

**OPERATIONS MANAGEMENT PRACTICES AND PERFORMANCE OF
STEEL MANUFACTURING FIRMS IN KENYA**

BY

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF
BUSINESS ADMINISTRATION, UNIVERSITY OF NAIROBI**

DECEMBER, 2018

DECLARATION

I declare that this research project is my original work and has never been submitted for award of a degree in any other University.

Signed..... Date.....

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D61/72461/2014

This project has been submitted for examination with my authority as the university supervisor.

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ACKNOWLEDGEMENT

I wish to acknowledge the support of my Supervisor Mr. E.O AKELO for accepting to supervise my project and for the encouragement. I sincerely thank God almighty for his strength and grace to do this work for without Him I can do nothing. Appreciation is extended to my beloved family, friends and employer for financial, emotional and moral support throughout this work.

DEDICATION

I dedicate this project to my wife for the continuous encouragement and our children for the sacrifices they had to make during the course of my study.

LIST OF ABBREVIATIONS

OMP	Operations Management Practices
SPSS	Statistical Package for the Social Sciences

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ABSTRACT

Changes in business environment occasioned by globalization and development in information communication and technology have revolutionized the way manufacturing is conducted. The entire manufacturing process from reception of input to generation of outputs needs to be closely monitored to ensure high quality products are produced in a more effective manner. The issue of organizational performance has been central in sustaining businesses in dynamic technological innovations, political and economic factors and customer demands. Organizations employ various practices in order to achieve high efficiency which results into their performance. The study sought to determine how operational management practices influenced performance with specific reference to Kenya's steel manufacturing firms. The type of design adopted was descriptive. The study targeted one manager from each steel manufacturing, from Operations management department making a total of 165 managers as the respondents. The study used a census design because the population was small and it is easily accessible. This study collected primary data using structured questionnaires. The study found out that operation management practices positively influence performance of steel manufacturing company. The study concludes that manufacturing firms' labor was easily available and the distribution was easily accessible. The firms hired more workers when demand increased and increased working hours depending on demand. The firms experienced limited employee skills, there was limited capital to invest in the operations management practices and relatively high costs associated with new technologies hindered the application of management practices. The study recommends that manufacturing firms' labor ought to be easily available and the distribution ought to be easily accessible. The firms ought to hire more workers when demand increases and increase working hours depending on the demand. The organization ought to implement a quality management system and conduct regular staff training on quality management programs. Manufacturing firms ought to increase their market edge due to increased level of competition in the industry. Employees ought to be ready to adapt to change and the cost of implementation of operations management practices should not hinder the application of operation management practices.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Change in business atmosphere occasioned by globalization and development in information communication and technology has revolutionized the way manufacturing is conducted. In addition, the level of information possessed by target clients for a given manufactured product has greatly improved forcing manufacturers to be cautious in their manufacturing processes if they are to be competitive (Slack, Brandon-Jones & Johnston, 2013) The entire manufacturing process from reception of input to generation of outputs needs to be closely monitored to ensure high quality products are produced in a more effective manner. Battistoni, Bonacelli, Fronzetti and Schiraldi (2013) noted that implementation of operations management practices (OMP) helps manufacturing firms manage their internal operational processes for high quality production. Firms implement diverse OMP with the aim of increasing their grip on manufacturing processes for high quality outputs which meets the dynamic needs of their customers.

Anyona (2017) noted that organizations need to stay ready to seize opportunities as and when they come up. They need to always anticipate likely changes in the consumption patterns of their customers using extrapolation of their current tastes and preferences. Through application of appropriate operation management practices, organizations can position themselves competitively in a given industry (Slack *et al.*, 2013). It is important that organizations create and maintain competitive edge over their competitors through appropriate recruitment and selection, stakeholder engagements and finding appropriate ways of optimizing operational costs.

In order for businesses to retain their competitiveness in any given industry, they need to consistently offer production systems that have the capacity to handle consumers and market requirements. There needs to be capacity to adapt to changes to enable timely realignment of the organization to the changing operational environment.

1.1.1 Operations Management Practices

Operations management involves the utilization of business resources to create efficiency and effectiveness in an organization. Its main concern is to convert raw materials and labor into finished goods and services as required by the organization so as the profit can be maximized as effectively (Chardine-Baumann & Botta-Genoulaz, 2014). The process of achieving the highest net profit is geared towards balancing costs with revenue. Operation management comprises materials, technology, resource utilization by the staff and equipment used to generate products (Cohen & Roussel, 2013). The goods are developed by the operation managers and then delivered to the target consumers based on consumer wants and the abilities of the company. There are many strategic issues that are handled by operations management.

Parisio, Rikos and Glielmo (2016) noted that operation management practices involve quality management, supply management, inventory management, process and capacity, scheduling and facility location in the production of good and services. Its main concern is to ensure efficiency in operations of the business that would lead to attainment of customer requirements and ensuring that the resources are used accordingly. It also aims at managing the entire production system which involves conversion of inputs into outputs. López, Ochoa, Terashima and Burke (2013) states operations result into production of products, management of quality and creation of services. Operations management covers a number of sectors including the banking industry, health centers, organizations that closely work with suppliers and those companies relying on technology (Gitau, 2016). Operations management are one of key functions within an organization besides the human resource, finance and marketing. In operations function, the day-to-day and strategic production of products is managed (Propa, Banwet & Goswami, 2015).

1.1.2 Organizational Performance

Performance occurs when competencies, abilities, skills and experience are combined to accomplish given tasks within a clearly established time horizon (Katoh & Standley, 2013). At the place of work, performance (also called job performance) is the ranking of

an individual with regard to the required activities and tasks. To determine performance, either financial or non-financial indicators may be applied. Komppula (2013) ascertains that measurements of performance include profitability, return assets and return equity. On the other hand, the non-financial measures of performance in an organization are customer satisfaction, customer retention and employee efficiency. Performance in many organizations helps the management and employees to know if they are doing a legit work or not (Omari, Ateka, & Nyaboga, 2013).

Ekwueme, Egbunike and Onyali (2013) argue that organizational performance can be measured using four major buckets; effectiveness (whether an organization can achieve its objective), efficiency (ability of an organization to use its resources properly), relevance (degree to which the organization's stakeholders perceive the organizations activity as being aligned to their needs and wants) and lastly financial viability (the extent which n organization is viable over a short and long term horizon and also how long the organization has remained profitable). Some of the important aspects of organizational performance include: revenue generated, motivated workforce, organizational culture and organizational systems and processes (Kaplan & Norton, 1996).

Cost reduction involves the process that companies use to reduce business cost and increase their profits while firm performance is the measurement of how strong a firm is in terms of its business performance (Matata & Wafula, 2015). Business strategies always vary depending on the product or service types that the firm delivers. Costs in a business are affected by the decision-making processes. It should be noted that when launching a new product to the market, the costs that are incurred during production becomes of good important when the level of competition increases (Masindet & Ogollah, 2014). The price of the commodity eventually becomes a differentiating factor in the market. In today's life, cost reduction has become an important factor in an environment that is highly competitive.

