THE ROLE OF QUALITY IN GROWTH OF SMALL AND MEDIUM ENTERPRISES IN KENYA

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The Role of Quality in Growth of Small and Medium Enterprises in Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

To my brothers, Alex and Joel and my wife Beatrice Njoki Wanjau

And

To my dear late parents, mum Annet and dad Geoffrey

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TABLE OF CONTENTS

CHAPTER THREE

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

5S	Seiri (Sifting), Seiton (Sorting), Seiso (Seeping), Seiketsu (Standardize), Shitsuke (Sustain)
AQL	Acceptable Quality Level
ASQ	The American Society for Quality
ANOVA	Analysis of Variance
BPR	Business Process Reengineering
BQF	British Quality Foundation
BSC	Balance Scorecard
CI	Continuous Improvement
DFSS	Design for Six Sigma
DMAIC	Define, Measure, Analyse, Improve, Control
DTI	Department of Trade and Industry
EFQM	European Foundation for Quality Management
EM	Entrepreneurial Management
EQA	The European Quality Award
ISO	International Organization for Standardization

JIT	Just-In-Time
JUSE	Japanese Union of Scientists and Engineers
KAM	Kenya Association of Manufacturers
KEBS	Kenya Bureau of Standards
KIRDI	Kenya Industrial Research and Development Institute
KM	Knowledge Management
KMO	Kaiser- Meyer – Olkin Test
KPIs	Key Performance Indicators
LO	Learning Organization
MBNQA	Malcolm Baldrige National Quality Award
MO	Market Orientation
OE	Operational Effectiveness
OE	Organizational Behaviour
OM	Operations Management
OS	Operations Strategy
PE	Process Excellence

QA	Quality Assurance
QC	Quality Control
QCC	Quality Control Circle
QII	Quality Initiative Implementation
QM	Quality Management
QMS	Quality Management System
QSHE	Quality, Safety, Health, and Environment
SMEs	Small and Medium Size Enterprises
SPC	Statistical Quality Control
TPM	Total Productive Maintenance
TQA	Thailand Quality Award
TQC	Total Quality Control
TQM	Total Quality Management
TQPC	Total Quality Promotion Centre

DEFINITIONS OF TERMS

1. Enterprise Growth

Researchers conceptualize enterprise growth as either an entrepreneurial process or an outcome. As an outcome, enterprise performance is viewed as an accumulation of assets and it is usually measured as a single phenomenon especially financial or employee growth (Matthews & Human, 2000). On the other hand, those that focus on enterprise take different approaches in studying it. Some studies have focused on growth stages and appear to depict an enterprise life as a linear process. These studies are based on a biological metaphor of birth, youth, maturity and decline. However, these growth stages do not reflect the reality of life in a SME because few SMEs grow to become large enterprises. Other studies focus on changes that take place in those enterprises to explain growth (Neshamba, 1998; Vyakarnam, 1998).

In this study, enterprise growth is defined as the cumulative change that takes place in an enterprise over a period of time. It is measured in terms of a combination of changes (both qualitative and quantitative) that have been implemented in the enterprise over a period of at least three years. These are changes in number of employees (increase or decrease), changes in location of enterprise as well as in type of enterprise premise, and quantitative and qualitative changes in equipment for production, finances, adoption of quality, changes made in product development and also product diversification.

2. Manufacturing Enterprises

Agus (2000) described the manufacturing industry as that which comprised of processing of raw materials, assembling products parts and repairing of manufactured products. Kenya Iindustrial Research and Development Institute (KIRDI) (1993), on the other hand described it as that compartment of the economy which is concerned with production or making of finished goods of raw materials by means of an elaborate and organized system of labour under single control, especially with the aid of machinery.

However, in this study, any enterprise that changes the form of any raw material to a consumable product through a process before selling to the customer is considered a manufacturing enterprise. These include enterprises like those involved in carpentry, bodybuilding and fabrication, leatherwork, textile, food processing, polymer and paint processing.

3. Small and Medium Enterprises

Definitions of small and medium enterprises vary widely. There is no official definition of SMEs available. Some countries have no clear definitions of a small and medium enterprise; others use different definitions, depending on the purpose of the definition and stage of development. For instance, a study of small enterprise found more than 50 different definitions in 75 countries (Neck & Nelson, 1987). The United States Agency for International Development (USAID) defines a small enterprise as having maximum of 20 workers, Ksh. 2, 750,000 in capital assets and Ksh. 275, 000 in capital assets per work place. The World Bank definition of small-scale enterprise is a maximum of 100 employees, 13.75 million shillings in fixed assets and the enterprises range from small manufacturers with modern operations to petty traders in the informal sector.

However, in this study the following definitions of SMEs have been adopted. Any manufacturing enterprise that has between 10-50 employees will be considered as a small enterprise and 51-100 employees as medium sized enterprises. This criterion is consistent with other similar studies (Kuratko, Goodale & Hornsby, 2001) and was used to identify and qualify SMEs for the purpose of this research.

4. Quality

Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. This definition recognizes that quality can involve every aspect of a product or service, that quality affects the ability of a product or service to satisfy needs, and that customer needs for quality may not always be explicitly stated (Cole, 1998).

5. Consultant

Offers advice and training on administrative and technical aspects of organizational quality (Summers, 2006).

7. ISO 9000 Series Standards

A set of international standards on quality management and quality assurance developed to help companies effectively document the quality system elements to be implemented to maintain an effective system (Summers, 2006).

8. Quality Assurance/ Quality Control

The terms are used interchangeably, referring to the actions performed to ensure the quality of a product, service, or process (Summers, 2006).

ABSTRACT

In today's business environment, small and medium enterprises (SMEs) cannot afford to ignore the strategic implications of quality for its competitive position. Research shows that most SMEs lose between 5%-15% of sales revenue as a result of the lack of attention to quality. Of the limited research available, it appears that SMEs have been very slow to implement formal quality models, and where they have, the outcomes are inconclusive. The purpose of this study was to investigate the role of quality in growth of SMEs in Kenya. The study focused on manufacturing SMEs that are based in Nairobi and its environs.

The study adopted an exploratory approach using a descriptive survey. Stratified random sampling was used and each stratum represented a sub-sector. The sub-sectors are agro-based, chemical and mining and finally engineering and construction. In order to collect the relevant data, a semi-structured questionnaire, interview schedule (structured) and an observation checklist were developed. To ascertain the validity and reliability of questionnaire, interview and observation schedules a pre-test and pilot survey was conducted. The data collection instruments were finally issued to all the 123 firms identified. The response rate was 100%.

Statistical analyses were conducted using statistical package for social scientist (SPSS) to calculate descriptive statistics, reliability analysis, factor analysis, t-test, F-test and regression. Results showed that; majority (72%) of the manufacturing SMEs had adopted quality or are implementing quality initiatives; forty five (45%) percent of the SMEs adopting quality are in the agro-based sub sector. Overall, the SMEs level of quality initiatives implementation is below average (mean = 3.49). The results are indicative of the reluctance of SMEs to adopt quality initiatives.

