STRATEGIC QUALITY MANAGEMENT PRACTICES AND COMPETITIVENESS OF MANUFACTURING FIRMS IN NAIROBI

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A RESEARCH PROJECT REPORT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

2017

DECLARATION

I do hereby declare and state that this research project is my original work and that it has not been presented in this university or any other institution of higher learning or otherwise in Kenya or elsewhere for whatever purpose.

Jacqueline Wangui Muiruri
D61/85979/2016

Signature……
Date ……

This research project has been presented for examination with my approval as the university supervisor

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Signature …….
Date……..

DEDICATION

I dedicate this research project to my husband James Njuguna, my children Tedd, Trevor and Amy for their love, encouragement and support.

To my loving parents, thank you for believing in me.

ACKNOWLEDGEMENT

I thank the Almighty God for enabling me to do my research and complete it in time.

I wish to thank my supervisor, Dr. Magutu Obara for the constant support and guidance while carrying out the research.

Lastly I would like to appreciate the management and staff all manufacturing firms that found time to assist me with data collection.

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ABBREVIATIONS

CI Continuous Improvement

GDP Growth Domestic Products

ISO International Organization for Standardization

KAM Kenya Association of Manufacturers

QM Quality Management

QMS Quality Management Systems

RoK Republic of Kenya

SQM Strategic Quality Management

TOC Theory of Constraints

ABSTRACT

Strategic quality management practices are the effective ways through which organizations can achieve improved performance levels and gain competitive edge in a cut-throat competitive industry, for they ensure monitoring of the firm's operations in order to have high quality products hence meeting and exceeding customers' satisfaction. Previous literatures on the study topic had not provided comprehensive and adequate evidence on SQM practices and competitiveness implemented in manufacturing firms. The main objective of this study was to establish strategic quality management practices and competitiveness of manufacturing firms in Nairobi. Specifically, the study aimed at determining the extent to which strategic quality management practices are adopted in the manufacturing companies in Nairobi County and to establish the association that may exist between strategic quality management practices and competitiveness of manufacturing firms in Nairobi County. Theories used were: Quality Improvement Theory, Theory of constraints and Resource-based view. The research adopted a descriptive survey research design in trying to focus on manufacturing firms operating in Nairobi. The population of the study in this research comprised of manufacturing firms that are operating in Nairobi. This study used the list of manufacturing firms in Nairobi as provided in the KAM directory that showed a total of 499 manufacturing firms operating in Nairobi. The research study used stratified random sampling. The sample size of the research study was 50 manufacturing firms. The data was collected by use of structured questionnaires. This data was collected from operations managers, quality assurance managers and supply chain managers or their equivalents since they were deemed to be well versed and had good understanding of strategic quality management practices and operational activities of manufacturing firms. The independent variables were analyzed through descriptive statistics in the form of mean, frequencies and percentages; and regression analysis was employed to analyze objective two which was the dependent variable. The information from the analysis was presented by use of pie charts, graphs, bar charts and tables to search for any correlation between strategic quality management practices and firms' competitiveness. The results revealed that bench marking and competitiveness were positively and significantly correlated (r=0.578, p=0.000). The results further showed that continuous improvement and competitiveness were positively and significantly related (r=0.620, p=0.000). It was additionally verified that supplier partnering and competitiveness were positively and significantly related (r=0.510, p=0.000). Equally, the results showed that six sigma and competitiveness were positively and significantly related (r=0.529, p=0.000). Finally, the results revealed that quality management practices and competitiveness were positively and significantly related (r=0.642, p=0.000). The results indicated that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of firm competitiveness. This was reinforced by an F statistic of 21.769 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level. The study recommended that for enhanced strategic quality management application, then manufacturing firms should institute and involve the support of strategic administration department to monitor their adoption and implementation.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The rising demand for better quality products and services by customers has led firms to focus on quality practices in order to compete successfully in a high intense competitive environment. According to Anderson (2004) strategic management activity within firms ensures continuous improvement of the quality of services, products and processes by having customers perspective in mind to meet and exceed customers' needs.

It seeks a broader achievement in all functions of the organization through continuous improvement, customer focus and comprehensive commitment to achieve certain set objectives within an organization. Zairi &Youssef (2005) state that there is need of awareness by the management on the essentials of quality management practices.

The adoption of new paradigms in an organization has lead to excellent organizational performance and high levels of customer satisfaction for they lead to higher productivity while reducing the cost implications. Having new ways of improving efficiency and effectiveness of the organization is viewed as the main strategy of remaining competitive in the business environment while meeting and exceeding customers' needs and expectations

1.1.1 Strategic Quality Management

Strategic quality management (SQM) practices are managerial techniques set through managerial tendencies of planning, improvement and control. Deming (2006) defined quality as a predictable degree of uniformity and dependability which can be achieved at low cost. SQM varies from one firm to another but it has certain essential principles

which can be adopted to ensure efficiency in operations, cost reduction, increased market share and high profitability (Kanji & Wallace, 2000).

SQM practices used by manufacturing firms include things done under the following; six sigma, benchmarking, quality management systems, continuous improvement, supplier partnership and quality awards.

Adoption of SQM enables firms to enhance the efficiency of their internal operations while exceeding customers' expectations and it is a major boost towards being competitive in the market place. Implementation of SQM is becoming essential for every firm for they form a strategic platform for competitive advantage and organizational performance (Kruger, 2001). SQM practices require appropriate organizational strategies that ensure full implementation of the practices, management of the practices and continuous improvement of the same.

1.1.2 Firm's Competitiveness

Competitiveness means the ability of firms and organizations to effectively meet the needs and wants of customers. Porter (2004) defines competitiveness as the abundance obtained through value addition when goods and services are offered to the market above their production cost. Firm's competitiveness is the ability of a firm to withstand different external forces and challenges existing in the external business environment. It refers to the different strategies employed by different firms to face economic turbulence within the external environment and they include adopting different technologies that are unique to the industry, using the firm's brand as a competitive tool as well as preparing staff for any technicalities that may arise within their line of work (Cobb, 2003).

According to Sacheva (2009) organizations need to remain relevant and profitable in their operations in order for them to be competitive. Changes in the market environment have led to low productivity and other areas of growth within firms, creativity and innovation, creation of new jobs and development, new paradigms of trade; competitive agenda should be focal point for organizations locally and globally. Although most manufacturing industries have made progress in improving competitiveness, it is marked by fragility and vulnerability to environmental shocks (Global Competitiveness Report 2015-2016). SQM practices lead to increased productivity, cost minimization, operational efficiency and improved financial performance (Gaspersz, 2005).

There is need to ascertain the level of a firm's competitiveness in order to create sustainable long-term growth in a competitive environment. Firms must build resilience against internal and external operational shocks, infrastructure, skills and innovation areas. There should be structural reforms, practices and measures to improve the manufacturing operations and to foster innovation. This would increase resilience in a competitive environment by diversifying from commodity price dependence to enabling production focused on value addition to goods and services.

1.1.3 Manufacturing Firms in Nairobi County

The Kenya Association of Manufacturers (2017) states that there are 700 manufacturing firms in Kenya and 499 manufacturing firms in Nairobi County. The manufacturing industry in Kenya is dominated by different types of firms dealing in various production operations and activities which are categorized into; textile, chemicals, electronics, pharmaceuticals, food and beverages, beauty products, paper, timber, plastics and leather products. Most output from these manufacturing firms constitute of basic supplies like

construction materials, food and beverages with only 5% constituting of skill intensive manufactured items such as medicinal drugs and pharmaceuticals. There is need for these firms to be competitive for them to survive in turbulent environment.

The location of Nairobi County is connected with enhanced communication structures, improved transport networks, and high workforce base making it an attractive place for most manufacturing firms. The manufacturing firms are also a fundamental way for the country to connect into the local, region and global markets like Common Market for Eastern and Southern Africa (COMESA) and East Africa Community (EAC). Due to high competition emerging from the regional and international market, there is high emphasis for the manufacturing firms to focus on the high-quality products and services in order to remain competitive in the market.

