited involve employees in goals setting and decision making as indicated by 55 (75.3%) respondents who were in agreement with the statement. Further, 15 (20.5%) respondents strongly agreed, while 3 (4.1%) respondents were of moderate opinion with the statement. The statement had a mean of 4.16 and a standard deviation of 0.47. This implies that majority of the respondents agreed that the leadership at Bamburi Cement Limited involve employees in goals setting and decision making. This finding concurs with the research findings by McQuaid (2010) that a good leader promotes a culture of cohesion and collaboration within the workplace.

It was established that 37 (50.7%) of the respondents strongly agreed that leaders at Bamburi Cement Limited have created an appropriate environment for creativity and innovation, 26 (35.6%) respondents agreed, while 5 (6.8%) respondents either disagreed or strongly disagreed with the statement. The statement had a mean of 4.16 and a standard deviation of 1.18. This implied that majority of the participants agreed that leaders at Bamburi Cement Limited have created an appropriate environment for creativity and innovation. These findings support research findings by Finkelstein et al. (2016) that skillful organizational leaders are able to promote creativity and innovation cultures in an entity which in turn help increase worker organization productivity.

The findings of this study showed that 32 (43.8%) of the respondents agreed that leaders at Bamburi Cement Limited have serious consideration for teamwork, 27 (37.0%) respondents strongly agreed, 11 (15.1%) of the respondents strongly agreed, while 3 (4.1%) of the respondents disagreed with the statement. The statement had a mean average of 4.14 and a standard deviation of 0.82. This implied that majority of the

participants agreed that the leaders at Bamburi Cement Limited have serious consideration for teamwork. These findings concur with the research findings by Ireland and Hitt (2018) that noted that strong organizational leadership promote teamwork which has a direct impact on the ability for an organization to carry out its mission.

It was noted that 33 (45.2%) of the respondents agreed leaders at Bamburi Cement Limited have provided training opportunities for the employees, 29 (39.7%) of the respondents strongly agreed, 6 (8.2%) respondents disagreed while 5 (6.8%) of the respondents strongly disagreed with the statement. The statement had a mean of 4.03 and a standard deviation of 1.17. This implied that majority of the participants agreed that leaders at Bamburi Cement Limited have provided training opportunities for the employees. These findings support research findings by Vera and Crossan (2014) that leaders play an important role of inspiring groups of individuals to do their best and work towards a unified purpose.

Government Regulations

Respondents were asked to indicate their rating on with the statements in regard to government regulations. The results are presented in Table 4.11.

Table 4.11: Government Regulations

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Standard Dev
	F	%	F	%	F	%	F	%	F	%		
Our organization has complied with the government regulations as outlined by national environmental management authority	4	5.5	0	0	11	15.1	36	49.3	22	30.1	3.99	0.98
Our organization has complied with all the government regulations regarding operations of cement companies in Kenya	3	4.1	5	6.8	10	13.7	36	49.3	19	26.0	3.86	1.02
Our organization has complied with the government regulations regarding licensing of the cement companies in Kenya	5	6.8	0	0	6	8.2	32	43.8	30	41.1	4.12	1.05
Our organization has complied with the regulations as set by Kenya Bureau of Standards in Kenya	5	6.8	0	0	14	19.2	20	27.4	34	46.6	4.14	0.96
Our organization has complied with the government regulations regarding distribution of cement in Kenya	4	5.5	5	6.8	17	23.3	19	26.0	28	38.4	3.85	0.17

The findings of this study showed that 36 (49.3%) of the respondents agreed that the organization had complied with the government regulations as outlined by National Environmental Management Authority. Further, 22 (30.1%) strongly agreed, 11 (15.1%) respondents were of moderate opinion, while 4 (5.5%) respondents strongly disagreed with the statement. The statement had a mean average of 3.99 and a standard deviation of 0.98. This implied that majority of the participants agreed that organization has complied with the government regulations as outlined by National Environmental Management Authority. These findings concur with the research findings by Steiner

and Steiner (2012) that the benefits of meeting legal obligations are that it improves company's reputation in the eyes of the public, regulators and other stakeholders.

Our organization has complied with all the government regulations regarding operations of cement companies in Kenya as indicated by 36 (49.3%) of the respondents who were in agreement. Further, 19 (26.0%) of the respondents strongly agreed, 10 (13.7%) respondents were of moderate opinion, 5 (6.8%) respondents strongly disagreed, while 3 (4.1%) respondents strongly disagreed with the statement. The statement had a mean of 3.86 and a standard deviation of 1.02. This implied that majority of the participants agreed that organization has complied with all the government regulations regarding operations of cement companies in Kenya. These findings concur with the research findings by Doppelt and McDonough (2017) that it is important that company executives are aware of these regulations so as to effectively conduct business while staying within the limits of the law.

The study results showed that 32 (43.8%) respondents agreed that the organization has complied with the government regulations regarding licensing of the cement companies in Kenya. Further, 30 (41.1%) respondents strongly agreed, 6 (8.2%) of the respondents were of moderate opinion, while 5 (6.8%) respondents strongly disagreed with the statement. The statement had a mean average of 4.12 and a standard deviation of 1.05. This implied that majority of the participants agreed that organization has complied with the government regulations regarding licensing of the cement companies in Kenya. These findings concur with research findings by Van Stel, Storey, and Thurik (2007) that state regulations seek to ensure fair business practices and compliance on clean and healthy environment among the most important things citizens expect of their government.

It was established that 34 (46.6%) of the respondents strongly agreed that the organization has complied with the regulations as set by Kenya Bureau of Standards in Kenya, 14 (19.2%) of the respondents strongly agreed, while 5 (6.8%) of the respondents strongly disagreed with the statement. The statement had a mean average of 4.14 and a standard deviation of 0.96. This implied that majority of the participants agreed that the organization has complied with the regulations as set by Kenya Bureau of Standards in Kenya. These findings support research findings by Djankov, Georgieva, and Ramalho (2018) that when firms comply with government regulations, customers will know that the firm care about keeping their information safe.

It was noted that 28 (38.4%) of the respondents strongly agreed that Bamburi Cement Limited has complied with the government regulations regarding distribution of cement in Kenya. Further, 19 (26.0%) of the respondents agreed, 17 (23.3%) respondents were of moderate opinion, 5 (6.8%) respondents disagreed while 4 (5.5%) of the respondents strongly disagreed with the statement. The statement had a mean of 3.85 and a standard deviation of 0.17. This implied that majority of the participants agreed that Bamburi Cement Limited has complied with the government regulations regarding distribution of cement in Kenya. These findings support the research findings by Bhuian, Abdul-Muhmin, and Kim (2002) that government regulations on business seek to ensure standards ranging from environmental quality to consumer protection, business, and safe practices.

Summary of Key Findings

1. It was agreed by 65 (89%) of the respondents that the firm can predict with certainty the quantities of cement demanded by the customers. It was established that 64 (87.7%) of the respondents agreed that the organization works with its suppliers to plan for inventory replenishment. Majority of the

respondents 60 (82.2%) agreed that organization shares actual data with suppliers for replenishment of inventories. It was noted that 67 (91.8%) of the respondents agreed that the organization holds a joint planning session in which customer's requirement schedule is discussed while 64 (87.7%) of the respondents agreed that the organization holds a joint planning session in which supplier delivering schedules are discussed.