Analysis of variance was used to analyze the degree of relationship between the variables in the study. The overall results indicated that entrepreneurial management (EM), marketing orientation (MO) and capacity enhancement of employees had significant linear relationship with quality. The study also established that there is no link between investment in technology and adoption of quality. The main finding of this study is that quality has a positive influence on growth of an organization. The results support the notion that SMEs committed to adoption of quality do obtain results. Multiple regression analysis was also done to determine the group of factors proposed together predict adoption of quality.

The study recommends that SMEs must know what quality management is and what comprises quality management if they are to implement them in their firms. Kenya Bureau of Standards and non-governmental organizations should develop quality management programs specifically for manufacturing SMEs.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The contribution of small and medium enterprises (SMEs) to the national economy is well recognized and documented in various studies. Some of the studies include (ILO, 1996; Levitsky, 1993; Elkan, 1989; Sessional Paper No. 2 of 1992) and Kenya National Development Plans (2001-2005) and Sessional Paper No.2 of 2005). Billetoft (1993) noted that people have a much higher opinion of SMEs than of large firms, partially because an SME is characterized by individual freedom, risk taking, initiative, thrift, frugality and hard work. In this regard, a number of studies in the United States show that contributions of SMEs which survive (Birley, 1987) and particularly those which grow (Reynolds, 1987) play a much more important role in national development.

Small and medium manufacturing enterprises in Kenya's manufacturing sector are defined as enterprises with full-time employees not exceeding 100 or annual sales turnover not exceeding Ksh 150 million. These enterprises are further categorized into small enterprises and medium-sized ones. Small enterprises are those with annual sales turnover of between Ksh 5 million and Ksh 50 million or employing between 11 and 50 workers; and medium enterprises are those with annual sales turnover of between 50 million and 150 million or employing between 51 and 100 workers (GoK, 2007).

The development of competitive and resilient small and medium enterprises (SMEs) forms an integral component of Kenya's initiatives to be globally competitive and prosperous nation with a high quality of life by 2030. The challenges posed by increased liberalization, new entrants to the market, increased standards requirements and technological developments require SMEs to raise efficiency levels, strengthen inter-firm linkages and respond timely to market changes. At the same time, greater integration into the global economy provides opportunities for SMEs to participate in the international value chain and supply chains networks. This will enable SMEs to move up the value chain and adopt new technologies, particularly information and communication technology (ICT). Only SMEs that are capable of harnessing technology and knowledge to develop high value-added products of superior quality will be able to compete globally (GoK, 2007).

1.2 Overview of Quality Management System and Quality

The globalization of the marketplace and the rapid improvement in high quality products and services has brought about high levels of market pressure across the world. In order to become efficient and competitive in today's business environment, the majority of firms are being encouraged not only to change their old operational habits, but also to develop better ways to ensure that customers are satisfied with the quality of products/services. As many firms have discovered that the key to customer satisfaction and competitive success lies in emphasizing and achieving product and service quality as a strategic weapon in performing business (Pulat, 1994; Krasachol & Guh, 2001; Warnack, 2003; Reed, Lemak, & Mero, 1999). It is clear that quality has emerged as a strategic competitive tool for organizational success (Yong & Wilknson, 2002). In today's business environment, organizations cannot afford to ignore the strategic implications of quality for its competitive position. In the light of this, it is vital for firms to develop or adopt an effective Quality Management System (QMS) very often associated with quality initiatives such as ISO 9000 series (Rohitratana & Boon-Itt, 2001).

Quality Management System is referred to as a business that can be applied to all business sectors and sizes of companies. If you think of a business as a set of processes it identifies the key process areas that need to be addressed to ensure quality is managed effectively. Moreover, quality management systems are designed to provide the support and mechanism for the effective accomplishment of quality- related activities in organizations (Klefsjo, Bergquist & Edgerman, 2006). In broader sense, Goetsh and Davies (2005) indicated that the quality management system "consists of all the organization's policies, procedures, plans, resources, processes, and delineation of responsibility and authority, all deliberately aimed at achieving product or service quality levels consistent with customer satisfaction and the organization's objectives. When these policies, procedures, plans, ex ceetra are taken together, they define how the firm works, and how quality is managed."

Firms seeking to remain competitive in today's global markets must integrate quality into all aspects of their organization. Successful firms focus on customers and their needs, requirements, and expectations. The voice of the customer serves as a significant source of information for making improvements to a firm's products and services (Summers, 2006).

In common with other managerial ideas and approaches, quality management has taken time to move from its original home in large industrial manufacturing to the small and medium size-manufacturing sector. While the majority of developments up to the 1980s were focused on the subject of managing quality in the manufacturing industry (Morris, 1991), quality ideas gradually moved out of that domain into the service, health care, and public sectors and eventually merged with mainstream organizational management thinking (Boon & Monder, 1998; Selegna & Fazel, 2000). The widespread adoption of quality systems was driven not only by the need for improvement, as in the manufacturing industry, but also by personal sponsorship, ideology, and championship (Dale, Boarden & Lascelles, 1994).

Since developing countries are breaking the traditional trade barriers and opening their markets to international competitors, the demand for quality can no longer be the prerogative of the developed world. Today developing countries are beginning to see dramatic improvements in quality (Temtime & Solomon, 2002). The only way a developing nation can increase its trade activities and develop sustainable basis is to improve the quality of its products and services (Djerdjour, 2000).

Both large and small, production and service, and public and private organizations have made commitments to quality initiatives like total quality management (TQM) by making it fundamental to their growth (Oakland, 2004). Increasing product quality results in higher profits because costs are decreased and productivity and market share are improved (Ryan, Deane & Ellington, 2001; Gupta, 2004). Firms can adopt several strategies aimed at quality improvement such as TQM, ISO 9000 standards and Six Sigma (Cole, 2002).

The relevance of formal quality management initiatives such as Total Quality Management (TQM), quality certification, and Quality Awards to small and medium enterprises (SMEs) has been a highly contentious issue in the quality and SME literatures over the past decade. Besides the ubiquitous criticisms of these initiatives based on the prohibitive costs of implementation, increased bureaucracy and complexity, and managerial confusion over the different methods, there is little evidence to support their pecuniary rewards to SMEs (Husband & Mandal, 1999). Internationally, empirical research into the rate and success of implementation of these initiatives in SMEs is largely considered to be inadequate   Literature in this area is more often conceptual than empirical, and where empirical, it sometimes suffers from methodological limitations (such as unclear or inconsistent definitions of what constitutes an SME) (Ramsey 1998; Kuratko, Goodale & Hornsby, 2001).

Of the limited research available, it appears that SMEs have been very slow to implement formal quality models, and where they have, the outcomes are inconclusive (Husband & Mandal, 1999). For example, Chittenden, Poutziouris and Mukhar (1998) found that only a "tiny minority" of small firms in the UK had registered for ISO 9000, but the "great majority" of these found that the benefits of doing so exceeded the costs. Reported benefits included marketing and competitive advantage, and to a lesser extent improved internal operating efficiencies. On the other hand, Terziovski, Samson and Dow (1997) surveyed over 900 manufacturing firms in Australia and New Zealand and found that "ISO 9000 certification is not shown to have a significantly positive effect on organizational performance", and that the rate of quality system adoption was lower in smaller firms than in larger ones.

