IMPACT OF ISO 9001 QUALITY CERTIFICATION ON THE FINANCIAL PERFORMANCE OF ORGANIZATIONS LISTED AT THE NAIROBI STOCK EXCHANGE

BY

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DECLARATION

This research project is my original work and has not been submitted for the award of a degree in any other university.

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This research project has been approved for presentation by my supervisor,

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I want to thank my family members who have been extremely supportive of me during my pursuit of this project. I am grateful to all of my fellow students and the staff of the School of Business for their tremendous support and encouragement during my research.

May God bless you all.

DEDICATION

I dedicate this project to Almighty God who has been my strength and wisdom. To my family, for your love and encouragement.

ABSTRACT

The academic literature offers two approaches to explain how quality management practices could have an effect on business performance. First, the operational view highlights that firms adopting quality management schemes such as ISO 9001, improve their performance as a result of the prevention of production process failures and that the costs linked to quality improvements must be seen as investments, and the benefits from those investments are reflected in firm performance measures leading to the achievement of important financial and organizational gains.

The study shows that certified companies had better results not only after certification but also prior to the certification date. The values of sales, size, operation expenses and earnings per share three years before and after certification however shows no significant differences implying that the good performance was visible in the companies before and after ISO 9001 certification.

The analysis however showed a significant difference between ISO 9001 certified and non-certified firms. There was a significant difference in the mean values of the variables between certified and non-certified firms except for operating expenses. Based on the high values of the variables among the ISO 9001 certified firms, this implies that ISO 9001 certification had such a significant impact on general firm financial performance.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Today's business managers in general are not sceptical of whether they shall adopt ISO 9001. Instead, they are more concerned with how to implement the quality management standard most successfully and how their companies can be differentiated from other ISO 9001 certified competitors in the industry after obtaining the certification. ISO 9001 is a supplier quality guarantee model formulated from the customer's view point which gives customers an assurance about the quality of products or services supplied which they can use as a basis for deciding whether or not to purchase products or services. The premise of ISO 9001 is that well defined and documented procedures improve consistency of output. The choice of implementing ISO 9001 family Quality Management Standards makes a firm seek internal improvements and strategic benefits associated with the quality program. The internal improvements include requiring that all business activities related to a product be conducted in a three part continuous cycle of planning, control and documentation leading to better documentation, greater quality awareness, increased productivity and efficiency. External benefits will include good customer perception on quality, improved customer satisfaction, increased competitive advantage and reduced customer quality audit.

Fluctuating structural economic, social and political conditions world over and in Kenya particular make it necessary for all organizations to review and tightly control costs and expenditures in an endeavour to maximize shareholder wealth. At such periods of time, management often has the tendency to put quality on the back burner

due to financial constraints. Ironically, those are the occasions which present the greatest opportunities for minimizing operational losses by the judicious pursuit of quality improvement projects. Active participation in these processes has presented great challenges to the implementers as well as the shareholders of the restructured firms. This phenomenon has brought to face the grim reality to shareholders and managers alike, that for an organization to succeed and gain a competitive edge, a traceable standardized management system has to be put in place that would provide a benchmark in the firm's or the organizations undertakings in dealings with employees, its suppliers of raw materials and buyers of its products or services.

The widely accepted view is that implementing an effective quality improvement program requires that firms move away from the philosophy of using inspection to weed out defective products to a philosophy of preventing defects from occurring in the first place. The principles, procedures, and elements to achieve this include top management commitment, improved communications between management and workers, training and education, higher employee involvement, continuous process improvement, statistical process control, developing long term relationships with quality suppliers, and a true focus on quality throughout the entire organization; as documented in Edward Deming's 14 points (Deming, 1982), Juran's Breakthrough Sequence (Juran and Gryna 1980), and Crosby's 14-point program (Crosby, 1979).

These steps are difficult to implement because they involve drastic changes in management philosophy, changes in management/labour relations, changes in performance measurement and reward systems, and uprooting entrenched habits and methods. Furthermore, these changes need to be adopted wholeheartedly by the entire organization which requires that the organization learns how to change. Therefore, it

is not surprising that recent surveys by some management consulting firms suggest that many firms have not been effective at implementing quality improvement programs. It is often assumed by management that consideration for quality improvement related to the products and services offered raises the cost of operations above the current levels. It is based on the assumption that improvements inherently involve higher expenditures. It can be simply demonstrated that not all quality improvements carry higher price tags higher efficiency may be obtained, in some cases by simplifying tasks, thereby reducing costs.

Moreover, for certain cases of quality improvements, the added costs associated with the quality improvement are outweighed by the financial benefits derived from the changes. Recently, many firms in Kenya have invested substantial time and money to achieve and maintain ISO 9001 registration. The question addressed in this study is whether the firms' shareholders benefit from this registration process. The primary reason to believe shareholders may benefit from ISO registration is that successfully completing the registration process demonstrates management's commitment to quality. The increase in perceived quality should result in new customers, increased sales, and reduced operating costs. In some cases, the ISO 9001 standard has been imposed on small firms by their larger customers, particularly in the automobile industry. Van der Wiele and Brown (1997) study revealed that the immediate benefits of certification included an enhanced awareness of quality and related issues, improved customer service, strengthened managerial control, and greater uniformity in product and service quality; at the same time, it appeared that some benefits might take a longer period to emerge.

ISO 9001 certification has emerged as a managerial tool that aims to achieve a better performance at both the firm and the plant level through continuous improvements of processes and techniques. The academic literature offers two approaches to explain how quality management practices could have an effect on business performance. First, the operational view highlights that firms adopting quality management schemes (such as ISO 9001) improve their performance as a result of the prevention of production process failures (reducing internal process variability), the empowerment of workers to identify potential sources of quality gains, and a commitment to customer satisfaction (Garvin,1984). Second, the strategic approach to adoption emphasizes that the costs linked to quality improvements must be seen as investments, and the benefits from those investments are reflected in firm performance measures (Rust, Zahorik and Keiningham, 1995).

As a result, it can be expected that quality management enhances product quality (design, conformance and durability, amongst others), leading to the achievement of important financial and organizational gains derived from technological innovations and quality improvements (Dean and Bowen, 1994). Despite these arguments, empirical research examining the consequences of the adoption of ISO 9001 certification is not conclusive. On the one hand, some papers show a strong effect of ISO 9001 certification on business performance (Corbett, Montes-Sancho and Kirsch, 2005; Gonza´ lez- Benito and Gonza´ lez-Benito, 2005; Terziovski, Power and Sohal, 2003).

Sun (1999) investigated ISO 9001 certification in Norwegian companies and found that it was significantly correlated with quality results, especially the reduction of defective products and customer complaints and the improvement of business performance such as profitability and productivity. Lloyds Register of Quality

Assurance's (1996) survey found certified companies sales growth, profit margins and return on capital employed were much better than the industry average. Support for this can be found in a Spanish longitudinal study that compared the return on assets employed of 400 accredited and 400 non–accredited firms between 1994 and 1998 (Heras et al. 2002). On the other hand, the positive relationship between ISO certification and business performance appears as weak and not always significant in empirical research (Tsekouras, Dimara and Skuras, 2002). Batchelor's (1992) study of over 600 registered UK firms, found that only 15 per cent of firms achieved gains from quality certification. These benefits were largely internal, such as reduction in error rates and procedural efficiency, rather than external dimensions such as market share. Terziovski et al. (1997) study of 1,000 firms in Australia and New Zealand that found that Quality certification had no significant, positive relationship with business performance. Haversjo (2000), analysis of the returns on capital employed of 800 companies between 1989 and 1995 found no significant improvement post certification.