1.2 Research Problem

Strategic quality management practices are the effective methods for which firms can achieve improved organizational performance and gain competitive edge in a cut-throat competitive industry, for they ensure monitoring of the firm's operations in order to have high quality products hence meeting and exceeding customers' satisfaction. These practices have led to customers' loyalty, efficiency in operation and increase in productivity level.

In many emerging economies, manufacturing firms have been the engine of growth in the countries. According to KAM (2012) Kenya enjoys a continuous growth of 4% over the last decade. In the last 15 years the manufacturing industry was one of the largest sector of the economy after agriculture (RoK, 2008) but it has gradually reduced its prominence

to the fourth place after transport and communication, agriculture, retail and wholesale trade (World Bank, 2012). The sector has seen a reduction of GDP contribution from 13.6 percent to 9.2 percent (RoK, 2013). There is emphasis for manufacturing firms to strategize for efficient and sustainable practices as a way of making the organizational products and services to be locally and globally competitive and successful (RoK, 2007).

According to UNEP (2015) manufacturing firms in Kenya are burdened by resources scarcity, low level of technology utilization, unreliable supply of electricity, declining trend of product innovation and high cost of energy. Nonetheless, there has been an average growth of 4.1 percent from 2006 to 2013 but this was minimal compared to the average GDP of 4.6 percent. Achuora *et al.,* (2015) states that most manufacturing firms in Nairobi County operate at a technical efficiency of 59% compared to other countries such as Malaysia that average about 74%. This leads to the question of the ability of the manufacturing firms in Nairobi to be competitive in the market. Thus, there is need for large scale manufacturing firms' in Nairobi to conform to the best strategic quality management practices in order to have consistence performance in their operations and to enhance on providing high quality products and services in order to remain competitive in the market.

Globally, Terziovski & Power (2007) found out that in two years after firms adopted quality management practices like ISO certification, the rate of return of the selected firms demonstrated a 35 percent rise than those of non-ISO certified. Fotopoulos *et al*. (2010) determined that there is a substantial connection between ISO certification and firm's performance. Quanzi & Padibjo (1998) noted that there is no significant association between quality management practices and firms performance. However,

these studies were done from different countries and a different type of industry of operation

Locally, various studies have been conducted on the relationship between quality practices with an aspect of performance. Wachira (2013) established that firms' performance in a competitive environment is largely affected by the implementation of QM practices at 75.5 percent. Mutua (2014) found out that manufacturing firms that adopted quality management practices were sustainability and performed better. However, no studies have been carried out to show the association between strategic quality management practices and firms' competitiveness in manufacturing firms in Nairobi.

It is clear that previous literatures on the study topic have not provided comprehensive and adequate proof about SQM practices implemented in the manufacturing sector and the relationship between SQM practices and competitiveness of manufacturing firms in Nairobi County. This research study seeks to answer the question; what are some of the SQM practices implemented in manufacturing firms' in Nairobi? What is the relationship between SQM practices and competitiveness of manufacturing firms in Nairobi?

1.3 Research Objectives

i. To determine the extent to which strategic quality management practices were adopted in manufacturing firms in Nairobi County.
ii. To establish the relationship that may exist between strategic quality management practices and competitiveness of manufacturing firms in Nairobi County.

1.4 Value of the study

The survey shall provide comprehensive information and clear understanding about implementation of strategic quality management practices to the manufacturing firms in Nairobi County.

Researchers and scholars will benefit from the research study given that results from the findings will provide ideas and information for further studies on the study topic and it will also highlight the current trends in the implementation of SQM practices in the manufacturing firms.

Policy makers including the Kenya Association of Manufacturers will benefit from the findings of this study as it will inform and shed light on SQM practices that improve on competitiveness in Nairobi County and Kenya as a whole.

Firms from other sectors of economy may benefit from the findings of this research study through its provision of more knowledge on the effectiveness of strategic quality management practices to enhance competitiveness.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will cover the theoretical framework on which SQM practices are based, literature on competitiveness, relationship between strategic quality management and competitiveness. A review of empirical studies alongside a conceptual framework linking strategic quality management practices and competitiveness and literature review summary.

2.2 Theoretical framework

Several theories offer insights into the rationale underlying strategic quality management practices as discussed below. They include quality improvement theory, theory of constraint and resource based view.

2.2.1 Quality Improvement Theory

This theory proposes that quality management component requires the involvement and support of the strategic administration to operate well (Deming, 1986). According to Hill, 1995, he recognizes that strategic functions are responsible for the practices that produce 80% of the issues in the organization. The strategic management personnel play a bigger role on the quality management practices because they ultimately decide on the resources to deploy, procedures to link the operations and the control measures of the SQM practices. Deming's quality improvement theory states that low quality control practices through strategic administrative involvement will enhance improvement of operations within the firm and contribute towards sustainability.

According to Hubert (2000), in his hypothetical approach on Deming's quality improvement theory, he established a hierarchical framework that stimulates participation and inventing ways to implement the process of administration that leads to radical changes in the processes, procedures and administrative functions that are focused towards the customer while at the same time contributing towards the sustainability of the firm. Deming (2004) put into consideration the Plan Do Check Act (PDCA) cycle as an all-inclusive quality change practice. The hypothetical essence of the quality improvement theory puts emphasis on reducing the number of defects occurring in the manufacturing processes by making strategic frameworks and procedures that enhance participation and learning of the firms' processes, which prompt implementations of SQM practices (Anderson et al., 1994). The theory is vital in our research study for it provides the importance of the strategic management in the planning and execution of the quality management practices in the firms.

2.2.2 Theory of constraints

The theory of constraints provides strategies of identifying areas that require change, what ought to be changed and how to plan and execute the changes in which it recognized. Change is a progressive procedure. It points out that rather than emphasizing on the overall process, there is need to identify the restricted area that limits operational excellence. Theory of constraint (TOC) is utilized as an indispensable system that enhances the application of strategic quality management practices and it should be used in identifying processes of quality management practices that need improvement. TOC is an essential approach for the application of SQM practices because it enhances operational efficiency. However, it is only applicable where there is a constraint and

raises an alarm over the constraint. TOC involves the articulation of ideas, standards and practices that can be implemented in order to enhance administration of frameworks and expand implementation by distinguishing the most limiting component that requires practice executions and controlling.

Rahman (1998) states that the TOC opens the doors for development and improvement by eliminating the prohibiting elements that occur within the firm and by adopting strategic quality management practices that will create change for operational efficiency and effectiveness. The theory is essential in the research study for it provides a platform for the implementation of the strategic quality management practices by identifying constraints that need to be improved on in the firm.

2.2.3 Resource-based view

Lynch et al., (2000) states that this theory is in contention that the firm because of unique resources and practices holds a firms' continual competitive advantages. As stated by Barney (1991), resources can be categorised into capital resources, physical capital resources and human capital resources. Practices are ideas and skills that a firm requires to fully leverage its assets. According to (Olavarrieta & Ellinger, 1997), operational activities, assets and amassed knowledge exercised through organizational processes and strategic quality management practices enable firms to synchronize activities and make use of their resources.

Proponents of the resource-based view state that firms should search internally to acquire their sources of competitive advantage instead of looking at the external competitive environment. It is more rational to expound external opportunities using existing internal

resources in a new way rather than striving to obtain new skills for each diverse opportunity and challenge.

2.3 Strategic Quality Management Practices

SQM practices are processes implemented in firms especially manufacturing firms for monitoring the quality of goods from acquisition of raw materials to the actual finished products by use of statistical procedures and overall organization commitment to produce products that are defect free. There are various strategic quality management practices implemented by manufacturing firms.

The main SQM practices adopted by manufacturing firms in Nairobi County are; benchmarking, continuous improvement, supplier partnering practices, six sigma practices and international organization for standardization.

2.3.1 Benchmarking practices

Benchmarking practices are a continuous process for measuring goods, services and practices in comparison to the leading firms in the industry. The best performing organization are used as yardsticks against the organization that is evaluating itself (Carigo & Maria, 2006). In manufacturing firms, there are two types of benchmarking that are used to assess quality; competitive benchmarking which involves a firm evaluating itself with their direct competitors (Wright & Richard, 2007) and non-competitive benchmarking that involves measuring the firm against the trend setters in terms of quality regardless of the industry of the firms thus the firm can identify and adopt the best practices implemented in the company (Wilkinson, Adrian & Hugh, 2006).