Cost reduction comprises a variety of products to help meet customer needs and demands (Guritno, Fujianti & Kusumasari, 2015). A good manager who is well focused should be able to understand the benefits of reducing costs regarding the company's health. They

should be able to come up with a better cost reduction plan that aims at lowering costs in every business activity (Ogonda, 2016). Competition has become stiff in many business organizations and increasing prices would lower the demand of customers to a certain product. Hence it is very crucial to consider cost reduction methods so as to increase the morale of workers which would further increase the level of firm performance (Beske & Seuring, 2014).

1.1.3 Steel Manufacturing Firms in Kenya

The manufacturing industry plays a key role in economic development of Kenya as it forms one of the key economic pillars in the vision 2030. The industry supports the construction and infrastructure industry by providing steel products which provide a framework. The sector is comprised of manufacturers, distributors and customers who all work together to determine the sector performance. The Kenya Association of manufacturers (KAM) indicates that there are more than one thousand established multi-sector manufacturing firms in Kenya involved in the manufacturing business. The manufacturing industry has the potential to create employment and earn foreign exchange through exports.

The steel manufacturing industry supports other key economic development sectors like the infrastructure and general constructions. According to Kariuki (2013), the overall annual demand for steel stands at 480,000-600,000 tones. In most cases, domestic market However, the quality of products in the steel industry is not standard which affect the quality of constructions. This has led to massive losses not only to manufacturing firms but also to construction industry investors. Hence the need to monitor the quality of finished products and internal processes for improved industry profitability.

1.2 Research Problem

The issue of organizational performance has been central in sustaining businesses in dynamic technological innovations, political and economic factors and customer demands. Organizations employ various practices in order to achieve high efficiency which results into their performance (Laosirihongthong, Adebajo & Choon Tan, 2013). Operations

form a key element in the manufacturing industry. Well managed operations result in lower operational costs, which can then be translated in lower selling price and higher turnover. Today's highly dynamic business operations environment require that manufacturing firms rethink their operational strategies if they are to realize operational efficiency and better performance (Hajmohammad, Vachon, Klassen & Gavronski, 2013).

Constantly evolving customer tastes and preferences require that operations be innovative and efficiency so that the outputs are availed in better quality and competitively priced. For instance, the manufacturing industry in Kenya has faced fierce competition from international supplies and international brands setting up operations in the Country (Lwiki, Ojera, Mugenda & Wachira, 2013). The industry is characterized by lack of market diversification high costs of energy and raw materials, application of obsolete technology which limits the extent of value addition. In addition, entry of international brands has made the competition stiff requiring local manufacturing firms to rethink their strategies if they are to be competitive (Muma, Nyaoga, Matwere & Nyambega, 2014).

The Steel manufacturing industry has experienced challenges as the construction industry slows down. In addition, the range of competitors in the local industry has increased as more firms venture in. The firms have invested in various operation management practices with the aim of improving their overall financial outcomes. Several studies have been conducted on operations management practices (OMP). For instance, Battistoni et al. (2013) indicate that OMP impacts performance of SMEs. This study only concentrated on all SMEs but did not look at the steel manufacturing firms. Kushwaha (2013) established that adoption of operations management practices bore direct and statistically significant influence on productivity. The study only concentrated on the factors affecting adoption of OMP but did not look at the effects of OMP on performance.

In the Kenyan context, Kemunto (2015) focused on evaluating the extent to which OMP affected performance outcomes in the non-governmental sector within Nairobi County. The study focused on the Non-governmental organization but did not look at the firms in steel manufacturing. Wachira (2016) established that quick product development and

introduction time practices were applied. Key challenges in application of appropriate practices included high costs in acquiring latest technology and high costs of labor. The study only concentrated on the challenges of OMP. These studies focused on operations management practices but none of them looked at the steel manufacturing firm. Therefore, this study sought to fill the gaps in research by answering one research question: How do operational management practices affect performance of steel manufacturing firms in Kenya?

1.3 Research Objectives

The research objectives of this study were:

- i. To determine extent to which operations management practices are used in the steel manufacturing firms in Kenya.
- ii. To establish the effect of operations management practices on performance of steel manufacturing industry in Kenya
- iii. To determine the challenges in the application of operation management practices among the steel manufacturing industry in Kenya.

1.4 Value of the Study

This study would benefit several stakeholders including: managers in the manufacturing industry, policy makers in Government and future scholars and researchers.

For the managers in the manufacturing firms, the findings of this study would be significant in enabling them understand the effect that each operational management practice has on performance. This would help them in improvement of the operational efficiency level thereby reducing on the level of wastages. This would result in higher production and improved profitability.

The findings would also be valuable to the Government of Kenya especially the Ministry of Industrialization to formulate and implement sound policies related to efficiency in

manufacturing process. The government would evaluate the efficiency of its policies besides information formulation of additional ones.

The findings would be valuable to future scholars by extending the existing literature on the subject of operations management practices and firm outcomes. Through the findings of this study, areas of research deficiency would be outlined in which future researchers can focus their studies. This would help grow the general level of existing literature on operations management practices.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explores about the operation management practices and their effect on their performance. It starts off with a presentation on the theoretical foundations before availing a discussion on operations management practices, conceptual framework and chapter summary.

2.2 Theoretical Foundation

This section presents a number of theories on which the study anchors. Specifically, two theories are discussed: Production Competence Theory and the Quality Improvement Theory.

2.2.1 Production Competence Theory

It holds that firms involved in manufacturing in a synchronized process, competence is to be expressed as a variable as opposed to a fixed characteristic (Hayes & Wheelwright, 1979). This means that it can vary with time to respond to dynamic customer requirements. It is important to appreciate the general characteristics of manufacturing functions to optimize on manufacturing capacity and productivity (Cleveland, Schroeder & Anderson, 1989). This is because product process changeovers have proven to be expensive and time consuming because of the standardized methods in process manufacturing firms. Their markets are also well established with customers informed on their quality and what the competition offers.

This theory acknowledges the formalized processes and procedures under controlled work schedules with minimal variations in the reporting. These firms enjoy economies of scale because of their standardized processes and procedures which do not compromise on quality (Dennis & Meredith, 2000). Possession of well qualified and experienced employees that enable a firm to timely respond to constantly changing business

environment is the most important competence in remaining competitive. These sentiments are qualified by Gourley (2006) who argues that possession of well qualified and experiences employees enable manufacturing firms to better manage their practices as compared to incompetent employees who keep reacting to outcomes of an underlying process. Successful introduction of new processes and technologies require that a conducive environment in which knowledge can easily be assimilated and shared so that continuous learning can take place to improve absorption capacity (Coates & McDermott, 2002). It helps the firm to on how to consider its strengths and establish ways in which these strengths can complement manufacturing weaknesses.

2.2.2 The Quality Improvement Theory

This theory holds that the quality management principle is the responsibility of manufacturing organization (Deming, 1986). This theory avails appropriate measures to organizations for eliminating challenges in quality standards management using effective techniques. This can be achieved through creation of systems that promote cooperation for proper implementation of operations management practices (Hubert, 2000).