Moreover, operational and strategic-oriented literature offers two main explanations for the feeble impact of ISO certification on firm performance. First, the lack of commitment from firms' personnel and management team regarding ISO implementation, along with the fact that ISO results are not observable in the short term, may lead to system failure (Samson and Terziovski, 1999). Second, quality management practices, such as ISO certification, might be context reliant on other factors such as market environment and the intensity of competition (Karmarkar and Pitbladdo, 1997; Powell, 1995).

1.2 STATEMENT OF THE PROBLEM

ISO 9001 certification has emerged as a managerial tool that aims to achieve a better performance at both the firm and the plant level through continuous improvements of processes and techniques. The academic literature offers two approaches to explain how quality management practices could have an effect on business performance. First, the operational view highlights that firms adopting quality management schemes such as ISO 9001, improve their performance as a result of the prevention of production process failures (reducing internal process variability), the empowerment of workers to identify potential sources of quality gains, and a commitment to customer satisfaction (Garvin, 1984). Second, the strategic approach to adoption emphasizes that the costs linked to quality improvements must be seen as investments, and the benefits from those investments are reflected in firm performance measures (Rust, Zahorik and Keiningham, 1995). As a result, it can be expected that quality management enhances product quality (design, conformance and durability, amongst others), leading to the achievement of important financial and organizational gains derived from technological innovations and quality improvements (Dean and Bowen, 1994).

Mwihaki (2006) studied the effect of ISO certification on operation performance and found a weak positive relationship between sales as the dependent variable and predictors variables of customer complaints, production rejects, sales return and conversion costs in the study.

Gatimu (2007) study found that firms that adopted ISO 9001 were firms that already had a quality system in place and therefore adoption of the standard was to enable the

firm strengthen and improve its already existing quality system. The main reasons that motivated firms to adopt ISO 9001 were identified as: to enable firm gain competitive advantage mainly in overseas markets, aid the firm in increasing efficiency and productivity, to play a role as part of the firm's larger improvement strategy and to enable the firm compete more effectively in overseas markets.

Kimani (2007) study identified greater quality awareness leads to improved product and improved customer perception while the greatest challenge identified was that certified organizations had on a moderate scale experienced high surveillance audit costs and the fact that ISO 9001 will not work without management support.

Despite these arguments, empirical research examining the consequences of the adoption of ISO 9001 certification is not conclusive. On the one hand, some papers show a strong effect of ISO 9001 certification on business performance (Corbett, Montes-Sancho and Kirsch, 2005; Gonza´ lez-Benito and Gonza´ lez-Benito, 2005; Terziovski, Power and Sohal, 2003). On the other hand, the positive relationship between ISO certification and business performance appears as weak and not always significant in empirical research (Tsekouras, Dimara and Skuras, 2002).

Other than the research done elsewhere in other countries, the studies done in the Kenya market have been too few to give a conclusive result and none has been carried out on the impact of ISO 9001 Quality Certification on financial performance of organizations in Kenya, hence there existed a research gap that the necessitated the need to carry out the research. This study attempts to establish if the financial performance of a firm in Kenya changes following its certification to ISO 9001.

1.3 RESEARCH OBJECTIVES

1. To determine the impact of ISO 9001 Quality Certification on the financial performance of firms listed at the Nairobi Stock Exchange.
2. To compare the financial performance of ISO 9001 certified firms and non-ISO 9001 certified firms listed at the Nairobi Stock exchange.

1.4 SIGNIFICANCE OF THE STUDY

The research aims to contribute to literature by offering insights on impact of ISO 9001 Quality Certification on financial performance to an organization. It is anticipated that the findings of this study will be important to;

Organization management and directors as it will provide an insight into the various approaches of ISO 9001 quality management practises and the benefits that may accrue following its implementation.

The government in the developing policy papers, policy making regarding taxation and other regulatory requirements and guidelines on quality management tools in the country.

The academicians who will be furnished with relevant information regarding ISO 9001Quality Management practices. The study will contribute to the general body of knowledge and form a basis for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the literature on the reasons for implementing ISO 9000 series quality management system and its impact on the firm.

2.2 BACKGROUND

The International Organization for Standardization (ISO) is the world's largest developer of voluntary International Standards for business, government and society. ISO has a membership of 163 ("ISO", 2010) national standards institutes from countries large and small, industrialized and developing, in all regions of the world. Kenya is represented in this organization by the "Kenya Bureau of Standards". ISO develops voluntary technical standards which add value to all types of business operations by contributing to the dissemination of technology and good business practices by supporting the development, manufacturing and supply of more efficient, safer and cleaner products and services.

Emphasis on quality has led to demand by organizations for external recognition of quality, which in turn provided some impetus for the International Organization for Standardization's (ISO) development of the ISO 9000 series of international quality management standards for quality assurance of products and services. ISO/TC 176, comprising experts from businesses and other organizations around the world, monitors the use of the standards to determine how they can be improved to meet user needs and expectations when the next revisions are due. All ISO standards are

reviewed regularly for relevancy; changes are made when there is a demonstrated need to improve the standard.

ISO 9001 is a supplier quality guarantee model formulated from the customer's view point which gives customers an assurance about the quality of products or services supplied which they can use as a basis for deciding whether or not to purchase products or services. Up to the end of December 2008, at least 982, 832 ISO 9001 (2000 and 2008) certificates had been issued in 176 countries and economies. The 2008 total represents an increase of 31,346 (+3 %) over 2007, when the total was 951 486 in 175 countries and economies. ("ISO Survey," 2008). In Kenya the number of ISO certified firms has grown from a low of 24 in the year 2003 to a high of 204 in 2007 ("ISO Survey", 2007).

2.3 THEORETICAL FRAMEWORK

The premise of ISO 9001 is that well defined and documented procedures improve consistency of output. The ISO 9001 standards are based on the concepts that certain minimum characteristics of a quality management could be usefully standardized, giving mutual benefit to suppliers and customers and focus on process rather than product quality (Withers and Ebrahimpour, 1998). Sharma (2005) indentifies Internal Improvement theory and External Improvement theory which attempt to explain possible sources of gains following ISO 9001 certification. Both theories give a consistent view that performance of certified firms exceeds performance of uncertified firms.

The latest version of ISO 9001, which was released in November 2008, and its predecessor ISO 9001:2000 indicate that the standard is constituted by eight principles ("ISO", 2008). Thus, it is very possible that certified organizations may not implement these principles in similar extents and may exhibit varying patterns of implementation by paying extra attention to some principles that are in line with their corporate strategies. The ISO 9000 series standards introduce the eight quality management principles on which the quality management system standards are based. The eight quality management principles as defined in ISO 9000:2005, Quality management systems Fundamentals and vocabulary, and in ISO 9004:2000, Quality management systems Guidelines for performance improvement are Customer focus, Leadership , Involvement of people, Process approach, System approach to management, Continual improvement , Factual approach to decision making and Mutually beneficial supplier relationships. These principles can be used by senior management as a framework to guide their organizations towards improved performance. The principles are derived from the collective experience and knowledge of the international experts who participate in ISO Technical Committee ISO/TC 176, Quality management and quality assurance, which is responsible for developing and maintaining the ISO 9000 standards.

One of the main requirements for acquiring the ISO 9000 standards is that a firm's quality system must be documented (Curkovic and Pagell, 1999). This is generally done at two levels, a quality manual and a procedures manual (Nwankwo, 2000). However the registration process for the ISO 9001 standards consists of an audit of the implementation of the company's documented quality system after it has been verified and seen to conform to the requirements of the applicable ISO 9001 standard. A third party implements the audit (Ofori and Gang, 2001; Abraham et al., 2000).