Researchers have identified that non-competitive benchmarking is comprehensive, broader and a more useful practice, for it will make a company to adopt the best practice globally thus surpassing the competition in its own industry. In contrast, competitive benchmarking will make a firm be competitive in that particular industry. Firms will also find it much easier to have information access about the practices being adopted in the firms that are not part of their competition because they will not be viewed as a threat to the firm. It also entails internal benchmarking of functions and processes and making comparison with various divisions in the firm. Internal benchmarking is usually a logic way for an organization to initiate the benchmarking practice.

For successful implementation of benchmarking practice, a manufacturing firm must comprehensively evaluate its own practices (Hinckley &Martin, 2007). The firm will have an idea on the current position of its own quality issues through honest and thorough self-assessment, which will identify the weaknesses and strength that needs to be improved on in order to the attain firms' strategic objectives (Kinni and Theodore, 2005).

2.3.2 Supplier Partnering Practices

Manufacturing firms partner directly with their suppliers of components and parts in order to enhance quality at their suppliers' location (Wilkinson, Adrain & Hugh, 2006). This involves creating close working relationships that entails direct participation between manufacturing firm and their suppliers in terms of technical assistance, materials delivery, assembly of components and other transactional details (Van de and Vliet, 2009).

Sharing statistical control is one way of collaborating with suppliers. Many manufacturing firms have resolved to outsourcing as a way of bringing down costs associated with manufacturing and production (Songini & Marc, 2007). Thus, there is high emphasis on the suppliers of the components and parts to put a lot of concentration on quality of the goods produced which are of superior quality. However, there has been inconsistency in the quality levels from suppliers thus there is need for manufacturer-supplier relationship to solve the issue by ensuring that suppliers meet the quality standards as stipulated by the manufacturer (Prado & Carlos, 2007).

Supplier partnering practice needs a continuous and consistent communication and feedback on the improvement of the operations because suppliers usually have an ideal perspective of the industry and can help the manufacturing firms achieve operational excellence thus being competitive in the industry (Heller & Robert, 2004).

2.3.3 Continuous Improvement Practices

Continuous Improvement (CI) practice is a technique of SQM that enhances improvement of processes and firm's operations that leads to increased competitiveness by improving on the company's internal resources (Porter & Anne, 2007). Improvement can involve increasing the level of customer satisfaction or producing zero defect products. The CI practice uses identical principles despite the difference in the goals of the processes (Murphy & Elana, 2006). These principles includes improvement of the existing processes, participation and involvement of the firm's corporate levels which involves data collection on the firms' operations and quantifying the data that forms the basis of improvement that will be measured for continuous improvement (Morgan, 2006).

CI involves representation from all levels of the firm, which involves learning of the current processes of the company and that of another company and quantitative data is collected and presented to the strategic administration (McManus, 2009). The representative then proposes to the strategic management the various changes and they begin to implement those practices that will enhance improvement and there is need of follow-up that will ensure monitoring and further improvement ideas. If the practices are adopted in the operations of the firm, it will enhance quality as an outcome of its initial effort (Kinni & Theodore, 2005). This will draw more personnel of the firm into the practice for it will lead to continued search for more improvement and thus total continuous improvement (Joiner & Brian, 2009).

2.3.4 Quality Management Practices

Quality Management practices have become essential in the business world. Most manufacturing firms are conforming to international standards in order for the product to compete locally, regionally and globally. The International Organization for Standardization (ISO 9000) is a series of international standards on quality assurance and quality management that state how strategic activities are to be carried out in a firm to guarantee that quality is reflected in the final goods and products. Manufacturing firms must conform and adhere to the set standards for firms by ensuring that quality is achieved (Martin, 2007).

The main objective of QM practices is to ensure quality of the products and prevention of non-conformities. All manufacturing organizations must undertake an all-inclusive program in order to apply for ISO certification that involves review and documentation of management procedures, creating job descriptions, and preparation of a quality manual

and submission periodically for standard checks by an external body. The ISO certification demonstrates commitment to quality by the manufacturing firms (Heller & Robert, 2004).

2.3.5 Six Sigma Practices

Six sigma is a strategic quality management practice implemented by manufacturing firms for reduction of defects and General Electric's Jack Welch initiated it. It is a practice that improves the efficiency of the firm's operations and increases the quality of the finished products by eliminating wastes and mitigating frequency of errors that occur during production of products in manufacturing firms. Implementation of six sigma ensures that firms do not experience stock outs and obsolete stocks (Davenport *et al.,* 2006).

2.4 Impact of strategic quality management practices on firms' competitiveness

Eldridge *et al.* (2009), states that quality is crucial for business sustainability and industry competition for it leads to increase in market share, customer satisfaction and reduction in cost of production. Quality is observed as doing the right thing all the time (Harrington, 2001). Most manufacturing firms implement SQM practices as a competitive strategy in order to attain sustainability, increase their profitability and increase their sales revenues. Bricknell (2006) observed a direct relationship between quality management practices and firms improvement through implementation of the practices in every process of the firm in order to increase efficiency by reduction of wastes and errors.

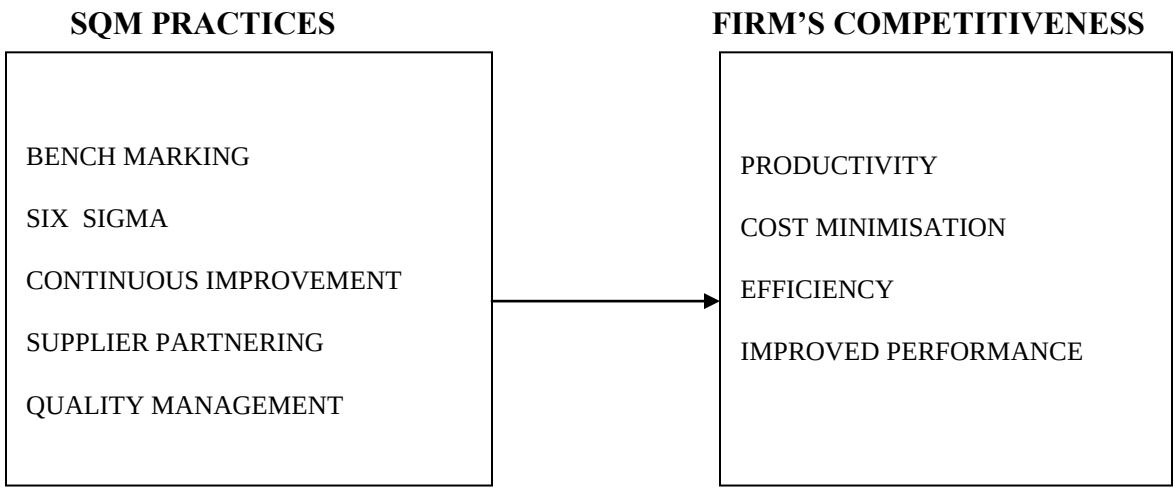
SQM practices are essential for survival of firms in a competitive industry. They enhance employees' knowledge, skills and commitment on the operations of the manufacturing firms (Goetsch & Davis, 2007). The adoption of strategic quality management practices makes most manufacturing firms improve their performance thus making them competitive in the industry (Oakland, 2003). The impact of SQM practices on competitiveness has attracted no interest on the contrary; most researches concentrated on how SQM practices impact the firms' performance (Hendricks & Singhal, 2009, Sharma & Gedenne 2008, Eriksson & Hansson, 2002). The findings from these surveys have shown a positive association between strategic quality management practices and performance especially in the operational performance and financial performance.

There are other empirical studies on the SQM practices as a strategy of reducing wastes and cost. The findings from these studies indicated that SQM practices lead to reduction of costs and wastes in the firms. Sharma & Gadenne (2010), on their research study found out that the degree of competition, buyer-supplier relationship, lack of attention to employees and cultural and behavioral aspect are reasons of poor quality management. Wachira (2013) found that QMP enhance firms' profitability.

2.5 Conceptual framework

From the basis of this research study, the predictor variables affect the dependent variable immensely that is competitiveness of manufacturing firms in the county of Nairobi. To this extent, it shows that competitiveness of the firms in Nairobi County will highly depend on the degree of the implementation of SQM practices.

