THE STOCK PRICE PERFORMANCE OF FIRMS WITH EFFECTIVE TOTAL QUALITY MANAGEMENT (TQM) PROGRAMS IN KENYA

by

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DECLARATION

This management research project is my original work and has not been submitted for a degree at the University of Nairobi or any other University.

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DEDICATION

This work is dedicated to my parents, my mother Nyambura Mwangi and my father Mwangi Gakuo.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ISO – International Organization of Standardization

KEBS – Kenya Bureau of Standards

TQM – Total Quality Management

FMCG - Fast Moving Consumer Goods

NSE – Nairobi Stock Exchange

OROA - Operating Return on Assets (OROA)

HPR - Holding Period Return.

MBNQA - Malcolm Baldrige National Quality Award

TAT - Total Asset Turnover

OPM - Operating Profit Margin

ABSTRACT

The study has been undertaken to assess the impact of Total Quality Management (TQM) on stock prices in the respective sectors of specific companies listed at the Nairobi Stock Exchange (NSE). These sectors are namely Fast Moving Consumer Goods (FMCG), Petroleum, Rubber Processing, Media and Publishing, and Cement Processing. From each sector two companies have been drawn to form the experimental group comprising listed companies that have initiated TQM programs and the control group listed companies that do not have TQM programs in place. This study then tries to establish a relationship between TQM, as indicated by Operating Return on Assets (OROA), and market returns (computed using the Holding Period Return – HPR). Thereafter an F-test is used to assess the actual impact of TQM on holding period returns (HPR) by comparing stock HPR before and after TQM implementation.

It has been found that the implementation of TQM programs has impacted positively on two sectors namely FMCG and Media & Publishing, which have seen their stock prices surge after implementation of TQM programs.

CHAPTER 1

INTRODUCTION

1.1 Background

1.1.1 Performance of firms

Many factors have been linked with organizations' performance and hence their value. These include more direct activities like marketing, sales and location. There are other factors which are not direct and whose effects are more difficult to measure like quality of management, strength of the brand(s), advertising, promotions, and training. Total Quality Management (TQM) falls in the latter category of factors.

Organizations today are competing in a very complex, dynamic and competitive business environment. They are facing many challenges and are constantly adapting and responding to the changing environmental conditions such as increased customer awareness, ethical and legal issues, rapid advances in technology, increased product ranges, shorter product life cycles and so on. In response to these changing conditions, organizations are looking for various methods to counter these challenges and thrive. The reputation enjoyed by an organization is built by quality, reliability, delivery and price. Quality is the most important of these competitive weapons. Reputations for poor quality last for a long time, and good or bad reputations can become national. (Oakland 1989).

1.1.2 Creation of Value

The objective of a company must be to create value for its shareholders. Value is represented in the market price of the company's common stock, which, in turn is a function of the firm's investment, financing, and dividend decisions. (Van Horne, 1998). The market price per share is equivalent to the discounted cash flows of the firm. (Weston and Copeland, 1988). For quoted public companies, the shareholder wealth is measured by the share price in the financial markets. For private companies, whose shares are not quoted in a stock exchange, shareholder wealth maximization remains a key goal.

In its day-to-day operations, management employs financial analysis for purposes of internal control. Particularly it is concerned with the return on investment in the various assets of the company and in the efficiency of managing the assets under its custody.

1.1.3 Total Quality Management and performance enhancement

Quality in the context of TQM is the ability to meet the customer requirements, and this is not restricted to the functional characteristics of the product or service. Organizations delight the customer by consistently meeting customer requirements, and then achieve a reputation of 'excellence'. (Oakland, 1989).

It is necessary to create an organizational culture that is conducive to continuous improvement and in which everyone can participate. Quality assurance and improvement practices also need to be integrated into all of an organization's processes and functions. This requires changing people's behavior, attitudes and working practices in various ways:

i) Everyone in the organization must be involved in 'improving' the process under their control on a continuous basis and must take personal responsibility for their own quality assurance.

ii) Employees must be encouraged to identify wastage in all its various forms

iii) Employees must inspect their own work

iv) Defects should not be passed, in whatever form, to the next process. The internal customer-supplier relationship (everyone for whom you perform a task or service or to whom you provide information is a customer) must be recognized.

v) All people have to be committed to satisfying their customers, both internal and external.

vi) External suppliers and customers must be integrated into the improvement process.

vii) Mistakes must be viewed as an improvement opportunity.

viii) Honesty, sincerity and care must be integral parts of daily business life.

Changing people's values and attitudes is one of the most difficult tasks facing management, requiring considerable powers and skills of motivation and persuasion. Serious thought is required to facilitate and manage culture change, which will bring about improved and sustainable quality, which will in turn yield good reputation. Poor reputation occasioned by poor quality may last for a long time and as a result undermine performance of a company. However, as quality improves, costs fall through reduction in failure and detection costs. Improved quality leads to performance benefits from increased output and higher productivity.

Today's business environment is such that managers must strive for competitive advantage to hold on to market share and increase it. TQM helps companies to:

i) Focus clearly on the needs of their markets.

ii) Achieve top quality performance in all areas.

iii) Operate the simple procedures necessary for the achievement of quality performance.

iv) Critically and continually examine all processes to remove none productive activities and waste

v) See the improvement required and develop measures of performance

vi) Understand fully and prepare a competitive strategy

vii) Develop a team approach to problem solving

viii) Develop good procedures and acknowledgement of good work.

ix) Review continually the process of a never ending improvement strategy

Once an organization has made a deliberate effort of seeking TQM certification from the relevant award body, for example the Kenya Bureau of Standards (KEBS) in Kenya, and eventually gets certification status for example the ISO certification, then they are considered as having implemented an effective TQM program.

1.2 Statement of the problem

Getting TQM certification involves going through a number of steps which involves changing the way organizations provide their services to customers. The field of TQM provokes many areas in which research can be done about quality management but this research focuses on understanding the relationship between the performance of stock prices of firms and TQM implementation. Does implementation of TQM improve the stock prices of firms? There exist a large number of examples of failed or badly performing TQM programs (Hendricks and Singhal, 1997). Such poorly performing programmes negatively affect organizations in their development towards business excellence and ultimately survival in a competitive environment. (Heizer and Render, 1996).

On a wider context, TQM relies on a single fundamental principle that should serve as a core mission of any business, which, is to maximize productivity while minimizing costs (Motiska and Shilliff, 1990). Many organizations have adopted TQM with inflated expectations and a quick-fix mentality. However, when TQM did not produce the answers to the problems afflicting the firms and turn around the sliding performance, it was deemed inept. Furthermore, contrary to the TQM philosophy, many firms adopted it seeking instant and swift gratification. (Omiti, 2003). Omiti carried out a research on the effect of implementing TQM programs on the financial performance of firms in Kenya. In her research Omiti used accounting based measures of performance, which significantly differs from this study which uses a market based performance measure, the stock prices of firms quoted at the Nairobi Stock Exchange, with effective TQM programs.