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Registration is dependent on periodic follow up audits. Organization wishing to remain registered must always maintain their quality system compliant to ISO 9001 standards.

ISO 9001 certification is not a standardised package that can be applied in the same way in every organization (Singels et al., 2001). Although the same set of principles and guidelines for ISO 9001 implementation is widely shared by organizations, certified organizations in fact implement the standard in very different ways (Lee and Yu, 2009). "The standards only recommend the essential elements of a proper quality assurance system without recommending the way to apply them" (Tsioras and Gotzamani, 1996 p. 66). ISO 9001 is a management control procedure (Yahya and Goh, 2001) which involves a business in documenting the processes of design, production and distribution to ensure that the quality of its products and services meets the needs of customers (Quazi et al., 2002).

ISO 9001 is more to do with achieving conformance to predetermined standards than it is to do with instilling the concept of excellence associated with customer responsive management (Davis and Manrodt, 1996), or a customer value delivery orientation throughout an organization (Woodruff, 1997). Najmi and Kehoe (2001) and Heras et al (2002) suggested that ISO 9001 presents a sound basis for assuring the customer of the quality of the products and services, as well as the processes that create them. The standards implementation may also contribute towards continuous improvement since documentation and standardization are proposed as the first and the last step of any formal improvement effort (Vonderembse, 1996). Documentation of processes offers a good opportunity for companies to evaluate and improve them,

while the regular quality audits that are required by the standards offer important improvement information to the companies that are willing to use it.

2.3.1 WHY FIRMS SEEK ISO 9001 CERTIFICATION

The choice of implementing ISO 9000 family Quality Management Standards makes a firm seek internal improvements and strategic benefits associated with the quality program. The internal improvements include requiring that all business activities related to a product be conducted in a three part continuous cycle of planning, control and documentation leading to better documentation, greater quality awareness, increased productivity and efficiency. External benefits will include good customer perception on quality, improved customer satisfaction, increased competitive advantage and reduced customer quality audit. This cycle along with a necessary quality conformance system that maintains regular calibration of measuring and testing equipments are some of the immediate improvements. ISO 9001 aims to prevent shipment of product that does not meet the quality standard, thereby reducing the number of returns from the buyer, warranty costs and reworking.

Reduction of the number inspection of products from ISO 9001 certified firms also becomes a strategic benefit to purchasing firms. Continuing improvement, marketing strategy, customers' requirements are reasons cited for seeking ISO Certification (Naroola and Connell, 1996; Beattie and Sohal, 1999; Anderson *et al.*, 1999). Jones *et al.* (1997) have identified three main categories of reasons for seeking registration:

Non-developmental reasons: major customer(s) requiring certification, the desire not to be locked out of future tendering processes or markets, realization that ISO

certification is progressively becoming a requirement for doing business, the opportunity to use ISO 9001 certification as a marketing and public relations tool.
Developmental reasons: the desire to improve the company's internal processes, and the desire to enhance the overall competitive performance of the company.
Mixed reasons: a combination of developmental and non-developmental reasons.
ISO 9001 is also necessitated by the desire of a firm to meet customer requirements, improving the quality of work done, competitive advantage and as an important strategy and requirement to compete more effectively in international market (Mwihaki, 2006).

Pursuit of ISO 9001 certification is primarily motivated by external forces such as customer pressures, for advertising purposes, the need to enter the global marketplace or competitive pressures (e.g., Anderson *et al.*, 1999; Rayner and Porter, 1991; Beattie and Sohal, 1999). These factors, among others, are used to explain the prevalence of ISO 9000 certification among firms in the world today. A study on companies in Taiwan (Huarng *et al.*, 1999) has shown the dominance of external factors in the process of deciding on the implementation of a quality assurance standard. On the other hand, there is also evidence showing that the desire to create more efficient processes (i.e. improving overall company's performance) can be identified as an important reason for certification (Vloeberghs and Bellens, 1996).

Anderson et al. (1999) find that US firms with higher exports to Europe are more likely to seek ISO 9001 certification, and Corbett (2003) finds that exports drive early certifications. Adams (1999) finds that ISO 9000 certification in New Zealand increases with firm size, Tobin's Q and market segmentation. Naveh and Marcus (2000), using a detailed survey of ISO 9001 in the US, find that "going beyond" the

requirements of the standard increases its value to the firm. King and Lenox (2001) find some evidence that ISO 9001 and ISO 14000 certification respectively improve firms' environmental performance, suggesting that both standards do also have an impact on production practices.

Taylor (1995) found that the four main reasons for seeking certification were customer pressure, the desire to achieve improved efficiency and productivity, the opportunity to develop higher-grade products, and image/marketing advantages. Van der Wiele and Brown (1997), in a survey of 160 Western Australian companies, identified similar reasons for seeking ISO 9001 certification, namely customer requirements, the desire to improve customer service, marketing, internal efficiency, and the utilization of ISO 9001 as the basis for a quality push.

Although the reasons for seeking ISO 9001 registration display considerable variation, it can be concluded that companies are driven either by external circumstances, internal drive, or both forces, to seek ISO 9001 certification.

2.4 EMPIRICAL LITERATURE

2.4.1 STOCK REACTION TO ISO 9001 CERTIFICATION

While award of ISO 9001 certification is an indication that the firm has an effective quality improvement program in place, this information may not be a complete surprise to the stock market and consumers because past actions of the firms could have indicated to the stock market and consumers that the firm is trying to implement

a quality improvement program. These actions could include press releases by the firm about a shift in focus of the quality of its products and services; top management of the firm emphasizing the importance of quality in their meetings with employees, suppliers, shareholders, and analysts; and the firm organizing high visibility events such as employee recognition day on quality. Accordingly, the stock market may have assigned a probability for the success of the quality improvement program, and hence may have incorporated part of the value of such programs even before the firm has won a quality award.

The effect on expected future cash flows depends on whether improvements are made in the conformance or the performance dimension of quality. Conformance is the degree to which a product's design, manufacturing, and operating specifications meet some predetermined standards. It is a measure of the consistency of quality. Performance refers to the primary operating characteristics of products. It is a measure of the level of quality.

Docking and Dowen (1999), Beirao and Sarsfield (2002) and Nicolau and Sellers (2002) found a positive effect in the stock markets of the USA, Portugal and Spain. However, Martı´nez-Costa and Martı´nez-Lorente (2003) did not find positive effects in the Spanish stock market and Aarts and Vos (2001) found a negative relationship in the New Zealand market. Hendricks and Singhal (1996) in their research found out that the stock market reacts positively to winning quality awards announcements and implementing a quality improvement program that effectively improves conformance quality is likely to have a positive impact on the net expected future cash flows of the firm.

2.4.2 ORGANIZATION PERFORMANCE

Two recent papers using longitudinal analysis and financial data are Corbett et al. (2005) and Sharma (2005). They have found positive results of ISO 9001 implementation. Corbett et al. (2005) have found that a firms' decision to seek their first ISO 9001 certification is indeed followed by significant abnormal improvements in financial performance. They compared certified firms and not-certified firms before and after certification and they measured financial performance using different measures: ROA, ROS, cost of goods sold divided by sales, sales growth and asset turnover. Sharma (2005) also compared both kinds of firms before and after certification and used profit margin, sales growth and earnings per share as measures of financial performance.