The research study will use a conceptual model to demonstrate the relationship between SQM practices and competitiveness of manufacturing firms in Nairobi County.



Source: Researcher, 2017

Figure 2.1: Conceptual Framework

2.6 Summary of the Literature review

The literature review focused on the theoretical and empirical literature of the study topic. The theoretical review formed the basis of the strategic quality management practices while the empirical literature review highlighted previous studies that were done on the related research topic, the essence of SQM practices and how they affect the competitiveness of manufacturing firms in Nairobi County.

However, none of the studies has focused on SQM practices and competitiveness of manufacturing firms' in Nairobi County. This research study is necessary to establish the extent of the implementation of the SQM practices and the relationship between them and competitiveness of manufacturing firms in Nairobi County.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails the methodology that was applied in seeking answers to the research questions in the study. It addresses the research design, the population of the study, the sample design, data collection instrument and data analysis.

3.2 Research Design

The study adopted a descriptive survey research design in trying to focus on manufacturing firms operating in Nairobi. A descriptive survey involves observation and description of the subject of a study without manipulation of any kind (Kothari, 2004). This design is appropriate for the research study, as it will facilitate the collection of substantive information regarding strategic quality management practices of large manufacturing firms in Nairobi and this will ensure that research question are answered appropriately.

3.3 Population of the study

The population targeted under the study comprised of manufacturing firms that are operating in Nairobi. This study used the list of manufacturing enterprises in Nairobi as provided in the KAM directory that shows a total of 499 manufacturing firms operating in Nairobi. Due to their numbers, they were sampled according to various sectors under which they operated.

3.4 Sample Design

The research study used stratified random sampling as described by Cooper & Schindler (2006), to decide on the sample size. This is because the population of manufacturing

companies is heterogeneous and the use of stratified sampling technique ensured each manufacturing firm was presented in the sample for fair generalization and comparison for the findings.

The sample size of the research study was 50 manufacturing firms. This was arrived through a formula developed by Kelley & Maxwell (2003), which is 0.101 as the sample size multiplied by total population (0.101*499). This formula is derived from a series of samples assuming non-zero probability and is appropriate when the population is large. Table 3.1 shows how the sample size was arrived

Table 3.1 Sample Size

SECTOR	**NO.OF FIRMS**	**%AGE**	**RESPONDENT**
Energy, electrical & electronics	34	6.8	3
Building, mining & Construction	20	4	2
Chemical & Allied Sector	70	14	7
Food & Beverages	71	14.2	7
Leather & Footwear	7	1.4	1
Metal & Allied Sector	66	13.2	7
Motor vehicles & Accessories	27	5.4	3

Pharmaceutical & Medical Equipment	21	4.2	2
Paper & Board Sector	63	12.6	6
Plastics & Rubber	68	13.6	7
Textile & Apparels	35	7	4
Furniture, timber & Wood	17	3.4	2
TOTAL	**499**	**100**	**50**

3.5 Data Collection

The study relied on primary sources of data. Structured questionnaires were used by the researcher to collect the data (Appendix I). The targeted respondents were operations managers, quality assurance managers and supply chain managers or their equivalents since they were deemed to be well versed and had good understanding of strategic quality management practices and operational activities of manufacturing firms. The research administered 50 questionnaires, one questionnaire for targeted sample in each sector of study. The questionnaires were given out physically to the respondents in the selected firms using the drop and pick later method.

The questionnaire comprised of two sections. The first section obtained information regarding the profile of the manufacturing firm and the second section information relating to the research objectives. The structured questions were answered using the

Likert type scale where respondents were required to indicate their views on a scale of 1 to 5 that indicated the extent to which the independent variables were practiced in the firm.

3.6 Data Analysis

The data collected was analyzed using two methods. Objective one which is the independent variables was analyzed through descriptive statistics in the form of mean, frequencies and percentages; and regression analysis was employed to analyze objective two which is the dependent variable.

The information from the analysis was displayed by use of bar charts, graphs, pie charts and tables to search for any correlation between strategic quality management practices and firms' competitiveness.

The following regression equation was used to show the relationship between strategic quality management practices and competitiveness of manufacturing firms in Nairobi.

$$\mathbf{y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon}$$

Where:

y = Firms' Competitiveness

α = Constant; y intercept, that is, the value of y when x is equal to zero

$\beta_1 \ldots B_5$ = the slope/gradient that represents the degree of change in independent variable by one-unit variable

X_1 = Benchmarking practices

X_2= Supplier partnering practices

X_3= Continuous improvement practices

X_4= Quality management practices

X_5= Six Sigma practice

ε = error term

Table 3.1 Data analysis Summary

Objective	**Data collection**	**Method**
I. To determine the extent to which strategic quality management practices are adopted in the manufacturing firms in Nairobi County.	Questionnaire	Descriptive analysis e.g. means frequencies and percentages.
II. To establish the relationship that may exist between strategic quality management practices and competitiveness of manufacturing firms in Nairobi County	Questionnaire	Regression analysis

CHAPTER FOUR: RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, results and discussions on the study findings of the SQM practices implemented in manufacturing firms and the relationship between SQM practices and competitiveness of manufacturing firms in Nairobi County. The analysis is based on research questions and objectives as identified in the study and then analyzed using SPSS. The results have been presented in form of tables and charts.

4.2 Background information

The study was guided by background information at the beginning of the research. Some of the information that the background provided are discussed as follows.

4.2.1 Response Rate

Table 4.1 indicated that a sample size of 50 respondents was targeted for this study, with 48 respondents returning fully filled questionnaires. Orodho (2005) defines response rate as the extent to which the final data sets includes all. According to Kothari (2004) and Mugenda and Mugenda (2003), a response rate that is above 50% is considered adequate for a descriptive survey. According to Babbie (2004), return rates of not less than 50% are tolerable to analyze and publish, 60% is good, 70% is very good while 80% and above is excellent. Based on these declarations from renowned academics, 96% response rate is very good for the study.

Table 4.1: Response Rate

Response	Frequency	Percentage
Returned questionnaires	38	76%
Unreturned questionnaires	12	24%
Total	50	100

4.2.2 Job Designation

Respondents were asked to name their job designation in their company. Majority of the respondents indicated that they were operating as supply chain managers (36%) followed by marketing managerial capacities (34%). These were then followed by procurement officers at (14%) and logistics managers followed at (10%). Finally, operations managers were least at (6%). The aim of the study was to obtain information from individuals who were well acquitted with SQM practices and competitiveness of manufacturing firms in Nairobi County. This was achieved since majority of the respondents were supply chain managers and marketing managers. These results are shown in figure 4.2 below.

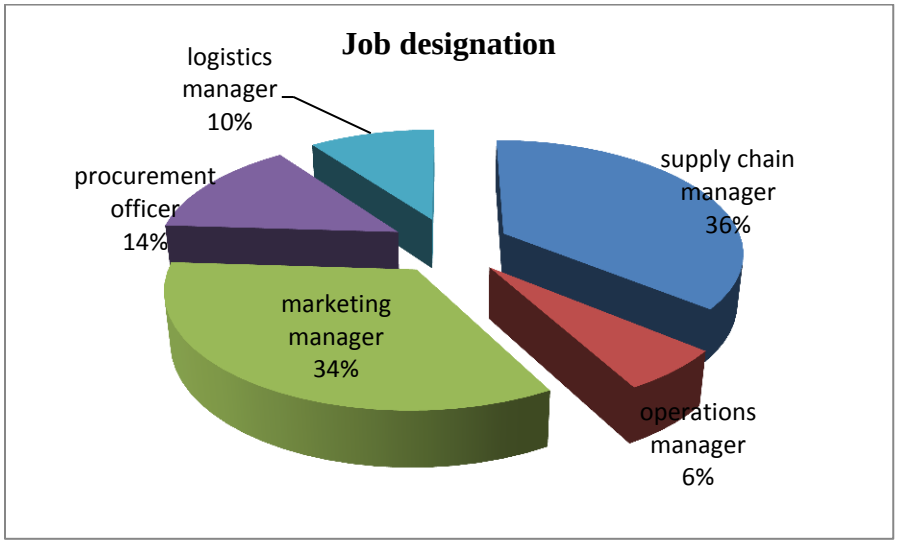


Figure 4.2 Job Designation

4.3 Descriptive Statistics

This section presents the descriptive results on bench marking, continuous improvement, supplier partnering, six sigma, quality management practices and competitiveness.

