

**QUALITY MANAGEMENT PRACTICES AND
FINANCIAL PERFORMANCE OF CEMENT
MANUFACTURING FIRMS IN KENYA**

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DECLARATION

I declare that this project is my original work and has not been submitted for examination in any other university.

Signed Date.....

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

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To my family, parents and friends for their honest support and encouragement during the study, to all of you, kindly accept my appreciation for your great support.

DEDICATION

I wish to dedicate this project to my family and friends for their support and encouragement in my academic journey.

ABSTRACT

The study was set to establish the quality management practices adopted by cement manufacturing firm in Kenya and financial performance of the same. The study used a cross sectional research design since it focused on quality management practices and performance of the cement manufacturing firms in Kenya. The production managers and finance managers interviewed in all the six cement manufacturing firms were 76 total. The study used both primary and secondary data sources since the nature of the data was quantitative and qualitative. The respondents chosen for this study were the operation managers, quality managers and finance managers of all the six cement manufacturing firms. The questionnaire was administered through a drop and pick later method at an agreed time with the researcher. Secondary data was sourced from the Kenya Association of manufacturers and audited annual financial statements. A regression model was used for establishing the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya. The model adopted consisted of six variables: The independent variables were quality management practices while the dependent variable is financial performance of cement manufacturing firms in Kenya. The findings revealed that most cement manufacturing firms that implemented quality management practices recorded high sales turnover leading to organizational performance. The study also recommends that cement manufacturing firms in Kenya should benchmark themselves with the best performing firms globally in order to find out the quality management practices that the firms use in enhancing competitiveness. Future researchers and academicians should research on the effect of quality management practices in another sector for example the banking industry or the insurance industry then findings and conclusions can be drawn based on concrete facts.

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LIST OF ABBREVIATION

ISO- International Organization for Standardization

KAM-Kenya Association of Manufacturers

ROA-Return on Assets

ROE-Return on Equity

ROI-Return on Investment

ROS-Return on Sales

TQM-Total Quality Management

CHAPTER ONE:INTRODUCTION

1.1 Background of the Study

Quality aspects have become one of the most important factors in global competition today. Increasing demand by customers for better quality of product in market place has encouraged many companies to provide quality product and services in order to compete in the marketplace successfully. To meet the challenge of this global competition, many businesses have invested substantial resources in adapting and implementing quality management practices in their operations. Quality management is viewed as a strategy to meet or exceed customer's requirements and expectations. Quality management seeks excellence in all aspects of business through organization-wide continuous improvement, commitment by all, and customer focus. It is a firm-wide management philosophy of continuously improving the quality of the products, services and processes by focusing on the customers' needs and expectations to enhance customer satisfaction and firm performance (Anderson, Rungtusanatham and Schroeder, 2004).

Zairi and Youssef (2005), management awareness of the importance of quality management, alongside business process reengineering and other continuous improvement techniques was stimulated by the benchmarking movement to implement and improve on best practices. The commitment to continuous improvement historically originated in manufacturing firms then it spread quickly to the service sector.

Economic globalization brings both challenges and opportunities for most industrial companies globally, especially manufacturing companies who are confronted with a challenging and increasing competitive environment. Therefore, they should be able to create conditions that support them both in the domestic and international markets. Quality Management practices can be implemented in any sector of the economy for example manufacturing and service, the resulting outcome is reduced costs, increased productivity, and improved financial performance among others (Gaspersz, 2005).

In Kenya most manufacturing firms are adopting and implementing a set of operations management practices in order to win the intense competition in the marketplace for example: Total Quality Management (TQM). The benefits of TQM can be achieved through identifying the sets of common TQM principles and practices as applicable to the manufacturing and service industries.

1.1.1 Quality Management Practices

According to Deming, quality is a predictable degree of uniformity and dependability, at low cost and suited to the market. Deming also identified 14 principles of quality management to improve productivity and performance of the organization. Ishikawa also emphasized importance of total quality control to improve organizations' performance (Kruger, 2001). Application of quality management procedures tools and techniques in organizations are becoming popular because they form a strategic foundation for generating competitive advantage and improving organization.

Quality management requires good strategy that promises tremendous improvement in quality management and its implementation. Total quality

management is the culture of an organization committed to customer satisfaction through continuous improvement. This culture varies both from one country to another and between different industries, but has certain essential principles which can be implemented to secure greater market share, increased profits, and reduced costs (Kanji and Wallace, 2000).

Quality management practices are key ingredients in achieving quality services to customers, some of the quality management practices used by manufacturing firms are: continuous improvement, benchmarking, supplier partnering, International Organization for Standardization (ISO), Six Sigma, 'Poka Yoke' and Quality awards. Implementation of quality management practices enables companies to improve their internal operations in an efficient manner; this is however considered a requirement to become competitive in the global market place. Total quality management is an organizational wide process which requires changes both in production and decision making processes, employee training and development, participation as well as involvement (Jung and Wang, 2006).

1.1.2 Financial Performance

Performance is defined as the accomplishment of a given task measured against preset standards of accuracy, completeness, cost effectiveness and efficiency. In other words, it refers to the degree to which an achievement is being or has been accomplished. The recommended measures for financial analysis that determine a firm's financial performance are grouped into five broad categories: liquidity, solvency, profitability, repayment capacity and financial efficiency.