2. It was established that 60 (82.2%) of the respondents agreed that the organization has a way of reacting to the changes in its operational environment. It was revealed that 61 (83.6%) of the respondents agreed that there has been reduced production costs in regard to cement manufacturing. It was established that 64 (87.7%) of the respondents agreed that there have been minimal cases of stock outs. The results showed that 62 (84.9%) of the respondents agreed that the Bamburi Cement Limited production line is flexible.
3. The result showed that 66 (90.4%) of the respondents agreed that inventory management practices have led to high production cycle timeline. It was noted that 70 (95.9%) of the respondents agreed inventory management practices have reduced wastages in regard to inventories. Inventory management practices have enhanced optimal utilization of machines and equipment as indicated by 57 (78.1%) of the respondents who were in agreement. Results showed that 70 (95.9%) of the respondents agreed that inventory management practices have enhanced flexibility of production lines.
4. It was noted that there was a positive correlation between economic order quantity and operational performance at Bamburi cement limited as revealed by a correlation factor of 0.483. The study found a strong positive correlation between vendors managed inventory and operational performance at Bamburi

cement limited as indicated by correlation coefficient of 0.510. The study found a moderate positive correlation between Just in Time and operational performance at Bamburi cement limited indicated by correlation coefficient of 0.442. The study found a moderate positive correlation between ABC analysis and operational performance at Bamburi cement limited indicated by correlation coefficient of 0.446.

5. It was revealed that the leadership at Bamburi Cement Limited involve employees in goals setting and decision making as indicated by 70 (95.9%) respondents who were in agreement with the statement. It was established that 63 (86.3%) of the respondents agreed that leaders at Bamburi Cement Limited have created an appropriate environment for creativity and innovation. The findings showed that 62 (84.9%) of the respondents agreed leaders at Bamburi Cement Limited have provided training opportunities for the employees.
6. The study results showed that 62 (84.9%) respondents agreed that the organization has complied with the government regulations regarding licensing of the cement companies in Kenya. It was established that 54 (74%) of the respondents strongly agreed that the organization has complied with the regulations as set by Kenya Bureau of Standards in Kenya. It was noted that 47 (64.4%) of the respondents strongly agreed that Bamburi Cement Limited has complied with the government regulations regarding distribution of cement in Kenya.

Summary

This chapter has focused on the analysis of data, presentation and interpretation of the findings on the effect of inventory management practices on operational performance of cement manufacturing firms in Kenya, with a focus on of Bamburi Cement Limited.

The conclusions, discussions of key findings and recommendations of the study are presented in the next chapter.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The findings of the research are discussed in connection to the research objectives in this chapter. The study's objectives were to establish the inventory management practices adopted by Bamburi Cement Limited; to determine the measures of operational performance at Bamburi Cement Limited; to assess the effect of inventory management practices on operational performance at Bamburi Cement Limited. Based on the findings, the chapter include conclusions, recommendations, and areas for further research.

Discussions of Key Findings

Inventory Management Practices Adopted by Bamburi Cement Limited

In regard to Economic Order Quantity, the results showed that 38 (52.1%) of the respondents agreed that Bamburi Cement Limited is able to predict the ordering, holding and storage costs of cement in the organization. Further, 19 (26.0%) of the respondents were of moderate opinion, 15 (20.5%) respondents strongly agreed with the statement while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.90 and a standard deviation of 0.77. This implies that Bamburi Cement Limited was able to predict the ordering, holding and storage costs of cement. These findings support the research findings by Chan et al. (2017) that inventory management is a key component in organizations as it works to reduce costs and increase returns and profits of the firm.

The results on Economic Order Quantity showed that majority of the respondents 49 (67.1%) agreed that the firm is able to predict with certainty the quantities of cement

demanded by our customers, while 16 (21.9%) of the respondents strongly agreed with the statement. Further, 7 (9.6%) of the respondents were of moderate opinion, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.08 and a standard deviation of 0.66. This implies that majority of the participants agreed that through inventory management practices adopted, the firm was able to predict with certainty the quantities of cement demanded by their customers. These findings support Domínguez-Pérez et al. (2018) that inventory management ensures that the customer demands are met and fully satisfied since it operates in a way to sustain right quantities and quality of stocks that allows continuous processing.

Results on vendor managed inventory established that 46 (63.0%) of the respondents agreed that the organization works with its suppliers to plan for inventory replenishment, 18 (24.7%) respondents strongly agreed with the statement, while 9 (12.3%) respondents were of moderate opinion. The statement had a mean average of 4.12 and a standard deviation of 0.60. This implies that majority of the participants agreed that the organization works with its suppliers to plan for inventory replenishment. These findings support the study conclusion by Maina and Were (2018) that inventory management ensures that inventories are at the right place and at the right time such that there is efficiency in the processing and production sections of manufacturing entities.

Results of Just-In Time practices showed that majority of the respondents 46 (63.0%) agreed that organization shares actual data with suppliers for replenishment of inventories, 14 (19.2%) strongly agreed, 12 (16.4%) were of the moderate opinion, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.99 and a standard deviation of 0.70. This was an indication that majority of respondents agreed that the organization shares actual data with

suppliers for replenishment. These findings support Radzuan et al.'s (2015) findings that inventory management is about putting in place control measures during the ordering, storage, and utilization of resources and components within the organization and its production process.

In regard to Just-In Time practices it was established that majority of the respondents, 32 (43.8%) agreed that the organization usually order for inventories when they are required in our organization, 19 (26.0%) were of the moderate opinion, 17 (23.3%) strongly agreed, while 5 (6.8%) disagreed with the statement. This implies that majority of respondents agreed that the firm usually order for inventories when they are required. This finding supports the research conclusion by Muyundo (2018) that proper inventory practices are adopted for ensuring there is a balanced stock level amount to encourage continuous. processing.

Results in relation to Just-In Time practices established that 49 (67.1%) of the respondents agreed that the organization holds a joint planning session in which customer's requirement schedule is discussed, 18 (24.7%) strongly agreed while 6 (8.2%) disagreed with the statement. The mean average was 4.08 while the standard deviation was 0.76. This implies that majority of respondents agreed that the organization holds a joint planning session in which customer's requirement schedule is discussed. This finding supports the research conclusion by Singh and Verma (2018) that there is need for initiating proper inventory management practices to ensure balance in terms of stocks and inventories held in a firm at any one moment.

Results in relation to Just-In Time practices showed that 46 (63.0%) of the respondents agreed that the organization holds a joint planning session in which supplier delivering schedules are discussed, 18 (24.7%) of the respondents strongly agreed while 6 (8.2%) of the respondents were of moderate opinion. Further, 2 (2.7%) of the respondents

disagreed with the statement while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.07 and a standard deviation of 0.75. This implies that majority of the participants agreed that organization holds a joint planning session in which supplier delivering schedules are discussed. These findings support Tempelmeier's (2011) findings that inventory management acts as a major component of any supply chain irrespective of whether it is product or service for a firm.