This theory is more concerned with quality controls to ensure that the processes products meet the minimum required standards for customers (Goetsch & Davis, 2006). To achieve this, there needs to be adequate to management support in ensuring formulated plans are executed as planned (Oakland, 2004). It helps manufacturing organizations to ensure that they put in place appropriate systems that would guarantee production of high-quality products that meet the changing customers' needs

2.2 Operations Management Practices

Operations management is the ability to execute formulate and influence the production of products in an organization. Operations management ensures production of quality products with a given level of resources to achieve value for money. Operations management helps an organization to effectively meet the needs and want of its customers. Operations management concerns activities that results into conversion of raw materials

(resources) into finished goods and services. Operations management today is one of the functions within an organization besides marketing and finance functions. Operations management ensures that factors of production are effectively utilized in production of products required by customers of an organization.

Pearson (2010) noted that operations managers are held accountable for all actions and activities within an organization that leads to efficient delivery of services. There exists variations in given responsibilities of the operations management and in some cases it would rely on strategies adopted by an organization including operation, tactical and strategic function. Operations management is internal business environment and decisions within an organization. Operations management practices are macro factors contributing towards development of key competencies thus organizational competitiveness (Pisano, 1996).

Russel (2007) stated that operations practices are more than planning and controlling. It entails taking full advantage of available resources, time and decision-making processes. In order to attain effectiveness and efficiency within an organization, several undertakings are incorporated in operations management activities. The key activities in operations management of an organization include design of products (goods and services), layout of facilities within an organization, management and control of inventories, job design and quality improvement processes. Plant facilities are essential in delivering goods and services to consumers. Best process or set of processes have to be selected from the existing ones. Sound scheduling three programs put in place would facilitate the efforts of the other practices in driving the organization to achieve its goals. Skilled manpower means that right decisions would be made (Byegon, 2015).

2.2.1 Facility Location

Location incorporates the decision on where to locate the office and structures of an organization. Several factors come into play when deciding on where to locate the business including accessibility to customers, transport facilities and other social amenities. The business should locate in a strategic place for accessibility. In circumstances where

physical goods are involved, the determination of location would depend on available workforce, government rules and regulations, resources, access to market and the level of technology. For services directly offered to customers, the location is informed by such factors as accessibility to customer and transport facilities and networks available (Henzer, 2014). Before locating a business in a particular location, there are a number of factors that one needs to consider serving customers and maximize its revenue.

These factors may include: proximity to key suppliers; proximity to customers; nearness of the market and cost of serving customers; transport cost; land cost (rent); availability of labor skills; environmental stability; accessibility to power and electricity supply; government policies; nearby competition; and facility safety which also include work force safety (Ray, 2015). Location factors are a set of variables that one needs to consider when choosing the location of a business facility. It is critical therefore that manager of organization must consider facility location factors and how they affect performance of their supply chain.

2.2.2 Scheduling

Scheduling is the ability of an organization to efficiently allocate, control and manage its resource's (employees, materials and products) within a system. Unlike the service sector, the manufacturing sector requires a lot of systematic allocation. In provision of services, most attention is directed towards customers and this requires clear direction and sufficient level of employees (Henzer, 2014). Scheduling is a form of short term execution plan used to plan for production of goods and services. Production scheduling entails actions carried out in a manufacturing entity aimed at management and controlling the process of executing production.

A schedule is a given assigned problem that details how activities within an organization would be carried out and how resources would be used in meeting the plan. Detailed scheduling essentially is the challenge in allocation of machines for competing alternatives given some constraints. In every work center, only one job can be processed at any given time. Additionally, every machine can only handle one task and activity at any given time.

In a scheduling problem, a fixed job numbers is assumed and in every job, there are specific parameters (the needed resources, time estimated for every activity, constraints and tasks). In all scheduling approaches, one is required to estimate the length it would take to execute the activities and operations. All changes in scheduling can be estimated over a given period of time and this allows for identification and examination of the starting, completion and idle times.

2.2.3 Quality Management

Quality reflects how well a given product meets the needs and requirements of customers or consumers. Customers have expectations whenever they purchase a given good or service (Govindan et al., 2014). They are satisfied when then good meets the minimum set expectations which would motivate them to make a repeat purchase and recommend it to their friends and colleagues. Therefore, manufacturing firms have to keep into consideration the market dynamics in terms of customer preferences so as to align themselves to the changing business environment. According to Neyestani (2017), the market preferences and trends change over a very short periods of time.

In order to effectively meet the needs of customers, organizations today have invested sufficient funds in flexible systems and processes so as to produce products that meet established standards. Loyalty of customers towards given products of an organization is reduced with durability and quality of the products relative to the cost. Quality in service sector encompasses early forecasting of the preferences and demand of customers. Rumane (2016) indicated that some firms have committed significant level of resources aimed at attaining high standards of quality produced to customers.

According to Juran and Gryna (2013), there are various quality management standards that have been developed. These quality standards are basically list of design rules that help in guiding establishment of whole classes of systems of management. These quality standards comprise of new management technologies that would standardize the overall management practice in organizations (Uzumeri, 2017).

Talib, Rahman and Qureshi (2013), identified existence of quality management systems as the starting point in quality management. Employees need to be constantly trained on the desired quality of products in the eyes of customers (Bon & Mustafa, 2013). This would enable them to take their roles seriously as any discrepancies would lead to destruction of the desired quality. This is normally done in conjunction with feedback from customers. There needs to be a regular survey of customer perceptions on the quality of products produced by a manufacturer so as to keep pace with the changes in customer tastes and preferences (Ates et al., 2013).

Manufacturing firms also need to adhere to quality standards as prescribed in the regulator's provisions (Bon & Mustafa, 2013). Every industry has a prescribed description of what quality means and anything deviating from these provisions is sub-standard (Ross, 2017). The production processes need to be closely monitored to ensure that consistency of products is kept. This can only be achieved if well qualified and experienced persons are employed in the right positions.

Quality standards emphasize on the need to have quality policies and strategies. According to Juran and Gryna (2013), quality management as a process entails the resolving of the extended period goals of quality and approaches of how best to meet these goals. Strategic planning has been strongly emphasized by quality gurus in view of total quality management (Deming, 2014). Quality policies according to Crosby (2014) are practice standards that prioritize activities to be undertaken within an organization.

2.2.4 Inventory Management

Inventory comprises finished goods and those in process (Gitau, 2016). In the operations a very crucial division is warehousing which helps in ensuring the performance in a manufacturing firm is well catered for (Laosirihongthong, Adebajo & Choon Tan, 2013).

Fullerton, Kennedy and Widener (2013) indicated that for reduced rate of depreciation, wastage and pilferage in inventories, an organization should efficiently manage its available inventories. An organization should also ensure that materials are availed in the

production process and system in response to demand. In order to realize optimal profits and have the business survive, there has to be proper inventory management to optimize holding costs and reduce on any shortages (Sadikoglu & Olcay, 2014).