TQM implementation efforts were measured against short-term performance. Many firms ended up being disillusioned with TQM when short-term improvements did not materialize.

The weak defence offered by proponents of TQM has fuelled controversy about its value. Instead of providing hard facts showing that TQM is effective, many have argued on why TQM's theory of focusing on customer satisfaction, continuous improvement and employee involvement should lead to success. Gowland, (1988) stated that although you cannot link TQM to financial performance, organizations should still invest in it. Others have argued, again without any data, that if TQM does not improve corporate financial performance then what does? The most extensive study of the impact of TQM on corporate performance was provided by Easton and Jarrell (1996). They studied the impact of TQM on the performance of a sample of 108 firms which began serious efforts to implement TQM between 1981 and 1991. It was concluded that,

'performance, measured by profit margin, return on assets, asset use efficiency, and excess stock returns, is improved for the sample of firms that adopted TQM'

As a result of this controversy, it will be in the best interest of growth in knowledge to research on the impact of implementing TQM on the stock prices of firms quoted at the Nairobi Stock Exchange.

1.3 Objective of the study

The objective of this study is to ascertain the effect of effective TQM implementation on stock price performance for firms listed at the Nairobi Stock Exchange (NSE).

1.4 Importance of the study

In light of the fact that mammoth resources, both financial and non-financial, capital and non-capital, have been committed to effectively implement TQM programs, it is noteworthy to establish whether the implementation of TQM does have an effect on the performance of firms. The substantiation of this fact will be of significance to the following:

a. Consultants who are charged with the responsibility of recommending, assisting and grading organizations with the implementation
b. Organizations seeking to implement and adopt TQM in their mode of operations. This study will augment and validate the implementation and resource allocation towards TQM
c. Researchers interested in building on the already existing knowledge base about theoretical and empirical work on quality management
d. Academicians who are interested in disseminating knowledge on the subject of TQM and its relevance to performance of firms.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter builds on the background of the research problem and the research questions identified in the previous chapter. Literature relevant to this study are summarized and discussed thematically. My aim in this chapter is to discuss the relevant literatures from a broader and richer perspective to ensure that the relationship between effective TQM implementation and the financial performance of companies.

The cardinal aim of any firm is to maximize the wealth/value of shareholders. Therefore managers who have been given the duty of running the day-to-day affairs through delegation are charged with the responsibility of maximizing the firm's value and hence that of the shareholders. Shareholders can agree on the decision rule that they should give managers in their execution of duties. However they must be able to costlessly monitor management decisions if they are to be sure that management really does make every decision in a way that maximizes their wealth. Assuming that managers behave as though they are maximizing the wealth of the shareholders, a usable definition of what is meant by *shareholders' wealth* needs to be established. Shareholder wealth is the discounted value of after-tax cash flows available to shareholders. The after-tax-cash flows available for consumption can be shown to be the same as the stream of cash flows, CFt, available to shareholders. The discounted value of the stream of cash flows is:

$$So = \sum_{t=1}^{n} \frac{CF_t}{(1+k_s)^t}$$

Where So is the present value of shareholders' wealth, t is time and ks is the market-determined rate of return on equity capital.

2.2 The TQM Approach

Various definitions of Total Quality Management have been given.

There are many definitions of TQM, and the concept requires a disciplined business approach to be adopted. This is based upon a fundamental belief in the need for continuous and company-wide improvement to understand and meet the requirements of customers, identify and build upon best practice, and be cost effective. (Dale and McQuater, 1998).

TQM is a comprehensive approach to improving competitiveness, effectiveness and flexibility through planning, organizing and understanding each activity, and involving each individual at all levels. For an organization to be truly effective, each part of it must work properly together towards the same goals, recognizing that each person and each activity affects and in turn is affected by others. (Oakland 1989).

TQM is a corporate business management philosophy, which recognizes that customer needs and business goals are inseparable. It ensures maximum effectiveness and efficiency within a business and secures commercial leadership by putting in place processes and systems which will promote excellence, prevent errors, and ensure that every aspect of the business is aligned to customer needs and the advancement of business goals without duplication or waste of effort. (Barnes and Pike).

The commitment to TQM originates at the Chief Executive level in a business and is promoted in all human activities. The accomplishment of quality is thus achieved by personal involvement

and accountability devoted to a continuous improvement process, with measurable levels of performance by all concerned.

The United States Department of Defense defines TQM as 'both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. TQM is the application of quantitative methods and human resources to improve the materials and services supplies to an organization, all the processes within an organization, and the degree to which the needs of the customer are met, now and in the future.

TQM ensures that management adopts a strategic overview of quality and focuses on prevention, not detection of problems. Once this is achieved then the organization is on its way to achieving its cardinal objective of maximizing shareholder wealth.

TQM is also a way of ridding people's lives of wasted effort by bringing everyone into the processes of improvement, so that results are achieved in less time. The methods and techniques used in TQM can be applied throughout any organization. They are equally useful in the manufacturing, public service, health care, education and hospitality industries. It is gaining ground rapidly and has become a way of life for many organizations.

In every organization there are some very large processes – groups of smaller processes called key, critical or business processes. These are activities the organization must carry out especially

well if its mission and objectives are to be achieved. It is therefore critical that management of quality be integrated into the strategy of the organization.

The Control of quality clearly can only take place at the point of operation or production such as when a patient is admitted in case of a hospital or the chemical manufactured. It is important to note that the act of *inspection is not quality control.* When the answer to "have we done the job correctly?" is given indirectly by answering the questions of capability and control, then we have assured quality, and the activity of checking becomes one of quality assurance – making sure that the product or service represents the output from an effective system to ensure capability and control. It is frequently found that organizational barriers between departmental empires encourage the development of testing and checking of services or products in a vacuum, without interaction with other departments.

The impact of TQM on an organization is, firstly, to ensure that the management adopts a strategic overview of quality. The approach must focus on developing a problem-prevention mentality; but it is easy to underestimate the effort that is required to change attitudes and approaches. Many people will need to undergo a complete change of "mindset" to unscramble their intuition, which rushes into the detection/inspection mode to solve quality problems. For example they may have in mind ideas such as, 'We have a quality problem', 'We had better check every letter', 'Take 2 samples out of each sack' etc.

The correct mindset may be achieved by looking at the sort of barriers that exist in key areas. Staff will need to be trained and shown how to reallocate their time and energy to their processes

in teams, searching for causes of problems, and correcting the causes, not the symptoms, once an for all. This will require of management a positive, thrusting initiative to promote the right-first-time approach to work situations. Through quality improvement teams, which will need to be set up, these actions will reduce the inspection-rejection syndrome in due course. If things are done correctly first time round, the usual problems that create the need for inspection for failure will disappear.