The results of ABC analysis showed that 38 (52.1%) of the respondents agreed that the organization classifies its inventories in regard to their importance, 18 (24.7%) respondents were of moderate opinion, 12 (16.4%) respondents strongly agreed, 6 (8.2%) respondents were of moderate opinion while 5 (6.8%) of the respondents disagreed with the statement. The statement had a mean average of 4.07 and a standard deviation of 0.75. This implies that majority of the participants agreed that organization classifies its inventories in regard to their importance. These findings support the findings by Po-Lynn (2019) that inventory management plays an important role in matching demand and supply within each and every partner in the entire supply chain, ultimately providing flexibility in coping up with external and internal events of the today's uncertain, globalized business environment.

Measures of Operational Performance at Bamburi Cement Limited

The results showed that 29 (39.7%) of the respondents agreed that there has been a high production cycle timeline of cement manufacturing at Bamburi Cement Limited, 23 (31.5%) respondents strongly agreed, 16 (21.9%) respondents were of moderate opinion, 4 (5.5%) respondents disagreed while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.95 and a standard deviation of 0.94. This implies that majority of the participants agreed that there has

been a high production cycle timeline of cement manufacturing at Bamburi Cement Limited. These findings are in support of research findings by Opoku et al. (2020) that production cycle timeline can help in making of decisions that would produce the best overall performance for the company.

It was established that 39 (53.4%) of the respondents agreed that the organization has a way of reacting to the changes in its operational environment, 21 (28.8%) respondents strongly agreed, 12 (16.4%) respondents were of moderate opinion while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 4.08 and a standard deviation of 0.76. This implies that majority of the participants agreed that the organization has a way of reacting to the changes in its operational environment. These findings concur with the findings by Vollman et al. (2005) that operational performance is also a measure of reduction of costs and wastage of resources such that by maintaining the right volume of stock, the company does not incur additional costs for production.

Based on the result findings 49 (67.1%) of the respondents agreed that there has been reduced production costs in regard to cement manufacturing at Bamburi Cement Limited while 12 (28.8%) respondents either strongly agreed with the statement or were of moderate opinion with the statement. The statement had a mean average of 4.00 and a standard deviation of 0.58. This implies that majority of the participants agreed that there has been reduced production costs in regard to cement manufacturing at Bamburi Cement Limited. These findings support the results by Muyundo (2018) that operational performance is a measure of reduction of costs and wastage of resources such that by maintaining the right volume of stock, the company does not incur additional costs for production.

It was established that 34 (46.6%) of the respondents agreed that there has been reduction of wastages in regard to inventories at Bamburi Cement Limited, 16 (21.9%) respondents strongly agreed, 15 (20.5%) of the respondents were of moderate opinion, 7 (9.6%) respondents disagreed, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.78 and a standard deviation of 0.95. This implies that majority of the participants agreed that there has been reduction of wastages in regard to inventories at Bamburi Cement Limited. These findings support Panwar et al. (2018) that it is important to know the amount of time needed to produce a single unit of product for planning purposes.

It was clear from the findings that 39 (49.3%) of the respondents agreed that there has been optimal utilization of machines and equipment at Bamburi Cement Limited, 16 (21.9%) respondents strongly agreed, 17 (23.3%) respondents were of moderate opinion, while 4 (5.5%) respondents disagreed with the statement. The statement had a mean average of 3.88 and a standard deviation of 0.82. This implies that majority of the participants agreed that there has been optimal utilization of machines and equipment at Bamburi Cement Limited. These findings support the research findings by Oballah et al. (2015) that the significance of inventory management procedures is the optimal utilization of production machines and ability to maintain optimum stocks.

It was established that that 47 (64.4%) of the respondents agreed that there have been minimal cases of stock outs at Bamburi Cement Limited, 17 (23.3%) respondents strongly agreed, 6 (8.2%) of the respondents disagreed, 2 (2.7%) respondents were of moderate opinion, while 1 (1.4%) of the respondent strongly disagreed with the statement. The statement had a mean average of 3.88 and a standard deviation of 0.82. This implies that majority of the participants agreed that there have been minimal cases of stock outs at Bamburi Cement Limited. These findings support the research findings

by Dillon et al. (2017) that operational performance should look at aligning all the business operational units within the organization to ensure they work in sync to deliver the core business goals and objectives.

Results showed that 35 (47.9%) of the respondents agreed that the Bamburi Cement Limited production line is flexible, 27 (37.0%) of the respondents strongly agreed while 11 (15.1%) of the respondents were of moderate opinion. The statement had a mean average of 4.22 and a standard deviation of 0.69. This implies that majority of the participants agreed that Bamburi Cement Limited production line is flexible. These findings support research findings by Uhrin et al. (2017) that flexibility requires that a company produces products and services of different levels of quality and with various design modifications.

Effect of Inventory Management Practices on Operational Performance

It was noted that there was a positive correlation between economic order quantity and operational performance at Bamburi cement limited as revealed by a correlation factor of 0.483. The study found a strong positive correlation between vendors managed inventory and operational performance at Bamburi cement limited, as indicated by correlation coefficient of 0.510. The study found a moderate positive correlation between Just in Time and operational performance at Bamburi cement limited indicated by correlation coefficient of 0.442. The study found a moderate positive correlation between ABC analysis and operational performance at Bamburi cement limited indicated by correlation coefficient of 0.446.

Results showed that 42 (57.5%) of the respondents agreed that inventory management practices have led to high production cycle timeline which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 24 (32.9%) of the

respondents strongly agreed with the statement, while 7 (9.6%) respondents were of a moderate opinion. The statement had a mean average of 4.23 and a standard deviation of 0.61. This implies that majority of the participants agreed that inventory management practices have led to high production cycle timeline which has in turn enhanced operation performance at Bamburi Cement Limited. These findings go hand in hand with research findings by Opoku et al. (2020) that inventory management practices that are adopted by micro and small enterprises have led to increased competitive advantages realized due to improved organizational performance.

Inventory management practices have enabled Bamburi Cement Limited react to the changes in its operational environment which has in turn enhanced its operation performance as indicated by 32 (43.8%) of the respondents who agreed. Further, 22 (30.1%) of the respondents strongly agreed, 17 (23.3%) of the respondents were of moderate opinion, while 2 (2.7%) respondents disagreed with the statement. The statement had a mean average of 4.01 and low standard deviation of 0.81. This implies that majority of the respondents agreed that inventory management practices have enabled Bamburi Cement Limited react to the changes in its operational environment which has in turn enhanced its operation performance. These findings concur with research findings by Atnafu and Balda (2018) that managers in inventory management practices such that they can gain benefits including improved performance and competitive advantage.

It was established that 40 (54.8%) of the respondents agreed inventory management practices have reduced production costs which has in turn enhanced operation performance at Bamburi Cement Limited, 15 (20.5%) of the respondents strongly agreed, 13 (17.8%) respondents were of moderate opinion while 5 (6.8%) respondents disagreed with the statement. The statement had a mean average of 3.89 and a standard

deviation of 0.81. This implies that majority of the participants agreed that inventory management practices have reduced production costs, which has in turn enhanced operation performance at Bamburi Cement Limited. These findings are in support of the research findings by Shin et al. (2015) that implementing inventory management practices enable organizations to control their inventories that are essential to the operations of the business entity.