Heras et al. (2002) presented some results that would undermine these previous studies, since they found that certified companies had better results not only after certification but also prior to the certification date, which could indicate that companies only undertake the certification process when they have enough resources and are not overwhelmed by negative results. Juran and Gryna (1980) develop the notion of an optimal conformance level by trading off the appraisal and prevention costs (the costs of achieving high quality) with the internal and external failure costs (the costs of producing poor quality products). They argue that the optimal conformance level implies a strictly positive proportion of defectives, and once the optimal conformance level has been achieved, any attempt to improve further will actually increase costs. The work of Romano (2000) presents a longitudinal analysis. It compares the growth in different measures of performance six months before and after certification. The sample is comprised of 100 Italian companies and the

performance measures were internal and external quality, quality costs and timing (cycle, manufacturing, punctuality in delivery etc.). The conclusions are that registered companies improve their internal quality and the reliability of the production process.

A reduction in the internal quality costs and an increase in the inspection costs are also noticeable. An insight into the importance of having a developmental orientation towards quality is provided by the study by Chapman et al. (1997) of large service and manufacturing firms in Australia. They found that improved financial performance (sales per employee) was linked to greater integration of quality plans into strategic business plans. This relationship was found to be stronger in service firms than in manufacturing ones. Jacobson and Aaker (1987) found product quality had a positive influence on return on investment, market share and price.

The results of an extensive study by Terziovski et al. (1997) of 1,341 manufacturing sites were contradictory. They concluded that the presence or absence of ISO 9001 certification is a poor indicator of organizational performance and quality as measured with respect to defect rates, warranty costs, and other key measures such as full on-time delivery. Batchelor (1992) supports this view by providing empirical evidence showing that only 15 percent of the 647 certified manufacturing and service organizations had derived business value on nine dimensions of organizational performance. These dimensions were market share, new customers, customer satisfaction, procedural efficiency, staff motivation, staff attitudes, error rates, wastage, and costs.

An investigation of 65 firms in the furniture industry (Forker et al., 1996) discovered that quality defined as conformance to specification was significantly related to sales growth and the return achieved on the sales growth. These findings indicate the powerful impact that better conformance can have on reducing costs, attracting and retaining customers.

Yeung et al. (2003) conducted empirical research in the Hong Kong electronics industry to study how the "objectives of gaining ISO certification", the "attitudes to implementation" and "confidence of understanding the standard" among senior management affect the development of a quality management system and organizational performance. Their results revealed that the likely cause of ISO 9001 ineffectiveness at enhancing organizational performance was senior executives' "incorrect" understanding of and attitudes to the standard. This is supported by a recent rigorous empirical study (Terziovski et al., 1997) of 1,000 firms in Australia and New Zealand that found that Quality certification had no significant, positive relationship with business performance. They noted that the principal motivation for pursuing Quality certification was the ability of the certificate to open customers' doors that were previously closed, or would close, if Quality certification were not achieved.

Surveys by Terziovski et al. (1997) and Singels et al. (2001) find no link between ISO 9000 and organizational performance among Australian and Dutch firms respectively, though Terziovski et al. (2003) do find that higher reported business performance is positively associated with a broader set of motivations for seeking ISO 9001 certification. Casadesús et al. (2001) find that Basque companies report substantial operational and financial benefits from certification.

A study conducted by the Australian Manufacturing Council (1994) found that managers of certified companies, particularly those working in the export market, voiced similar views that customer perception of product quality increases following certification. Firms with a high level of adoption in the principles ISO 9001 outperformed those with a relatively lower level of adoption in both overall performance and behavioural response (Lee and Yu, 2009), lending support to Deming's (1982) quality chain reaction theory, which states that focus on quality will lead to outcomes such as employee and customer satisfaction, efficiency, and profitability.

2.4.3 QUALITY AND COST

Empirical studies have found that quality and costs are positively correlated for differentiated-product businesses and capital good businesses (Gale and Branch 1982 and Phillips et al. 1983). It is reasonable to expect that a product with high performance quality will be more expensive to produce as it can require more reliable and durable components, more effort in designing the product, and more labour hours in manufacturing, and more of other resources. Since costs and prices are generally positively correlated, one would expect that high performance quality products will sell at higher prices. This suggests that a high performance product will sell in smaller volume, and may have a smaller market share. These are businesses where quality is likely to be equated with the performance dimension.

The empirical evidence on the relation between performance quality and price is mixed. Using quality ratings developed by Consumer Reports, which typically focus

on product performance, Reisz (1979) found that nondurables generally had a weak or negative correlation between quality and price, whereas durables showed a strong positive correlation. Studies based on experimental data instead of market data found a positive correlation (McConell, 1968). Garvin's (1983) study of the room air conditioning industry, and Abernathy et al. (1981) study of the automobile industry, shows that manufacturers with higher conformance quality have lower costs.

Surveys that have collected data on quality costs (Crosby 1979) provide additional evidence that conformance level and costs are inversely related. Studies based on PIMS data base also find that quality and costs are negatively related for homogeneous products (Gale and Branch 1982), and in component and supplies businesses (Phillips et al. 1983). On the other hand, Deming (1982) and Crosby (1979) prescribe that the optimal conformance level is zero defects. This prescription is based on the belief that producing higher conformance quality products is always less costly than producing low conformance quality products. This has led to the famous claim by Crosby (1979) that quality is "free."

Mcadam and Mckeown (1999) found that the benefits of ISO 9001 implementation far exceeded the costs. They suggested that companies should view ISO 9001 as the starting point for TQM implementation, rather than as the terminus of their quality "journey". The main benefits of certification appeared to be a reduction in customer complaints, increased productivity, lower costs, increased sales and improved control within the enterprise. Sun (2000) found better warranty costs, quality costs, defect rates and customer satisfaction of certified firms in a sample of 316 Norwegian companies.

2.4.4 MANAGERIAL CONTROL AND EMPLOYEE INVOLVEMENT

Flynn et al.'s (1995) study of the transportation, electronics and machinery industries found that good internal quality (made right first time) was associated with greater employee involvement and better process control. Greater employee involvement could be associated with the total quality ideal, while better process control should come from the quality control that underpins good quality assurance systems. This indicates that better process control should lead to lower rework and diminishing costs of quality.

Vloeberghs and Bellens (1996) also note that ISO 9001 implementation causes both internal and external changes within an organization. Internally, the company will develop a robust system of procedures, with clearly defined responsibilities and duties that will help to clarify the organizational structure. Externally, the company will be better able to respond to customers' needs, and the level of trust between the company and its customers will be increased.

A study by Van der Wiele and Brown (1997) revealed that the immediate benefits of certification included an enhanced awareness of quality and related issues, improved customer service, strengthened managerial control, and greater uniformity in product and service quality; at the same time, it appeared that some benefits might take a longer period to emerge. They suggested that, for the quality system to operate effectively, it was important that managers viewed ISO 9001 certification as merely the starting point for improving the company's internal procedures rather than an end in itself, and that employees' were committed to, and participated actively in, the process of implementation.

From the point of view of documentation, Joubert (1998) pointed out that ISO certification enables employees to communicate ideas to one another and review and alter current processes so that operational procedures are uniform between different work stations; this also reduces the time needed to train employees. As regards external benefits, certification makes the company's existing and potential customers aware that the company is seeking to provide better product quality; the company can therefore expect to enjoy greater customer loyalty and enjoy a competitive advantage, with a consequent increase in sales. Tzelepis et al. (2006) argue that the adoption of ISO 9001 reduces managerial inefficiency, rather than being a new production factor.

2.4.5 STRATEGIC BENEFIT

Findings from the World-class Manufacturing Project (Flynn et al., 1997) indicate that achieving conformance to specification with low levels of rework has a direct effect on competitive advantage, while management perception of the plant's product quality and customer service, relative to its competitors (quality differential), had an even greater impact. ``Right first time'' was strongly associated with better process flow management while quality differential was shown to be linked with better process management and quality control.