It is important to remember that past and present financial information are not the only factors affecting a firm's financial performance rather measuring a group

performance is more important than focusing on only one or two measures at the exclusion of others (Crane, 2010). The financial performance of a firm shows the financial status of a firm, it demystifies the financial stability of a firm and is provided in the financial statements of a firm (Willoughby and Julia, 2001).

The common financial indicators of financial performance include: sales growth, return on investment (ROI), return on equity (ROE), and earnings per share. The popular ratios that measure organizational performance can be summarized as profitability and growth: return on asset (ROA), return on investment (ROI), return on equity (ROE), return on sale (ROS), revenue growth, market shares, stock price, sales growth, liquidity and operational efficiency (Oye, 2006).

1.1.3 Cement Manufacturing Firms

In Kenya, there are six cement manufacturing firms namely: Bamburi Cement Limited, Rhino Cement Foundation, East African Portland Cement Company, Mombasa cement company, Savanna Cement and National cement company ltd. Apparently, more than 90% of all cement manufacturers in Kenya today are located within Machakos County and mainly in Athi River. With a ready market, cement ready market in Nairobi and Machakos among many other adjacent towns in Kenya, there is really no doubt that cement companies in this part of Kenya will always continue to flourish (KAM, 2013).

Recently, Kenya has experienced a tremendously growth which has led to increased commercial construction boom as a result of increased foreign investment, and extensive government and donor-funded spending on the country's mega infrastructure projects. As a result, per capita consumption (PCC) of cement increased at an average rate of 10.7% to 83.9 (Kgs) in 2011 from 50.0

Kgs in 2006 despite relative stagnation in annual population growth. The rapid demand for cement has heightened the need for quality management practices to ensure compliance of quality rules and regulations in order to provide quality goods and services to the customers (Dyer and Blair Bank, 2012).

In an article, Ndetto (2014) stated that “quality management practices play a pivotal role in enhancing financial performance of cement manufacturing firms. According the Kenya Association of Manufacturers (KAM) report, most cement manufacturing firms are ISO certified and adhere to the professional set standards and regulations on quality issues. The implementation of quality management practices in most manufacturing firms in Kenya is done by managers who ensure a lean and efficient staff, strategic quality planning, leadership, customers focus, and supplier quality management training, knowledge and process management.

1.2 Research Problem

Despite the fact that quality management practices have been recognized by many organization as capable of transforming the quality culture and producing substantial financial results for large size companies, some concerns have been raised about validity of quality management practices to generate real economic gains and or improve financial performance of firms. A number of empirical studies have been conducted since the 1980’s in order to explore the variance between quality management practices and financial performance. The work of Hendricks and Singhal (2007) has provided evidence of an existing relationship between quality management practices and financial performance of manufacturing firms and the effectiveness of the implementation of quality management practices. A study by Adam et al. (2007) has shown that there is a

positive impact of quality management practices on financial performance of a firm. In addition, Choi and Eboch (2008) found a significant direct link between quality management practices and performance of a firm.

A survey was carried out by Moghimi and Anvari (2014) to evaluate the relationship between TQM and financial performance of 40 Iranian cement companies, a descriptive survey was carried out on the effects of TQM on financial performance of cement firms. A sample of 25 cement companies was conducted; qualitative and quantitative data was used. A descriptive statistics method of data analysis was applied. The findings of the study revealed a positive relationship between TQM and financial performance of cement manufacturing firms in Iran. Sarangarajan, Ananth and Lourthuraj (2012) carried out a cross sectional survey on the effects of Quality management practices 10 cement firms, secondary data was used for all the ten cement firms and analysis was done using descriptive statistics. The study found that cement firms that observed quality management practices performed better as compared to those cement firms who did not implement quality management practices.

In Kenya, there have been efforts to improve quality in manufacturing firms; this is aimed at achieving quality goods and services to meet the ever growing needs of customers. Despite the measures put in place to ensure implementation of quality management practices, some manufacturing firms have faced various challenges making it difficult for them to reap the benefits of quality management practices. A study by Kamau (2013) concluded that quality management practices led to the introduction of more products in the organization, effective product and process designing, increased sales leading to a large market share but this study

did not cover all cement manufacturing firms in Kenya and did not focus on the relationship between quality management practices and financial performance,

Research has been carried out locally regarding quality management practices especially in education and manufacturing sectors. Wachira (2013) established that organizational performance is largely influenced by the implementation of quality management practices at 75.5%. The study was also able to identify specific quality management practices that were deemed to have an effect on operational performance. In another study Ogada (2012) revealed the importance sugar manufacturing companies attach to quality management improvements. The quality management practice that was largely practiced was top management commitment indicating that top management is actively involved in quality management and is providing clear and consistent leadership. These studies however did not address the impact of quality management practices on financial performance of cement manufacturing firms. Rono (2013) found that the challenges to effective implementation of lean manufacturing can be managed well and through training of the lean manufacturing concept, its implementation in the organization will be successful. These studies were too broad and did not address issues of quality management practices in relation to financial performance of all cement manufacturing firms in Kenya.

Therefore, this study attempts to answer the following research questions: what are the quality management practices adopted by cement manufacturing firm? What is the impact of quality management practices on return on investment of cement manufacturing firms in Kenya? Additionally, what is the impact of quality management practices on sales growth in cement manufacturing firms in Kenya?

1.3 Objective of the Study

The objective of this study was to determine the impacts of quality management practices on financial performance of cement manufacturing firms in Kenya.