2.2.5 Process and Capacity Management

In process and capacity management, volumes are combined with varieties in order to meet the overall demand of the market (Slack, Brandon & Johnston, 2013). The point of decision-making entails process selection, required level of technologies, expertise, system, maintenance and quality that determine the cost structure of an organization. Service operation decisions are simpler as they comprise of processes that directly involve customers. Having in place sufficient quantity of goods and services would result into steady supply of products in the market thus continuous sales and revenue flow to an organization (Govindan, Kaliyan, Kannan & Haq, 2014).

Kerzner (2017) used a case of sunset hotel in Kisumu to determine how capacity management influences performance. The findings of the study indicated that the need of customers is dynamic and this piles pressure to an organization to ensure quality products are produced to meet the needs and wants of customers. The study further revealed that management of inventories, price, outsourcing and forecasting of capacity within an organization all have direct and significant influence on organizational performance (Jeston, 2014).

2.3 Operations Management Practices and Performance

Operations management practices is efficient management of processes and activities of an organization in order to create high level of efficiency and effectiveness (Munizu, 2013). Through operation management, an organization is able to efficiently convert raw materials into finished products for increased productivity. According to Rostamzadeh, Govindan, Esmaili and Sabaghi (2015), operations management entails actions and activities like ability to plan, organize and supervise with specialization in producing products to meet

customer needs and wants. Employee performance in an organization improves as operations management is strengthened (Villar, Alegre & Pla-Barber, 2014).

Chardine and Botta (2014) argued that operations management is now one of the functions within organization that closely interlinked with other departments including marketing and finance. Operations management practices are internal variables that help an organization to gain competitive advantage. Morali and Searcy (2013) states that these practices are useful as an imperative apparatus for enhancing benefits, expanding piece of the overall industry, and growing new markets. However, they are the most important drivers of operational execution. The operations capacity is, in this way, a critical business work with regards to assembling that presents the administration chances to create upper hand through phenomenal operational execution (McGuire, Morton & Cast, 2013).

Goodrich et al. (2013) carried out a reconciliation between performance measure metrics and operations management objectives is necessary to help satisfy the market requirements by developing desirable operational performance objectives, and taking decisions on the distribution of resources which affect the activities in operations. Aghdaie and Alimardani (2015) ascertains that an organization decides the target market and its customers through the method of market- based to operations strategy method. The market position of a firm is able to attract and retain its customers through its efficiency and effectiveness of employee performance (Lin, Tan & Geng, 2013).

Operations management practices are geared towards achieving the needs of the customers, measuring customer satisfaction and making use of the information to create new and improved goods and services (Wiengarten, Pagell & Fynes, 2013). The decisions made in operations management are very important in an organization because they help in creation of operations management practices that help in maximization of the value of customers. Mitra and Datta (2014) states that operations practices involve taking full advantage of the available resources, time and decision-making processes to set the organizational target and its set objectives. Activities involved in operation management aim at attaining the

required level effectiveness and efficiency based on how these factors are arranged (Strauch, Lima, Volk, Lorz & Makeschin, 2013).

Production quality of a firm is improved through continuous evaluation of standard measures, quality procedures and capacity building of human resources (Sarc & Lorber, 2013). Operations managers closely work with other employees in departments to reduce wastage of resources, boost the level of productivity and the overall profitability of an organization. Hajmohammad et al. (2013) noted that operations managers should possess critical and analytical skills to effectively make decisions that maximize the value of customers. Innovation in management controls inventory, supply chain, quality management and information management hence increased organizational performance.

2.4 Challenges in the Application of Operation Management Practices

A number of challenges have been identified in the implementation of operations management practices in organizations. For instance, Ogonda (2011) identified the high costs associated with acquisition and implementation of new information technology systems as a huge hindrance in quest to implement information systems in organizations. Keeping pace with developments in information communication and technology calls for constant investments in new inventions which may not always lead to positive returns (Matata & Wafula, 2015).

In another study, Muema (2013) identified skills inadequacy or limited understanding among persons tasked with the implementation of systems on key aspects of the practice. It was established that majority of the personnel engaged as first line managers and directors had limited levels of education as majority possessed diplomas which limited their innovation capability (Masindet & Ogollah, 2014). These managers also had insufficient skills in managing personnel as they were not trained in human resource management. They therefore did not know how well to relate with employees in different scenarios leading to constant conflicts which hampered smooth operations (Heizer & Render, 2006). This resulted in go slows and process interruptions which led to poor quality products. It also resulted in losses as some products produced could only be sold as defects.

2.5 Conceptual Framework

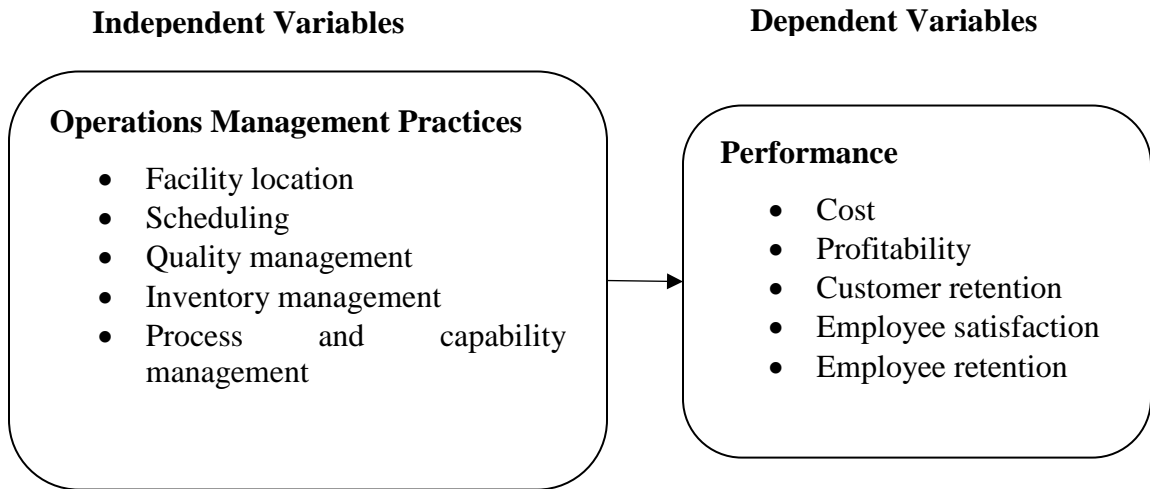


Figure 2.1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter details the type of design that was used and the targeted population. The method used to select representative elements from this population are also detailed with how data was collected and analyzed.

3.2 Research Design

The study used descriptive research design. This design has been selected upon because of its simplicity in analyzing a phenomenon in its natural form without any modification. This design allows for deeper analysis of study occurrences so as to enable development of a complete profile. It is mainly concerned with aspects relating to what, where, when, which and whom of a phenomenon. This design has successfully been applied by other scholars in studying the link existing between OMP and performance of supply chains (Wachira, 2016).