It was noted from the research findings that 36 (49.3%) of the respondents agreed inventory management practices have reduced wastages in regard to inventories which has in turn enhanced operation performance at Bamburi Cement Limited, 34 (46.6%) respondents strongly agreed while 3(4.1%) respondents were of moderate opinion. The statement had a mean average of 4.42 and a standard deviation of 0.58. This implies that majority of the participants agreed that inventory management practices have reduced wastages in regard to inventories, which has in turn enhanced operation performance at Bamburi Cement Limited. These findings are in support of the research findings by Agu et al. (2016) that manufacturing firms, which adopt inventory management practices, have reduced the investments they make on fixed assets as a way of managing their cash flow and controlling inventories.

Inventory management practices have enhanced optimal utilization of machines and equipment, which has in turn enhanced operation performance at Bamburi Cement Limited as indicated by 31 (42.5%) of the respondents who were in agreement. Further, 26 (35.6%) respondents strongly agreed, 11 (15.1%) of the respondents were of moderate opinion, 4 (5.5%) respondents disagreed while 1 (1.4%) respondent strongly disagreed with the statement. The statement had a mean average of 4.05 and a standard deviation of 0.93. This implies that majority of the participants agreed that inventory management practices have enhanced optimal utilization of machines and equipment

which has in turn enhanced operation performance at Bamburi Cement Limited. These findings support the research findings by Dickson (2018) who noted that with increased operational costs, firms are using inventory management practices to overturn the trend and cut operational costs.

It was established that 35 (47.9%) of the respondents agreed inventory management practices have reduced cases of stock outs which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 15 (20.5%) of the respondents strongly agreed, 10 (13.7%) respondents were of moderate opinion, 9 (12.3%) respondents disagreed, while 4 (5.5%) of the respondents strongly disagreed with the statement. The statement had a mean average of 3.66 and a standard deviation of 1.11. This implied that majority of the participants agreed that inventory management practices have reduced cases of stock outs, which has in turn enhanced operation performance at Bamburi Cement Limited. These findings go hand in hand with research findings by John et al. (2015) who revealed that firms that adopt inventory management practices and especially those that use scientific inventory management approaches get better results through reduce material shortages, over-stocking and having adequate quantities of high-quality materials and inventories.

Results showed that 49 (67.19%) of the respondents agreed that inventory management practices have enhanced flexibility of production lines which has in turn enhanced operation performance at Bamburi Cement Limited. Further, 21 (28.8%) respondents strongly agreed with the statement, while 3 (4.1%) respondents strongly disagreed with the statement. The statement had a mean average of 4.21 and low standard deviation of 0.64. This implies that majority of the participants agreed that inventory management practices have enhanced flexibility of production lines which has in turn enhanced operation performance at Bamburi Cement Limited. These findings support research

findings by Ouma and Mwangangi (2018) the ability to maintain optimal stockpiles is aided by the success of inventory management systems such as just-in-time. Demand forecasting dependability, production planning, and shorter lead times all contribute to appropriate stock levels, which eventually enhances the firm's success.

Conclusion

The study concludes that the organizations was able to predict the ordering, holding and storage costs with certainty and also the quantities of cement demanded by the customers. The organization ought to work with suppliers to plan for inventory replenishment and also share actual data with suppliers for replenishment of inventories. Organizations should order for inventories when they are required in our organization and also classify its inventories in regard of their importance.

The study concludes that there has been a high production cycle timeline of cement manufacturing and the organization has a way of reacting to the changes in its operational environment. There has been reduced production costs, wastages, optimal utilization of machines and equipment and minimal cases of stock outs in the organization. The organization production line is flexible to respond to any changes when they occur.

The study concludes that economic order quantity, vendors managed inventory, Just in Time and ABC analysis enhanced operational performance of the organization. This is because inventory management practices have led to high production cycle timeline, enabled organization react to the changes in its operational environment and reduced production costs, which has in turn enhanced operation performance. Inventory management practices have reduced wastages, enhanced optimal utilization of

machines and equipment's, reduced cases of stock outs and enhanced flexibility of production lines, which has in turn enhanced operation performance.

Recommendations

The study recommends that cement manufacturing companies should study their customer purchasing patterns and also monitor their customer demands so that they can ensure that they have sufficient stock in their warehouses. The cement manufacturing companies should also avoid holding their stocks in their warehouses for a long time as this may increase their operational costs.

The study recommends that the management of cement manufacturing companies should make investment in purchase of high producing cement machineries so as to produce sufficient cement. This help in enhancing economies of scale and thus reduce operational costs, meet production timelines, ensure reliability of meeting customers' demand and in turn enhance operational performance.

The study recommends that cement manufacturing companies should adopt the inventory management practices as this help them in managing their production cycle timeline, reduce wastages, ensure optimal utilization of their machines and in turn meet their customers' demand. This will be crucial in enhancing their organizations' operational performance as their will be reduction in operational costs and increased revenue as a result of increased customer demand.

Recommendations for Further Research

This study sought to establish the effect of inventory management practices on operational performance of cement manufacturing firms in Kenya, a case of Bamburi Cement Limited. The study independent variables were limited to economic order quantity, vendor managed inventory, Just in Time, and ABC analysis. Future studies

can examine the impact of other inventory management practices such as safety stock inventory and batch tracking and their effect on operational performance. Studies can also be done on inventory management practices on operational performance in other manufacturing firms and help compare the results.

REFERENCES

- Abrahams, D. A. (2010). Technology adoption in higher education: A framework for identifying and prioritising issues and barriers to adoption of instructional technology. *Journal of Applied Research in Higher Education*, 2(2), 34-49.
- Agu, O. A., Obi-Anike, H. O., & Eke, C. N. (2016). Effect of inventory management on the organizational performance of the selected manufacturing firms. *Singaporean Journal of Business Economics, and Management Studies*, 5(4), 56-69.
- Ahmad, K., & Zabri, S. M. (2018). The mediating effect of knowledge of inventory management in the relationship between inventory management practices and performance: The case of micro retailing enterprises. *Journal of Business and Retail Management Research*, 12(2), 83-93.
- Arrow, K. J., Karlin, S., & Scarf, H. E. (1958). *Studies in the mathematical theory of inventory and production*. Redwood City, CA: Stanford University.
- Atnafu, D., & Balda, A. (2018). The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia. *Cogent Business & Management*, 5(1). doi: 10.1080/23311975.2018.15032191503219
- Attar, M., & Abdul-Kareem, A. (2020). The role of agile leadership in organizational agility. In B. Akkaya (Ed.), *Agile business leadership methods for industry 4.0* (pp. 171-191). Bingley, UK: Emerald Group.
- Avelar, L., García, J. L., Cedillo, M. G., & Jaimes, W. (2018). Effects of regional infrastructure and offered services in the supply chains performance: Case Ciudad Juarez. *Dyna*, 81(186), 208-217.
- Bagshaw, K. B., & Peters, G. T. (2019). Order processing and just in time procurement in public institutions in Rivers State, Nigeria. *Global Journal of Management And Business Research*, 19(14), 33-43.
- Ballou, R. H. (2005). Expressing inventory control policy in the turnover curve. *Journal of Business Logistics*, 26(2), 143-164.
- Bamburi Cement Limited (2020). Annual Report Financial Statements. Retrieved from https://www.lafarge.co.ke/sites/kenya/files/atoms/files/bamburi_cement_annual_report_financial_statements_2020-website.pdf.
- Beaman, L., Benyishay, A., Magruder, J., & Mobarak, A. M. (2018). *Can network theory-based targeting increase technology adoption?* (Discussion Paper No. 2139). New Haven, CT: Yale University.
- Bhuian, S. N., Abdul-Muhmin, A. G., & Kim, D. (2002). The relationship between ethical business practices, government regulations, and consumer rights: An examination in Saudi Arabia. *Business and Professional Ethics Journal*, 21(1), 47-64.