4.3.1 Bench marking

This study aimed at determining the various SQM practices adopted by manufacturing firms in Nairobi County. The first SQM practice tested was bench marking. Various statements were used to test on applicability of this practice among manufacturing firms in Nairobi. In the first statement the organization conducts a continuous procedure of measuring goods, services and practices against those ones of the competitors. Most of the respondents were to a large extent agreeing with this statement at 86% (48%+38%). The second statement was that their company does comprehensive comparison against the best performing companies both locally and globally. Majority of the respondents were also in agreement with this statement as shown by a mean of 4 and a standard deviation of 1. These results were in agreement with past study results for instance; Carigo and Maria (2006) argued that the best performing organization are used as yardsticks against the organization that is evaluating itself. The third question was that the manufacturing firm through comparison is able to identify the weakness of the operations and work towards improving it and majority of the respondents were in agreement with it (mean= 4, standard deviation=1). Finally if the organization practiced competitive comparison with the firms dealing with the same products. Majority of the respondents were in agreement with it (mean= 4, standard deviation=1). From this sub-variable the mean for all the statements was 4 and a standard deviation of 1 meaning that the respondents were in agreement with all the statements. This therefore meant that

bench marking was one of the various SQM practices being utilized by manufacturing firms in Nairobi County. These results are shown in table 4.2.

The findings of this study were in agreement with previous studies. Hinckley and Martin (2007) postulated that for successful implementation of benchmarking practices, a manufacturing firm must comprehensively evaluate its own practices. In addition the study concurred with the findings of Kinni and Theodore (2005) who concluded that the firm will have an idea on the current position of its own quality issues through honest and thorough self-assessment which will identify the weaknesses and strength that needs to be improved on in order to attain firms' strategic objectives.

Table 4.2 Bench marking

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
Our organization conducts a continuous process of measuring products services and practices against those ones of the competitors	0.0%	0.0%	14.0%	48.0%	38.0%	4	1
Our company does comprehensive comparison against the best performing companies both locally and globally	0.0%	0.0%	16.0%	36.0%	48.0%	4	1

The manufacturing firm through comparison is able to identify the weakness of the operations and work towards improving it	0.0%	0.0%	18.0%	50.0%	32.0%	4	1
Our organization practices competitive comparison with the firms dealing with the same products	0.0%	0.0%	16.0%	56.0%	28.0%	4	1
Average						**4**	**1**

Source: Researcher 2017

4.3.2 Continuous Improvement

The second SQM practice tested is continuous improvement. The first statement under this sub-variable was that the firm works towards improving every operational functions in the firm. Majority of the respondents were in agreement with this statement (mean= 4, standard deviation=1). Secondly the statement of if the company produces no defects from the manufacturing operations was asked. Most respondents agreed with a (mean= 4, standard deviation=1). Thirdly, the statement of whether the company achieves high levels of customer satisfaction was tested. Majority of the respondents were in agreement with this statement (mean= 4, standard deviation=1). Respondents were also tasked if there was continuous review of quality in every stage of operations. Majority of the respondents were in agreement with the statement (mean= 4, standard deviation=1). Finally the respondents were asked to indicate the extent to which they were agreeing with the statement that a quality management team only concentrates on the quality of the products, processes and functions. Majority of them were in agreement with this

statement (mean= 4, standard deviation=1). On average, the respondents were to a large extent agreeing with many of these statements (mean= 4, standard deviation=1) and this meant that manufacturing firms had adopted continuous improvement as an SQM practice. These findings are shown in table 4.3 below.

Table 4.3 Continuous Improvement

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
Our company works towards improving every operational functions in the firm	0.0%	16.7%	25.0%	31.2%	27.1%	4	1
Our company produces no defects from the manufacturing operations	0.0%	12.5%	18.8%	39.6%	29.2%	4	1
Our company achieves high levels of customers satisfaction	0.0%	20.8%	10.4%	33.3%	35.4%	4	1
There is a continuous review of the quality in every stage of the operations	2.1%	4.2%	25.0%	39.6%	29.2%	4	1
We have a quality management team that only concentrates on the quality of the products, processes and functions	8.3%	0.0%	16.7%	35.4%	39.6%	4	1
Average						**4**	**1**

Source: Researcher 2017

4.3.3 Supplier Partnering

The researcher went on to establish whether manufacturing firms in Nairobi were utilizing supplier partnering as a SQM practice. Respondents were asked whether their firms work collaboratively with their suppliers to improve the quality of the products and processes. Majority of them were to a large extent agreeing with this statement (mean= 4, standard deviation=1). Secondly the respondents were asked if their firms practice outsourcing of some non-core activities in order to concentrate on their core products production. Majority of them were to a large extent agreeing with this statement (mean= 4, standard deviation=1). In addition, the statement of whether their firms share the statistical controls being used in the company with the supplier in order to ensure high quality of products. Majority of them were to a large extent agreeing with this statement (mean= 4, standard deviation=1). Finally, the question of whether their firms also outsource some services in order to cut down on the operational cost or production cost was asked. Majority of them were to a large extent agreeing with this statement (mean= 4, standard deviation=1). On five point scale, the mean of all these statements was 4 and a standard deviation of 1 meaning that majority of the respondents agreed to a large extent with these statements. The researcher thus concluded that supplier partnering was an SQM practice being used by manufacturing firms in Nairobi. These results are shown in table 4.4 below. This study concurred with one that states that manufacturing firms liase with their suppliers of parts and components in order to advance on quality from their suppliers' location Wilkinson, Adrain & Hugh (2006). In addition, the study was in agreement with a previous study that argued that supplier partnering practice needs a continuous and consistent communication as well as feedback on the improvement of the

operations because suppliers usually have an ideal perspective of the industry and can help the manufacturing firms achieve operational excellence thus being competitive in the industry Heller & Robert (2004).

Table 4.4 Supplier Partnering

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
The firm works collaboratively with the supplier of the company to improve the quality of the products and processes	2.1%	6.2%	14.6%	39.6%	37.5%	4	1
Our firm practices outsourcing of some non-core activities in order to concentrate on their core products production	4.2%	6.2%	27.1%	25.0%	37.5%	4	1
The firm shares the statistical controls being used in the company with the supplier in order to ensure high quality of products	0.0%	10.4%	20.8%	41.7%	27.1%	4	1
Our firms also outsource some services in order to cut down on the operational cost or production cost	2.1%	8.3%	25.0%	33.3%	31.2%	4	1
Average						**4**	**1**

Source: Researcher 2017

4.3.4 Six Sigma

The researcher engaged the respondents on the aspect of Six Sigma as an SQM practice in manufacturing firms in Nairobi. Respondents were to respond to various statements. The first statement was whether there is a reduction of waste being produced from the work-in-progress. Majority of the respondents to a large extent agreed with this statement (mean= 4, standard deviation=1). Secondly the respondent was asked whether there is reduction of stock-out cost and whether they produce what is exactly being demanded in the market. Majority of the respondents to a large extent agreed with this statement (mean= 4, standard deviation=1). Surprisingly, for the third, fourth and fifth questions received an agreement that was to a large extent magnitude (mean= 4, standard deviation=1). These questions were: Our firm has created a reputation and good image to the customers and stakeholder due to meeting and exceeding the customers demand; Our firm works towards production of high quality products in order to have high level of customer satisfaction and finally whether there is always a reduction level of wastes being produced in the firm due to the implementation of quality mechanisms and; On average, majority of the respondents were in agreement with many of these statements (mean= 4, standard deviation=1) meaning that manufacturing firms in Nairobi were adopting six sigma as an SQM practice and that it was boosting the overall firm competitiveness. These results are shown in table 4.5 below. These findings were in agreement with those of Davenport *et al.*, (2006) who stipulated that Implementation of six sigma ensures that firms do not experience stock outs and obsolete stocks.