3.3 Population of the Study

A target population was used with requisite information regarding the study. According to the KAM (2018) there are 33 registered steel manufacturing firms in Kenya. Therefore, the study targeted five managers from each steel manufacturing, form Operations management department making a total of 165 managers.

3.4 Sample Design

A study sample design is a definitive plan used to gain a model from assumed populace. It shows a step-by-step procedure that the researcher was adopt in selecting items from the target population that made the sample for the study (O'Connor & Kleyner, 2011). All the 165 participants were included in the study hence a census. Therefore, there was no sampling. According to Yin (2017), a census is sufficient provided element of the

population is less than 200. The study used a census design because informants were easily accessible.

3.5 Data Collection

The study relied on primary data collected by use of questionnaires. The research instruments were structured into sections based on study objectives. The instruments were dropped to respondent and then recollected at a later date to improve on the response rate. The respondents were given two weeks to fill the questions before picking them for analysis. The respondents that were included in the study are managers form operations management department. These are the individuals that manage both raw materials and personnel.

3.6 Data Analysis

The study used descriptive statistics to analyze data. These included: mean, standard deviation, median, mode and frequencies. To estimate link between the study variables, the study conducted a multiple regression analysis using the model in the format of:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \varepsilon$$

Where Y= Performance

B0 = Constant

$\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are beta coefficients

ε = error term

X1= Facility Location

X2= Scheduling

X3= Quality Management

X4= Inventory Management

X5= Process and Capacity Management

The finding from the analysis was presented in form of charts, pie charts, figures, graphs, tables and narrations.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

The chapter details the findings on the collected data. Data for the study was collected from primary sources and the analysis was done using means, standard deviations and regression analysis.

4.1.1 Response Rate

The study collected 124 questionnaires from 165 managers from 33 registered steel manufacturing firms in Kenya. This gave a response rate of 75.0% which was in synch with Mugenda et al. (2003).

4.2 Demographic Information

Demographic information regarding; number of years in operations in Steel manufacturing industry and their position in their respective organization to determine how sufficient they were in the current study are as shown in subsequent section.

4.2.1 Number of Years in Operations

The distribution of the respondent's number of years in operations in steel manufacturing industry is as shown in Table 4.1.

Table 4.1: Number of Years in Operation

	Frequency	Percentage
Below 3 Years	29	23.4
3-6 Years	49	39.5
6-9 Years	31	25.0
Above 9 Years	15	12.1
Total	124	100

The findings in Table 4.1 established that 39.5% had worked in steel industry for a period of 3-6 years followed by 25% who had worked for 6-9 years, 23.4% had worked for less than 3 years and lastly 12.1% indicated above 9 years. Thus, respondents were well conversant with their company's performance on influence of operations management an indication that they gave reliable data.

4.2.2 Position Held

Distribution of the respondent's position in their respective organization is as shown in Table 4.2.

Table 4.2: Position Held

Position Held	Frequency	Percent
Operations manager	29	23.4
Supply chain manager	25	20.2
Production manager	13	10.5
Maintenance manager	38	30.6
Quality engineering manager	8	6.5
Planning manager	11	8.9
Total	124	100.0

Table 4.2 shows that 30.6% of the respondents were maintenance managers followed by 23.4% who indicated that they were operations managers, 20.2% were supply chain managers, 10.5% were production managers, 8.9% were planning managers and 6.5% were quality engineering managers. The study established that the study relied from the finding of managers who were well conversant with the organizational performance an indication that reliable data was sought for the study.

4.3 Operations Management Practices in Steel Manufacturing Firms

The findings of level agreement on operations management practices are indicated in subsequent sections.

4.3.1 Facility Location

Table 4.3 presents the findings on facility location as one of the identified operations management practices.

Table 4.3: Facility Location

	Mean	Std. Dev
Our organization location is close to our customers	3.274	.904
We have affordable rent and Leasing costs	3.475	.790
In our organization labor is easily available	4.338	.475
In our organization distribution is easily accessible	4.129	.662
In our organization transportation is easily accessible	3.782	.605

The findings pointed out that organization location was close to their customers, they had affordable rent and leasing costs and transportation in their organization was easily accessible with a mean ($M = 3.274$; $SD = 0.904$), ($M = 3.475$; $SD = 0.790$) and ($M = 3.782$; $SD = 0.605$) respectively.

Majority of respondents said that labor was easily available and distribution was easily accessible with a mean ($M = 4.338$; $SD = 0.475$) and ($M = 4.129$; $SD = 0.662$) respectively. The findings are in line with Ray (2015) who states that it is critical that manager of organization must consider facility location factors and how they affect performance of their supply chain.

4.3.2 Scheduling

The findings on scheduling as another operations management practice are shown in Table 4.4.

Table 4.4: Scheduling

	Mean	Std. Dev
Our organization maintains constant production and supply	3.250	1.200
Our organization hires more workers when demand increases	4.556	.498
In our organization employees work overtime more often to clear backlogs	4.395	.752
Our organization increases working hours depending on demand	4.798	.402
Our organization decreases working hours depending on demand	3.943	.981

Organization hires more workers when demand increases, employees work for overtime to clear backlogs and working hours are increased depending on demand with a mean ($M = 4.556$; $SD = 0.498$), ($M = 4.395$; $SD = 0.752$) and ($M = 4.798$; $SD = 0.402$) respectively. Organization maintains a constant production and working hours are decreased depending on demand with a mean ($M = 3.250$; $SD = 1.200$) and ($M = 3.943$; $SD = 0.981$) respectively. This is in line with Henzer (2014) who states that most attention is directed towards customers and this requires clear direction and sufficient level of employees.

4.3.3 Quality Management Practices

Table 4.5 gives the findings on quality management practices as an aspect of OMPs.

Table 4.5: Quality Management Practices

	Mean	Std. Dev
Our organization has implemented a quality management system	4.516	.501
Our organization conducts regular staff training on quality management programs	4.387	.489
Our company collects customer feedback on the quality of our products	4.290	.608
Our organization uses customer feedback to improve the quality of its products	4.354	.677
Our organization complies with quality standards approved by the Kenya Bureau of Standards	4.419	.495
Production processes in our organization are closely monitored to ensure standard production	4.475	.501
Our organization hires well qualified personnel in each production phase	4.080	.822

Organization had implemented a quality management system, they conducted regular staff training on quality management programs, company collected customer feedback on quality of products, they used customer feedback to improve quality of its products, they comply with quality standards as approved by Kenya Bureau of Standards and qualified personnel are hired at each production phase with a mean (M = 4.516; SD = 0.501), (M = 4.387; SD = 0.489), (M = 4.290; SD = 0.608), (M = 4.354; SD = 0.677) and (M = 4.080; SD = 0.822) respectively. This is in the line with Bon and Mustafa (2013) who states that employees need to be constantly trained on the desired quality of products in the eyes of customers. Manufacturing firms need to adhere to quality standards as prescribed in the regulator's provisions (Bon & Mustafa, 2013). Every industry has a prescribed description of what quality means and anything deviating from these provisions is sub-standard (Ross, 2017).