- Boche, B., Mulugeta, T., & Gudeta, T. (2020). Assessment of inventory management practices at the Ethiopian pharmaceuticals supply agency, Addis Ababa, Ethiopia. *Integrated Pharmacy Research & Practice*, 9, 175-183. doi: 10.2147%2FIPRP.S269421
- Brigham, E., & Ehrhard, L. (2015). *Intermediate financial management*. New York, NY: Pearson.
- Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford, UK: Oxford University.
- Cárdenas-Barrón, L. E., Chung, K. J., & Treviño-Garza, G. (2014). *Celebrating a century of the economic order quantity model in honor of Ford Whitman Harris*. Amsterdam, Netherlands: Elsevier.
- Chahal, V., & Narwal, M. (2017). Impact of lean strategies on different industrial lean wastes. *International Journal of Theoretical and Applied Mechanics*, 12(2), 275-286.
- Chan, S. W., Tasmin, R., Aziati, A. N., Rasi, R. Z., Ismail, F. B., & Yaw, L. P. (2017). *Factors influencing the effectiveness of inventory management in manufacturing SMEs*. Bristol, UK: IOP.
- Chen, L., Zheng, W., Yang, B., & Bai, S. (2016). Transformational leadership, social capital and organizational innovation. *Leadership & Organization Development Journal*, 2(4), 68-91.
- Chen, X., & Simchi-Levi, D. (2004). Coordinating inventory control and pricing strategies with random demand and fixed ordering cost: The finite horizon case. *Operations Research*, 52(6), 887-896.
- Chung, K. J., & Hou, K. L. (2019). An optimal production run time with imperfect production processes and allowable shortages. *Computers & Operations Research*, 30(4), 483-490.
- Cooper, R., & Schindler, S. (2011) *Business research methods* (11th ed.). New York, NY: McGraw-Hill.
- Cooper, R., & Schindler, S. (2013) *Business research methods* (14th ed.). New York, NY: McGraw-Hill.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach*. Thousand Oaks, CA: Sage.
- Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.

- Dickson, M. M. (2018). *Inventory management practices and operational performance of Kenya animal feeds industry* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Dillon, M., Oliveira, F., & Abbasi, B. (2017). A two-stage stochastic programming model for inventory management in the blood supply chain. *International Journal of Production Economics*, 187, 27-41. doi: 10.1016/j.ijpe.2017.02.006
- Djankov, S., Georgieva, D., & Ramalho, R. (2018). Business regulations and poverty. *Economics Letters*, 165, 82-87. doi: 10.1016/j.econlet.2018.02.002
- Dobler, A. (2016). *Purchasing management* (6th ed.). London, UK: Mcgraw Hill.
- Dobson, G., Pinker, E. J., & Yildiz, O. (2017). An EOQ model for perishable goods with age-dependent demand rate. *European Journal of Operational Research*, 257(1), 84-88.
- Domínguez-Pérez, F., Lopes-Martínez, I., Felipe-Valdés, P. M., Vallin-García, A. E., & Cruz-Ruiz, A. (2018). Proposal for the classification of inputs for inventory management in the biopharmaceutical industry: Case study at the Center for Molecular Immunology. *Vaccimonitor*, 27(2), 51-60.
- Doppelt, B., & McDonough, W. (2017). *Leading change toward sustainability: A change-management guide for business, government and civil society*. Abingdon, UK: Routledge.
- Dorigo, M., & Blum, C. (2015). Ant colony optimization theory: A survey. *Theoretical Computer Science*, 344(2-3), 243-278.
- Douissa, M. R., & Jabeur, K. (2020). A non-compensatory classification approach for multi-criteria ABC analysis. *Soft Computing*, 24(13), 9525-9556.
- Doz, Y. (2020). Fostering strategic agility: How individual executives and human resource practices contribute. *Human Resource Management Review*, 30(1), 17-93.
- Ekdale, B., Singer, J. B., Tully, M., & Harmsen, S. (2015). Making change: Diffusion of technological, relational, and cultural innovation in the newsroom. *Journalism & Mass Communication Quarterly*, 92(4), 938-958.
- Erik, M., & Marko, S. (2011). *A concise guide to market research: The process, data, and methods using IBM SPSS statistics*. New York, NY: Springer.
- Eroglu, C., & Hofer, C. (2011). Lean, leaner, too lean? The inventory-performance link revisited. *Journal of Operations Management*, 29(4), 356-369.
- Falasca, M., Kros, J. F., & Nadler, S. S. (2016). Performance outcomes and success factors of industrial vending solutions. *International Journal of Operations & Production Management*, 36(10), 1359-1381.

- Finkelstein, A., Tesluk, P. E., Farr, J. L., & Klein, S. R. (2016). Influences of organizational culture and climate on individual creativity. *The journal of creative behavior*, 31(1), 27-41.
- Freeland, R. F. (2002). *The firm as a minisociety*. Unpublished manuscript.
- Gao, X. (2018). Corporate cash hoarding: The role of just-in-time adoption. *Management Science*, 64(10), 4858-4876.
- Groysberg, B., Lee, J., Price, J., & Cheng, J. (2018). The leader's guide to corporate culture. *Harvard Business Review*, 96(1), 44-52.
- Hancock, D. R., & Algozzine, B. (2016). *Doing case study research: A practical guide for beginning researchers*. New York, NY: Teachers College.
- Hue, T. T. (2019). The determinants of innovation in Vietnamese manufacturing firms: An empirical analysis using a technology-organization-environment framework. *Eurasian Business Review*, 9(3), 247-267.
- Iasya, A., & Handayati, Y. (2015). Material requirement planning analysis in micro, small and medium enterprise case study: Grooveline-an apparel outsourcing company final project. *Journal of Business and Management*, 4(3), 317-329.
- Inman, R. A., & Green, K. W. (2018). Lean and green combine to impact environmental and operational performance. *International Journal of Production Research*, 56(14), 4802-4818.
- Ireland, R. D., & Hitt, D. S. (2018). Competitive landscape shifts: The influence of strategic entrepreneurship on shifts in market commonality. *Academy of Management Review*, 43(3), 349-370.
- Jackson, I., Tolujevs, J., & Kegenbekov, Z. (2020). Review of inventory control models: A classification based on methods of obtaining optimal control parameters. *Transport and Telecommunication Journal*, 21(3), 191-202.
- John, N., Etim, J., & Ime, T. (2015). Inventory management practices and operational performance of flour milling firms in Lagos, Nigeria. *International Journal of Supply and Operations Management*, 1(4), 392-406.
- Joseph, C. H. (2018). *Inventory management practices and supply chain performance of construction firms in Nairobi* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Kamakia, C. W. (2015). *Inventory management and supply chain performance of petroleum marketing firms in Nairobi* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Kazemi, N., Abdul-Rashid, S. H., Ghazilla, R. A. R., Shekarian, E., & Zanoni, S. (2018). Economic order quantity models for items with imperfect quality and emission considerations. *International Journal of Systems Science: Operations & Logistics*, 5(2), 99-115.