1.3 Statement of Problem

Although small companies tend to be creative and innovative, they generally lag behind larger firms when it comes to adoption of quality (McMahon, 2001). Studies by Elmati and Kathawala (1999) indicate that the adoption of quality by small businesses has been minimal. The initial emphasis for a long time has been measuring the success of a business in relation to mass production.

The variables used to measure ‘success’ also vary, with some studies focusing on financial measures such as costs, profit, sales, and return on investment, while others use non-financial measures such as levels of customers satisfaction and operational efficiencies (Chittenden, Poutziouris, & Mukhtar, 1998). Research has confirmed the strategic benefits of quality programs and better quality is proven to contribute to greater market share and return on investment (Cole, 1992; Phillips, Chang & Buzzell, 1983), lower manufacturing costs; improve productivity (Garvin, 1988) and improve the area of strategic performance (Zhang, 2000).

Despite the above cited benefits, SMEs have been somewhat slow in adopting quality initiatives, not only due to excessive managerial involvement in day-to-day entrepreneurial activities that typically focus on sales strategies and market growth but also because they are less comfortable with the formal approaches that have been advocated as part of ISO 9000 series registration, and introduction of quality initiatives like TQM (Yusof & Aspinwall, 1999; McTeer & Dale, 1994). Despite its conceptual rigor, the role of quality in affecting organizational growth or performance (whether facilitative or causative) particularly within the context of small businesses requires research attention (Tatoglu & Zaim, 2006).

Research findings of Adam (1994) and reports in the business press suggest that quality management implementation does not in and of itself guarantee high performance (Bleakley, 1993; Fuchsberg, 1992a,b, 1993; Jacob, 1993; Mathews, 1993; Mathews & Kate 1992; Naj, 1993). Why quality initiatives like TQM implementation - performance relationship have remained so inconsistent has been largely unexplained (Forker, 1997). Through many years of relentless debate, this inconsistency has led several authors to conclude that, instead of viewing this relationship as a direct one, it ought to be mediated by other constructs (Macaes, Farhangmehr & Pinho, 2007).

Research shows that most SMEs loose between 5%-15% of sales revenue as a result of the lack of attention to quality (McMahon, 2001). This suggests that formal quality management systems are important tools contributing to the growth and development of SMEs. In addition, buyers in domestic and international markets are demanding that their suppliers operate quality management systems as a means of ensuing strong commitment to quality, productivity, cost competitiveness, and customer satisfaction. With the weakening of trade-barriers, the opening of markets to multinational competitors and the spread of international quality standards such as ISO 9000 to developing countries, SMEs are expected to achieve competitive advantage through the provision of quality products and services (Agus, 2000).

This study aimed to address the gap in research on the relationship between quality initiatives and SME growth in Kenya. In order to bridge the gap and provide SMEs with practical assistance in dealing with this issue, this research used a sample of manufacturing SMEs within Kenya to examine whether adoption of quality inevitably contribute towards growth of the firm. The perception of process improvement consulting on the manufacturing sector, the demand for process improvement services among Kenyan firms is very low and many are not aware of the potential for improved competitiveness (GoK, 2007).

This study is also a follow up of previous research by Lobo and Jones (2002), which examines empirically the possible association between the adoption of certain quality initiatives (namely TQM, quality assurance and quality benchmarking) and rate of business growth in Australian manufacturing SMEs.

1.4 General Objective

The study investigated the role of quality in growth of SMEs in Kenya.

1.4.1 Specific Objectives

In order to fulfill the research aim, this study intended;

1. To investigate whether adoption of quality in SMEs influences entrepreneurial management**.**

2. To investigate whether adoption of quality in SMEs influences market- orientation.
3. To determine whether Small and Medium Enterprises in the manufacturing sector have the employee capacity to introduce and ensure adoption of quality.
4. To investigate whether adoption of quality influences investment in technology (plant).
5. To determine whether the independent factors (EM, MO, capacity of employees and investment in technology) together influence adoption of quality.

1.5 Research Hypotheses

To examine how each of the criterion variables influence the response variable, the following null hypotheses were tested;-

H_1: There is no relationship between entrepreneurial management (EM) and adoption of quality in SMEs.

H_2: There is no relationship between market orientation (MO) and adoption of quality in SMEs.

H_3: The capacity of employees is not related to adoption to quality in SMEs.

H_4: There is no relationship between investment in technology and adoption of quality in SMEs.

H_5**:** There is no relationship between adoption of quality and growth in SMEs.

H_6: The independent factors (EM, MO, capacity of employees and investment in technology) together do not influence adoption of quality.

1.6 Justification of the study

Since Small and Medium Enterprises dominate the industrial scene in most developing countries, a deeper understanding of quality and why adoption of quality is important, may make it possible to pursue industrialization, thereby leading to results that are more equitable and efficient. Quality is a key strategy for maintaining competitive advantage and is a way of managing firms to improve its overall effectiveness and performance towards achieving world- class status (Zhang, Waszink & Wijngaard, 2000, Chapman & Al-Khawaldeh, 2002).

According to Powell (1995), empirical studies have not shown that TQM firms consistently outperform non-TQM firms. Nevertheless, adoption of quality has become an irrepressible, globally pervasive strategic force in today's turbulent and dynamic firm performance is mixed and inconclusive, there is much consensus that implementation of quality practices leads to better performance, improved communication, increased customer satisfaction and team work (Chandler & McEvoy, 2000; Boon & Ram, 1998; Van der Wiele & Brown, 1998; Reed et al., 1999).

The ever-increasing intensity of market competition has made the adoption of quality a prerequisite for corporate survival. As a result of adopting successful quality programs, corporations like Xerox, General Electric, and Motorola have reduced their quality costs from 30% of sales to 2% of sales while improving the quality of their products (Gupta, 2004).

At Pakistan's first international convention on quality, Crosby (cited in Djerdjour, 2000) stated that there was nothing more important to the prosperity of a developing nation than quality. The only way a developing nation can increase its trade activities and develop sustainable basis is to improve the quality of its product and services. Developing countries, particularly the emerging ones, are blessed with a big advantage. They do not have to make the mistakes and omissions that were made by industrialized countries, because they can move into the proper position if they take time to study the trends. In an increasingly competitive world, quality is no longer an optional extra; it is an essential strategy for all firms regardless of size and location (Agus, 2000).

The growing interest in adoption of quality has led to the emergence of a distinct stream of quality research. For instance, Ghobadian and Gallear (1996) studied four manufacturing SMEs using case methodology. Their findings showed that (a) quality initiatives like TQM maybe successfully adopted by SMEs, (b) certain quality practices appeared to more readily fit the characteristics most prevalent in SMEs, while others appeared to be size independent, and (c) leadership, education and training, and effective communication were fundamental elements of a successful quality program. Although a number of researchers and academicians have extensively examined quality implementation practices in industrialized countries such as the United States of America, Japan, the United Kingdom and other European countries, it is only recent years that a few researchers have begun to examine quality practices in developing countries. Of the few studies in developing countries, the majority has examined quality practices of large firms. Thus, studies on adoption of quality practices by SMEs in developing countries, particularly in Africa, are few (Magd, 2008).