4.3.4 Inventory Management

The findings on inventory management are as shown in Table 4.6.

Table 4.6: Inventory Management

	Mean	Std. Dev
Our company has installed inventory movement management systems	4.266	.744
The inventory management system provides exact locations of products	4.072	.613
Our organization forecasts demand for its products accurately	3.564	.798
Our company looks at the optimal cost levels for its production	4.177	.460
Our organization offers some discounts to improve on sales	4.137	.465
Our organization organizes production of its products based on customer orders	4.048	.609
Our organization strives to match production and customer orders to minimize stock holding costs	4.177	.460

Company had installed inventory movement management systems, inventory management system provided exact locations of products, company looks at the optimal cost levels for its production, organization offered some discounts to improve on sales, production is done based on customer orders and organization strives to match production and customer orders to minimize stock holding costs with a mean (M = 4.266; SD = 0.744), (M = 4.072;

SD = 0.613), (M = 4.177; SD = 0.460), (M = 4.137; SD = 0.465) and (M = 4.177; SD = 0.460) respectively. The findings are in line with Laosirihongthong, Adebajo and Choon, (2013) who revealed that inventory management practices have significant influence on performance. For realization of maximum profits and grow businesses, proper inventory management practices need to be in place (Sadikoglu & Olcay, 2014).

4.3.5 Process and Capacity Management

The findings on process and capacity management are as shown in Table 4.7.

Table 4.7: Process and Capacity Management

	Mean	Std. Dev
Our organization maintains a constant production in any given period	3.201	.835
The organization has invested in information technology for its operations	4.379	.487
The processes of the organization are flexible to allow aligning of operations to changing environment	4.104	.696
Our organization has capacity to deal with increases in customer orders	4.241	.429
Our company has adequate capacity to meet all customer orders	3.838	.859
Our company has adequate warehouses to keep produced stocks	3.927	.957

The organization maintained a constant production in any given period, adequate capacity to meet all customer orders and company had adequate warehouses to keep produced stocks with a mean (M = 3.201; SD = 0.835), (M = 3.838; SD = 0.859) and (M = 3.927; SD = 0.957) respectively. The findings are in line with Govindan, Kaliyan, Kannan and Haq (2014) who stated that sufficient quantity of goods and services would result into steady supply of products in the market thus continuous sales and revenue flow to an organization.

Also, other respondents reported to high extent that their organizations had invested in information technology for its operations, the processes of the organization are flexible to allow aligning of operations to changing environment and their organizations had capacity to deal with increases in customer orders with a mean (M = 4.379; SD = 0.487), (M = 4.104; SD = 0.696) and (M = 4.241; SD = 0.429) respectively. This is line with Kerzner (2017) who found out that the need of customers is dynamic and this piles pressure to an organization to ensure quality products are produced to meet the needs and wants of

customers. Similarly, Jeston (2014) revealed that management of inventories, price, outsourcing and forecasting of capacity within an organization all have direct and significant influence on organizational performance.

4.4 Extent of Application of Operations Management Practices

The findings on extent of application of application management practices are as shown in Table 4.8.

Table 4.8: The Extent of Application of OMP's

	Mean	Std. Dev
Facility Location	3.728	.623
Scheduling	3.999	.589
Quality management	4.021	.457
Inventory Management	3.512	.592
Process and capacity management	4.233	.678

From the study discoveries, a high extent concurred there was the application of facility location, scheduling, quality management, inventory management and process and capacity management with a mean ($M = 3.728$; $SD = 0.623$), ($M = 3.999$; $SD = 0.589$), ($M = 4.021$; $SD = 0.457$), ($M = 3.512$; $SD = 0.592$) and ($M = 4.233$; $SD = 0.678$) respectively.

4.5 Organizational Performance

The findings on level of agreement on manufacturing performance is as shown in Table 4.9.

Table 4.9: Organizational Performance

	Mean	Std. Dev
Our organization has improved on its profitability	3.677	.591
Our organization retains our customers	4.056	.545
We as the employees, we are satisfied in our organization which improves our performance	3.548	.829
Our organization has entered into long term leasing agreement to manage production costs	3.629	.604
Our organization carries out regular machine maintenance to improve their efficiency	4.346	.477

The study pointed out that their organization had improved on its profitability, the employees are satisfied with their firms had entered into long term leasing agreement to manage production costs with a mean ($M = 3.677$; $SD = 0.591$), ($M = 3.548$; $SD = 0.829$) and ($M = 3.629$; $SD = 0.604$) respectively. The findings are in line with Sarc and Lorber (2013) who states that operations managers closely work with other employees in departments to reduce wastage of resources, boost the level of productivity and the overall profitability of an organization. Govindan et al. (2014) stated that quality reflects how well a given product meets the needs and requirements of customers or consumers.

The study also established respondents agreed to a high extent that their customers are retained and regular machine maintenance is carried out to improve their efficiency with a mean ($M = 4.056$; $SD = 0.545$) and ($M = 4.346$; $SD = 0.477$) respectively. The findings are in line with Munizu (2013) who states that operations management practices are efficient management of processes and activities of an organization in order to create high level of efficiency and effectiveness.

4.6 Effect of Operations Management Practices on Performance

The researcher regressed OMP against performance as shown in sections below.

4.6.1 Model Summary

The finding of R , R^2 and adjusted R^2 are as shown in Table 4.10.

Table 4.10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.872 ^a	.760	.750	.93023

a. Predictors: (Constant), process and capacity management, facility location, scheduling, QMP, inventory management

Table 4.10 shows that adjusted $R^2=0.750$. This can be interpreted to mean that 75.0% variation in performance of the studied firms is explained by process and capacity management, facility location, scheduling, quality management practices and inventory management.

4.6.2 Analysis of Variance

Table 4.11 presents the ANOVA findings.

Table 4.11: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	323.634	5	64.727	74.801	.000 ^b
Residual	102.108	118	.865		
Total	425.742	123			

The findings show that ($df=_{(5,123)}=74.801$, $p=0.000 < 0.05$), thus the general model was fit. The model was therefore suitable in predicting the link between OMPs and performance.

4.6.3 Regression Analysis

The findings of regression analysis are as shown below.

Table 4.12: Effect of Operations Management Practices on Performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	15.420	1.327		11.620	.536
Facility location	.214	.068	.081	3.143	.006
Scheduling	.262	.071	.215	3.663	.000
Quality management practices	.361	.046	.054	7.843	.001
Inventory management	.140	.065	.176	2.158	.033
Process and capacity management	.493	.048	.674	10.255	.000
R =.872 ^a	Adj R squared= .750	F Statistics =74.801		p=0.000	

$$Y = 15.420 + 0.214X_1 + 0.262X_2 + 0.361X_3 + 0.140X_4 + 0.493X_5$$

The study established that the variables had a strong relationship with performance and the regression was sufficient for the study. The study variables can only explain 75% of the changes.

The study established that a unit increment on operation management practices, facility location, scheduling, quality management practices, inventory management and process capacity management, organizational performance would be at 15.420, 0.214, 0.262, 0.361, 0.140 and 0.493 consecutively.