1.3.1 Specific objectives of the study were:

- i. To establish the quality management practices adopted by cement manufacturing firm in Kenya.
- ii. To determine the quality management practices and financial performance of cement manufacturing firms in Kenya.

1.4 Value of the Study

The findings of this study will be useful to manufacturing firms since it will provide insights on the importance of practicing quality management practices in manufacturing firms to achieve financial performance of firms.

Kenya Association of manufacturers and other policy makers will also benefit from this study as the findings will inform the setting up policies that ensure that manufacturing firms comply with quality practices to provide quality services and improve their financial performances.

In theory, this study will be resourceful in provide more information on the various quality management practices adopted by firms. The study will also serve as a point of reference to academicians interested in this area and other related topics.

CHAPTER TWO:LITERATURE REVIEW

This section will cover quality management practices used by various organizations. It will also show the relationship between quality management practices and financial performance, the conceptual argument and the summary of the literature review.

2.1 Quality Management practices

Quality control refers to the process, most often implemented in manufacturing, of monitoring the quality of finished products through statistical measures and an overall corporate commitment to producing defect-free products. Quality control principles can also be utilized in service industries (Deming, 2004). There various quality management practices adopted by manufacturing firms, the main quality management practices adopted by Kenyan manufacturing firms include benchmarking, supplier partnering, Continuous improving and other quality management practices.

2.1.1 Benchmarking Practices

Benchmarking is a continuing process of measuring products, services, and practices against your strongest competitors. In benchmarking, the best performing firms are used as yardsticks against the organization that is evaluating itself (Caringo and Maria, 2006). There are two types of benchmarking used by manufacturing firms use to assess quality. The first, competitive benchmarking involves benchmarking against direct competitors in the marketplace (Wright and Richard, 2007). This can include comparing specific numerical or statistical measurements return on assets used and the market share. The second method,

noncompetitive benchmarking, can take two forms. The first is measuring your company against the best companies in the world, regardless of industry. Companies such as 3M, Coca-Cola, and General Electric are considered to be trendsetters and leaders in quality, so companies from nearly every industry study them and copy their best practices (Wilkinson, Adrian and Hugh, 2006).

Business analysts note that noncompetitive benchmarking is a broader and sometimes more useful instrument of quality control. By only benchmarking against competitors, a company ensures it will be as good as that competitor. Through benchmarking against the best companies in the world, a company can aspire to be as good as those companies and can surpass the competition in its own industry. Companies may find it easier to gain access to information about companies they do not compete with because they are not seen as a threat to the well-being of the company.

The second type of noncompetitive benchmarking is internal benchmarking, which involves comparing functions or processes in different departments within the same organization. Internal benchmarking is often seen as a logical starting point for a business that is attempting to use benchmarking for the first time. To successfully benchmark, a company must first look closely at its own practices and conduct a rigorous self-assessment (Hinckley and Martin, 2007). Once that self-assessment is completed, the company has a good idea of where it stands on each quality issue and can successfully compare itself to other companies. The self-assessment must be honest and thorough. It should identify weaknesses, but

should also highlight strengths and ways of improving weaknesses that are identified should be tied to company strategic aims (Kinni and Theodore, 2005).

2.1.2 Supplier Partnering Practices

Supplier partnering is an increasingly common practice globally. The manufacturers work directly with their parts and components suppliers to improve quality at the supplier's location (Wilkinson, Adrian and Hugh, 2006). This can involve direct participation in the supplier's operations that is staff from the manufacturer might work on site at the supplier's office or provide technical assistance and equipment or simply a very close working relationship that more resembles a partnership rather than a simple business transaction between two unrelated firms (Van de and Vliet, 2006).

One of the methods of partnering with suppliers involves sharing the use of statistical controls. Most globally manufacturers have switched to outsourcing as a means of cutting the costs of production (Songini and Marc, 2007). This increased emphasis on outsourcing means that the companies that supply the parts or components must place just as much emphasis on quality as the manufacturer if the finished product is to be of high quality. Among the quality issues that still need to be addressed in the manufacturer-supplier relationship are inconsistent quality levels from suppliers, even from different plants of the same supplier. To counter this challenge most firms especially the auto industry, manufacturers are overcoming the supplier problems by helping the suppliers meet quality standards (Prado and Carlos, 2007).

The other facet of supplier partnering means that the manufacturer also actively seeks out feedback from the supplier on how the former's operations can be improved. Suppliers often have a unique perspective on the industry they work in and on the companies they supply and can provide valuable advice on how to make changes for the better (Heller and Robert, 2004). When this happens, it is important that the two companies have a framework in place to manage the partnering system. This can mean that the manufacturer's purchasing department would be deemed as the intermediary between the two companies, passing information from the supplier back to the appropriate internal customers (Murphy and Elana, 2007).

2.1.3 Continuous Improvement Practices

Continuous improvement (CI) is a method for improving every facet of a company's operations and increasing competitiveness by developing a company's resources (Porter and Anne, 2007). The improvement can involve many goals producing products with zero defects or achieving 100 percent customer satisfaction but continuous improvement has the same basic principles irrespective of the set goals (Murphy and Elana, 2006). These principles include: involvement of the company at all levels, find savings by improving existing processes, not by investing more money, gathering data on company operations and quantify that data, which becomes the baseline against which improvements will be measured for continuous improvement (Morgan, 2006).