Huarng (1998) conducted a questionnaire survey to study the motivations and benefits for implementing ISO 9001 in Taiwan. He reported that ISO 9001 provided significant benefits of internationalisation, quality management, enhancing sales, and cost reduction for small and medium-sized enterprises. Moreover, he suggested that implementing ISO 9001 with the active motivation of improving enterprises and

internationalisation would lead to quality improvement as time progresses. Adanur and Allen (1995), in a survey of 150 textile companies, identified five benefits of ISO 9001: reduced customer complaints and improved supplier quality, better involvement of people, restriction of inferior-quality products from being shipped, increased business, and reduced costs.

Motwani *et al.* (1996) have summarized the benefits of ISO 9001 into six categories; doing business with European countries, recognition by the international community, marketing edge, improvement in quality, productivity and costs reduction in the need for second-party audits by prospective customers. Beattie and Sohal (1999) claim that the main strategic business benefit that ISO 9001 certification provides is an improved relationship with customers, leading to increased market share. The main operational business benefit is the documentation of operational procedures, which strengthens employee capabilities and allows the company to respond more quickly to changes in market demand. They also reported that when companies derive benefits from their ISO 9001 certification efforts, virtually all of these benefits are reported as operational improvements, such as improved efficiencies, reductions in operating costs, reductions in scrap, and fewer defects. Certification does thus lead to an improvement in product quality.

In their discussion of whether ISO 9001 certification is beneficial to Taiwanese companies, Huarng *et al.* (1999) suggest that certification was found to provide significant benefits in terms of improved quality, enhanced international competitiveness, reduced costs and increased sales. The external effectiveness that ISO 9001 can provide for companies mainly takes the form of enhanced customer

loyalty resulting from the improved relationships with customers due to the reduction in complaints. This in turn can lead to increased sales and higher market share.

Calisir et al. (2005), in a survey of 43 ISO 9001 certified Turkish textile companies, reported that most benefits of certification were actually associated with increased product quality, reduced error/defect rate in production, and increased overseas market share. Atwater and Discenza (1993) reported that their respondents from a sample of 29 firms listed the ISO 9001 registration benefits as follows: improved plant operating efficiency, greater customer satisfaction, and improved competitive position. A study by Beattie and Sohal (1999) found that improved market share was the number one benefit in the list of strategic business benefits, supported by customer service, which in turn was the second most important operational benefit.

Rayner and Porter (1991) emphasized the fact that certification tends to result in improved marketing. Magd et al. (2003) conducted a survey of 140 ISO 9001 (or 9002) certified manufacturing companies in Saudi Arabia. They successfully obtained feedback from 83 companies which were registered to either ISO 9001 or ISO 9002:1994. The results of the study suggested that an increase in quality awareness, an improvement in quality system efficiency and an improvement in customer service were found to be the most important benefits of ISO 9001. Shih *et al.* (1996) studied Taiwanese companies that had secured ISO 9001 certification, and found that certification provided significant benefits in terms of increased employee productivity, superior documentation systems, better quality control, enhanced sales competitiveness and clear division of responsibility. If a company adopts the right attitude and makes effective use of the documentation of quality processes, this can reduce the company's wastage rate, reduce delivery times, and allow the company to

achieve more success in preventing problems from occurring. If, on the other hand, a company's management becomes complaisant after securing certification, this can lead to a loss of direction that can be extremely dangerous.

Using the Profit Impact of Marketing Strategies (PIMS) data base, Buzzell and Wiersema (1981), Craig and Douglas (1982) and Phillips, Chang, and Buzzell (1983) among others, confirm the positive association between quality and market share. They find that businesses that improved quality in the 1970s increased their market share five to six times faster than those that declined in quality, and three times faster than those whose relative quality remained unchanged. A source of potential benefits of ISO 9001 adoption comes from process improvement in terms of productivity gains, cost and waste reduction, the elimination of procedural problems, better management control, quality enhancement and efficiency improvement (Bhuiyan and Alam, 2005; Casadesu´ s and Karapetrovic, 2005). Other possible mechanisms that influence firm performance have to do with marketing reasons. Acquisition and retention of customers, entry into new markets and fewer dissatisfied customers have been cited as marketing advantages of certification (Buttle, 1997).

2.4.6 CRITICISM OF ISO 9001 CERTIFICATION

Almost from its inception, critics have denounced ISO 9001 as being strong on form and short on substance. Chen (2001) reported that, although certification led to an upgrading of the quality system, allowed transactions to proceed more smoothly, reduced the number of customer complaints and caused the defect rate to fall, it also led to an increase in the amount of documentation that had to be processed and caused manufacturing cost to rise.

In contrast to the studies reporting business benefits, Batchelor's (1992) study of over 600 registered UK firms, found that only 15 per cent of firms achieved gains from quality certification. These benefits were largely internal, such as reduction in error rates and procedural efficiency, rather than external dimensions such as market share. Beattie and Sohal (1999) state that certified quality management systems per se do not achieve major benefits, but when they are combined with quality-improvement initiatives, substantial improvements can be expected. Dalgleish (2002) criticizes the ISO 9001 process by pointing out that the process requires an inordinate and unnecessary paperwork. He also points out that as the certificate leads to a pass/fail mentality, the ISO 9001 certificate hinders quality and efficiency, the very things it is supposed to encourage. Singels et al. (2001) found worse ROA, productivity, cash flow, market share, sales growth and market growth of certified companies.

Corrigan (1994), Henkoff (1993), Johannsen (1995), Stephens (1994), negative view is based are summarized in the following: implementation of the standards may result in the development of a static quality system, which increases bureaucracy and reduces flexibility and innovation. Excessive obedience to the documented procedures may discourage critical thinking, while in many cases process standardization acts as a barrier for processes improvement. Effective thinking should continuously criticise the basic principles described in written procedures and search for innovations. Implementation of the standards cannot be considered as a sign of top management commitment to quality since many believe that the "true" motives behind certification are mainly related to the possession of the certificate itself and not to the quality improvement that it may offer. In cases of bad implementation, the company is more likely to move one step backwards, instead of forwards because of the general

disappointment and resentment that may be caused to the employees as a result of excessive bureaucracy and workload.

Another criticism of the standard is that they cannot guarantee efficiency. Auditors check the existence of the necessary procedures to ensure conformance to the standards requirements but they do not check the efficiency of these procedures. A quality system may be too complex and inefficient and still be certified. Implementation of the standards cannot really guarantee effectiveness in terms of customer satisfaction since the emphasis is on conforming to company driven specifications and not to the true customer requirements. But the only judge of quality is the customer and not the certification body.

Taylor (1995) conducted a survey of senior executives in 682 organizations to study organizational difference in ISO 9001 implementation practices. Of the 682 responses, 115 were from organizations registered to ISO 9001. Taylor found that there were significant differences in ISO 9001 implementation practice between large, medium and small organizations. He reported that small organizations were shown to have particular problems in terms of understanding the purpose of ISO 9001, methods of measuring its business impact, and knowledge of where the potential benefits might lie. On the positive side, small organizations were more likely to seek registration for all activities

2.7 SUMMARY AND CONCLUSION

The analysis of the literature shows that the effect of ISO 9001 certification on company results is not clear. ISO certification might be seen as a strategic tool that could facilitate the creation of a competitive advantage, and that managers could

perceive this investment as a cost-control tool. Using different methodologies, some researchers have found positive results but others have found negative ones. There is evidence albeit not consistent enough to be compelling to support the broad range of benefits suggested which showed quality certification is associated with lower costs through reduced wastage and quality improvement or increased market sales through perceived higher quality and improved market opportunities. It is clear, from the literature reviewed on business performance that better quality does have a consistent positive relationship with improved business performance but other studies show some negative effects following ISO certification. The review also shows that factors that are essential to quality assurance systems, such as effective process control, quality control and better conformance quality, are linked to better business performance. Although the balance appear to be more inclined towards the positive effect hypothesis, the evidence is not decisive and it is necessary to add more research evidence to the topic.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research design and methodology that was used to carry out the research. It presents the research design, the population, sample size and sampling procedure, data collection and data analysis.