To date, research interest in the role of quality in SMEs in general, and manufacturing SMEs in particular, is surprisingly sparse and underdeveloped (Weinzimmer, 2000). There is limited research literature to date on the adoption of quality by SMEs in Kenya.

Organizations mostly focus on the encouraging role played by external stakeholders, especially governmental agencies that provide funding. External stakeholders, it is argued, have become increasingly concerned about having evidence that services provided at arm's length from them meet acceptable standards of quality. As a result of this concern, voluntary and community organizations are feeling pressured to varying degrees to adopt quality systems so that they can demonstrate to stakeholders their organizational effectiveness and the standard of their services (Oakland, 2005; Jackson, 2001).

Research pointing to the effectiveness (or otherwise) of quality initiatives in SMEs is important to the continued development and competitiveness of small and medium enterprises. The influence of the explanatory variables on the growth of small and medium enterprises assist the entrepreneurs look for growth, develop an attitude that adoption of quality is necessary since they have a vision, think and act globally, look for expansion, rely on external resources, seek professional advice or be introduced to professional teams. The outcome of this study is useful for researchers who are interested in quality initiatives research and would like to select reliable quality practices to fit appropriate organizational research settings.

It is relevant to note that, although a significant part of its industrial structure is mainly dominated by SMEs, few studies address the analysis of quality implications within smaller countries (Pinto, 2008). In line with Bayati and Taghavi (2007), there is a need for research on adoption of quality by SMEs in specific geographical regions. Kenya seems to be an interesting case given the significant role that SMEs play in the economic sector and due to the fact that it has a more advanced economy in comparison with other East African countries. Consequently most SMEs in Kenya which were accustomed to operate within a protective and stable market needed to undergo intensive product and design differentiation as well as improvement in their marketing and distribution skills in order to respond to an increasingly competitive market environment.

1.7 Scope of the Study

The study only investigated small and medium manufacturing enterprises, which are only located in Nairobi and its environs (35km). Most of the formal small and medium enterprises are located in Nairobi and Coastal region. Based on the available data, 56% of formal small and medium manufacturing enterprises are located in the Nairobi region and its environs (GoK, 2007). Also the study design was limited to one geographical region, which faces similar external environment pressures. It is believed, however that these results are indicative of the major issues facing SMEs in developing economies today.

1.8 Limitations of the Study

Since it was not be possible to study all variables influencing adoption of quality by SMEs in manufacturing sector in Kenya at once, this study was designed to generate basic understanding of the interaction effects of quality and enterprise growth. Although the respondents varied by scale, the study relies heavily on the use of perceptual data. The measure of perceived quality market outcomes, in particular, is relatively weak, because it asks owners/managers for their perception of market perceptions of the firm and the quality of its products.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The study examined the role of quality in growth of small and medium enterprises in Kenya. In this section, the study explores the role of quality in SMEs as articulated by various scholars and the research gaps they identified .The study focuses on both theoretical and past studies on the topic. A conceptual framework has also been developed.

2.1.1 Concept of Quality

During the past several years, the management literature has been flooded with information on “quality revolution.” In just the last three years more than 4,000 articles have been published on the subject (Deming, 1986). Prior to this decade, the quality gurus heralded the benefits of quality; yet, the industry and the academic community paid the “new” approach little heed (Deming, 1986). Quality management theory has been influenced by the contributions of quality leaders (Deming, 1986). These ideas have exerted an influence upon later studies, in such a way that the literature on quality management has progressively developed from these initial contributions, identifying different elements on for effective quality management: customer focus, leadership, quality planning, management based on facts, continuous improvement, human resource management, learning, process management, cooperation with suppliers and organizational awareness and concern for social and environmental context (Cole, 2002).

The quality concept has been a popular research topic in marketing and management literature where researchers have attempted to identify key dimensions of quality initiatives and performance. Researchers have defined the concept of quality in different ways ranging from perception of value (Summers, 2006) to conformance to requirements (Deming, 1986), fitness to use (Juran, 1979) and finally to meeting customer's expectations (Oakland, 2004). Quality is a customer determination based on the customer's actual experience with the product or service, measured against his or her requirements stated or unstated, conscious or merely sensed, technically operational or entirely subjective and always representing a moving target in a competitive market (Cole, 2002). Gupta (2004) point out the importance of quality by saying "quality is an important strategic dimension and a key competitive weapon that cannot be ignored by any corporation."

Deming (1986) considered quality and process improvement activities as the catalyst necessary to start an economic chain reaction. Improving quality leads to decreased costs, fewer mistakes, fewer delays, and better use of resources, which in turn leads to improved productivity, which enables a firm to capture more of the market, which enables the firm to stay in business, which results in providing more jobs (Summers, 2006).

A study by Ahire and Gohlar (1996) found that the introduction of quality initiatives like TQM in SMEs had helped to sharpen SMEs' market focus, to become more efficient, to harness their human resources better, and to improve their competitiveness. They also concluded that adoption of quality leads to better product quality and that SMEs can implement quality initiatives like TQM as effectively as large firms.

2.2 Overview of the Kenya Manufacturing Sector

The growing competition in the market place, the advance of manufacturing technologies, and shorter product life cycles has exerted strong impacts on the entire manufacturing industry. Under such a dynamic environment, small and medium enterprises (SMEs) have deployed various approaches to reposition their competitive priorities such as cost, quality and delivery so as to achieve the ultimate goal to customer satisfaction (Chen, 1999).

The Kenyan economy has remained predominantly agro- based since independence, with the manufacturing sector remaining an integral part of the country's development strategies. Agriculture currently accounts for about 24.2% of the Gross Domestic

Product (GDP) and 60% of earnings from the merchandise exports while manufacturing and trade contributed 10.5% and 10.8% to GDP respectively in 2007.The industrial capital share of monetary GDP has remained about 15 – 16% while that of manufacturing sector alone has remained at a little more than 10% over the last two decades. The sector's Gross value added (GVA) grew at a slower pace of 6.2 per cent in 2007 compared to 6.3 per cent in 2006. Manufacturing activities account for the greatest share of industrial production output and form the core of industry (GoK, 2007).

The manufacturing sector is an important source of employment for the country's labour force and currently employs about 2.7 million Kenyans in 2007 with micro, small and medium enterprises (MSMEs) share in employment having expanded rapidly in recent years. Over the last 5 years, employment in manufacturing has grown at a rate faster than in all other activities. The sector's real value added grew by 6.2% in 2007 compared to 6.3% in 2006. Total value output rose to Ksh 603.7 billion in 2007 from Ksh 558.3 billion in 2006 representing an 8.1% growth (GoK, 2008).