Table 4.5 Six Sigma

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
Is there a reduction of wastes being produced from the work-in-progress	8.3%	0.0%	18.8%	31.2%	41.7%	4	1
Is there reduction of stock-out cost, we produce what is exactly being demanded in the market	12.5%	10.4%	18.8%	29.2%	29.2%	4	1
Our firm has created a reputation and good image to the customers and stakeholder due to meeting and exceeding the customers demand	8.3%	6.2%	12.5%	39.6%	33.3%	4	1
Our firm works towards production of high quality products in order to have high level of customer satisfaction	6.2%	8.3%	25.0%	37.5%	22.9%	4	1
There is always a reduction level of wastes being produced in the firm due to the implementation of quality mechanisms	12.5%	6.2%	18.8%	35.4%	27.1%	4	1
Average						**4**	**1**

Source: Researcher, 2017

4.3.5 Quality Management

Quality Management Practices as SQM practices was tested through various statements: The firm has enrolled in quality awards frameworks and competition before; We have received awards in terms of the quality of the products that meet customer demands and satisfactions; Our concentration on quality of the products, processes and function have made the firm be recognized locally, regionally and internationally through ISO Certification; Our focus is on customer satisfaction through production of quality products and services in the market; Production of the quality products has led to high demand of our product locally, regionally and globally. Surprisingly, majority of these respondents were agreeing with many of these statements as shown by a similar mean of 4 and standard deviation of 1. The researcher then conducted a mean of all these statements and obtained a mean of 4 and standard deviation of 1 meaning that in all these statements, respondents were to a large extent agreeing with these statements. Therefore Quality Management Practice as an SQM practice has been adopted by manufacturing firms in Nairobi. These findings are presented in table 4.6 below. This study was in agreement with that of Martin (2007) who states that manufacturing firms must conform and adhere to the set standards for firms by ensuring that quality is achieved.

Table 4.6 Quality Management

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
The firm has enrolled in the quality awards frameworks and competition before	8.3%	12.5%	16.7%	35.4%	27.1%	4	1

We have received awards in terms of the quality of the products that meet customer demands and satisfactions	8.3%	10.4%	16.7%	37.5%	27.1%	4	1
Our concentration on quality of the products, processes and function have made the firm be recognized locally, regionally and internationally through ISO Certification	8.3%	10.4%	18.8%	31.2%	31.2%	4	1
Our focus is on customer satisfaction through production of quality products and services in the market	10.4%	14.6%	12.5%	31.2%	31.2%	4	1
Production of the quality products has led to high demand of our product locally, regionally and globally	10.4%	12.5%	12.5%	33.3%	31.2%	4	1
Average						**4**	**1**

Source: Researcher 2017

4.3.6 Competitiveness

Finally, the respondent was tasked with statements that were aimed at describing the relationship of Strategic Quality Management Practices and Competitiveness. Respondents were to indicate the level to which they agreed with the statements in

accordance to the following scale: 1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent.

Respondents were to a large extent agreeing with the statement that Partnering with suppliers led to a reduction in the inventory holding costs that were being experienced in the organization This is supported by a means of 4 and a standard deviation of 1. The researcher therefore concluded that partnering with suppliers as an SQM practice leads to increased competitiveness for the manufacturing firms.

Respondents also were to a large extent agreeing that Benchmarking practices within the organization led to adoption of effective mechanism that makes firms competitive in the market. This is represented by a mean of 4 and standard deviation of 1. The conclusion here is that manufacturing firms should improve on benchmarking since it leads to improved competitiveness in the market. The researcher recommended that firms should come up with as many benchmarking approaches and to also hold several of them so as to increase on adoption of effective mechanism that makes firms more competitive.

Continuous improvement in the firms has led to an increase in productivity levels, reduction in cost and efficient utilization of assets. This was the conclusion of the respondents (mean=4, standard deviation=1). The researcher therefore concluded that CI as an SQM practice leads to increased competitiveness in manufacturing firms in Nairobi

Respondents were also tested on whether focus on the production of quality products leads to the improvement of customer satisfaction and reputation of the firms' image hence broader customer base. The respondents were to a large extent agreeing with this statement as indicated by a means of 4 and a standard deviation of 1. The researcher

therefore concluded that focus on the production of quality products led to competitiveness for manufacturing firms in Nairobi.

The researcher engaged the respondents regarding whether reduction of waste in the company has led to reduction of costs which leads to reduction on the price of the products thus being competitive in the market. Majority of them were to a large extent agreeing with this statement (mean=4, standard deviation=1). The researcher therefore concluded that waste reduction in the company boosts manufacturing firms' competitiveness in the market. The recommendation given here is that firms should endeavor to maintain cleanliness and order in their places of operations as this is positively and significantly related to the competitiveness a firm will have in the market.

Respondents were to indicate whether improvement in the efficiency of the production through continuous improvement has led to meeting and exceeding customer satisfaction. Majority of the respondents were to a large extent agreeing with this statement (mean=4, standard deviation=1). The conclusion here was that efficiency of the production through continuous improvement is significant and positive in explaining competitiveness. Manufacturing firms should enhance it in order to meet and exceed customer satisfaction. The argument here was that satisfied customers will make a repeated purchase and also bring on board more referrals. This will finally boost on sales volume and hence a firm's profitability.

Regarding whether implementation of the techniques from the best performing firms had led to increase in the productivity levels, respondents were to a moderate extent agreeing with this statement (mean=3, standard deviation=1). The researcher therefore concluded that implementation of the techniques from the best performing firms had not really led to

increase in the productivity levels and thus never realized its impact to a firm's level of competitiveness.

Pertaining whether waste minimization in the firm had contributed to the good reputation of the company hence increase in the customer base, respondents were to a moderate extent agreeing with this statement. The study therefore concluded that waste minimization had not really impacted on competitiveness.

Respondents were asked whether production of high quality products is essential in the sustainability of the company in the industry. Majority of the respondents were to a large extent agreeing with this statement (mean=4, standard deviation=1). The study therefore concluded that production of high quality products is a practice necessary for the boosting of firm's competitiveness in the manufacturing sector.

Finally, the respondents were to answer regarding whether increased customer satisfaction levels had increased sales volumes in the competitive environment. Majority of the respondents were moderately agreeing with this statement (mean=3, standard deviation=1). The researcher therefore concluded that the satisfaction of the customer had not significantly impacted competitiveness. On the other hand, the study recommended that firms should proceed in the same since results might take time to finally impact on competitiveness. On average, the statements received a means of 3.7 and a standard deviation of 1. This reflected a majority. These results are shown in table 4.7.

Following the afore mentioned concepts of quality management practices in the manufacturing firms in Nairobi, the study concluded that application of the same is positively and significantly related to increased firm's competitiveness. These findings

were in agreement with the findings of Oakland (2003) who states that the adoption of strategic quality management practices make most manufacturing firms improve their performance thus making them competitive in the industry. Moreover, the study concurred with the study of Bricknell (2006) who observed a direct relationship between quality management practices and firms improvement through implementation of the practices in every process of the firm in order to increase efficiency by reduction of wastes and errors.

Table 4.7 Competitiveness

	not at all	low extent	moderate extent	large extent	very large extent	Mean	Standard Deviation
Partnering with suppliers has led to a reduction in the inventory holding costs that was being experienced in the organization	10.4%	12.5%	18.8%	27.1%	31.2%	4	1
Benchmarking practices within the organization has led to adoption of effective mechanism that makes us being competitive in the market	10.4%	12.5%	16.7%	25.0%	35.4%	4	1

Continuous improvement in the firm has led to increase in the productivity levels, reduction in cost and efficient utilization of assets	10.4%	12.5%	16.7%	29.2%	31.2%	4	1
Focus on the production of quality products has led to the improved customer satisfaction and reputation of the firms image hence broader customer base	12.5%	12.5%	12.5%	31.2%	31.2%	4	1
Reduction of the wastes in the company has led to reduction of costs which leads to reduction of the price of the products thus being competitive in the market	10.4%	12.5%	10.4%	37.5%	29.2%	4	1
Improvement in the efficiency of the production through continuous improvement has led to meeting and exceeding customer satisfaction	8.3%	16.7%	10.4%	33.3%	31.2%	4	1

Implementation of the techniques from the best performing firms has led to increase in the productivity levels	14.6%	14.6%	14.6%	22.9%	33.3%	3	1
Waste minimization in the firm has contributed to the good reputation of the company hence increase in the customer base.	14.6%	12.5%	12.5%	33.3%	27.1%	3	1
Production of high quality products is essential in the sustainability of the company in the industry	14.6%	12.5%	10.4%	31.2%	31.2%	4	1
Increased customer satisfaction levels has increased sales volumes in the competitive environment	14.6%	12.5%	14.6%	31.2%	27.1%	3	1
Average						**3.7**	**1**

Source: Researcher 2017

4.4 Inferential Analysis

Inferential analysis was carried out to generate correlation results, analysis of the variance (ANOVA), model of fitness and regression coefficients.