3.2 RESEARCH DESIGN

Research design refers to the way the study is designed, that is the method used to carry out the research. In the study correlational research was used in the study. Correlational research attempts to determine whether and to what degree a relationship exists between two or more quantifiable variables.

3.3 TARGET POPULATION

The study focused on firms listed at the Nairobi Stock Exchange that have been certified to ISO 9001 Quality Management System standard from the years 1999 to 2009 and those that have not been certified over the same window period.

3.4 SAMPLING PROCEDURE

Random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample. Simple random sampling method was used to select the firms that have been ISO 9001 certified and those that that have not been ISO 9001 certified

from the target population. The method spreads the sample more evenly over the population and is easier to conduct

3.5 DATA COLLECTION AND ANALYSIS

The research was carried out using secondary data from published financial accounting statements. For this study, earnings per share (EPS) is used as dependent variable to measure overall financial performance of firms. The Independent variables are given below together with a brief justification for their inclusion:-

Sales is used since it is believed that an ISO 9001 certified firm attracts more customers compare to a non-ISO certified firm thus increasing sales. Foker et al., (1996) found that quality defined as conformance to specification was significantly related to sales growth through the fact that better quality attracted and retained more customers.

Operating expenses is included since ISO 9001 is supposed to reduce internal costs and thus improve business performance (Maani et al., 1994; Flynn et al., 1995). This is also in line with Deming (1986), who purports that as quality improves, waste is eliminated leading to a reduction costs and an improvement in financial performance.

Size (Company size) is included to control the size effects on performance.

Age is included because Finley and Buntzman (1994) argued that the performance of a company is influenced by its age. Age refers to the number of years a company is listed on Nairobi Stock Exchange.

ISO Status is coded as ISO Status: ISO 9001 certified=1 and non-ISO 9001 certified=0. The variable ISO status is used in the pooled panel data.

The econometric model takes the following general form:

$EPS = \alpha + \beta_1 Sales + \beta_2 Size + \beta_3 Opexp + \beta_4 Age + \beta_5 ISOstatus + \varepsilon$

Where;

Sales = total Sales of the company

Size = total assets

Op exp = total operating expenses of the company (distribution expenses + administrative expenses + other expenses)

Age = number of years listed on the Nairobi Stock Exchange

ISO status = (ISO Status: ISO 9001 certified = 1 and non-ISO 9001 certified=0)

3.6 DATA RELIABILITY AND VALIDITY

The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability. Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. External validity refers to the extent to which the results of a study can be generalized beyond the sample while internal validity refers to the extent to which the independent variable can accurately be stated to produce the observed effect. Statistical tests for regression and multi-collinearity was used to test variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 INTRODUCTION

The objectives of this study was to determine the impact of ISO 9001 Quality Certification on the financial performance of companies listed at the Nairobi Stock Exchange and to compare the financial performance of ISO 9001 certified firms and those that are not ISO 9001 certified . The population and sample of interest consisted of all companies (certified and non-certified) trading in ordinary shares at the Nairobi Stock Exchange (NSE) between 1999 and 2009.

Data was collected for all companies that had been continuously listed at NSE for these years and had complete data over this period. A total of fifteen certified firms were included in the analysis. For each certified firm, a control non-certified firm was selected and the data compared over the same time period (3years before certification and 3years after certification).

4.2 COMPARISONS OF FIRM PERFORMANCE BEFORE AND AFTER ISO 9001 CERTIFICATION

Table 1 shows the ISO 9001 certified firms listed at NSE that were included in the study. Data was available for fifteen ISO 9001 certified firms. The firms were certified between the year 2000 and 2009.

Table 1

ISO 9001 Certified firms listed at Nairobi Stock Exchange

Company	Year of ISO 9001 Certification
1. Sameer Africa	2000
2. Nation Media Group	2001
3. East Africa Cables	2002
4. Kenol Kobil	2002
5. Total (K) Ltd.	2003
6. Kengen	2004
7. Athi River Mining	2005
8. Jubilee Holdings	2005
9. Kenya Breweries Limited	2005
10. Mumias	2005
11. Carbacid	2006
12. Crown Berger	2006
13. Kenya Power & Lighting Company	2007
14. CMC Motors	2008
15. East Africa Portland Cement	2009

4.2.1 Descriptive Statistics

The results in table 2 below shows the average value for Earnings per Share, Sales, Size and Operating Expenses 3years before and 3years after ISO 9001 certification.

Table 2

Average EPS, Sales, Size and Operating Expenses values before and after certification.

ISO 9001 Certified Firm	ISO Status	EPS	Sales	Size	Operating expenses
Athi River Mining	Before	0.97	1,335,427	1,228,255	307,240
	After	3.08	2,898,497	3,109,719	399,325
Carbacid	Before	7.90	215,939	728,471	42,246
	After	14.21	293,658	1,051,843	40,734
CMC	Before	5.74	7,716,697	3,891,700	1,092,667
	After	1.07	11,978,940	11,012,212	1,514,685
Crown Berger	Before	2.11	1,275,177	679,076	300,026
	After	2.41	2,056,379	907,311	574,676
East Africa Cables	Before	1.12	375,878	294,737	116,430
	After	2.09	547,251	292,457	133,009
East Africa Portlands	Before	6.34	6,595,977	7,684,851	1,230,894
	After	8.57	8,755,044	12,036,764	1,701,188
Jubilee Holdings	Before	6.05	1,055,123	4,107,875	693,301
	After	13.09	2,577,215	3,369,221	1,329,856
Kenya Breweries Limited	Before	23.36	28,909,832	14,348,938	5,681,714
	After	9.47	39,799,952	20,696,515	6,432,329
Kengen	Before	9.17	11,224,888	62,413,117	7,924,220
	After	2.88	11,355,361	70,494,569	7,238,031
Kenol Kobil	Before	27.23	7,207,517	1,486,836	648,216
	After	32.87	21,485,093	2,918,697	1,054,537
KPLC	Before	14.21	21,517,307	25,202,911	27,643,711
	After	28.26	17,569,713	47,139,555	29,332,132
Mumias	Before	0.42	8,422,891	6,996,056	1,701,540
	After	2.75	10,706,301	9,352,282	1,930,760
Nation Media Group	Before	7.29	2,627,367	1,950,400	1,423,500
	After	7.87	4,037,100	2,442,067	2,492,833
Sameer Africa	Before	1.80	3,076,006	1,949,782	498,976
	After	1.03	2,832,189	2,166,530	517,827
Total	Before	1.26	19,124,797	2,403,151	1,279,458
	After	3.17	33,522,959	4,420,601	1,549,526

The average value of Earnings per Share increased after ISO 9001 certification implying an impact of the certification except for CMC Motors, Kenya Breweries, Kengen and Sameer Africa. With the exception of Kenya Power & Lighting and Sameer Africa, the average value of sales increased for all companies after the ISO 9001 certification.

After ISO certification, all companies except for East Africa Cables and Jubilee Holdings had a significant increase in their total assets (size).

Besides Carbacid and Kengen, all companies experienced an increase in their operating expenses after ISO 9001 certification.