The management of many firms may think that their scale of operation is not sufficiently large, that their resources are too slim, or that the need for action is not important enough to justify implementing TQM. Before arriving at such a conclusion, however, they should examine the existing performance by asking the following:

i) Is any attempt being made to assess the costs arising from errors, defects, waste, customer complaints, lost sales and so on. If so, are these costs minimal or insignificant.

ii) Is the standard of quality management adequate and are attempts being made to ensure that quality is given proper consideration at the design stage?

iii) Are the organization's quality systems – documentation, procedures and operations in good order?

iv) Have personnel been trained on how to prevent errors and quality problems? Do they anticipate and correct potential causes of problems, or do they find and reject?

v) Do job instructions contain the necessary quality elements, are they kept up-to-date, and are employees doing their work in accordance with them?

vi) What is being done to motivate and train employees to do work right first time?

vii) How many errors and defects, and how much wastage occurred last year? How does this compare with the previous year?

If satisfactory answers can be given to most of these questions, an organization can be reassured that it is already well on the way to using adequate quality procedures and management. Even so, it may find that the introduction of TQM causes it to reappraise quality activities throughout. If answers to the above questions indicate problem areas, it will be beneficial to review top management's attitude to quality. Time and money spent on quality-related activities are not limitations of profitability; they make significant contributions towards greater efficiency and enhanced profits.

2.3 The Evolution of Quality Management

The evolution of quality management can be traced through four main stages (Dale et al., 1994):

i) *Inspection*

'Activities such as measuring, examining, testing or gauging one or more characteristic of an entity and comparing the results with specified requirements in order to establish whether conformity is achieved for each characteristic' (BS EN ISO 8402, 1995).

ii) *Quality Control (QC):*

'Operational technique and activities that are used to fulfil requirements for quality' (BS EN ISO 8402, 1995)

iii) *Quality Assurance (QA)*

'All planned and systematic actions implemented within the quality system and implemented within the quality system and demonstrated as needed to provide adequate confidence that an entity will fulfill requirements for quality'(BS EN ISO 8402, 1995)

iv) *Total Quality Management*

"Management approach of an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society' (BS EN ISO 8402, 1995)

2.4 ISO and TQM

Questions have arisen whether or not there is any connection between the Quality Management Standard BS EN ISO 9000 and the TQM approach. In response to this, it is possible for a company to be certificated to be BS EN ISO 9000 without TQM, or a company can have TQM without BS EN ISO 9000. Alternatively a company can be certificated to the Standard first and then pursue a TQM approach. According to Pike and Barnes (1996), some companies have embarked on the installation of both processes at the same time. If an organization intends to adopt both approaches, it makes sense for it to adopt an integrated methodology towards the implementation.

BS EN ISO 9000 is a Quality Management System in which the emphasis is on the writing of formal procedures and work instructions to guide employees. The expectation is that all employees will comply with the procedures in order to ensure that the work is done properly. Internal and external audits are carried out in order to identify whether or not employees are complying with the requirements, and where they are not corrective action is taken to remedy the deficiencies. The focus is, therefore, on the technical system and the way it operates.

Dick, (2000) lists the following as the specific reasons why a firm ought to consider using the TQM and ISO tools:

i. To become more profitable
ii. To achieve a competitive position
iii. To improve employee involvement
iv. To increase efficiency
v. To improve consistency
vi. To improve quality of product or service
vii. Less re-work and wastage

2.5 Where does quality in an organization commence?

In a nutshell, quality starts with the marketing function of the organization. The marketing function of an organization must take the lead in establishing the true requirements for the product or service. Having determined the need, marketing should define the market sector and demand to determine such product or service features as grade, price, quality and timing. For example, a major hotel chain contemplating opening a new hotel or refurbishing an old one will need to consider its location and accessibility before deciding whether it will be predominantly a budget, first-class, business or family hotel.

Marketing will also need to determine customer requirements by reviewing the market needs, particularly in terms of unclear or unstated expectations or pre-conceived ideas held by customers. Marketing is responsible for determining the key characteristics that determine the suitability of a product or service in the eyes of the customer.

Good communication between customers and suppliers is the key to total quality, because it eradicates the 'demanding nuisance/idiot' view of customers, which pervades many organizations. Poor communications often occur in the supply chain between organizations, when neither party realizes how poor they are. Feedback from both customers and suppliers needs to be improved where dissatisfied customers and suppliers do not communicate their problems. In such cases non-conformance of purchased products or services is often due to customers' inability to communicate their requirements clearly. If these ideas are also used within an organization, then the internal supplier/customer interfaces will operate much more smoothly.

All efforts devoted to finding the nature and timing of the demand will be pointless if marketing fails to communicate the requirements promptly, clearly and accurately to the remainder of the organization. The marketing function should be capable of supplying the company with a formal statement or outline of the requirements for each product or service. This constitutes a preliminary set specifications, which can be used as the basis for service or product design. The information requirements include:

- Characteristics of performance and reliability – these must make reference to the conditions of use and any environmental factors that may be important.
- Aesthetic characteristics, such as style, color, smell, taste and feel
- Any obligatory regulations or standards governing the nature of the product or service.

Marketing must also establish systems for feedback of customer information and reaction, and these systems should be designed on a continuous monitoring basis. Any information pertinent to the product or service should be collected and collated, interpreted, analyzed and communicated to improve the response to customer experience and expectations. These same principles must also be applied inside the organization if continuous improvement at every transformation process interface is to be achieved. If one department of a company has problems recruiting the correct sort of staff, and the human resources department has not established mechanisms for gathering, analyzing and responding to the information on new employees, then frustration and conflict will replace communication and co-operation.

One aspect of the analysis of market demand that extends back into the organization is the review of market readiness of a new product or service. Issues that require some attention include the assessment of:

- Suitability of the distribution and customer-service systems
- Training of personnel in the 'field'
- Evidence that the firm is capable of meeting customer requirements

Marketing establishes the true requirements for the product or service. These must be communicated properly throughout the organization in the form of specifications.

2.6 The Importance of Quality in Business performance

In the last decade, many organizations have come to appreciate that TQM will enable them to become and remain competitive in both home and international markets. In many of these markets, quality, and its continuous improvement are now qualifying criteria. TQM not only leads to increased

productivity, higher standards, improved systems and procedures, improved motivation and increased customer satisfaction but also to lower costs and bottom-line savings. It means quality at the most effective cost (i.e. value for money).

Today, quality is regarded by most producers, customers and consumers as crucial to their manufacturing, operations, service and purchasing strategies. To understand why, we need only recall the unsatisfactory examples of products/services we have experienced, how we felt about them, the actions we took, and the people we told about the experience and the outcome, if any. Waiting for a customer complaint is too late. Quality concerns and near misses need to be monitored to provide a mechanism for turning concerns into improvement opportunities and retaining customers and their loyalty. An organization should always be aware that niggling incidents can cause aggravation to the customer, and whenever a customer becomes dissatisfied, a loss of goodwill results. This leads to extra effort being expended by personnel within the organization, investigating what has gone wrong and then trying to put right that wrong. These unsatisfactory experiences result in actual costs above what has been budgeted, which have a direct impact on bottom-line performance and can also result in erosion of the market share.