The manufacturing sector in Kenya is characterized by relative low value addition, low employment and low export volumes partly due to weak linkages to other sectors and low capacity utilization. The intermediate and capital goods industries are also relatively underdeveloped, implying that Kenya's manufacturing sector is highly import dependant despite registering export growth for manufactured goods (GoK, 2008). This has resulted to limited local linkages contributing to weak multiplier effect in the local economy. Although the manufacturing sector recorded an impressive growth during the first decade of independence, it declined considerably thereafter following the oil crisis of 1973.The sector declined further in the 1980s and 90s,recording a growth rate of only 1% in 1999 and 1.5% in 2000 (GoK, 2007).

Since 2003 the sector has shown improved growth resulting from enhanced power supply, increased market opportunities within the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA), favorable tax reforms and other incentives. Sub-sectors which recorded growth were meat and dairy products, canned vegetables, fruits, fish, oils, fats; beverages and tobacco; petroleum and other chemicals among others. The significant growth recorded in key sub-sectors was mainly due to the opening up of new processing plants, diversification of products, increased capacity utilization and a construction boom leading to increased regional trade especially for firms exporting manufactured goods. Growth in business investment on the other hand led to increased output in manufacturing hence contributing to the overall economy. The growth in manufacturing sub-sectors like cement production, metal products and paints manufacture can be attributed partly to upturn in building and construction sector (GoK, 2008).

The performance of the manufacturing sector has been affected by low injection of new capital to offset the loss arising from capital depreciation. Further, Kenya’s image as an attractive investment destination has plummeted from an average growth of 10% between 1985 and 1989, to low growth rate of 0.4% between 1997 and 2001.This partly explains the limited Foreign Direct Investment (FDI) inflows the country has received relative to competitive countries in the region. Other factors that have constrained industrial development include the poor state of physical infrastructure, limited access to finance, limited research and development, poor institutional framework, poor business environment, and inadequate managerial, technical and entrepreneurial skills (GoK, 2007).

To increase competitiveness of manufactured goods, the Government continued the process of reducing the cost of doing business especially in areas of legislation in addition to creating an enabling environment for investment. This enabled a number of manufacturing entities to expand their production capacities and access regional and overseas markets (GoK, 2008).

During the review period, key measures were put in place by Kenya Bureau of Standards (KEBS) to cushion manufacturers against the influx of sub-standard products into the local market. Some manufacturing firms also diversified their products thus increasing their range of manufactured goods in addition to outsourcing their production to other firms (GoK, 2008).

2.3 Conceptual Framework

In a conceptual framework, descriptive categories are systematically placed in a broad structure of explicit propositions, statements of relationships between two or more empirical properties to be accepted or rejected (Parsons & Shils, 1962). It comprises of independent variables and dependent variables. An independent variable (IV) or the exploratory variable is the presumed cause of changes in the dependent variable (DV). It is caused or influenced by the dependent variable(s). Dependent variable(s) is the variable the researcher wishes to explain. It is also called criterion or predictor variable (Kothari, 2004).

For simple relationships, all other variables are considered extraneous and are ignored. In actual study situations, however, such a simple one- on- one relationship needs to be conditional or revised to take other variables into account. Often one uses another type of explanatory variable of value. The propositions included within the framework summarize, provide explanations and predictions for empirical observations.

This study adopted a conceptual framework of strategic importance to identify some underlying forces behind different aspects of the key concept of quality. In particular, it investigated the significance of entrepreneurship management (namely risk taking and innovations), market orientation; capacity enhancement and technology (see figure.2.0). According to Wolff and Pett (2006) within SME research, the issue of firm growth/ performance has taken a place of prominence as a dependent variable.

Figure 2.0 below depicts the relationship between different constructs that are of paramount importance for achieving long-term sustainable competitive advantage.

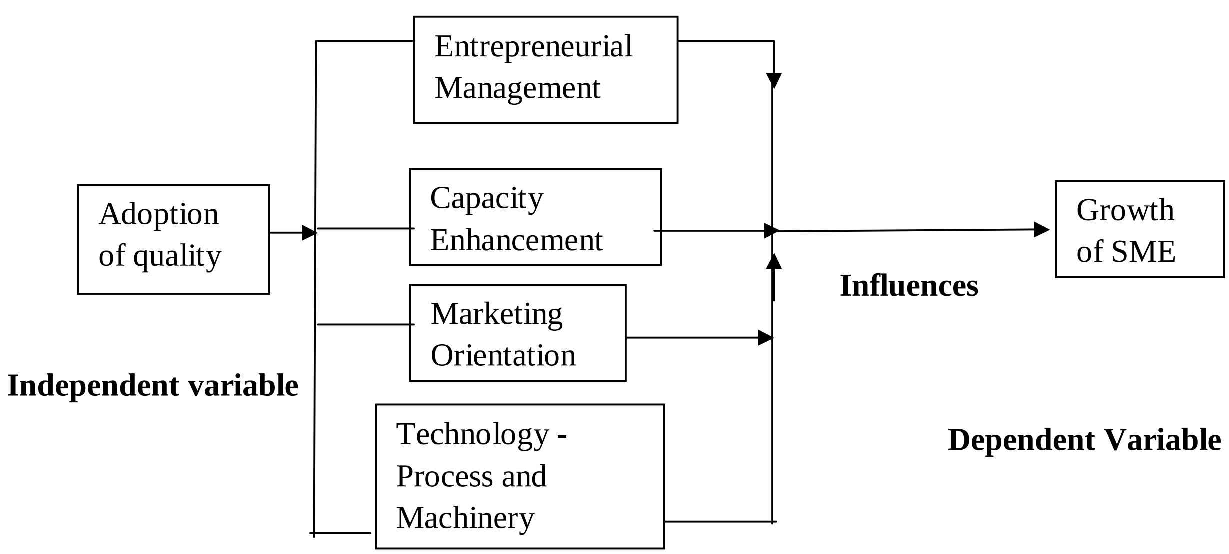


Figure 2.0 Conceptual Framework

The conceptual framework posits that the adoption of quality influences growth of SMEs. However, that relationship is influenced by explanatory variables which are influenced by adoption of quality; the entrepreneurial management, capacity enhancement, market orientation, and technology, process and machinery. Each of these variables, are explained, in the context of this study.

2.3.1 Entrepreneurial Management

Entrepreneurship as a field is by no means characterized by a widespread agreement on basic models (corporate and social entrepreneurship assumptions and methods. On the contrary a myriad of different understandings of fields' object exist (Davidson, 2002). Trying to come to grips with the field and enforcing some kind of reasonable structure is no easy task and what may be gained in scope is surely lost in depth.

Entrepreneurship contributes significantly to the economy (Ahire,Walter & Golhar 1995). Schumpeter (1961) simply defines the entrepreneur as the one who brings about innovations which is what creates real development in the economy. Without the entrepreneur the economy would grow (too) slowly. The entrepreneur creates 'revolutionary' expansions in the economy by creating new combinations of existing resources, such as new products, new production methods or new markets, new sources of supply of raw materials and semi manufactured products and development of new organizations (Schumpeter, 1961).