Paired t-test was used to test for significant differences in the mean values of Earnings per Share, Sales, Size and Operating Expenses before and after ISO 9001 certification as shown in table 3 below. The results, however, shows no significant differences in the mean values before and after certification for all the variables (p-value>0.05) implying that ISO 9001 certification had no significant impact on firm performance.

Table 3

Comparison of the independent variables before and after ISO certification

	ISO 9001 Certification			
Variable	**Before**	**After**	**t**	**P-Value**
Earnings Per Share	7.73	8.74	-0.44	0.659
Sales	8,343,035.23	11,420,270.86	-1.31	0.192
Size	9,381,865.42	12,777,142.34	-0.86	0.393
Operating Expenses	3,836,931.67	3,715,933.26	0.07	0.944

4.2.2 Test for Multi-Collinearity

A correlation matrix was constructed to check for multi-collinearity, which can arise due to the possibility of closely related variables.

Table 4

Correlation Matrix of the variables used in the study before and after certification

		Earning Per Share	Age	Iso status	Sales	Size	Operating Expenses
Earnings Per Share	R	1	.437**	.049	.232*	.191	.339**
	P-value		.000	.659	.034	.081	.002
Age	R	.437**	1	.000	.123	-.287**	.063
	P-value	.000		1.000	.256	.007	.576
Isostatus	R	.049	.000	1	.141	.093	-.008
	P-value	.659	1.000		.192	.393	.944
Sales	R	.232*	.123	.141	1	.264*	.405**
	P-value	.034	.256	.192		.014	.000
Size	R	.191	-.287**	.093	.264*	1	.520**
	P-value	.081	.007	.393	.014		.000
Operating Expenses	R	.339**	.063	-.008	.405**	.520**	1
	P-value	.002	.576	.944	.000	.000	

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

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

R = Pearson Correlation Coefficient

4.2.2 Test for Multi-Collinearity

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	P-value		.000	.659	.034	.081	.002
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	P-value	.000		1.000	.256	.007	.576
Isostatus	R	.049	.000	1	.141	.093	-.008
	P-value	.659	1.000		.192	.393	.944
Sales	R	.232*	.123	.141	1	.264*	.405**
	P-value	.034	.256	.192		.014	.000
Size	R	.191	-.287**	.093	.264*	1	.520**
	P-value	.081	.007	.393	.014		.000
Operating Expenses	R	.339**	.063	-.008	.405**	.520**	1
	P-value	.002	.576	.944	.000	.000	

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

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

R = Pearson Correlation Coefficient

According to the table, there exists a positive and a significant relationship between Earnings Per Share and Age of a firm at 5% level of significance (R=0.437, p-value = 0.000 < 0.05). This implies that the older a firm is, the higher its performance.

The results also shows a positive and significant relationship between Earnings Per Share and Sales at 5% level of significance (R=0.232, p-value = 0.034 < 0.05). This also implies that as the value of sales increases, so is the Earnings Per Share and hence the firms' performance.

The results also shows positive and significant relationship between Earnings Per Share and firm's operating expenses at 5% level of significance (R=0.339, p-value = 0.002). This is also an indication that firms with higher operating expenses are better performers (Earnings Per Share) than firms with low operating expenses.

The results in the table shows that age and Size of a firm are negatively and significantly correlated (R = -0.287, p-value = 0.007) implying that older firms are likely to be bigger in terms of assets than younger firms.

According to the table, there is a positive and significant correlation between sales and size (R = 0.264, p-value = 0.014) indicating that the bigger a firm is in assets the more sales it is likely to make. There is also a positive correlation between size and operating expenses (R = 0.520, p-value = 0.000) implying that bigger firms haves have higher operating expenses than smaller firms.

Linear multicollinearity in the independent variables was observed between age and Size of a firm which were negatively and significantly correlated (R = -0.287, p-value = 0.007). It was also observed between sales, size and operating expenses as shown in the table.

4.2.3 Regression Analysis on determinants of Firm Performance before and after certification

Regression analysis was used to assess for linear relationship between firm performance as proxied by Earnings per Share and the independent variables (Sales, Size, Age, Operating Expenses and ISO Status). This analysis compared before and after ISO 9001 certification.

Table 5

Regression of Earnings Per Share and determinants of firm performance

	Intercept	Sales	Size	Operating Expenses	Age	ISO Status
Regression Coefficients	-3.879	0.000	0.000	0.000	0.285	1.048
t-values of coefficients	-1.375	0.453	1.570	1.405	4.042	0.507
P-value	0.173	0.652	0.121	0.164	0.000	0.614
R-square	0.540[a]					
Adjusted R-square	0.243					
F	5.994					

[a] *Dependent Variable: Earning Per Share*

The result in table 5 below shows the R-square value for the regression model. The Adjusted R^2, is used to measure the proportion of the variation in the dependent variable that is explained by the combination of the independent variables in the multiple regression model. The R-squared (R^2) value ranging from '0' to '1' or the 'corrected R-squared' (R^2) which is adjusted for degrees of freedom indicates the explanatory power (goodness of fit) of the model.

The R-square value according to the table is 0.540 while the adjusted R-square is given as 0.243. To test for the existence of a linear relationship between the dependent and the independent variables, Analysis of Variance was employed. The results from the analysis of variance based on the F-statistics shows that the regression relationship between Earnings per Share and the independent variables is statistically significant at 5% level of significance (F=5.994, p-value=0.000<0.05).

The results in table 5 show the test of significance of individual regression parameters. According to the results, of all the regression parameters, only a firm's age is statistically significantly and positively linearly related to the Earnings Per Share at 5% level of significance (t=0.285, p-value=0.000). The coefficient of ISO status is positive but not significant indicating the comparison before and after ISO certification do not have any significant differences. The coefficient of the regression parameters for sales, size and operating expenses are zero implying that they do not affect Earnings Per share when considered with other variables.

The resultant regression equation based on the findings in table 5 can then be expressed as;

$$EPS = -3.879 + 0.000\text{Sales} + 0.000\text{Size} + 0.000 OpExpenses + 0.285 Age + 1.048 ISOStatus + \varepsilon$$

4.3 COMPARISON OF ISO 9001 CERTIFIED AND NON-CERTIFIED FIRMS

4.3.1 Descriptive statistics comparing certified and non-certified firms.

Independent t-test was used to test for significant differences in the mean values of Earnings per Share, Sales, Size and Operating Expenses between ISO 9000 certified firms and non-certified firms.

Table 6a

Averages for EPS, Sales, Size and Operating Expenses for non-ISO 9001 certified firms

Non-ISO 9001 Certified Firms	EPS	Sales	Size	Operating expenses
Bamburi Cement	9.2	22,100,333	18,774,667	8,611,000
BAT	14.3	15,297,898	5,529,351	7,192,647
BOC	12.0	1,200,580	1,375,947	317,661
Car and General	4.4	726,717	509,201	170,340
EAAGADS	0.4	61,082	204,471	10,155
Express Kenya	-0.4	3,073,334	329,494	458,039
Kakuzi	1.4	1,314,027	1,728,786	89,981
Kapchorua Tea	1.3	548,302	935,410	48,811
Kenya Airways	1.9	27,682,333	18,132,333	6,803,667
Pan Africa Insurance	3.3	1,416,816	1,232,280	423,441
Rea Vipingo	0.0	619,995	623,316	207,724
Sasini	-1.4	1,175,293	3,437,281	270,049
Standard Group	1.1	1,327,228	193,713	792,889
Unga Group	4.0	9,489,824	3,719,515	823,407
Williamson Tea	-0.5	1,095,643	3,226,485	228,927

Table 7

Comparison of the mean values of the variables between certified and non-certified firms

	ISO 9001 Certification			
Variable	**Non-ISO Certified**	**ISO Certified**	**t**	**P-Value**
Earnings Per Share	3.37	8.74	-2.717	0.008
Sales	5,808,627	11,420,271	-2.429	0.017
Size	3,996,817	12,777,142	-2.764	0.007
Operating Expenses	1,837,637	3,715,933	-1.395	0.167

The results shows that there is a significant differences in the mean values of the variables between certified and non-certified firms (p-value<0.05) except for operating expenses. This implies that ISO 9001 certification had a significant impact on general firm performance based on the high values of the variables under consideration among the ISO 9001 certified firms,

4.3.2 Test for Multi-Collinearity Correlation Matrix

A correlation matrix comparing certified and non-certified firms was constructed to check for multi-collinearity, which can arise due to the possibility of closely related variables.