Following on from this, an order, contract or customer lost on the grounds of non-conforming product and/or service quality is much harder to regain than one lost on price or even delivery grounds. The customer could be lost forever – in simple terms, the organization has been outsold in the market place. If the truth of this statement was in doubt, one only needs to consider the number of organizations that have gone out of business or lost a significant share of a market, as well as examine the reported reasons for this situation. Quality is one of the factors that is not negotiable. In today's business world, the penalties for unsatisfactory product quality and poor service are likely to be

punitive. When management of an organization compares its profit-to-sales ratio and its quality-costs-to-sales-turnover ratio, they will find that the cost of quality is of the same order as profitability. Dale and Plunkett (1995), based on a variety of companies, initiatives and situations, claim that the cost of quality (or, to be more precise, the cost of not getting it right) ranges from 5 to 25 per cent of an organization's annual sales turnover. This provides an immediate indication of the importance of quality to the business. Goodman and Adamson (quoted in Anon.1993), estimate that:

The cost of not meeting customer expectations to a British company manufacturing products which people buy several times a year, with each purchase producing a £25 profit, would be £1.5 million lost profit annually.

Kano et al. (1983) carried out an examination of 26 companies that won the Deming Application Prize between 1961 and 1980. They found that the financial performance of these companies in terms of earning rate, productivity, growth rate, liquidity and net worth was above the average for their industries.

A report published by the US General Accounting Office (1991) focused on the top 20 scorers of the Malcolm Baldrige National Quality Award (MBNQA) in the period 1988 to 1989. On the basis of a combination of questionnaire and interview methods, the companies were asked to provide information on four broad classes of performance measures: a) Employee-related indicator, b) Operating indicators, c) Customer satisfaction indicators and d) Business performance indicators. Improvements were claimed in all indicators. Useful information on financial performance was obtained from 15 of the 20 companies, which experienced the following annual average increases:

a. Market share: 13.7 per cent

b. Sales per employee: 8.6 per cent

c. Return on Assets: 1.3 per cent

d. Return on sales: 0.4 per cent

Larry (1993) reported on a study carried out on the winners of the MBNQA and found that they 'yielded a cumulative 89 per cent gain, whereas the same investment in the Standard and Poor 500 Stock index delivered only 33.1 per cent'. Wisner and Eakins (1994) also carried out an operational and financial review of the MBNQA winners, in the period 1988-1993. One of the conclusions reached was that the winners appeared to be performing financially as well or better than their competitors.

The US Commerce Department's National Institute of Standards and Technology (NIST) invested a hypothetical $1,000 in each of the five publicly traded, whole company MBNQA winners, and the parent companies of seven subsidiary winners, and also made the same investment in the Standard and Poor's 500. It was found that these twelve companies outperformed the Standard and Poor's 500 by almost three to one. In addition, NIST also invested a hypothetical $1,000 in a group of 32 companies receiving MBNQA site visits; these companies outperformed the Standard and Poors's 500 companies by two to one. Curt Reimann (1995), the director of MBNQA programme at the time, commented on the results:

This review adds to the mounting evidence that, done right, quality management can lead to outstanding returns in many business areas including financial performance, satisfied customers and improved market share.

A study carried out at the University of Bradford Management Center identified 29 companies within the UK that display characteristics associated with TQM (Letza et al., 1997). The study was first carried out over the period 1987 – 1991 and has been repeated for the period 1991 – 1995. Nine measures were used by the study team to compare company performance with the median for the particular industry. The second study revealed the following:

a) 81 per cent of companies are above the industry median for turnover per employee.

b) 81 per cent of companies provide a higher salary to turnover ratio than their peers.

c) 74 per cent the organizations remunerate their employees above the median for the industry.

d) 65 per cent of the organizations produce above median profit per employee for their industry.

e) 62 per cent of the organizations have a higher net asset turnover than their peer group.

The author also went on to say that "Four of the nine measures are marginally below the median for their industry but this is to be expected as quality becomes institutionalized and more widespread".

Aeroquip, which is a wholly owned subsidiary of the Trinova Corporation, uses its own modified version of the MBNQA, called AQ+, for self-assessment. Worldwide, Aeroquip has 40 sites in 12 countries, employs 9,000 people and is a global manufacturer of fluid power connectors and custom engineered plastic parts and assemblies. The president of the corporation made it an objective of

every site to achieve AQ+ by December 1996. By the end of 1994 nine of the forty sites had achieved this requirement, and the corporate quality director produced the following data:

64 per cent of Aeroquip operating income from 31 per cent of sales

a) 15.1 per cent return on sales against 3.9 per cent for the rest of Aeroquip

b) 21 per cent growth in sales compared with 5.0 peer cent for the rest of Aeroquip

c) 31 per cent growth in income compared with a 3.2 per cent decrease for the rest of Aeroquip

The most extensive study of the impact of TQM on corporate performance was provided by Easton and Jarrell (1996). They studied the impact of TQM on the performance of a sample of 108 firms which began serious efforts to implement TQM between 1981 and 1991. It was concluded that, 'performance, measured by profit margin, return on assets, asset use efficiency, and excess stock returns, is improved for the sample of firms that adopted TQM'

While there are methodological problems with most of these studies, the broad picture emerging is of the benefits of quality management competence in terms of competitive advantage and business performance.

2.7 Quality as an organization-wide concept

All members of an organization need to work together on 'company-wide quality improvement'. The co-operation of everyone at every interface is required to achieve perfection.

For an organization to be truly effective, each part of it must work properly together. Each part, each activity, each person in the organization affects and is in turn affected by others. Errors have a way of

multiplying, and failure to meet the requirements in one part or area creates problems. The benefits of getting it right first time everywhere are enormous.

Everyone experiences problems in working life. This results in people spending a large part of their time on irrelevant activities such as correcting errors, looking for things, finding out why things are late, checking suspect information, rectifying and reworking, apologizing to customers for mistakes, poor quality and lateness. About a third of workers' efforts are wasted in this manner. In the services sector it can be much higher.

Quality, as defined above aims at meeting the customer requirements, gives people in different functions of an organization a common language for improvement. It enables all the people, with different abilities and priorities, to communicate readily with one another, in pursuit of common goal. When business and industry were local, the craftsman would manage on his own. Business is now so complex and employs so many different specialist skills that everyone has to rely on the activities of others in doing their jobs.

Some of the most exciting applications of TQM have materialized from departments that could see little relevance when first introduced to its concepts. Following training, many departments of organizations can show the use of the techniques. Sales staff can monitor and increase the use of sales calls, office staff have used TQM methods to prevent errors in word-processing and improve inputting to computers, customer service people have monitored and reduced complaints, the distribution department has controlled lateness and disruption in deliveries.

Management that rely on exhortation of the workforce to 'do the right job right the first time', or 'accept that quality is your responsibility', will not only fail to achieve quality but will create division and conflict. These calls for improvement infer that faults are caused only by the workforce and that problems are departmental when, in fact, the opposite is true – most problems are inter-departmental. The commitment of all members of an organization is a requirement of 'company-wide quality improvement'. Everyone must work together at every interface to achieve perfection. And that can only happen if the top management is really committed to quality improvement.