The study established facility location had a ($p = 0.006 < 0.05$, $t = 3.143 > 1.96$) this shows that the variable influenced performance. Operations management practices are geared towards achieving the needs of the customers, measuring customer satisfaction and making use of the information to create new and improved goods and services (Wiengarten, Pagell & Fynes, 2013). Production quality of a firm is improved through continuous evaluation of standard measures, quality procedures and capacity building of human resources (Sarc & Lorber, 2013).

The study pointed out that scheduling had a ($p = 0.000 < 0.05$, $t = 3.663 > 1.96$) this shows that the variable had an influence on performance. Hajmohammad et al. (2013) noted that operations managers should possess critical and analytical skills to effectively make

decisions that maximize the value of customers. Innovation in management controls inventory, supply chain, quality management and information management hence increased organizational performance.

The study found out that quality management practices had a ($p=0.001<0.05$, $t = 7.843 >1.96$) this shows that the variable had influenced performance of steel manufacturing company. This agrees with Aghdaie and Alimardani (2015) who ascertains that an organization decides the target market and its customers through the method of market-based to operations strategy method. The market position of a firm is able to attract and retain its customers through its efficiency and effectiveness of employee performance (Lin, Tan & Geng, 2013).

The study pointed out that inventory had a ($p =0.033<0.05$, $t= 2.158 >1.96$) this shows that the variable had an influence on performance. This agrees Chardine-Baumann and Botta-Genoulaz (2014) who argued that operations management is one of the functions within organization that closely interlink with other departments including marketing and finance. Operations management practices are internal variables that help an organization to gain competitive advantage.

The study further established the process and capacity management had a ($p =0.000 < 0.05$, $t = 10.255 > 1.96$) this shows that the variable influenced performance. This is in support of Munizu (2013) who established that operations management practices are efficient management of processes and activities of an organization in order to create high level of efficiency and effectiveness. Employee performance in an organization improves as operations management is strengthened (Villar, Alegre & Barber, 2014).

4.7 Challenges in the Application of Operation Management Practices

The findings on challenges in the application of OMP are as shown in Table 4.13.

Table 4.13: Challenges in the Application of Operation Management Practices

	Mean	Std. Dev
Resistance from employees to adapt to change	4.322	1.079
High costs involved implementation of practices	3.822	1.028
Poor management skills among employees	3.564	1.326
Increases in the level of competition in the industry	4.306	0.894
Limited employee skills	3.556	1.127
Limited capital to invest in the operations management practices	3.653	1.256
Relatively high costs associated with new technologies	4.290	1.241

The study established that implementing operation management practices was resisted by employees to adapt to change as shown (M=4.322, SD=1.079). Majority of the respondents indicated that were challenged by the high costs involved in implementation of practices (M= 3.822, SD=1.028). There were poor management skills among employees (M=3.564, SD=1.326). Increases in the level of competition in the industry were a major challenge (M=4.306, SD= 0.894). This agrees with Muema (2013) who identified skills inadequacy or limited understanding among persons tasked with the implementation of systems on key aspects of the practice that lead to constant conflicts which hampered smooth operations.

The company had limited employees' skills (M=3.556, SD=1.127). The company had limited capital to invest in the operations management practices (M= 3.653, SD=1.256). Respondents indicated that their company faced challenges on relatively high costs associated with new technologies (M=4.290, SD= 1.241). This is in line with Ogonda (2011) who identified the high costs associated with acquisition and implementation of new information technology systems as a huge hindrance in quest to implement information systems in organizations.

4.8 Discussions of the Findings

In regard to operation management practices, the study established that respondents manufacturing companies labor was easily available, distribution was easily accessible and

the organization hired more workers when demand increases. The study found out that the organization increased working hours depending on demand and implemented a quality management system. Respondents' organization used customer feedback to improve the quality of its products and complied with quality standards approved by the Kenya Bureau of Standards. Manufacturing companies had installed inventory movement management systems and looked at the optimal cost levels for its production. The organization had invested in information technology for its operations and processes of the organization were flexible to allow aligning of operations to changing environment. This agrees with Chardine-Baumann and Botta-Genoulaz (2014) who argued that operations management practices are internal variables that help an organization to gain competitive advantage.

On challenges in the application of operations management practices in manufacturing companies, the study established that there was increased resistance from employees to adapt to change, the organization faced high costs in implementation of operations management practices. There were poor management skills among employees and the manufacturing companies experienced increased level of competition in the industry. The firms experienced limited employee skills, there was limited capital to invest in the operations management practices and relatively high costs associated with new technologies hindered the application of management practices.

On effect of operation management practices, process and capacity management had the highest influence on performance of steel manufacturing companies in Kenya, followed by quality management practices, scheduling, and facility location and lastly inventory management had the least influence to performance of steel manufacturing company. This is in line with Munizu (2013) who established that operations management practices are efficient management of processes and activities of an organization in order to create high level of efficiency and effectiveness.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The analyzed findings are summarized in this chapter. The conclusions emanating from these findings are also discussed with relevant recommendations which have implications to policy and practice.

5.2 Summary of the Findings

5.2.1 Extent which Operations Management Practices are used in Steel Manufacturing Firms

The study established that the organization labor was easily available and the distribution was easily accessible. The company hired more workers when demand increased and increased working hours depending on demand. Respondents agreed that the organization had implemented a quality management system, conducted regular staff training on quality management programs and production processes in were closely monitored to ensure standard production. Respondents agreed that the companies had installed inventory movement management systems and looked at the optimal cost levels for its production. Respondents agreed that the organization strived to match production and customer orders to minimize stock holding costs and invested in information technology for its operations.

5.2.2 Effect of Operations Management Practices on Performance

Process and capacity management had the highest influence on performance of steel manufacturing companies in Kenya, followed by quality management practices, scheduling, facility location and lastly inventory management had the least influence to performance of steel manufacturing company.

5.2.3 Challenges in the Application of Operation Management Practices

The study pointed out that there were poor management skills among employees and the manufacturing companies experienced increased level of competition in the industry. The firms experienced limited employee skills, there was limited capital to invest in the operations management practices and relatively high costs associated with new technologies hindered the application of management practices. There was increased resistance from employees to adapt to change, the organization faced high costs in implementation of operations management practices.

5.3 Conclusion

The study concludes that manufacturing firms' labor was easily available and the distribution was easily accessible. The firms hired more workers when demand increased and increased working hours depending on demand. The organization had implemented a quality management system, conducted regular staff training on quality management programs and production processes in were closely monitored to ensure standard production. The companies had installed inventory movement management systems and looked at the optimal cost levels for its production. Manufacturing firms strived to match production and customer orders to minimize stock holding costs and invested in information technology for its operations.

The study concludes that the firms experienced limited employee skills, there was limited capital to invest in the operations management practices and relatively high costs associated with new technologies hindered the application of management practices. There were poor management skills among employees and the manufacturing companies experienced increased level of competition in the industry. There was increased resistance from employees to adapt to change, the organization faced high costs in implementation of operations management practices.