Table 8

Correlation Matrix comparing certified and non-certified firms

		EPS	Age	Isostatus	Sales	Size	Opexpenses
EPS	R	1	.181	.283**	.220*	.238*	.366**
	P-value		.094	.008	.041	.026	.001
Age	R	.181	1	-.321**	-.130	-.314**	-.050
	P-value	.094		.002	.223	.003	.645
ISO status	R	.283**	-.321**	1	.252*	.284**	.150
	P-value	.008	.002		.017	.007	.167
Sales	R	.220*	-.130	.252*	1	.353**	.424**
	P-value	.041	.223	.017		.001	.000
Size	R	.238*	-.314**	.284**	.353**	1	.556**
	P-value	.026	.003	.007	.001		.000
Operating expenses	R	.366**	-.050	.150	.424**	.556**	1
	P-value	.001	.645	.167	.000	.000	

According to the table, there exists a positive and a significant relationship between Earnings Per Share and ISO status of a firm at 5% level of significance (R=0.283, p-value=0.008<0.05). This implies that ISO 9001 certified firms have higher performance than non-ISO certified firms implying certification has an impact on a firm's financial performance based on Earnings per Share.

The results also show a positive and significant correlation between Earnings per share and Sales (R=0.220, p-value=0.041), Earnings per Share and Size (R=0.238, p-value=0.026) and between Earnings per Share and Operating Expenses (R=0.366, p-value=0.001). This shows that firm financial performance increases with increase in sales, size and operating expenses. Multi-collinearity is observed between age and ISO status (R=-0.321, p-value=0.002), age and size (R=0.238, p-value=0.003), ISO

status and sales (R=0.252, p-value=0.017), ISO status and size (R=0.284, p-value=0.007) and between sales and size (R=0.353, p-value=0.001) and between sales and operating expenses (R=0.424, p-value=0.000).

4.3.3 Regression Analysis comparing certified and non-certified Firms

Regression analysis was used to assess for linear relationship between firm performance as proxied by Earnings per Share and the independent variables (Sales, Size, Operating Expenses and ISO Status) comparing certified and non-certified firms.

Table 9

Regression of Earnings per Share and determinants of firm performance

	Intercept	Sales	Size	Operating Expenses	Age	ISO Status
Regression Coefficients	-6.489	0.000	0.000	0.000	0.206	6.219
t-values of coefficients	-2.113	0.305	1.018	2.055	3.150	3.094
P-value	0.038	0.761	0.312	0.043*	0.002*	0.003*
R-square	0.535[a]					
Adjusted R-square	0.240					
F	6.253					

a. Dependent Variable: Earning Per Share

The R-square value according to table 8 shown is 0.535 while the adjusted R-square is given as 0.240. To test for the existence of a linear relationship between the dependent and the independent variables, Analysis of Variance was employed. The results from the analysis of variance based on the F-statistics shows that the regression relationship between Earnings per Share and the independent variables is statistically significant at 5% level of significance (F=6.253, p-value=0.000<0.05).

According to the results in table 8 below, of all the regression parameters, the age of a firm, its ISO status and operating expenses are significantly and positively linearly related to the Earnings Per Share at 5% level of significance ($p<0.05$). This implies that ISO 9001 certified firms are more likely to have better performance than non-ISO 9001 certified firms. The coefficient of the regression parameters for sales, size and operating expenses are zero implying that they may not linearly affect a firm's performance. The resultant regression equation based on the findings in table 8 can then be expressed as;

$$EPS = -6.489 + 0.000\text{Sales} + 0.000\text{Size} + 0.000OpExpenses + 0.206Age + 6.219ISOStatus + \varepsilon$$

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to determine the impact of ISO 9001 quality certification on financial performance and compare the financial performance of ISO 9001 certified and non ISO 9001 certified companies listed at the Nairobi Stock Exchange.

5.2 Summary and Conclusions of the findings

A significant increase in the value of sales, size, operation expenses and earnings per share in almost all the firms listed at NSE after the ISO 9001 certification is observed indicating that ISO 9001 certification has an impact on the variables under study.

Paired t-test performed to compare the values of sales, size, operation expenses and earnings per share three years before and after certification however shows no significant differences implying that the good performance was visible in the companies before and after ISO 9001 certification. These results are similar to Heras et al. (2002) whose results indicated that certified companies had better results not only after certification but also prior to the certification date. The analysis however showed a significant difference between ISO 9001 certified and non-certified firms. There was a significant differences in the mean values of the variables between certified and non-certified firms ($p\text{-value}<0.05$) except for operating expenses. Based on the high values of the variables among the ISO 9001 certified firms, this implies that ISO 9001 certification had such a significant impact on general firm performance. These results are similar to Corbett et al. (2005) whose results indicated that a firms' decision to seek their first ISO 9001 certification is indeed followed by significant

abnormal improvements in financial performance. Correlation test for the companies before and after certification showed that there exists a positive and a significant relationship between Earnings Per Share and a Age of a firm at 5% level of significance (R=0.437, p-value=0.000<0.05). This implies that the older a firm is, the higher its performance. The results also showed a positive and significant relationship between Earnings Per Share and Sales at 5% level of significance (R=0.232, p-value=0.034<0.05). This also implies that as the value of sales increases, so is the Earnings Per Share and hence the firms' performance. The results also showed positive and significant relationship between Earnings Per Share and firm's operating expenses at 5% level of significance (R=0.339, p-value=0.002). This is also an indication that firms with higher operating expenses are better performers (Earnings Per Share) than firms with low operating expenses. Correlation test performed on both certified and non-certified firms that there exists a positive and a significant relationship between Earnings Per Share and ISO status of a firm at 5% level of significance (R=0.283, p-value=0.008<0.05) implying that ISO 9001 certified firms have higher performance than non-ISO 9001 certified firms.

According to the regression results, of all the regression parameters, only a firm's age is statistically significantly and positively linearly related to the Earnings Per Share at 5% level of significance (t=0.285, p-value=0.000). The coefficient of ISO 9001 status is positive but not significant indicating the comparison before and after ISO 9001 certification do not have any significant differences. The coefficient of the regression parameters for sales, size and operating expenses are zero implying that they do not affect Earnings Per share when considered with other variables. The results of the regression analysis performed on all the firms both certified and non-certified showed that of all the regression parameters, the age of a firm, its ISO status and operating

expenses are significantly and positively linearly related to the Earnings Per Share at 5% level of significance ($p<0.05$). This implies that ISO certification had a significant relationship with firm performance.

5.3 Limitation of the Study

The key limitation of this study was that historical financial statements and reports were not available for some companies listed at NSE. Test assumption is made that there is a linear relationship between firm performance and ISO certification in the course of the research.

5.4 Suggestions for further research

Given the quantitative nature of the study there is need for a study that will assess the link of long term financial performance of ISO certified firms and firm value.

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