Continuous improvement most often involves creating a team that includes representatives from all areas of the company. The team first spends time learning about their company and other companies (benchmarking is common during this

phase). The necessary quantitative data is created (McManus, 2009).The team then proposes solutions to management and begins to implement those solutions. When that is achieved, follow-up mechanisms must be put in place that seeks additional improvements as time goes by. The team might change members with the passage of time, but hopefully become an established and accepted part of the company even as its schedule changes. If the plans are executed as planned the team will achieve improved quality as a result of its initial efforts (Kinni and Theodore, 2005).This can attract more employees into this concept which in turn leads to the continued search for more improvements and thus continuous improvements (Joiner and Brian, 2007).

2.1.4 International Organization for Standardization Practices

Quality control has become a huge cottage industry in the business world. The other popular concepts and terms associated with quality control are as follows: ISO 9000, this is a series of international standards that set out requirements and recommendations that specify how management operations are to be conducted at a company to ensure that quality is the end result. Most manufacturing firms conform to this specification that sets standards for companies to follow by ensuring that quality is achieved (Hinckley and Martin, 2007).

The goal of international organization for standardization (ISO) is to prevent nonconformities, all manufacturing firms must undergo a comprehensive program to apply for ISO 9000 certification, reviewing and documenting management procedures, creating job descriptions from the ground up, preparing a quality manual, and submitting to periodic standards checks by an external body. The

process enables the manufacturing firms to get the certification a badge to demonstrate its commitment to quality (Heller and Robert, 2004).

2.1.5 Six Sigma Practices

Six Sigma is a quality management tool used by manufacturing firms; it is a defect reduction program that was pioneered by General Electric's Jack Welch. This tool plays an important role in the elimination of waste and increasing efficiency. In addition, it helps in mitigating the frequency of errors that may be caused by inconsistencies and inefficiencies when the manufacturing firms are carrying out their activities. For instance, the application of Six Sigma prevents the firm from incurring stock out costs and obsolete stock (Davenport, Jerry and Tang, 2006). Quality award is a quality control practice that motivates manufacturing firms to observe quality standards and procedures when carrying out their work within and outside the firm (Henricks, 2006).

Quality award creates a positive image to the customers and other stakeholders on quality goods and services offered by a particular firm. This helps in building confidence and trust on the quality of goods offered by a manufacturing firm leading to increased customer satisfaction (Conlin, 2008). To attain this award large and small manufacturing firms should carry out a rigorous set of quality standards through a continuous process while observing quality control measures for example giving employees an incentive to improve quality and as a means of demonstrating to customers their commitment to quality (Caringo and Maria, 2006).

Another quality tool commonly used in manufacturing firms is 'Poka Yoke' a Japanese term that comes from two words that mean avoid error. This concept refers to any tool or process used to prevent a mistake (Buttle, 2007). This concept is mostly applied by small manufacturing firms as a way of reducing errors since it's easy to use and relatively inexpensive to detect and correct errors. This makes it easy for small businesses and manufacturing firms to practice and observe quality standards to provide quality goods and services (Beard and Thomas, 2007). There are other factors that could affect the financial performance of cement manufacturing firms in Kenya e.g. political, environmental among others though our research focuses on the quality management practices.

2.2 The Impacts of Quality Management Practices on Financial Performance

Harrington (2001) described quality as doing the job right every time. Quality management practices are used by most manufacturing firms as a competitive strategy to achieve increase return on investment and sales growth of manufacturing firms this is as a result of reduced costs, and enhanced customer satisfaction. According to Eldridge et al. (2006) quality is crucial for business competition that could be applied by any company and its implementation results in substantial cost reduction and increment of revenues. Bricknell (2006) also explains the relationship between quality management practices and business improvement as a whole through making awareness in each and every part of an organization in order to remove errors and minimize waste.

According to Dahlgaard et al. (2002), quality management is essential for survival of organizations in the market. Palmberg and Garvare (2006) also mentioned several researchers who had dealt with the issues of quality management, process management and self-assessment and their positive impact on the improvement of productivity and profitability of companies. Quality management practices encourage and motivate employees to enhance their skills, commitment and productivity by giving them information, knowledge, power and rewards (Goetsch and Davis, 2007). Research by various scholars for example Neal and Tromley (2005), Reed et al., (2006), has shown that productivity is the measure most directly affected by the application of the quality management principles (Morris, 2003). The adoption of quality management concepts inspires most firms and employees to succeed and grow and thus improving their performance and productivity (Oakland, 2003).

Successful implementation of quality management practices and its impact on financial performance has been studied by different researchers (Hendricks and Singhal, 2009, 2001; Eriksson and Hansson, 2002; Sharma and Gadenne, 2008). The results of these studies by various scholars and researchers have shown a positive relationships between quality management and financial results specifically on profitability and productivity are Farris and Reibstein (1979) and (Craig and Douglas (1992).