- Kenya National Bureau of Statistics. (2018). *Economic survey 2018*. Nairobi, Kenya: Author.
- Kinyua, D. (2016). *Inventory management practices and performance of consumer goods manufacturing firms in Nairobi Kenya* (Unpublished doctoral dissertation). University of Nairobi, Nairobi, Kenya.
- Kithaka, E. D. (2014). *The effect of mobile banking on financial performance of commercial banks in Kenya* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Krafcik, J. F. (1988). Triumph of the lean production system. *Sloan Management Review*, 30(1), 41-52.
- Lafarge. (2019). *Bamburi Cement Limited annual report & financial statements 2019*. Nairobi, Kenya: Author
- Lafarge. (2020). *Bamburi Cement Limited annual report & financial statements 2020*. Nairobi, Kenya: Author.
- Lai, P. C. (2017). The literature review of technology adoption models and theories for the novelty technology. *JISTEM-Journal of Information Systems and Technology Management*, 14(1), 21-38.
- Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health Promotion Practice*, 16(4), 473-475.
- Li, J., Ghadge, A., & Tiwari, M. K. (2016). Impact of replenishment strategies on supply chain performance under e-shopping scenario. *Computers & Industrial Engineering*, 102, 78-87. doi: 10.1016/j.cie.2016.10.005
- Maina, A. W., & Were, S. (2018). Influence of vendor managed inventory on performance of retail outlets in Kenya: A case of Tusky's supermarket limited. *The Strategic Journal of Business & Change Management*, 5(4), 567-581.
- Mani, V., Gunasekaran, A., & Delgado, C. (2018). Supply chain social sustainability: Standard adoption practices in Portuguese manufacturing firms. *International Journal of Production Economics*, 1(8), 149-164.
- Marí Farinos, J. (2017). Sustainability as an object of corporate social responsibility. *VITRUVIO-International Journal of Architectural Technology and Sustainability*, 2(1), 13-22.
- Marodin, G. A., Frank, A. G., Tortorella, G. L., & Fetterman, D. C. (2019). Lean production and operational performance in the Brazilian automotive supply chain. *Total Quality Management & Business Excellence*, 30(3-4), 370-385.
- Marsden, G. (2011). *Innovation and diffusion theory: Application to local transport planning policies*. Retrieved from <https://eprints.whiterose.ac.uk/79066/7/Innovation%20and%20Diffusion%20Theory%20->

- Mbah, S., Obiezekwem, J., & Okuoyibo, A. (2019). Inventory management and operational performance of manufacturing firms in South-East Nigeria. *International Business Research*, 12(7), 76-82.
- McLeod, S. (2019). *Qualitative vs quantitative research*. Retrieved from <https://www.simplypsychology.org/qualitative-quantitative.html#:~:text=Quantitative%20data%20is%20information%20about,not%20measured%2C%20such%20as%20language>
- McQuaid, R.W. (2010). Theory of Organisational Partnerships - partnership advantages, disadvantages and success factors. In S. P. Osborne (Ed.), *The new public governance: Critical perspectives and future directions* (pp. 125-146). London, UK: Routledge.
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation*. Thousand Oaks, CA: Sage.
- Mokhtari, H. (2018). Economic order quantity for joint complementary and substitutable items. *Mathematics and Computers in Simulation*, 154, 34-47. doi: 10.1016/j.matcom.2018.06.004
- Muchiri, K. J., & Hazel, G. (2019). Effects of leadership styles on organizational performance of listed commercial banks in the Nairobi securities exchange. *International Journal of Business Management and Finance*, 2(1), 46-61.
- Mugenda, O. M., & Mugenda, A. G. (2012). *Research methods: Quantitative and qualitative approaches*. Nairobi, Kenya: Acts.
- Muller, M. (2019). *Essentials of inventory management* (3rd ed.). New York, NY: HarperCollins Leadership.
- Musau, E. G., Namusonge, G., Makokha, E. N., & Ngeno, J. (2017). The effect of inventory management on organizational performance among Textile Manufacturing Firms in Kenya. *International Journal of Academic Research in Business and Social Sciences*, 7(11), 1032-1046.
- Muyundo, M. C. (2018). *Inventory management and organizational performance of cement manufacturing firms in Kenya* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Ngugi, E. N., Kimutai, G., & Kibet, Y. (2019). Effects of inventory management systems on performance of manufacturing companies in Eldoret Town, Kenya. *The Strategic Journal of Business & Change Management*, 6(2), 1431-1345.
- Njoroge, C. W. (2017). *Factors influencing effective strategy implementation in Sameer Africa Limited* (Unpublished doctoral dissertation). United States International University-Africa, Nairobi, Kenya.
- Nzuza, Z. W. (2015). *Factors affecting the success of inventory control in the stores division of the eThekweni Municipality, Durban: A case study* (Unpublished master's thesis). Durban University of Technology, Durban, South Africa.

- Oballah, D., Waiganjo, E., & Wachiuri, W. E. (2015). Effect of inventory management practices on organizational performance in public health institutions in Kenya: A case study of Kenyatta National Hospital. *International Journal of Education and Research*, 3(3), 703-714.
- Onyango, R. A. (2017). *Inventory management practices and supply chain performance of fast-moving consumer goods manufacturers in Nairobi* (Unpublished master's research project). University of Nairobi, Nairobi, Kenya.
- Opoku, R. K., Fiati, H. M., Kaku, G., Ankomah, J., & Opoku-Agyemang, F. (2020). Inventory management practices and operational performance of manufacturing firms in Ghana. *Advances in Research*, 21(10), 1-18.
- Ortega, M., & Lin, L. (2004). Control theory applications to the production-inventory problem: A review. *International Journal of Production Research*, 42(11), 2303-2322.
- Osei-Mensah, E. (2016). *The effect of inventory management practices on service delivery at St. Martin's Hospital, Agroyesum, Amansie-West* (Unpublished doctoral dissertation). Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
- Ouma, M., & Mwangangi, D. P. W. (2018). Influence of inventory management systems on performance of soft drinks manufacturing firms in Kenya. *International Journal of Business Management & Finance*, 1(57), 972-985.
- Panwar, A., Jain, R., Rathore, A. P. S., Nepal, B., & Lyons, A. C. (2018). The impact of lean practices on operational performance-an empirical investigation of Indian process industries. *Production Planning & Control*, 29(2), 158-169.
- Park, Y. B., Yoo, J. S., & Park, H. S. (2016). A genetic algorithm for the vendor-managed inventory routing problem with lost sales. *Expert Systems with Applications*, 53, 149-159. doi: 10.1016/j.eswa.2016.01.041.
- Po-Lynn, E. (2019). *Framework for Managing an Efficient and Effective Pharmaceutical Supply Chain in Malaysia*. Sheffield Hallam University (United Kingdom).
- Prempeh, K. B. (2015). *The impact of efficient inventory management on profitability: Evidence from selected manufacturing firms in Ghana* (MPRA Paper No. 67889). Sunyani, Ghana: Sunyani Technical University.
- Qrunfleh, S., & Tarafdar, M. (2014). Supply chain information systems strategy: Impacts on supply chain performance and firm performance. *International Journal of Production Economics*, 147, 340-350. doi: 10.1016/j.ijpe.2012.09.018
- Radzuan, K., Rahim, M. K. I. A., Anuar, H. S., Nawi, M. N. M., & Osman, W. N. (2015). Inventory management practices and its effects on vendor managed inventory performance. *Advanced Science Letters*, 21(6), 2114-2117.