2.8 Evaluation of Performance of Firms

Evaluating the performance of firms is critical in order to ascertain whether the businesses are viable. A key measure of performance used in modern financial management is financial ratio analysis. The type of financial analysis varies according to the specific interests of the party involved. (Van Horne, 1998) Trade Creditors are interested primarily in the liquidity of the firm. Their claims are short term, and the ability of a firm to pay these claims is best judged by means of a thorough analysis of its liquidity. The claims of bondholders, on the other hand, are long term. Accordingly, they are more interested in the cash flow ability of the firm to service debt over the long run. The bondholder may evaluate this ability by analyzing the capital structure of the firm, the major sources and uses of funds, the profitability over time, and projections of future profitability.

Investors in a company's common stock are concerned principally with present and expected future earnings and the stability of these earnings about a trend, as well as their covariance with the earnings of other companies. As a result, investors might concentrate their analysis on a company' profitability. They would be concerned with its financial condition insofar as it affects its ability to pay dividends and to avoid bankruptcy.

In order to bargain more effectively for outside funds, management of a firm should be interested in all aspects of financial analysis that outside suppliers of capital use in evaluating the firm. Management also employs financial analysis for purposes of internal control. In particular it is concerned with profitability on investment in the various assets of the company and in the efficiency of asset management. Financial Ratio comparisons can be done in two-ways; that is time series and cross-sectional analysis. Time series analysis looks at the financial performance of one firm with another at a given point in time (Kathange, 2000). The level and historical trends of these ratios can be used to make inferences about a company's financial condition, its operations and attractiveness as an investment.

The following categories of ratios exist which can be used for analysis of financial statements.

i) **Short-term solvency ratios**

These ratios measure the ability of the firm to meet recurring financial obligations. Examples of ratios in this category include the Current and Quick Ratios.

ii) **Efficiency ratios**

These ratios measure a company's operating efficiency in terms of its ability to utilize its assets in a manner that maximizes its turnover. They include Total Asset Turnover (TAT) and Inventory Turnover.

iii) **Market Value Ratios**

One very important characteristic of a firm that cannot be found on accounting statements is its market value. Examples of measures of market value of a firm include the Market Price

(the price that buyers and sellers establish when they trade the stock), Price to Earnings (P/E) ratio, Dividend Yield, Market to Book ratio and Tobin's Q ratio.

iv) Financial leverage ratios

Financial leverage ratios show the extent that debt is used in a company's capital structure and reflect the company's ability to meet short-term and long-term debt obligations. They are important for long-term investors. Some of the ratios under this category include, Debt to Total Assets, Debt to Equity and Times Interest Earned

Generally, the higher these ratios are, the more risky a creditor will perceive its exposure in a business, making it correspondingly harder to obtain credit. (Altman, 1981)

v) Profitability

Profitability ratios measure the success of the firm in earning on sales or investments. Since profit is the ultimate objective of a firm, poor performance indicates a risk of failure that if not corrected would result in the firm going out of business. Examples of profitability ratios include Operating Profit Margin Ratio (OPM), Net Profit Margin (NPM) Ratio, Return on Assets (ROA) Ratio and Return on Equity (ROE) Ratio.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

An experimental research design consisting of an Experimental and a Control group was used. This involved measuring the impact of TQM certification on the stock price performance by subjecting the stock prices of both the Experimental and Control companies to pre and post testing over a ten (10) year period.

3.2 Population

The population of interest in this research was companies quoted at the Nairobi Stock Exchange (NSE). As at 31 December 2003 there were forty-eight (48) companies quoted at the NSE. The reason why only the NSE quoted companies were used is because they are the only companies with a known market trading value i.e. stock prices.

3.3 Sampling

The research used the ISO certification as a proxy to effective implementation of TQM.

For the experimental group, all the firms quoted at the NSE that had been awarded ISO certification for the first time between 1994 and 2003 were selected. (See Appendix 2)

For the control group, (See Appendix 3) non-certified companies quoted at the Nairobi Stock Exchange with similar characteristics as those in the experimental group were selected. The table 1 below outlines how the control group was selected by matching it with a company with similar characteristics in the experimental group.

Table 1: Summary of Experimental Group and Control Group companies

BUSINESS SECTORS	EXPERIMENTAL COMPANY (ISO CERTIFIED)	CONTROL COMPANY (NON-ISO CERTIFIED)	REASON
Fast Moving Consumer Goods (FMCG)	East African Breweries Limited (EABL)	British America Tobacco (BAT) Ltd	Both are large manufacturing companies dealing in Fast Moving Consumer Goods (FMCG)
Petroleum	Total Kenya Limited	Kenya Oil Company	Both are in the oil and gas business
Rubber Processing	Firestone Limited	Dunlop Limited	Both are in rubber processing business
Media and Publishing	Nation Media Limited	Standard Newspapers Limited	Both are in the media business
Banking and Finance	Standard Chartered Bank Limited (SCBK)	Barclays Bank Limited	Both are in the Banking and Finance business
Cement Processing	Bamburi Cement Limited	East Africa Portland Cement Limited	Both are in the cement processing business

3.4 Data Collection

The research used secondary data gathered from the Nairobi Stock Exchange (NSE) of the firms under study, both in the experimental as well as in the control group. A ten-year period between 1993 and 2002 for the study was used for the study. This entailed collecting the average monthly stock

prices of the experimental group five years before and five years after being awarded the ISO certification. For the companies in the control group, the average monthly stock prices were also gathered for the ten-year period under study.

The sources of the secondary data were:

- The Nairobi Stock Exchange (NSE)
- Kenya Bureau of Standards (KEBS)

3.5 Hypothesis

Ho: Implementing TQM does not affect the stock price of a firm.

H1: Implementing TQM affects the stock price of a firm.

3.6 Data Analysis Technique

The study explored the hypothesis that implementing effective TQM programs affects the share prices of firms. The share price movements for an experimental group of firms that have effective TQM programs were compared against a matching sample of control firms for a ten-year period between 1994 and 2003. This entailed analyzing the share prices' movement of the experimental group five years before and five years after being awarded the ISO certification. A similar analysis was also done for the companies in the control group.

The market return on the shares of these companies, both in the experimental and control groups for a ten-year period were subjected to a comparison to ascertain whether there is a significant difference

in the share prices and their market return. Statistical tests of significance were used to determine whether the differences are material or not.

From both the introduction and the literature review it can be deduced that **TQM can be defined as the process of maximizing customer satisfaction** (by ensuring sustained quality in both the product/service and its delivery) **and minimizing operational inefficiencies** (through continuous reduction of costs arising from wastage, defects, lost sales etc) **with the overall goal of maximizing shareholder value.**

On the basis of the above definition financial performance indicator(s) that are reflective of both customer satisfaction and operational efficiencies are:

- Total Asset Turnover (TAT)
- Operating Profit Margin (OPM)

The TAT component gives an indication of the ability of the work force to utilize its resources (asset base) so as to maximize revenues. It follows that the maximization of revenues is largely dependent on the company's ability to maximize customer satisfaction.

On the other hand, the OPM component is indicative of the company's ability to control its operating costs. This is directly related to the company's operating efficiency.