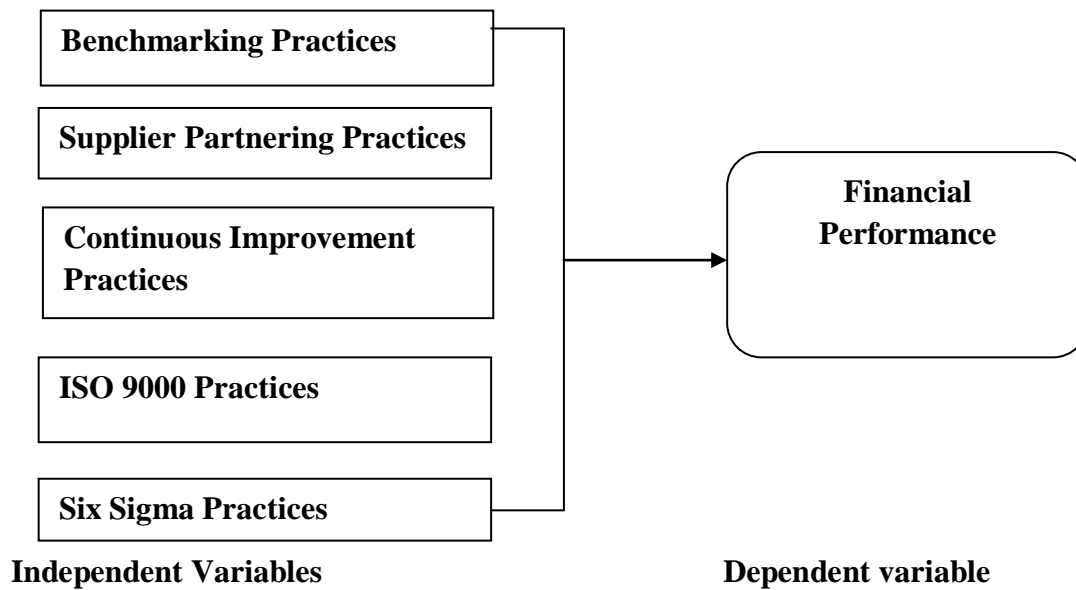
Other empirical studies have investigated quality management as a strategy of reducing costs and wastes (Crosby, 1997). The results of these studies shows that quality management practices leads to reduction of waste due to inefficiencies and poor quality management practices (Deming, 1994). Many researchers have

also published the existence of the relationship between adoption of quality management practices and performance (Adams et al., 2009).

Sharma and Gadenne (2010) reviewed many literatures from various sources for inconsistency of quality management on performance improvement, the results of this study revealed that: cultural and behavioral factors, buyer-supplier relationships, the degree of international competition, short term versus long term focus, and lack of attention to the human aspect were the cause for poor quality management (Edwards and Sohal, 2003). In another study, Backstrom (2009) investigated on the causes of poor quality management practices by manufacturing firms in Europe, the study found that ineffective change management (Sebastianelli and Tamimi, 2003), lack of quality goals, quality policies, and quality plans, lack of commitment of individuals and organizations and the working environment were the major causes of poor implementation of quality practices (Klefsjo et al., 2008).

2.4 Conceptual Framework

From the basis of this study, the independent variables affect immensely the dependent variable, which is financial performance of cement manufacturing firms in Kenya. To this extent therefore, improved financial performance of cement manufacturing firms in Kenya highly depends on the degree of the fore mentioned quality management practices. The study will use a conceptual model indicated below to explain broadly how the six quality management practices leads to financial performance of cement manufacturing firms in Kenya. Below is a conceptual representation of this argument.



Source: (Researcher, 2014)

2.5 Summary of the Literature Review and Knowledge Gap

Review of empirical literature. The empirical literature encompasses the need for quality management practices and how they influence financial performance of cement manufacturing firms in Kenya. Studies have been done in relation to quality management firms in the manufacturing industry, previous local studies by Kamau (2013), Wachira (2013) and Ogada (2012) have concluded that quality management practices are important for improving performance and the quality of goods and services provided by these manufacturing firms. However, none of the studies have addressed issues of quality management practices and financial performance in all the cement manufacturing firms in Kenya. This study therefore finds it necessary to address these issues by determining the quality management practices adopted by cement manufacturing firm in Kenya and the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya.

CHAPTER THREE:RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures used by the researcher to collect and analyze data collected from the field and other secondary sources. It describes the research design, the population of the study, sampling procedure, data collection and data analysis techniques.

3.2 Research Design

This study used a cross sectional research design since it focused on quality management practices and performance of the cement manufacturing firms.A Research design refers to how data collection and analysis are structured in order to meet the research objectives through empirical evidence (Cooper & Schindler, 2006).

3.3 Population of the Study

The population of the study included all the six cement manufacturing firms in Kenya namely: Bamburi Cement Limited, Rhino Cement Foundation, East African Portland Cement Company, Mombasa Cement Company, Savannah Cement Company Limited and National Cement Company limited. The production managers and finance managers interviewed in all the six cement manufacturing firms were 76 total. Population refers to an entire group of individuals, events or objects having common characteristics that can be observed and measured (Yin, 2003). According to the Kenya Association of Manufacturers (KAM, 2013) there are 6 cement manufacturing firms in Kenya as at the year

2014. Census survey was conducted in the entire six cement manufacturing firms in Kenya.

3.4 Data Collection

The study used both primary and secondary data sources since the nature of the data was quantitative and qualitative. The respondents were picked randomly from their respective departments. Cluster sampling was used in selecting the respondents from their respective cement manufacturing firms (Mugenda and Mugenda, 2003). The respondents chosen for this study were the operation managers, quality managers and finance managers of all the six cement manufacturing firms. This is because they were deemed to understand the quality management practices adopted by cement manufacturing firms and their impact on financial performance. The researcher collected primary data by use of a semi structured questionnaire. The questionnaire was structured into two sections; the first section will sought data on quality management practices used by cement manufacturing firms in Kenya, the second section sought data on the impact of quality management practices on financial performance of cement manufacturing firms in Kenya. The questionnaire was administered through a drop and pick later method at an agreed time with the researcher. Secondary data was sourced from the Kenya Association of manufacturers and audited annual financial statements.