In other writings, entrepreneurship implies innovation, risk taking and pro-activeness (Miller & Toulese, 1986; Kuratko et. al, 2001). This is in accordance with the view that true economic development and growth is not incremental but comes from discontinuous jumps or leaps. According to Schumpeter (1961) the economy does not grow like a tree, "steadily and continuously," but through individuals' creative or innovative responses to opportunities.

Schumpeter (1947) states that either by necessity or by desire entrepreneurs create qualitatively new phenomena, which is what makes the economy grow. The entrepreneurial function or role is thus defined by its disproportional contribution to the economy. Or in other words, an entrepreneur is one who contributes significantly more than others to the economy by virtue of creativity and realizing new combinations. Although Schumpter expected that innovations would primary be manifested in new organizations there has been a focus on renewal of existing businesses (Kuratko et. al., 2001) where innovations would occur in existing ventures.

Entrepreneurial management is a management style that involves a set of organizational processes, methods and styles used by an enterprise to act entrepreneurially (Jarillo & Stevenson, 1990). In the line of Miller (1983), Lumpkin and Dess introduced in 1996 the concept of 'entrepreneurial orientation' of a firm. Basically, they refer to the entrepreneurial management concept elaborated by Stevenson and Jarillo (1986) and entrepreneurial orientation highlights the dimensions that will affect entrepreneurial management development of a firm. This is depicted in table 2.0 below.

Table 2.0 The Entrepreneurial Management Vs the Administrator Management.

Orientation	**Entrepreneurial Management**	**Administrative Management**
Strategic Orientation	Opportunities perception driven	Resources control
Opportunities Recognition	Short delay toward action	Long delay- risk aversion
Resources Investments	Optimal/multiple stages investment process for opportunity exploitation	Global investment for the opportunity exploitation
Resources Control	Episodically used or rented	Totally controlled
Organizational Structure	Multiple informal networks and horizontal structure	Bureaucratic and formal structure

Based on the work of Stevenson & Jarillo, 1990

Lumpkin and Dess (1996: 2001) identify five points, adding autonomy and competitive aggressiveness to the three dimensions already identified by Miller (1983), so to say innovativeness, risk-taking and pro-activeness. For them, risk taking characterizes the propensity of a firm to engage large amount of resources into projects which have high uncertain return. Innovativeness reflects the firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes (Lumpkin & Dess, 1996, p.142).

The dimension of pro-activeness refers to how a firm relates to opportunities in the process of new entry (Lumpkin & Dess, 1996, p.146) and thus defines the propensity of a company to anticipate and act on future market needs (in order to influence trends or to create demand). Even if they are close to each other, the competitive aggressiveness' dimension needs to be distinct from pro-activeness. It refers in fact to a firm's propensity to directly and intensely challenge its competitors to achieve entry or improve position, that is, to outperform industry rivals in the marketplace (Lumpkin & Dess, 1996, p.146). If some scholars did not make in the past the distinction between competitive aggressiveness and pro-activeness (Morris and Sexton (1996), those two dimensions should be considered as different to each other. Lumpkin and Dess (1996), referred pro-activeness to how a firm relates to market opportunities when competitive aggressiveness refers to how a firm relates to its competitors (Lumpkin & Dess, 1996, p.147).

Finally, the dimension of autonomy- the freedom granted to individuals and teams who can exercise their creativity and champion promising ideas that is needed for entrepreneurship to occur (Lumpkin & Dess, 1996, p.140). Morris and Sexton (1996) also paid attention in the same year to the frequency of entrepreneurial activities with the introduction of the concept of ‘Entrepreneurial Intensity:’ ‘No firm is entrepreneurial all the time and no firm can be only entrepreneurial.’

Entrepreneurial management consists of managerial training, quality objective setting, commitment to quality, systematic business planning and vision, and actively championing communicating quality issues. The implementation of product quality in SMEs revolves around the role and responsibilities of the manager/owner. The success or otherwise of implementing quality initiatives like TQM is often down to the owner/manager of the business who constitutes the driving force behind adoption of quality (van der Weile & Brown, 1998; Warnack, 2003).

The owner can initiate strong relationships with suppliers by de-emphasizing price considerations in evaluating supplier selection and retention, providing the purchasing department with the tools needed to assess supplier quality levels, encouragement of long-term contracts with suppliers and requiring suppliers to be certified for quality (Deming, 1986). The firm’s owner/manager can encourage quality in the design process by sheltering the design function from pressures to rush new products to market before they have been thoroughly tested (Hammer, 2001).

Quality in process flow management is encouraged when an owner/manager eliminates the use of short-term, output-based measures as the means of supervision evaluation, and instead, provides rewards for process flow improvements. The entrepreneur influences work attitudes through the development and communication of a clear strategy that identifies the nature and direction of the organization as including quality performance, thus, encouraging goal congruency (Spilling, 2001).

A long-term orientation by the owner/manager is vital in order to prevent frustration if changed in quality performance progress more slowly than expected. In order to communicate this strategy to employees at all levels, it is necessary to create an entrepreneurial or managerial climate that focuses on quality performance (Jacob, 1993), since employees behave as they perceive they are expected to by the owner/manager (Warnack, 2003).

The entrepreneur or manager should accept his/her responsibility for adopting quality and provide active quality leadership, thus it is hypothesized;

Hypothesis 1: *There is no relationship between entrepreneurial management and adoption of quality by small and medium enterprise.*

2.3.2 Relationship Between Market Orientation and Adoption of Quality

Market orientation is the process of effectively collecting, disseminating, and responding to information that will enhance the marketing function within the organization. It is now of common knowledge that market orientation can also be defined as the implementation of the marketing concept within a firm. The marketing concept can be seen as the 'optimum marketing management philosophy' (Cole, 1998).

Market orientation (MO) is perceived as a system of corporate beliefs and values pivoting around; (1) the creation of superior customer value at a profit while not neglecting the interest of other key stakeholders, (2) the shaping of the company's internal environment and climate so that the company can be responsive to market information (Forker, 1997). On these grounds, it can be inferred that market orientation is an organizational culture that places the customer in the centre of the strategies or even at the top of the company's considerations. Ho (1999a) admits this cultural dimension when finding that the company's top management beliefs have a catalytic role as to whether the firm pursues a market orientation or not.

Interest at the marketing and entrepreneurship interface of SME research began at late 1980's. In recent years, the subject of market orientation has received much attention from marketing scholars who have developed, tested and refined market orientation scales. In literature, many studies have found relationship between market orientation and the performance of the business, but what is not clear is whether this concept is used by the small business owners (Bhote, 2003). However, Chen (1999) note that there is currently insufficient knowledge about marketing in small businesses.

The promotion of market expansion and diversification often leads to product diversification and need for adjustment of industrial activities to meet the demand. Manufacturers find such adjustments of challenging in the face of competition from established and more efficient manufacturers in the global arena (GoK, 2007). Quality of products has become an important aspect of competitiveness and a key market access concern in the export markets (Burke & Jarhatt, 2004). Consumers are increasingly demanding International Standards Organizations (ISO) Certification since they act as signals for quality, health and safety, and environment best practices (GoK 2007).