- Ramalho, G. (2017). *Bamburi Cement: Cement industry* (Unpublished doctoral dissertation). Nova School of Business & Economics, Lisbon, Portugal.
- Rapario, E. (2019). *Effect of logistics management practices on supply chain performance of cement manufacturing firms in Kenya* (Unpublished doctoral dissertation). KCA University, Nairobi, Kenya.
- Ravinder, H. V., & Misra, R. B. (2016). ABC analysis for inventory management: Bridging the gap between research and classroom. *American Journal of Business Education (AJBE)*, 9(1), 39-48.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.
- Sainathan, A., & Groenevelt, H. (2019). Vendor managed inventory contracts-coordinating the supply chain while looking from the vendor's perspective. *European Journal of Operational Research*, 272(1), 249-260.
- Samuel, I. S., & Ondiek, O. (2014). Inventory management automation and the performance of supermarkets in western Kenya. *International Journal of Research in Management & Business Studies*, 1(4), 9-18.
- Sebatjane, M., & Adetunji, O. (2019). Economic order quantity model for growing items with incremental quantity discounts. *Journal of Industrial Engineering International*, 15(4), 545-556.
- Sharma, A., & Arya, V. (2016). Study of inventory management in manufacturing industry. *International Journal of Advanced Engineering and Global Technology*, 4(03), 2012-2021.
- Shawe-Taylor, J., & Sun, S. (2011). A review of optimization methodologies in support vector machines. *Neurocomputing*, 74(17), 3609-3618.
- Shen, H., Deng, Q., Lao, R., & Wu, S. (2016). A case study of inventory management in a manufacturing company in China. *Nang Yan Business Journal*, 5(1), 20-40.
- Shih, W. (2018). Optimal inventory policies when stockouts result from defective products. *International Journal of Production Research*, 18(6), 677-686.
- Shin, S., Ennis, K. L., & Spurlin, W. P. (2015). Effect of inventory management efficiency on profitability: Current evidence from the US manufacturing industry. *Journal of Economics and Economic Education Research*, 16(1), 98-106.
- Singh, D., & Verma, A. (2018). Inventory management in supply chain. *Materials Today: Proceedings*, 5(2), 3867-3872.
- Sousa, M. J., & Rocha, Á. (2019). Leadership styles and skills developed through game-based learning. *Journal of Business Research*, 9(4), 360-366.
- Sremac, S., Tanackov, I., Kojić, M., & Radović, D. (2018). ANFIS model for determining the economic order quantity. *Decision Making: Applications in Management and Engineering*, 1(2), 81-92.

- Steiner, G. A., & Steiner, J. F. (2012). *Business, government and society: A managerial perspective, text and cases* (13th ed.). New York, NY: McGraw-Hill Irwin.
- Stevenson, W. J. (2015). *Operations management* (12th ed.). New York, NY: McGraw-Hill Education.
- Taskin, S., & Lodree, E. J. (2010). Inventory decisions for emergency supplies based on hurricane count predictions. *International Journal of Production Economics*, 126(1), 66-75.
- Tejesh, B. S. S., & Neeraja, S. J. A. E. J. (2018). Warehouse inventory management system using IoT and open source framework. *Alexandria Engineering Journal*, 57(4), 3817-3823.
- Tempelmeier, H. (2011). *Inventory management in supply networks*. Norderstedt, Germany: BoD Books on Demand GmbH.
- Tiwari, S., Daryanto, Y., & Wee, H. M. (2018). Sustainable inventory management with deteriorating and imperfect quality items considering carbon emission. *Journal of Cleaner Production*, 192, 281-292. doi: 10.1016/j.jclepro.2018.04.261
- Uhrin, Á., Bruque-Cámara, S., & Moyano-Fuentes, J. (2017). Lean production, workforce development and operational performance. *Management Decision*, 55(1), 103-117.
- Van Stel, A., Storey, D. J., & Thurik, A. R. (2007). The effect of business regulations on nascent and young business entrepreneurship. *Small Business Economics*, 28(2), 171-186.
- Vega, D. C., & Keenan, R. J. (2014). Transaction cost theory of the firm and community forestry enterprises. *Forest Policy and Economics*, 42, 1-7. doi: 10.1016/j.forpol.2014.01.006
- Vera, D., & Crossan, M. (2014). Strategic leadership and organisational learning. *The Academy of Management Review*, 29(2), 222-240.
- Vij, S., & Farooq, R. (2017). Moderating variables in business research. *The IUP Journal of Business Strategy*, 14(4), 34-54.
- Vollman, T. E., Berry, W. L., & Whybark, D. C. (2005). *Manufacturing planning and control systems* (5th ed.). New York, NY: McGraw-Hill.
- Wafula, M. A. (2016). *Inventory management and operational performance in the oil marketing companies in Kenya* (Unpublished doctoral dissertation). University of Nairobi, Nairobi, Kenya.
- Wang, K. T. (2015). *Research design in counseling*. Toronto, Canada: Nelson Education.
- Wild T. (2017). Strategic planning in small and medium enterprises (SMEs): A case study of UK SMEs. *Journal of Management and Strategy*, 8(1), 74-103.

- Womack, J. P., & Jones, D. T. (1996). Beyond Toyota: How to root out waste and pursue perfection. *Harvard Business Review*, 74(5), 140-151.
- Xie, L., & Ma, J. (2016). Study the complexity and control of the recycling-supply chain of China's color TVs market based on the government subsidy. *Communications in Nonlinear Science and Numerical Simulation*, 3(8), 102-116.
- Yin, R. K. (2017). *Case study research and applications: Design and methods*. Thousand Oaks, CA: Sage.
- Zimmermann, S., & Rentrop, C. (2014). *On the emergence of shadow IT-a transaction cost-based approach*. Retrieved from <https://core.ac.uk/download/pdf/301362309.pdf>
- Zomerdijk, L. G., & De Vries, J. (2003). An organizational perspective on inventory control: Theory and a case study. *International Journal of Production Economics*, 81, 173-183. doi: 10.1016/S0925-5273(02)00276-1

APPENDICES

Appendix A: Introduction Letter

Dear participant,

RE: Research Thesis

I am a postgraduate student at Daystar University carrying out a research thesis aimed at determining EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED. I hereby request for your cooperation to help me complete the research successfully. Kindly give your honest answers on the provided questionnaire.

The questionnaire data is to be used for research and academic purposes only and any information you give will be treated with confidentiality. Since no personal details are required on the questionnaire your identity will not be revealed.