3.5 Data Analysis

Descriptive statistics was used to determine the quality management practices used by cement manufacturing firms in Kenya. A regression model was used for establishing the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya. The model adopted

consisted of six variables: The independent variables were quality management practices while the dependent variable is financial performance of cement manufacturing firms in Kenya.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Y_F =Financial performance β_1 =Benchmarking

β_2 =Supplier Partnering

β_3 =Continuous Improvement

β_4 =ISO 9000

β_5 =Six Sigma

β_0 and X =Regression Constants

e = Error term.

The study used a linear regression model to show the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya. Proper implementation of quality management practices led to an increase in financial performance of cement manufacturing firms in Kenya.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This section covers the summary data analysis and interpretations of findings, results and discussions. This study was sought to establish the quality management practices adopted by cement manufacturing firm in Kenya and to determine quality management practices and financial performance of cement manufacturing firms in Kenya.

4.2 Response Rate

The response for this study was 60 out of the target population of 76 respondents'. This represents 78.9% of the respondents, 6 of the distributed questionnaires were defective, 10 of the respondents cited busy schedules as the reasons for not responding. 78.9% response was considered a sufficient representation of the population for this study.

4.3 Quality Management Practices

The study sought to determine the quality management practices adopted by cement manufacturing firms in Kenya. The respondents were asked to indicate the extent to they agreed with the following statements on the Quality Management Practices used by cement manufacturing Firms in Kenya using a five point likert scale. Below are the findings as provided below:

Table 4.1 Quality Management Practices

Benchmarking	N	Mean	S.D
Cement manufacturing firm conducts a continuous process of measuring products services and practices against competitors.	60	2.51	.654
Cement manufacturing firm compares themselves against the best performing companies in the world.	60	2.56	.644
Cement firm can identify weaknesses and work towards improving it.	60	2.65	.702
Cement firm practice competitive benchmarking.	60	3.01	.819
Average		2.683	.705
Supplier Partnering			
Cement firm work directly with suppliers to improve quality of service.	60	3.41	.671
Cement firm share the use of statistical controls with supply chain partners.	60	2.42	1.144
Cement firm practice outsourcing to cut costs of production.	60	3.16	1.002
Cement firm seek out feedback from suppliers.	60	3.47	1.004
Average		3.115	.955
Continuous Improvement			
Cement manufacturing firm work towards improving every facet of the firm.	60	3.52	.672
Cement manufacturing firms produce goods at zero defects.	60	3.64	.669
Cement firm are able to achieve 100% customer satisfaction.	60	3.85	.764
Cement firm observe quality improvement at all levels.	60	4.18	.878
Cement manufacturing firm has create a quality team	60	4.03	.892
Average		3.84	.775
ISO Certified			
Cement firm observe international standards and	60	4.55	.878

requirements			
Cement manufacturing firm is ISO certified	60	4.46	.896
Cement manufacturing firm prevent non conformity	60	4.17	.779
Cement manufacturing firm undergoes a comprehensive program to apply for ISO 9000	60	3.82	.765
Cement manufacturing firm reviews documents and manage procedures	60	4.25	.830
Cement firms undergo a process that enables them to get certification.	60	4.54	.978
Average		4.30	.854
Six Sigma			
Cement manufacturing firm eliminate waste	60	2.35	.551
Cement manufacturing firm reduce stock out costs	60	2.48	.497
Cement manufacturing firm creates a positive image to customers and other stakeholders	60	2.56	.632
Cement firm work towards producing quality goods and services	60	2.19	.695
Average		2.39	.593

Source: Research Findings

From the above analysis, it was discovered that the most popular quality management practices among cement manufacturing firms in Kenya were; ISO 9000 certification, continuous improvement, supplier partnering, benchmarking and six sigma with a mean score of 4.30, 3.84, 3.115, 2.28, 2.39 respectively. Further, the analysis indicated that six sigma quality management was least implemented in cement manufacturing firms with a mean score of 2.39

4.4 The Effect of Quality Management Practices on Financial Performance of Cement Manufacturing firms in Kenya.

The study examined the extent to which the quality management practices lead to financial performance of Cement Manufacturing firms in Kenya in terms of organizational sales turnover, Return on Assets, Net Income and reduction in cost. Below are the results of the findings.

4.4.1 Organization Sales Turnover

The study sought to determine the level of sales turnover in the year 2013. It was revealed that most cement manufacturing firms in Kenya recorded sales turnover of more than KES 500 Million this was pointed out by 80% of the respondents. 20% of the respondents indicated that cement manufacturing companies recorded a sales turnover of less than KES 500 Million. It was discovered that this level of sales turnover of cement manufacturing firms played a crucial role in enhancing financial performance.

4.4.2 Return on Assets

The study sought to determine the extent to which return on assets of cement manufacturing firms contributed to financial performance of these firms in 2013. The findings proved that most cement firms reported a ROA of between (3 to 5%), this is represented by 80% of the respondents from the Cement Manufacturing Firms. The other 20% of the respondents contended that cement manufacturing firms reported between (8-12%) ROA in year 2013. This greatly contributed to financial performance of cement manufacturing firms in Kenya which was an indication that quality management practices led to an increase in return on assets.