The financial indicators are mathematically defined as follows:

$$\text{TAT} = \frac{\text{Revenues (Sales)}}{\text{Total Assets}}$$

$$\text{OPM} = \frac{\text{Operating Profit}}{\text{Revenues (Sales)}}$$

It follows that the two indicators are combined into one as seen below:

$$\frac{\text{Revenues (Sales)}}{\text{Total Assets}} \times \frac{\text{Operating Profit}}{\text{Revenues (Sales)}} = \frac{\text{Operating Profit}}{\text{Total Assets}} = \textbf{OROA}$$

The Operating Return on Assets (OROA) was used as a key characteristic in measuring and monitoring TQM trends. As shown below, it was applied to infer a relationship between TQM and market returns (computed using the Holding Period Returns - HPR).

$$\text{HPR} = \frac{\text{Year End Price} - (\text{Year's Beginning Price} + \text{Dividends})}{\text{Year's Beginning Price}}$$

On establishing that a relationship between TQM and market returns exists, by way of R^2, the next step involved the study of the actual impact of TQM on holding period returns (HPR) by comparing stock HPR before and after TQM implementation on a month-to-month basis. To do this, the F- test was applied to assess whether there is a significant variation in market returns, expressed as HPR, between the periods before and after TQM implementation. For TQM to have a significant and positive impact on market returns the variation should increase significantly after TQM implementation.

$$F = \frac{S_1^2}{S_2^2} \qquad \begin{aligned} H_0&: S_1^2 = S_2^2 \\ H_1&: S_1^2 \neq S_2^2 \end{aligned}$$

F – F test

S – Sample variation

- If the variation is greater and significant in the period after TQM implementation then it can be conclusively stated that for the particular stock(s), holding other factors constant, the implementation of TQM has had a positive impact on stock price(s) and market returns. Accordingly, the null hypothesis was rejected and the TQM was considered as an effective avenue for maximizing shareholder value.
- In cases where the variation is not significant then the implementation of TQM can be deduced as being ineffective in maximizing shareholder wealth.

3.7 Justification of research design

Market based price drivers are always in effect while company-specific price drivers are experienced from time to time. As a result, market forces can be viewed as the dominant force in determining price momentum while company-specific forces come into play periodically to amplify the momentum or to change the direction of the momentum. For instance, the price of a stock could be rising boosted by the general positive economic outlook (market price driver) by investors but in the event that the company registers a loss (company-specific price driver) the upward momentum will be reversed. Consequently, prices will tend to move in line with normal market variation while any above normal variation in stock prices should be attributed to company-specific forces such as implementation of TQM programs. As a result, firms that implement TQM programs should see the respective stocks register an above normal market variation in price after TQM implementation as their profitability increases and market demand for the stock increases leading to a higher than normal stock price increase.

The F-statistic was used because it measures the significance of the difference between two variations – in this case the difference between variations in stock prices in the period before TQM implementation and the period after TQM implementation.

The stock price of each company is assumed to experience normal price variation in the period between 1994 and 1998 i.e. before TQM implementation. This variation was then compared to the stock price variation in the period between 1999 and 2003 (the period after TQM implementation) to determine whether, holding other factors constant, TQM implementation has caused any significant (above normal) variation in stock prices of the companies in the experimental group.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The primary objective of the study was to examine the financial performance of the listed companies with effective TQM programs in Kenya. ISO certification was used as a proxy to effective TQM implementation.

Accordingly, the overall aim of data analysis was to test, using relevant statistical tests, the hypothesis:

H_0: Implementing TQM does not affect the stock price

H_1: Implementing TQM will affect the stock price

This hypothesis attempts to establish whether the implementation of TQM programs in some of the listed companies at the Nairobi Stock Exchange (NSE) has had a direct and positive impact on stock price. Implied is the assumption that most significant changes in stock prices over and above normal market trends, over the last 5 yrs, witnessed in listed companies with TQM programs are mainly attributable to the implementation of TQM. Hence, from the on set the hypothesis only considers company-specific price drivers (TQM in this case) and ignores market based price drivers e.g. increased liquidity in the stock market.

In line with the objective, the study focused on the comparison of the variations in stock prices of the listed companies in both the experimental and the control groups before and after the implementation of TQM programs.

4.2 Characteristics of the firms under study

In order for the TQM to be subjected to statistical testing, some of its attributes must be expressed in mathematical form. Accordingly, a reasonable and sound definition of TQM must be sought and thereafter identify financial performance indicators that, to a great extent, meet the stated TQM definition. This indicator(s) was then applied in statistical testing and was used to both measure and reflect the trends in TQM application. In addition, the impact of this indicator(s) on stock prices was assessed with a view to ascertaining whether the implementation of TQM does impact positively on stock prices, hence adding shareholder value.

In the experimental group EABL's and Nation Media's market returns registered the highest responsiveness to OROA in the post TQM implementation-period. As a result, the correlation between OROA and HPR has become very strong after TQM implementation for both EABL and Nation Media standing at 0.9041 and 0.9082 respectively. In view of this, it appears that for the two companies market returns move, more or less, in tandem with OROA, which in this case is used to monitor TQM activity. Consequently, it is probable the entrenchment of TQM programs in these companies' operations will lead to higher market returns and subsequently increased shareholder value.

For both Firestone and Bamburi there is a considerable increase in the correlation to 0.4742 and 0.44076 respectively in the post TQM implementation-period. However, the correlation is not as strong as for both EABL and Nation Media. Contrastingly, for both Total and SCBK there has only been a slight increase in the correlation.

In the control group all firms, with the exception of Standard Newspapers and BAT, have registered a decline in the correlation between 1999 and 2003 (in the post TQM implementation –period for the experimental group). However, for both Standard Newspapers and BAT, there are no major increases in the correlation between OROA and HPR in this period.

Table 2: CORRELATION BETWEEN OROA AND HPR IN THE EXPERIMENTAL GROUP

Years	EXPERIMENTAL GROUP											
	EAST AFRICAN BREWERIES LIMITED		FIRESTONE (EA) LIMITED		TOTAL (K) LIMITED		STANDARD CHARTERED BANK KENYA LIMITED		NATION MEDIA GROUP		BAMBURI CEMENT LIMITED	
	Before TQM implementation (1994 to 1998)											
	OROA	HPR	OROA	HPR	OROA	HPR	OROA	HPR	OROA	HPR	OROA	HPR
1994	0.176	40.2	0.72	-8*	0.31	38.6	0.07	-38.7	0.3	216	0.13	18
1995	0.186	-53.9	0.78	-25	0.49	-12.3	0.08	-12.4	0.56	34.7	0.13	-40.4
1996	0.18	-2.88	0.69	14.6	0.29	-62	0.07	-6.7	0.51	9	0.13	-11
1997	0.13	-7.6	0.55	-21.6	0.23	-36	0.06	-15.7	0.39	15	0.12	-10
1998	0.17	31.3	0.48	-44.5	0.21	-24	0.06	6.3	0.27	3	0.07	-10
R^2 ('94 – '98)	0.0010		0.0336		0.0567		0.0025		0.14		0.0005	
	After TQM implementation (1999 to 2003)											
1999	0.12	16.6	0.13	-20	0.21	-3.5	0.6	22	0.18	-26.4	0.08	-29
2000	0.14	12	0.19	-28	0.07	12.2	0.06	-13	0.14	-25.8	0.07	28.5
2001	0.16	-3.26	0.20	-30	0.03	-61.2	0.06	-2	0.17	-38.2	0.10	-52
2002	0.19	68	0.15	18.3	0.12	35	0.05	9.6	0.24	91	0.14	173
2003	0.28	227	0.12	16	0.09	39	0.06	175	0.29	127	0.12	180
R^2 ('99 – '03)	0.9041		0.4742		0.0798		0.0429		0.9082		0.44076	