4.4.1 Correlation Analysis

The study undertook correlation matrix analysis to examine the SQM practices and competitiveness of manufacturing firms in Nairobi. Table 4.8 below presents the

correlation matrix analysis on SQM practices and competitiveness of manufacturing firms in Nairobi County. The correlation factor ranged from $-1 \leq 0 \geq 1$. The acceptance confidence level was 95% or significance level of 0.05. The study conducted a Pearson Moment Correlation analysis which is represented by *r* that is an indication of the strength and direction that exists between variables. It is also an indication that the variables do not have multi collinearity. Absence of multi collinearity allows the study to utilize all the independent variables.

The results revealed that bench marking and competitiveness were positively and significantly related (r=0.578, p=0.000). The results further indicated that continuous improvement and competitiveness were positively and significantly related (r=0.620, p=0.000). It was further established that supplier partnering and competitiveness were positively and significantly related (r=0.510, p=0.000). Similarly, the results showed that six sigma and competitiveness were positively and significantly related (r=0.529, p=0.000). Finally the results revealed that quality management practices and competitiveness were positively and significantly related (r=0.642, p=0.000). This implies that an increase in any unit of the variables leads to an increase in competitiveness. These results are shown in the table 4.8 below.

Table 4.8 Correlation Matrix

		Competitiveness	**Benchmarking**	**Continuous improvement**	**Supplier partnering**	**Six sigma**	**Quality management**
Competitiveness	Pearson Correlation	1	.578**	.620**	.510**	.529**	.642**

	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	48	48	48	48	48	48
Benchmarking	Pearson Correlation	.578**	1	.209	.205	.551**	.287*
	Sig. (2-tailed)	.000		.034	.042	.000	.048
	N	48	48	48	48	48	48
Continuous improvement	Pearson Correlation	.620**	.209	1	.289*	.421**	.557**
	Sig. (2-tailed)	.000	.034		.046	.003	.000
	N	48	48	48	48	48	48
Supplier partnering	Pearson Correlation	.510**	.205	.289*	1	.391**	.337*
	Sig. (2-tailed)	.000	.042	.046		.006	.019
	N	48	48	48	48	48	48
Six sigma	Pearson Correlation	.529**	.551**	.421**	.391**	1	.452**
	Sig. (2-tailed)	.000	.000	.003	.006		.001
	N	48	48	48	48	48	48
Quality management	Pearson Correlation	.642**	.287*	.557**	.337*	.452**	1
	Sig. (2-tailed)	.000	.048	.000	.019	.001	
	N	48	48	48	48	48	48

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

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Researcher 2017

4.4.2 Regression analysis

The results given in table 4.9 presents the fitness of the regression model used in explaining the study phenomena. Benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices were found to be satisfactory variables in explaining competitiveness. This is supported by coefficient of determination also known as the R square of 72.2%. This means that benchmarking, continuous improvement; supplier partnering, six sigma and quality management variables which represent SQM practices explain 72.2% of the variations in the dependent variable which is competitiveness. These results also imply that the model applied to link the relationship of the variables was satisfactory.

Table 4.9 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.849[a]	.722	.688	.59842

a. Predictors: (Constant), quality management, benchmarking, supplier partnering, continuous improvement, six sigma

Source; Researcher 2017

Table 4.10 provides the results of ANOVA analysis. The results show that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of firm's competitiveness. This was supported by an F

statistic of 21.769 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

Table 4.10 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.979	5	7.796	21.769	.000[b]
	Residual	15.040	42	.358		
	Total	54.019	47			

a. Dependent Variable: competitiveness

b. Predictors: (Constant), quality management , benchmarking, supplier partnering, continuous improvement, six sigma

Source: Researcher 2017

Regression of coefficients results in table 4.11 shows that benchmarking and competitiveness are positively and significantly related (r=0.825, p=0. 000). The table further indicates that continuous improvement and competitiveness of manufacturing firms in Nairobi are positively and significantly related (r=0. 707, p=0.002). It was further established that supplier partnering and competitiveness of manufacturing firms in Nairobi County were positively and significantly related (r=0.403, p=0.006), six sigma and competitiveness of manufacturing firms in Nairobi County was also positively and significantly related (r=0.083, p=0.049), quality management practices and competitiveness of manufacturing firms in Nairobi was also positively and significantly related (r=0.266, p=0.009).

Table 4.11 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.126	.346		4.903	.000
	benchmarking	.825	.196	.412	4.206	.000
	Continuous improvement	.707	.217	.329	3.257	.002
	Supplier partnering	.403	.139	.262	2.892	.006
	Six sigma	.083	.138	.067	0.604	.049
	Quality management	.266	.098	.282	2.723	.009

a. Dependent Variable: competitiveness

Source: Researcher 2017

Thus, the optimal model for the study is;

Manufacturing firms competitiveness= *1.126+ 0.825Benchmarking + 0.707 Continuous improvement + 0. .403 Supplier partnering + 0.083 Six sigma +0.266 Quality management*

4.5 Discussion of Research Findings

Benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices were positively and significantly related to competitiveness of manufacturing firms in Nairobi.

Benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices were found to be satisfactory variables in explaining competitiveness. This is supported by coefficient of determination also known as the R square of 72.2%.The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of firm

competitiveness. This was supported by an F statistic of 21.769 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter addressed the summary of the research findings, conclusions thereof and the recommendations. This was done in line with the study objectives.

5.2 Summary

This section provided a summary of the findings from the analysis. This was done in line with the objectives of the study.

5.2.1 Extent to which Strategic Quality Management Practices are adopted in the Manufacturing Firms in Nairobi County

The first objective of the study was to determine the extent to which strategic quality management practices are adopted in the manufacturing firms in Nairobi County

From the first sub-variable (benchmarking) the mean for all the statements was 4 and a standard deviation of 1 meaning that the respondents were in agreement with all the statements. This therefore meant that bench marking was one of the various SQM practices being utilized by manufacturing firms in Nairobi County. This also meant that benchmarking led to the boost of a firm's competitiveness.

The second SQM practice tested was that of continuous improvement. On average, the respondents were to a large extent agreeing with many of these statements (mean= 4, standard deviation=1) and this meant that manufacturing firms had adopted continuous improvement as an SQM practice. Consequently this meant that there was a positive and significant relationship between continuous improvement and manufacturing firms' competitiveness.

The researcher went on to establish whether manufacturing firms in Nairobi were utilizing supplier partnering as an SQM practice. Respondents were asked whether their firms work collaboratively with their suppliers to improve the quality of the products and processes. Majority of them were to a large extent agreeing with this statement (mean= 4, standard deviation=1).The researcher thus concluded that supplier partnering was an SQM practice being used by manufacturing firms in Nairobi.

The researcher engaged the respondents pertaining the aspect of six sigma as an SQM practice in the manufacturing firms in Nairobi. Respondents were to respond to various statements. On average, majority of the respondents were in agreement with many of these statements (mean= 4, standard deviation=1) meaning that manufacturing firms in Nairobi were adopting six sigma as an SQM practice and that it was boosting the overall firm competitiveness.

Quality management practices as an SQM practice was tested through various statements; the firm has enrolled in the quality awards frameworks and competition before; we have received awards in terms of the quality of the products that meet customer demands and satisfactions, etc. Surprisingly, majority of these respondents were agreeing with many of these statements as indicated by a similar mean of 4 and a standard deviation of 1. The researcher then conducted a mean of all these statements and obtained a mean of 4 and standard deviation of 1 meaning that in all these statements, respondents were to a large extent agreeing with these statements. Therefore quality management practices as an SQM practice has been adopted by manufacturing firms in Nairobi.