4.4.3 Net Income after Taxes

The researcher examined the average Net Income after tax for year 2013. The results from the respondents revealed that 55% of the cement manufacturing firms reported between (KES 250-500M), net income in the year 2013. 45% of the respondents indicated that cement manufacturing firms recorded above KES 500 Million on Net income after Tax. According to the findings, most cement manufacturing firms recorded above KES 400 million as net income which highly contributed to the financial performance. This means that proper implementation of quality management practices led to an increase in net income after tax.

4.4.4 Reduction in Cost

The study reviewed the level of cost reduction by cement manufacturing firms in Kenya in the year 2013 in order to determine the extent to which cost reduction led to financial performance of cement manufacturing firms. The results of the analysis revealed that the average percentage of cost reduction of cement manufacturing firms ranged between (0-4%), this was represented by 75% of the respondents, 25% of the respondents that indicated that the average percentage of cost reduction of cement manufacturing firms in year 2013 ranged between (5-9%). In reference to the findings, the results of cost reduction significantly contributed to increase in profitability leading to financial performance of cement manufacturing firms in Kenya.

This implies that most cement manufacturing firms that adopted quality management practices were able to reduce their costs significantly which in turn contributed to financial performance of firms.

4.5 Regression Analysis

Regression analysis was used to show the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya.

4.5.1 Model Summary

The used the model summary to determine the correlation between quality management practice and financial performance of cement manufacturing firms.

Table 4.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718(a)	.515	.657	.243

The model summary table provides information about the regression line's ability to account for the total variation in the dependent variable. Further, the model summary for the regression model has a correlation coefficient of .718 when quality management practices variables namely: Benchmarking, supplier partnering, continuous improvement, ISO 9000 and Six Sigma. The correlation coefficient increases by a unit as a result of a corresponding increase in the independent variables. The model summary has been used to determine the correlation between quality management practices and financial performance cement manufacturing firms.

4.5.2 Analysis of Variance

Analysis of Variance was used to establish the impact of the quality management practices on the financial performance of cement manufacturing firm.

Table 4.2 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.037	5	0.2074	4.846	.026(a)
	Residual	2.312	54	.0428		
	Total	2.367	59			

Source: Research Findings

From the findings ANOVAs results, the probability value of 0.026(a) was obtained implying that the regression model was significant in predicting the relationship between quality management practice and financial performance of cement manufacturing firms in Kenya. The independent variables were statistically significant since their level of significance was less than 5%.

4.5.3 Test for Coefficients

This test was carried out to determine whether there was a relationship between quality management practices and financial performance of cement manufacturing firms in Kenya. Below are the results of the findings provided in table 4.3 below:

Table 4.3 Test for Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.345	0.163		.110	.000
Benchmarking	1.103	.495	.102	.249	.003
Supplier Partnering	.134	.0123	.128	.645	.002
Continuos Improvement	.057	.014	.427	.609	.004
ISO 9000	.462	.110	.641	.101	.001
Six Sigma	.352	.120	.542	.110	.003

a. Dependent Variable: Financial Performance

Source: Research Findings

From the above findings, the following regression model was obtained as provided below:

$$ROA = 0.345 + 1.103X_1 + .134X_2 + .057X_3 + .462X_4 - .352X_5$$

Using the above model, it is possible to determine the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya using the following independent variables: Benchmarking, supplier partnering, continuous improvement, ISO 9000 and Six Sigma. Holding all other factors constant, an increase in one unit of the independent variables leads to a corresponding increase in the dependent variable. The independent variables in the above model are; however, significant since all of them have p-values of less than 5% as shown in the Table 4.3 above.

4.6 Discussions

From the above analysis, it was discovered that the most popular quality management practices among cement manufacturing firms in Kenya were: ISO 9000 certification, continuous improvement, supplier partnering, benchmarking and six sigma respectively. Further, the analysis indicated that six sigma quality management was least implemented in cement manufacturing firms with a mean score of 2.39. From the findings ANOVAs results, the probability value of 0.026(a) was obtained implying that the regression model was significant in predicting the relationship between quality management practice and financial performance of cement manufacturing firms in Kenya.

These findings are coherent with a study conducted by Hendricks and Singhal (2007) has provided evidence of an existing relationship between quality management practices and financial performance of manufacturing firms and the effectiveness of the implementation of quality management practices. A study by

Adam et al. (2007) has shown that there is a positive impact of quality management practices on financial performance of a firm. In addition, Choi and Eboch (2008) found a significant direct link between quality management practices and performance of a firm. Also, a survey was carried out by Moghimi and Anvari (2014) to evaluate the relationship between QM and financial performance of 40 Iranian cement companies revealed a positive relationship between QM and financial performance of cement manufacturing firms in Iran.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The response rate was 78.9%, this was considered a sufficient representation of the population for this study. From the above analysis, it was discovered that the most popular quality management practices among cement manufacturing firms in Kenya were: ISO 9000 certification, continuous improvement, supplier partnering, benchmarking and six sigma with a mean score of 4.30, 3.84, 3.115, 2.68, and 2.39 respectively. Further, the analysis indicated that six sigma quality management was least implemented in cement manufacturing firms with a mean score of 2.39

It was further revealed that sales turnover of cement manufacturing firms played a crucial role in enhancing financial performance. The other 20% of the respondents contended that cement manufacturing firms reported between (8-12%) ROA in year 2013. This greatly contributed to financial performance of cement manufacturing firms in Kenya. According to the findings, most cement manufacturing firms recorded above KES 400 million as net income which highly contributed to the financial performance. The results of the analysis revealed that the average percentage of cost reduction of cement manufacturing firms ranged between (0-4%), this was represented by 75% of the respondents, 25% of the respondents that indicated that the average percentage of cost reduction of cement manufacturing firms in year 2013 ranged between (5-9%). In reference to the findings, the results of cost reduction significantly contributed to increase in

profitability leading to financial performance of cement manufacturing firms in Kenya.