While a number of studies have addressed the desired features of practices, facilities, staffs that contribute to the quality implementation and hence organizational performance (Oakland, 2005) the role of market orientation (MO) has received relatively less attention. There is likely to be a strong logical relationship between market orientation and implementation of quality practices since both constructs explicitly focus on customer satisfaction. Lobo and Jones (2002) admits that there has been limited engagement in marketing research to take advantage of the tools, frameworks and implementation methods associated with quality. While studies on quality implementation appear to focus on identifying the role of quality practices on organizational success, quality practices are still directed from within the organization. Market orientation however, requires more external engagement and shares the same ultimate aim as quality implementations. Thus, market orientation and quality practices appear to complement each other.

Although both market orientation concept and quality practices share the same objectives, there is a paucity of empirical research investigating the two constructs and their association with organizational performance. Despite its conceptual rigor, quality's role in affecting organizational performance (whether facilitative or causative) particularly within the context of small businesses requires more research attention. Although the relationship between market orientation – quality implementation and organizational performance has been discussed in the prior literature (Macaes, Farhangmehr & Pinho, 2007) there is no research hitherto been recorded investigating the topic from the viewpoint of small and medium size enterprises (SMEs).

The majority of existing research has focused on quality implementation, leadership and performance relationships (Hayes, Pisano, Upton & Wheelwright, 2005; Hammer & Champy, 2001), whereas the impact of market orientation on quality and performance relations in the context of SMEs is largely neglected. This study therefore fills this lacuna and contributes to the extant literature by incorporating quality practices in market orientation and growth relationship within the context of an emerging country SMEs.

Since, previous research in this area tends to focus on larger organizations (Krasachol & Guh, 2001; Kubiak, 2003), SMEs with their limited resources may not be in a position to benefit from the findings of previous research based on larger organizations. Further, in the case of emerging market economies, SMEs operate in relatively more turbulent environments with greater uncertainties (Magd, 2008), therefore, market orientation strategy alone may not be sufficient to create growth performance.

There is a paucity of empirical research examining the relationship between market orientation and quality implementation in both quality management and marketing literature. There have been some descriptive works suggesting the link between market orientation and quality practices (Morenzo-Luzon, 1993), though most empirical evidence appears somewhat sketchy (Raju & Lonial, 2003). Both marketing activities and implementation of quality practices require close co-ordination among other departments in the organization and also necessitate systematic data collection for the purpose of satisfying customer expectations.

Value creation for customers also calls for close co-ordination between marketing and quality departments (Slater & Narver, 1995). Day (1994) argues that initiatives to enhance market sensing and customer linking capabilities are integral parts of building a market oriented organization. The main rationale behind market orientation and organizational growth performance relationship lies within value creation of sellers and perceived value by buyers of a product and service (Slater & Narver, 1990). A similar conceptualization has been used by (Parasuraman, Berry & Zeithaml 1985; Zeithmal, Berry & Parasuraman, 1996) in explaining service quality. As firms endeavor to achieve sustainable competitive advantage through value creation and providing better value for the customer, they need to develop an organizational culture that will maintain such a competitive edge in the market place.

Quality implementation appears to facilitate such capabilities and “at the heart of the quality initiative is the concept of an organization as an interrelated collection of processes rather than an interacting set of functional units” (Day, 1994). Both quality implementation and market orientation require an organizational structure to be designed around the flow of value-adding activities and should also empower employees to manage organizational change. Given the information oriented nature of quality practices and market oriented firm, quality implementation may offer a rich array of tools that organizations could be transformed in achieving market orientation.

One weakness as Day (1994) identifies in adoption of quality in order to achieve market orientation is that the effectiveness of quality practices is internally contained and a repetitive process which may not go beyond the bounds of the organization. An organizational change toward being more market oriented requires a steadfast top management commitment and a bottom up change, which could be facilitated by an effective implementation of quality practices. Such a change programme needs to be fostered by cross-functional activities, shared objectives and a decentralized structure, which may increase the firms' capabilities to respond to their customers (Day 1994).

Moreno-Luzon (1993) examined the effectiveness of quality initiatives in a survey of 44 small manufacturing companies in Valencia, Spain. Effectiveness was measured on the basis of managers' and employees satisfaction with the achievement of specific objectives and their estimation of the change in several performance variables over a one-year period believed to be a consequence of the quality program. Overall, the managers indicated a high level of achievement of their quality objectives, and some managers perceived that their quality programs had resulted in highly positive effects. In particular, the most frequently cited effects were the development of a quality culture (with 77% of firms experiencing this effect) and improved training (72.7%). Increased profits and increased sales were less frequently cited, with 63.6% and 50% of firms experiencing these effects, respectively (Moreno-Luzon, 1993).

The relationship with customers is hypothesized to have an indirect effect on quality performance in three ways. First, by improving initial design quality, a strong relationship with customers will improve quality performance by reducing the number of engineering change orders after the design has reached production, thereby reducing manufacturing process variability (Schonberger, 1994). Second, the establishment of strong links with customer is useful in the development of manufacturing designs, allowing determination of which specifications and tolerances are critical from the customers' perspective. Third, customer interaction is likely to lead to design of new product features, which better meet the customers' needs and satisfy customers (Flynn, Schroeder & Sakakibara, 1995).

Based on these and other supporting arguments we hypothesize that:

Hypothesis 2: *There is no relationship between marketing orientation and adoption of quality in SMEs.*

2.3.3 Relationship Between Capacity Building and Enhancement of Employees and Adoption of Quality

One of the key lessons learnt by International Finance Corporation (IFC) from existing and past initiatives targeting SMEs in Africa is the importance of capacity building and skills development to the long-term growth and survival of SMEs through training to enhance their management structures, policies and practices for the sustainable development of their businesses (King, 1996). Capacity building and enhancement consist of training and education, participation in decision-making, suggestion systems, incentive mechanisms and work autonomy (Temtime & Solomon, 2002).

Over the past one decade, there have been lot of changes in attitude and mind-set of the employees due to the ever-increasing challenges to survival of the organization (Cole, 2002). Availability of skilled labour is critical for firm competitiveness. Therefore, the policies of governments with regard to education and training have a great contribution to make with regard to labour force development and assembly of relevant skills. Apart from skills development however, the regulations of labour markets also have a bearing on firm competitiveness.

A study based on a survey of 55 small manufacturing firms in the Kobe region of Japan (Wheatley, 1998) revealed that firms with more skilled labour as well as relatively bigger firms in the small-scale sector achieved better performance in sales growth. Skilled labour force is critical for implementation of quality initiatives. According to a survey done by the Kenya Association of Manufacturers (KAM) in 2006, (see Figure 2.1 below) 27.6% of the firms interviewed in Kenya cited technical and managerial level skills as a major constraint to their operations, while in Bangladesh, China, Pakistan, Tanzania and Uganda were 19.8%, 30.7%, 12.8%, 25% and 30% respectively. This is likely to affect quality implementation given that skilled labor force is necessary, if a firm is to succeed in adopting quality initiatives.