*Firestone E.A. ltd was listed in the NSE in November 1994. Hence, in computing the '94 HPR the November price is taken as the year's beginning price

Table 3: CORRELATION BETWEEN OROA AND HPR IN THE CONTROL GROUP

Years	CONTROL GROUP											
	BRITISH AMERICAN TOBACCO (BAT)		DUNLOP		KENOL		BARCLAYS BANK KENYA LIMITED		STANDARD NEWSPAPERS		EAST AFRICA PORTLAND CEMENT	
	1994 to 1998											
	OROA	HPR%	OROA	HPR%	OROA	HPR%	OROA	HPR%	OROA	HPR%	OROA	HPR%
1994	0.24	-26	0.46	390	0.68	75.7	0.06	58	0.03	-76.4*	0.27	66
1995	0.23	-44.4	0.46	1.2	0.24	5.2	0.06	-4.9	-0.18	8.3	0.24	16.6
1996	0.27	-30.7	0.37	3.17	0.28	0.7	0.07	-35	0.17	-38	0.24	-57.5
1997	0.24	-39.7	0.10	-63.6	0.32	-32	0.07	0.0	0.37	485	0.02	-18.36
1998	0.24	37.7	0.07	-81.8	0.20	-8.3	0.06	5.2	0.01	65	0.06	-53.8
R^2 ('94 – '98)	0.135		0.415		0.7406		0.3612		0.5118		0.2563	
	1999 to 2003											
1999	0.37	12.8	0.03	-59	0.16	8.9	0.15	-13.8	-0.9	-60.6	0.02	-44
2000	0.16	-17	0.01	-34	0.15	4.3	0.16	-25.2	-0.14	-33	0.07	3
2001	0.21	-24.6	-0.14	-13	0.21	-9.75	0.15	0.7	-0.22	-1.4	0.04	8.6
2002	0.27	5.9	0.02	-3.8	0.17	30.4	0.13	16	0.04	61.6	0.06	1.2
2003	0.34	352	0.11	247	0.17	192	0.14	157	0.12[C1]	207	0.05	286
R^2 ('99 – '03)	0.225		0.330		0.0179		0.2236		0.5278		0.0314	

*Standard Newspapers ltd was listed in the NSE in August 1994. Hence, in computing the '94 HPR the August price is taken as the year's beginning price

From the above analysis the experimental companies' coefficients of determination (R^2)[1] are higher, post TQM implementation, than before TQM implementation. This is more, so with EABL and Nation media, which have registered a very strong correlation with market returns after the implementation of TQM programs. This implies that TQM implementation has a strong positive effect on the stock prices.

On the other hand, for the control companies' coefficients of determination (R^2)[2] were not significantly different between the 2 periods (1994-1998 and 1999-2003 respectively). This may be attributable to lack of TQM implementation.

4.3 Analysis of the impact of TQM on market returns, as reflected by HPR

The F- test was applied to assess whether there was a significant variation in market returns, expressed as HPR, between the periods before and after TQM implementation. For TQM to have a significant and positive impact on market returns the variation should have drastically increased after TQM implementation since the TQM is expected to push up the stock prices as market players buy the superior stocks whose performance has been enhanced by TQM through the continuous improvement of OROA. Subsequently, a sector-by-sector comparative analysis was undertaken, which involved comparing firms in the same sectors in both the experimental and control groups

[1] Coefficient of Determination (R^2) measures the degree to which the Market Return (HPR) is explained by the Operating Return on Assets (TQM measure)
[2] Coefficient of Determination (R^2) measures the degree to which the Market Return (HPR) is explained by the Operating Return on Assets (TQM measure)

Table 4: F-TEST SIGNIFICANCE FOR FIRMS IN BOTH THE EXPERIMENTAL AND CONTROL GROUPS

F-TEST (F-statistic; $\alpha = 0.05$)												
Companies	**EXPERIMENTAL GROUP**						**CONTROL GROUP**					
	EABL	**FIRESTONE**	**TOTAL**	**SCBK**	**NATION**	**BAMBURI**	**BAT**	**DUNLOP**	**KENOL**	**BBK**	**STD N.P.**	**E.A PT.LAND**
F-statistic	2.00*	1.00	1.45	1.43	1.79*	1.016	1.38	4.57*	3.43*	1.36	3.06*	2.29*
F- critical	1.607	1.607	1.607	1.607	1.607	1.607	1.607	1.607	1.607	1.607	1.607	1.607
Ho	Reject	Fail to reject	Fail to reject	Fail to reject	Reject	Fail to reject	Fail to reject	Reject	Reject	Fail to reject	Reject	Reject

* The F-statistic is significant at 95% confidence interval

4.4 Results of Significance tests

The table above contains a summary of the significance tests of variations in HPR of the respective companies (both experimental group companies and control group companies) conducted at 95% confidence level. The conclusions are based on the F-test.

A sector-by-sector analysis of the significance results revealed that:

i. In the FMCG sector there was evidence that the implementation of TQM programs impacted positively on the stock prices. In particular EABL's stock prices have been more volatile after TQM implementation averaging a price of Kshs 33.5 before TQM implementation compared to an average price of Kshs 273 after implementation. On the other hand, the volatility of BAT's stock price has been modest moving from an average of Kshs 134 between 1994 and 1998 to Kshs 161 between 1999 and 2003. Hence it is clear that implementing TQM programs has had a positive impact on the sector.

ii. Equally in the Media and Publishing sector there was evidence that the implementation of TQM programs impacted positively on the stock prices. Although both Nation Media's and Standard Newspapers' stock price volatility has been significant and both firms have witnessed a marginal decline in average stock prices (in the post TQM implementation –period) from Kshs 132.50 to Kshs 115 and Kshs 31.75 to Kshs 25.15 respectively, Nation Media has managed to

maintain higher stock prices in comparison with Standard Newspapers, implying that shareholder value has been maximized upon implementation of TQM programs. At the end of 2003 Nation's stock price stood at Kshs 191 while that of Standard Newspapers was Kshs 39.75

iii. In the Rubber Processing sector the implementation of TQM programs did not have any significant impact on Firestone's stock price. On the other hand, significant price volatility has been experienced in Dunlop (K) Limited due to a continuous decline in its stock price over the years from 1997 to 2002.

iv. In the Petroleum Sector, the implementation of TQM programs did not have any significant impact on Total's stock price. On the other hand, Kenol has registered significant price volatility occasioned by company-specific forces other than TQM.

v. In the Banking and Finance Sector, the implementation of TQM programs did not have any significant impact on SCBK's stock price.

vi. In the Cement Processing Sector, the implementation of TQM programs did not have any significant impact on Bamburi Cements Limited's stock price. In the case of E.A. Portland, the significance in volatility may be attributable to other company-specific forces other than TQM. On the other hand, implementation of TQM programs has enabled Bamburi Cement Limited to maintain reasonably high stock prices. At the end of 2003 Bamburi Cement Limited's stock price stood at Kshs 126. This price was much higher compared to E.A. Portland's stock price of Kshs 58.