The model summary for the regression model has a correlation coefficient of .718 when quality management practices variables namely: Benchmarking, supplier partnering, continuous improvement, ISO 9000 and Six Sigma

From the findings ANOVAs results, the probability value of 0.026(a) was obtained implying that the regression model was significant in predicting the relationship between quality management practice and financial performance of cement manufacturing firms in Kenya.

Using the above model, it is possible to determine the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya using the following independent variables: Benchmarking, supplier partnering, continuous improvement, ISO 9000 and Six Sigma. Holding all other factors constant, an increase in one unit of the independent variables leads to a corresponding increase in the dependent variable.

5.2 Conclusions

It was concluded that the main quality management practices among cement manufacturing firms were ISO 9000 certification, continuous improvement, supplier partnering and six Stigma. According to the findings, these quality management practices had the highest mean since they were high implemented in cement firms in Kenya.

It further concluded that better implementation of quality management practices led to improved reduction in costs, increased sales turnover, high net profit leading to organizational performance. The findings revealed that most cement manufacturing firms that implemented quality management practices recorded high sales turnover leading to organizational performance.

5.3 Recommendations

From the study findings, it was discovered that the most popular quality management practices among cement manufacturing firms in Kenya were; ISO 9000 certification, continuous improvement, supplier partnering, benchmarking and six sigma respectively. Further, the analysis indicated that six sigma quality management was least implemented in cement manufacturing firms with a mean score of 2.39. Therefore, this study recommends that cement manufacturing firms should consider adopting and implementing other quality management practices for example Six Sigma and compare the benefits and the challenges of these quality practices. This will provide a better platform of choosing the best quality management practices that lead to improved organizational performance.

The study also recommends that cement manufacturing firms in Kenya should benchmark themselves with the best performing firms globally in order to find out the quality management practices that the firms use in enhancing competitiveness. This will shed more light on the best quality management practices to adapt to increase organizational performance.

5.4 Suggestions for Further Studies

Future researchers and academicians should research on the effect of quality management practices in another sector for example the banking industry or the

insurance industry then findings and conclusions can be drawn based on concrete facts.

5.5 Limitations of the Study

The cement firms works under strict confidentiality and therefore most of the respondents agreed to fill the questionnaire on condition that the information could be treated with a lot of confidentiality and it was only for academic purposes.

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Appendix I: Sample Questionnaire

This Research is conducted with the authorization of the University of Nairobi, Faculty of commerce and School of Business. (Please tick responses as appropriate. where necessary tick as many items as you find relevant.)

Section A: Quality Management Practices used by Cement manufacturing Firms in Kenya

Please indicate the extent to which you agree with the following statements on the Quality Management Practices used by cement manufacturing Firms in Kenya.

The scale below will be applicable: 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent.

No	Statement	1	2	3	4	5
1	Benchmarking					
	Cement manufacturing firm conducts a continuous process of measuring products services and practices against competitors.					
	Cement manufacturing firm compares themselves against the best performing companies in the world.					
	Cement firm can identify weaknesses and work towards improving it.					
	Cement firm practice competitive benchmarking.					
2	Supplier Partnering					
	Cement firm work directly with suppliers to improve quality of service.					
	Cement firm share the use of statistical controls with supply chain partners.					
	Cement firm practice outsourcing to cut costs of production.					
	Cement firm seek out feedback from suppliers.					
3	Continuous Improvement					
	Cement manufacturing firm work towards improving every facet of the firm.					
	Cement manufacturing firms produce goods at zero defects.					

	Cement firm are able to achieve 100% customer satisfaction.						
	Cement firm observe quality improvement at all levels.						
	Cement manufacturing firm has create a quality team						
4	ISO 9000						
	Cement firm observe international standards and requirements						
	Cement manufacturing firm is ISO certified						
	Cement manufacturing firm prevent non conformity						
	Cement manufacturing firm undergoes a comprehensive program to apply for ISO 9000						
	Cement manufacturing firm reviews documents and manage procedures						
	Cement firms undergo a process that enables them to get certification.						
5	Six Sigma						
	Cement manufacturing firm eliminate waste						
	Cement manufacturing firm reduce stock out costs						
	Cement manufacturing firm creates a positive image to customers and other stakeholders						
	Cement firm work towards producing quality goods and services						

7.Any other, Please

indicate.....
.....
.....
.....

Section B: The Impact of Quality Management Practices on Financial Performance of cement manufacturing firms in Kenya.

Please provide requested data or tick appropriately as required below

1. Please provide your organization sales turnover for the year:

Year	2013
Turnover in KES(million)	

2. Please provide the average Return on Assets by your organization for the year

Year	2013
Percentage (%)	

3. Please provide your organization's Net Income after Tax in KES for the year.

Year	2013
Less than Zero	
0-200 Million	
200-600 Million	
Above 600 Million	

4. Please provide the reduction in cost achieved by your organization (%) for the year.

Year	2013
Less than Zero (%)	
0-5%	
5-10%	
Above 10%	

THANK YOU FOR YOUR TIME