Thanking you for your cooperation

Yours sincerely,

Nshutiyayesu Marthe

Appendix B: Questionnaire

Section A: Background Information

1. Please identify your gender? Male Female
2. Please identify the range of your age in years? 20-30 31-40
41-50 Above 51
3. What's your highest Education level?
Diploma Bachelor Degree Post Graduate
4. How many years have you served in the organization?
0-5 6-10 Above 10

Section B: The inventory management practices adopted by Bamburi Cement Limited

5. Kindly give an indication using a tick in the appropriate column that you agree with the statements in regard to the inventory management practices adopted by Bamburi Cement Limited. Rank on a 5- point scale in which: 1- Strongly disagree, 2-Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

Statement	1	2	3	4	5
We are able to predict the ordering, holding and storage costs of cement in our organization					
We are able to predict with certainty the quantities of cement demanded by our customers					
Our organization works with our suppliers to plan for inventory replenishment					
Our organization shares actual data with suppliers for replenishment of inventories					
We usually order for inventories when they are required in our organization					
Our organization holds a joint planning sessions in which customer's requirement schedule is discussed					

Our organization holds a joint planning sessions in which supplier delivering schedules are discussed					
Our organization classifies its inventories in regard to their importance					

Section C: The measures of operational performance at Bamburi Cement Limited

6. By use of a tick, kindly give an indication on how much you agree with the statements in regard to the measures of operational performance at Bamburi Cement Limited. Rank on a 5- point scale where: 1- Strongly disagree, 2- Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

Statement	1	2	3	4	5
There has been a high production cycle timeline of cement manufacturing at Bamburi Cement Limited					
Our organization has a way of reacting to the changes in its operational environment					
There has been reduced production costs in regard to cement manufacturing at Bamburi Cement Limited					
There has been reduction of wastages in regard to inventories at Bamburi Cement Limited					
There has been optimal utilization of machines and equipments at Bamburi Cement Limited					
There has been minimal cases of stock outs at Bamburi Cement Limited					
Bamburi Cement Limited production line is flexible to respond to any changes when they occur					

Section D: The effect of inventory management practices on operational performance at Bamburi Cement Limited.

7. By use of a tick, kindly give an indication on how much you agree with the statements in regard to the effect of inventory management practices on operational performance at Bamburi Cement Limited. Rank on a 5- point scale where: 1- Strongly disagree, 2-Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

Statement	1	2	3	4	5
Inventory management practices have led to high production cycle timeline which has in turn enhanced operation performance at Bamburi Cement Limited					
Inventory management practices have enabled Bamburi Cement Limited react to the changes in its operational environment which has in turn enhanced its operation performance					
Inventory management practices have reduced production costs which has in turn enhanced operation performance at Bamburi Cement Limited					
Inventory management practices have reduced wastages in regard to inventories which has in turn enhanced operation performance at Bamburi Cement Limited					
Inventory management practices have enhanced optimal utilization of machines and equipments which has in turn enhanced operation performance at Bamburi Cement Limited					
Inventory management practices have reduced cases of stock outs which has in turn enhanced operation performance at Bamburi Cement Limited					
Inventory management practices have enhanced flexibility of production lines which has in turn enhanced operation performance at Bamburi Cement Limited					

Section E: Organizational Leadership

8. By use of a tick, kindly give an indication on how much you agree with the statements that follow concerning the statements that follow concerning organizational leadership. Rank on a 5- point scale where: 1- Strongly disagree, 2-Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

	1	2	3	4	5
Bamburi Cement Limited organization's resources are effectively managed					
The leadership at Bamburi Cement Limited involve employees in goals setting and decision making					
Leaders at Bamburi Cement Limited have created an appropriate environment for creativity and innovation					
Leaders at Bamburi Cement Limited have serious consideration for teamwork					
Leaders at Bamburi Cement Limited have provided training opportunities for the employees					

Section F: Government Regulations

9. By use of a tick, kindly give an indication on how much you agree with the statements in regard to government regulations. Rank on a 5- point scale where: 1- Strongly disagree, 2-Disagree, 3-Neutral, 4- Agree, 5- Strongly agree

	1	2	3	4	5
Our organization has complied with the government regulations as outlined by National Environmental Management Authority					
Our organization has complied with all the government regulations regarding operations of cement companies in Kenya					

Our organization has complied with the government regulations regarding licensing of the cement companies in Kenya					
Our organization has complied with the regulations as set by Kenya Bureau of Standards in Kenya					
Our organization has complied with the government regulations regarding distribution of cement in Kenya					

Appendix C: Ethical Clearance

VERDICT: APPROVAL WITH COMMENTS

Daystar University Ethics Review Board

Our Ref: **DU-ERB/05/07/2021/000539**Date: 5th July 2021

To: Nshutiyayesu Marthe

Dear Nshutiyayesu,

RE: EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED

Reference is made to your ERB application reference no. 210621-01 dated 21st June 2021 in which you requested for ethical approval of your proposal by Daystar University Ethics Review Board.

We are pleased to inform you that ethical review has been done and the **verdict is to revise to the satisfaction of your Supervisors before proceeding to the next stage**. As guidance, ensure that the attached comments are addressed. Please be advised that it is an offence to proceed to collect data without addressing the concerns of Ethics Review board. Your application approval number is **DU-ERB-000539**. The approval period for the research is between **5th July 2021 to 4th July 2022** after which the ethical approval lapses. Should you wish to continue with the research after the lapse you will be required to apply for an extension from DU-ERB at half the review charges.

This approval is subject to compliance with the following requirements.

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

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

Yours sincerely,

Sr. Prof. A. L. Lando PhD
Chair, Daystar University Ethics Review Board



Appendix D: Research Permit

Republic of Kenya
Ministry of Education, Science and Technology
National Commission for Science, Technology & Innovation

Ref No: **306437** Date of Issue: **09/August/2021**

RESEARCH LICENSE



This is to Certify that Ms. MARTHE NSHUTIYAYESU of Daystar University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED for the period ending : 09/August/2022.

License No: **NACOSTI/P/21/12065**

306437
Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code



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Appendix E: Researcher's Letter of Introduction from Daystar University

**Bamburi**
cement P.L.C.
CORPORATE OFFICE
Kitui Road, off Kampala Road, Industrial Area
P.O. Box 10921 - 00100, Nairobi - Kenya
Landline: +254 20 2893000/ 66114358
Office Mobiles: +254 722 205471/727 532130
Email: corp.info@lafarge.com
Website: www.lafarge.co.ke

Evans Amata, PhD
Dean, School of Business and Economics
Daystar University
P.O BOX 44440 – 00100
NAIROBI.

Dear Sir,

RE: NSHUTIYAYESU MARTHE: STUDENT NUMBER 18-0425

We wish to confirm that the above named person approached our organization for support in her research thesis under the topic.

EFFECT OF INVENTORY MANAGEMENT PRACTICES ON OPERATIONAL PERFORMANCE: A CASE OF BAMBURI CEMENT LIMITED

We are pleased that all support was accorded to the student to support the learning process. The topic is keen to us in the process of improving our inventory management practices and in turn enhance our performance and increase our market share in the cement manufacturing industry.

Yours Faithfully,



Catherine Ndioo
Communications Manager

Appendix E: Plagiarism Report

Martha Nshutiyayesu Thesis - 24nd October 2021

ORIGINALITY REPORT

20%	17%	4%	12%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Kenyatta University Student Paper	2%
2	strategicjournals.com Internet Source	1%
3	ir.jkuat.ac.ke Internet Source	1%
4	Submitted to Daystar University Student Paper	1%
5	Submitted to Federal University of Technology Student Paper	1%
6	dspace.nwu.ac.za Internet Source	1%
7	erepository.uonbi.ac.ke Internet Source	1%
8	Submitted to University of the Western Cape Student Paper	<1%
9	pdfs.semanticscholar.org Internet Source	<1%