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH RECOMMENDATIONS

5.1 CONCLUSIONS OF THE STUDY

The study explored the hypothesis that implementing effective TQM programs improves the stock prices of listed companies. The ISO certification is used as a proxy for effective implementation of TQM programs. The results did yield some evidence to give credence to the argument that firms with TQM programs have tended to outperform the control group on stock price performance.

In this regard, the study found that company-specific price drivers, TQM in particular, do play a significant role in determining price volatility in some of the industries whose companies are listed at the NSE.

The FMCG and Media industries are quite responsive to TQM programs as reflected by the statistical significance of both EABL and Nation Media. The two firms have recorded prices well above normal historical trends in the period following TQM implementation. In this case TQM did contribute to maximization of shareholder value. Contrastingly, in their counterparts in the control group namely, BAT and Standard Newspapers have not

experienced a large upward price momentum. In fact, Standard Newspapers' downward price momentum rendered its price variance statistically significant.

The rest of the industries did not show any significant responsiveness in price to TQM programs where and when implemented. Hence for petroleum, rubber processing, banking and cement processing industries the implementation of TQM programs cannot be said to have positively contributed to the maximization of shareholder wealth.

5.2 LIMITATIONS OF THE STUDY

In assessing the relationship between OROA and HPR only year-to-year data for a 5-yr period is considered. The 5-year sample is quite small and as a result it may be vulnerable to abnormalities (a longer duration may be needed to normalize the sample data) when assessing the correlation between the two variables. In view of this, the stated correlations may not be entirely accurate.

One of the limitations of the study was that the month-to-month observation periods were less than the five-year maximum because some companies, namely Standard Newspapers and Firestone were listed well after the initial benchmark year of 1994 January. In light of this, instead of 60 month-to-month observations, 50 observations were applied starting November 1994 (for the 5-year period before TQM implementation) and 50 observations starting November 1999 (for the 5-year period after TQM implementation).

Consequently, the sample may not be wholly representative of the 10-year stock price trends of the firms under study.

Some of the financial accounts used in deriving the OROA did not indicate the company's operating levels and instead only displayed profit before tax. Consequently, the researcher had to try and derive the operating profit component from the set of accounts. Caution must therefore be exercised for there is a limitation in the accuracy associated with such data.

5.3 FUTURE RESEARCH RECOMMENDATIONS

Other avenues of future research could focus on the success rate of TQM implementation in the various industries or sectors with the regard to their ability to improve on Operating Returns on Assets (OROA) over time.

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APPENDICES

APPENDIX 1

COMPANIES QUOTED AT THE NAIROBI STOCK EXCHANGE AS AT 31 DECEMBER 2003

Main Investment Market Segment

Agricultural

1. Brooke Bond Limited
2. Kakuzi Limited
3. Rea Vipingo Plantations Limited
4. Sasini Tea and Coffee Limited

Commercial and Services

5. Car and General (K) Limited
6. CMC Holdings Limited
7. Hutchings Biemer Limited
8. Kenya Airways Limited
9. Marshalls (EA) Limited
10. Nation Media Group
11. TPS Limited (Serena)
12. Uchumi Supermarkets Limited

Finance and Investment

13. Barclays Bank (K) Limited
14. C.F.C. Bank Limited
15. Diamond Trust Bank (K) Limited

16. Housing Finance Company Limited

17. I.C.D.C. Investments Company Limited

18. Jubilee Insurance Company Limited

19. Kenya Commercial Bank Limited

20. National Bank of Kenya Limited

21. NIC Bank Limited

22. Pan Africa Insurance Holdings

23. Standard Chartered Bank Limited

Industrial and Allied

24. Athi River Mining

25. B.O.C. Kenya Limited

26. Bamburi Cement Limited

27. British American Tobacco (K) Limited

28. Carbacid Investments Limited

29. Crown Berger Limited

30. Dunlop Kenya

31. E.A. Cables Limited

32. E.A. Portland Cement Limited

33. East African Breweries Limited

34. Firestone East Africa Limited

35. Kenya Oil Company Limited

36. Mumias Sugar Company Limited

37. Kenya Power and Lighting Company Limited

38. Total Kenya Limited

39. Unga Group Limited

Alternative Investment Market Segment

40. A. Baumann and Company Limited

41. City Trust Limited

42. Eaagads Limited

43. Express Limited

44. Williamson Tea Kenya Limited

45. Kapchorua Tea Company Limited

46. Kenya Orchards Limited

47. Limuru Tea Company Limited

48. Standard Newspapers Group

APPENDIX 2

COMPANIES QUOTED AT THE NAIROBI STOCK EXCHANGE THAT ARE ISO CERTIFIED

1. East Africa Breweries Limited (1998)
2. Total Kenya Limited (1999)
3. Firestone East Africa Limited
4. Nation Media Group (1999)
5. Standard Chartered Bank Limited (1998)
6. Bamburi Cement Limited

APPENDIX 3

NON-ISO CERTIFIED COMPANIES QUOTED AT THE NAIROBI STOCK WITH SIMILAR CHARACTERISTICS AS THOSE THAT ARE ISO CERTIFIED

1. British American Tobacco (BAT)
2. Kenya Oil Company Limited
3. Dunlop Kenya Limited
4. Standard Newspapers Group
5. Barclays Bank Limited
6. East Africa Portland Cement

APPENDIX 4

STOCK PRICE VARIATIONS BEFORE AND AFTER TQM IMPLEMENTATION APPLIED IN THE F-STATISTIC

F-TEST												
	EXPERIMENTAL GROUP						CONTROL GROUP					
	EABL	FRSTONE	TOTAL	NATION	SCBK	BAMBURI	BAT	DUNLOP	KENOL	STDNP	BBK	EAP
Years	Before TQM implementation											
Variance(S^2) (1994-1998)	410.18	305.10	407.96	1009.42	634.72	966.95	189.32	664.71	47.73	3068.01	278.87	984.76
	After TQM implementation											
Variance(S^2) (1999-2003)	204.92	303.96	593.47	562.59	906.92	951.57	136.79	145.37	163.54	1003.26	378.21	429.36
F statistic	2.00	1.00	1.45	1.79	1.43	1.016	1.38	4.57	3.43	3.06	1.36	2.29