Respondents were to a large extent agreeing with the statement that partnering with suppliers led to a reduction in the inventory holding costs that were being experienced in

the organization. This is supported by a means of 4 and a standard deviation of 1. The researcher therefore concluded that partnering with suppliers as an SQM practice leads to increased competitiveness for the manufacturing firms.

Respondents also were to a large extent agreeing that benchmarking practices within the organization led to adoption of effective mechanism that makes firms competitive in the market. This is represented by a mean of 4 and standard deviation of 1. The conclusion here is that manufacturing firms should improve on benchmarking since it leads to improved competitiveness in the market. The researcher recommended that firms should come up with as many benchmarking approaches and to also hold several of them so as to increase on adoption of effective mechanism that makes firms more competitive.

5.2.2 Relationship between Strategic Quality Management Practices and Competitiveness of Manufacturing Firms in Nairobi County

The results revealed that bench marking and competitiveness were positively and significantly related (r=0.578, p=0.000). The results further indicated that continuous improvement and competitiveness were positively and significantly related (r=0.620, p=0.000). It was further established that supplier partnering and competitiveness were positively and significantly related (r=0.510, p=0.000). Similarly, the results showed that six sigma and competitiveness were positively and significantly related (r=0.529, p=0.000). Finally the results revealed that Quality management practices and competitiveness were positively and significantly related (r=0.642, p=0.000).

Benchmarking, continuous improvement, supplier partnering, six sigma and Quality management practices were found to be satisfactory variables in explaining

competitiveness. This is supported by coefficient of determination also known as the R square of 72.2%. This means that benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices which represent SQM practices explain 72.2% of the variations in the dependent variable which is competitiveness.

5.3 Conclusions

Based on the findings above, the study concluded that majority of the manufacturing firms in Nairobi County have adopted SQM practices (benchmarking, continuous improvement, supplier partnering, six sigma and quality management) in their competitive strategies.

Based on the findings above the study concluded that benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices have a positive and a significant effect on competitiveness of manufacturing firms in Nairobi.

The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of firm competitiveness. This was supported by an F statistic of 21.769 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

5.4 Recommendations

The researcher recommended that firms should come up with as many benchmarking approaches and to also hold several of them so as to increase on adoption of effective mechanism that makes firms more competitive.

The researcher having concluded that waste reduction in the company boosts on a manufacturing firms competitiveness in the market. The recommendation given here is

that firms should endeavor to maintain minimal wastes and defects in their places of operations as this is positively and significantly related to the competitiveness a firm will have in the market.

The study recommended that for enhanced quality management, manufacturing firms should institute and involve the support of strategic administration department to monitor their adoption and implementation.

The study recommended that manufacturing firms should adopt various quality management practices for both internal operations and external activities so as to improve on the aspect of quality of these manufacturing firms.

5.5 Limitations of the Study

The study findings were applicable to the manufacturing firms, specifically those in Nairobi Kenya only. Therefore, the findings cannot be used as representative of all other without considering manufacturing firms in other counties in Kenya. An inadequate resource such as finances was a challenge in this study leading to non-exhaustive exposition of majority of the SQM practices applied by manufacturing firms in Nairobi. Similarly, there was constrained time resource.

Some of the respondents had very tight working schedules and were therefore not available for the interview and others were not ready for the same. However, the researcher tried as much as possible and got above 70% response rate which was considered an adequate representative sample of the target population.

5.6 Areas for Further Studies

The study sought to determine the strategic quality management practices and competitiveness of manufacturing firms in Nairobi. This study, therefore, focused on manufacturing firms in Nairobi County only, thus area for further studies could consider manufacturing firms from other Counties for the purpose of making a comparison of the findings with those of the current study.

Benchmarking, continuous improvement, supplier partnering, six sigma and quality management practices were found to be satisfactory SQM practices variables in explaining competitiveness in the manufacturing firms. Future studies should aim at establishing other SQM practices still in the manufacturing sector.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Introduction

This questionnaire is intended for use in collecting data in pursuit of the objectives of the study titled "Strategic quality management practices and competitiveness of Manufacturing Firms in Nairobi". It has three sections each containing questions on general survey participant information, strategic quality management and benefits of strategic quality management practices. Kindly complete the questionnaire as per the instructions. Your participation is highly appreciated.

Section A: General Information

1. What is the nature of the business _____

2. What is your Job designation in this company? (Tick as appropriate)

Supply Chain Manager ☐ Procurement Officer ☐

Operations Manager ☐ Logistics Manager ☐

Marketing Manager ☐

SECTION B: Extent of Strategic Quality Management Practices used by your organization.

1.Please indicate the extent to which you agree with the following statements on the strategic quality management practices used in your organization. Use the scale below

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

No.	Statement	1	2	3	4	5
1.	**Benchmarking**					
	Our organization conducts a continuous process of measuring products services and practices against those ones of the competitors					
	Our company does comprehensive comparison against the best performing companies both locally and globally					
	The manufacturing firm through comparison is able to identify the weakness of the operations and work towards improving it					
	Our organization practices competitive comparison with the firms dealing with the same products					
2.	**Continuous Improvement**					
	Our company works towards improving every operational functions in the firm					
	Our company produces no defects from the manufacturing operations					
	Our company achieves high levels of customers satisfaction					

	There is a continuous review of the quality in every stage of the operations					
	We have a quality management team that only concentrates on the quality of the products, processes and functions					
3.	**Supplier Partnering**					
	The firm works collaboratively with the supplier of the company to improve the quality of the products and processes					
	Our firm practices outsourcing of some non-core activities in order to concentrate on their core products production					
	The firm shares the statistical controls being used in the company with the supplier in order to ensure high quality of products					
	Our firms also outsource some services in order to cut down on the operational cost or production cost					
4.	**Six Sigma**					
	Is there a reduction of wastes being produced from the work-in-progress					
	Is there reduction of stock-out cost, we produce what is exactly being demanded in the market					
	Our firm has created a reputation and good image to the customers and stakeholder due to meeting and exceeding the customers demand					
	Our firm works towards production of high quality					

	products in order to have high level of customer satisfaction					
	There is always a reduction level of wastes being produced in the firm due to the implementation of quality mechanisms					
5.	**Quality Management Systems**					
	The firm has enrolled in the quality awards frameworks and competition before					
	We have received awards in terms of the quality of the products that meet customer demands and satisfactions					
	Our concentration on quality of the products, processes and function have made the firm be recognized locally, regionally and internationally through ISO Certification					
	Our focus is on customer satisfaction through production of quality products and services in the market					
	Production of the quality products has led to high demand of our product locally, regionally and globally					

SECTION C: Measuring Competitiveness

1. Below are statements describing the relationship of Strategic Quality Management Practices and Competitiveness. Kindly indicated the level to which you agree with them in accordance to the following scale:

1-not at all, 2-low extent, 3-moderate extent, 4-large extent, 5-very large extent

No.	Statement	1	2	3	4	5
1	Partnering with suppliers has led to a reduction in the inventory holding costs that was being experienced in the organization					
2	Benchmarking practices within the organization has led to adoption of effective mechanism that makes us being competitive in the market					
3	Continuous improvement in the firm has led to increase in the productivity levels, reduction in cost and efficient utilization of assets					
4	Focus on the production of quality products has led to the improved customer satisfaction and reputation of the firms image hence broader customer base					
5	Reduction of the wastes in the company has led to reduction of costs which leads to reduction of the price of the products thus being competitive in the market					
6	Improvement in the efficiency of the production through continuous improvement has led to meeting and exceeding customer satisfaction					
7	Implementation of the techniques from the best performing firms has led to increase in the productivity levels					
8	Wastes minimization in the firm has contributed to the good reputation of the company hence increase in the customer base.					
9	Production of the high quality products is essential in the sustainability of the company in the industry					
10	Increased customer satisfaction levels has increased sales volumes in the competitive environment					

THANK YOU FOR YOUR TIME