The study further concludes that operation management practices adopted by the manufacturing firms in Kenya positively influence performance. The study established that

process and capacity management had the highest influence on performance of steel manufacturing companies in Kenya, followed by quality management practices, scheduling, facility location and lastly inventory management had the least influence to performance of steel manufacturing company.

5.4 Recommendations

The study recommends that manufacturing firms' labor ought to be easily available and the distribution ought to be easily accessible. The firms ought to hire more workers when demand increases and increase working hours depending on the demand. The organization ought to implement a quality management system and conduct regular staff training on quality management programs. Manufacturing firm's production processes in ought to be closely monitored to ensure standard production. The companies ought to install inventory movement management systems and look at the optimal cost levels for its production. Manufacturing firms need to strive to match production and customer orders to minimize stock holding costs and invest in information technology for its operations.

The study recommends that the firms need to focus on highly qualified employee for increased skills. Manufacturing firms ought to have enough capital to invest in the operations management practices. High costs associated with new technologies ought not to hinder the application of management practices. Manufacturing firms ought to increase their market edge due to increased level of competition in the industry. Employees ought to be ready to adapt to change and the cost of implementation of operations management practices should not hinder the application of operation management practices.

5.5 Suggestions for further Studies

The current study focused on the effect of operational management practices on performance of steel manufacturing firms in Kenya, future scholars ought to carry similar studies on commercial banks. The current study focused on the effect of operational management practices on performance of steel manufacturing firms in Kenya, future scholar ought to carry out similar studies each manufacturing firms.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

**OPERATIONS MANAGEMENT PRACTICES AND PERFORMANCE OF
STEEL MANUFACTURING FIRMS IN KENYA**

SECTION A: GENERAL INFORMATION

- 1) Name of your organization.....
 - 2) Number of years in operations in Steel manufacturing industry.....
 - 3) What is your position in this organization?
 - a) Operations Manager []
 - b) Supply chain manager []
 - c) Production Manager []
 - d) Maintenance Engineer []
 - e) Quality Manager []
 - f) Planning Manager []
 - g) Other (Please Specify) []
-

SECTION B: OPERATIONS MANAGEMENT PRACTICES

- 4) Using a scale of 1-5, kindly indicate the extent to which you agree with each statement in relation to operations in your organization.

1= Strongly disagree 2=Disagree 3 =Neither agree nor disagree 4= Agree 5=Strongly Agree

Facility Location	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Our organization location is close to our customers					
We have affordable rent and Leasing costs					
In our organization labor is easily available					
In our organization distribution is easily accessible					
In our organization transportation is easily accessible					

Scheduling	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Our organization maintains constant production and supply					
Our organization hires more workers when demand increases					
In our organization employees work overtime more often to clear backlogs					
Our organization increases working hours depending on demand					
Our organization decreases working hours depending on demand					
Quality Management Practices	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

Our organization has implemented a quality management system					
Our organization conducts regular staff training on quality management programs					
Our company collects customer feedback on the quality of our products					
Our organization uses customer feedback to improve the quality of its products					
Our organization complies with quality standards approved by the Kenya Bureau of Standards					
Production processes in our organization are closely monitored to ensure standard production					
Our organization hires well qualified personnel in each production phase					
Inventory Management	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Our company has installed inventory movement management systems					
The inventory management system provides exact locations of products					
Our organization forecasts demand for its products accurately					
Our company looks at the optimal cost levels for its production					
Our organization offers some discounts to improve on sales					
Our organization organizes production of its products based on customer orders					

Our organization strives to match production and customer orders to minimize stock holding costs					
Process and Capacity Management	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Our organization maintains a constant production in any given period					
The organization has invested in information technology for its operations					
The processes of the organization are flexible to allow aligning of operations to changing environment					
Our organization has capacity to deal with increases in customer orders					
Our company has adequate capacity to meet all customer orders					
Our company has adequate warehouses to keep produced stocks					

PART C: Extent of the Application of OMP's by Steel manufacturing Firms in Kenya.

Please indicate by ticking (√) the extent to which the following operations management practices are applied in your organization as per the following scale of 1 – 5 where 1= strongly disagree 2=Disagree 3 =neither agree nor disagree 4= Agree 5=Strongly Agree.

The extent of application of OMP's by Steel manufacturing Firms in Kenya.	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Facility Location					
Scheduling					

Quality management					
Inventory Management					
Process and capacity management					
Facility Location					

PART D: ORGANIZATIONAL PERFORMANCE

Using a scale of 1-5. Kindly indicate the extent which you agree with the following about Organizational performance. 1=Not Important 2 = Less Important 3= Important 4= Very Important 5= Extremely Important.

	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Our organization has improved on its profitability					
Our organization retains our customers					
We as the employees, we are satisfied in our organization which improves our performance					
Our organization has entered into long term leasing agreement to manage production costs					
Our organization carries out regular machine maintenance to improve their efficiency					

PART E: CHALLENGES IN THE APPLICATION OF OPERATION MANAGEMENT PRACTICES

Indicate on a scale of 1-5 to what extent you agree with the following challenges in the application of operation management practices in your organization. 1= Strongly disagree 2=Disagree 3 =Neither agree nor disagree 4= Agree 5=Strongly Agree.

Challenges in The Application of Operation Management Practices	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Resistance from employees to adapt to change					
High costs involved implementation of practices					
Poor management skills among employees					
Increases in the level of competition in the industry					
Limited employee skills					
Limited capital to invest in the operations management practices					
Relatively high costs associated with new technologies					

THANK YOU FOR TAKING PART IN THE STUDY

APPENDIX II: LIST OF STEEL MILL FIRMS IN KENYA

1. Accurate Steel Mills Ltd
2. Alloy Steel Castings Ltd
3. Apex Steel Ltd - Rolling Mill Division
4. ASL Ltd
5. ASP Company Ltd
6. Athi River Steel Plant Ltd
7. Atlantic Ltd
8. Blue Nile Wire Products Ltd
9. Brollo Kenya Ltd
10. Corrugated Sheets Ltd
11. Devki Steel Mills Ltd
12. Doshi & Company Hardware
13. East African Foundry Works (K) Ltd
14. Eco-Steel Africa
15. Insteel Ltd
16. Kaluworks Ltd
17. Kens Metal Industries Ltd
18. Kenya General Industries Ltd
19. Kenya United Steel Ltd
20. Mabati Rolling Mills Ltd
21. Nails & Steel Products Ltd
22. Nalin Steel Works
23. Ndume Ltd
24. Palak International Ltd
25. Patnet Steel Makers Manufacturers Ltd
26. Prime Steel Ltd
27. Safal Building Systems Ltd
28. St Theresa Industries Kenya Ltd
29. Standard Rolling Mills Ltd
30. Steelmakers Ltd
31. Techno Steel Industries Ltd
32. Tononoka Rolling Mills Ltd
33. Top Steel Kenya Ltd

Source, 13th Edition Kenya Manufacturers & Exporters Directory 2018.