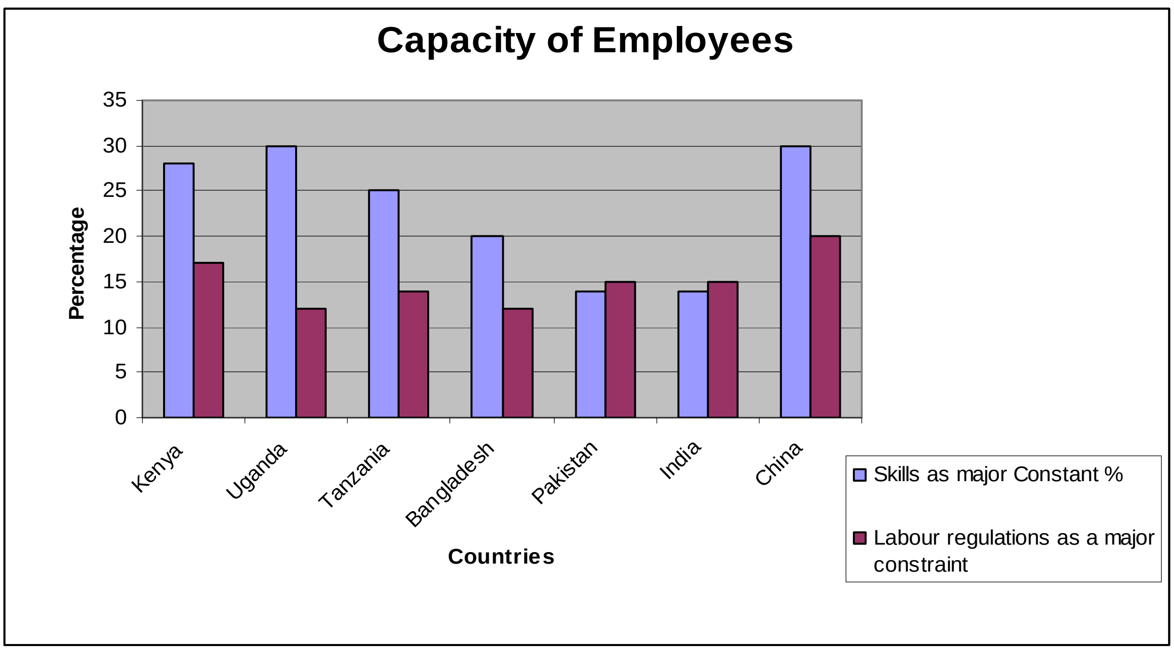


Figure 2.1 Capacity of Employees (Kenya Association of Manufacturers, 2006)

Kenya ranks lower than some of the countries with whom she competes for business. In that case, Kenyan firms are not as competitive as some firms from comparable countries. In order to safeguard interest of Kenyan firms, these identified bottlenecks will need to be addressed.

Employees are more willing to discuss ethics issues and to support the quality initiatives of their company if the organization communicates a commitment to ethical conduct. Indeed, those who work in an ethical organizational climate are likely to believe that they must treat all their business partners' respectfully, regardless of whether they operate inside or outside the organization. It becomes essential for them to provide the best possible value to all customers and stakeholders (Ferrell, Fraedrich & Ferrell, 2004).

Employee empowerment is effective in SMEs where most frequently the customer's perception of quality stands or falls based on the action of the employee in one-on-one relationship with customer (Temtime & Solomon, 2002). In recent years, the emphases on human issues and involvement of employees have increased within the field of quality (Cruickshank, 2000).

Many commentators argue that in order to be fully successful and self-sustaining, quality requires an extensive refashioning of “softer” practices (Schonberger, 1994; Dale, Boarden, & Lascelles, 1994), whose elements consist of essentially dimensions of human resource management (Wilkinson, Redman, Snape & Marchington, 1998; Dale et. al., 1994*)*.

Since employees’ commitment to quality has a positive effect on a firm’s competitive position, an ethical work climate should have a positive effect on the financial bottom line. Because the quality of customer service affects customer satisfaction, improvement in the quality of service will have a direct impact on a company’s image, as well as on its ability to attract new customer loyalty (Ferrell, Fraedrich & Ferrell, 2004).

Investment in staff is very important for any firm. Formal commitments to long-term contracts with a fine for early termination might keep trained staff in the institution, but also raises fixed costs (Cole, 2002). Capacity effectively translates into the knowledge of what to do and how to do it, and the capability to transform that knowledge into effective decisions and actions to solve development problems for both the short and long-term. Capacity enhancement has been defined in multiple ways; its ultimate purpose is to leave behind better skilled and oriented individuals, more responsive and effective institutions, and a better policy environment for pursuing development goals (Slack & Lewis, 2002).

Capacity enhancement can be implemented by adopting a variety of strategies; including the provision of technical assistance and training, fostering of field-to-field support networks, enhancement of strategic partnerships, development of innovative programming approaches and methodologies, documentation and dissemination of best practices. Areas of technical concentration will include best practices, maximizing the effectiveness of behavior change programming through the development and dissemination of centered approach guidelines and tools; improving capacity to implement high impact programs like adoption of quality (Slack & Lewis, 2002).

Development of a work force with positive work attitudes, including loyalty to the firm, pride in work, a focus on common organizational goals and the ability to work with employees from other departments, facilitates teamwork and flexibility (Hutton, 2000). Knowledge of common organizational goals is essential in ensuring that teams will progress in a direction that is not inconsistent with the organization's common goals (Ryan , Deane & Ellington, 2001).

Brown and Van der Wiele (1996) developed a typology that highlights different ways companies adopt quality in terms of ISO 9000 and TQM based on the motivates for pursuing quality. One approach they discovered is called converts. Firms in this group are initially skeptical about certification, do not have any quality practices like TQM and feel driven to become certified by external factors, but in the process of doing so discover beneficial outcomes.

The goal of the organization is to develop a useful quality system and employees are involved in developing the procedures and work instructions that can prepare the way for further progress down the quality maturity path. When employees are loyal to the firm and have pride in being part of it, they will be more willing to take individual risks in order to better the firm. Small and medium enterprises put only average emphasis on the importance of employee empowerment and involvement in quality implementation (Temtime & Solomon, 2002), thus it's hypothesized;

Hypothesis 3: *There is no relationship between adoptions of quality and enhancing employee capacity in SMEs.*

2.3.4 Relationship between Investment in Technology and Adoption of Quality

Technology is a broad concept that deals with a species' usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment. In human society, it is a consequence of science and engineering, although several technological advances predate the two concepts (Stoneman & Diederen, 1994).

Chen (1995) offers a useful framework for characterizing technology. In this framework, technology is characterized by three elements- products, processes and practices.

‘Product’ element of technology includes the knowledge and processes that are involved in the design and development of new models and variants/upgrades of the existing products. Similarly, ‘process’ element refers to the manufacturing processes-choice of processes, layout and organization of the shop floor, equipment machinery, skill level of work force and so on, required to manufacture the product.

Finally, ‘practices’ include managerial systems employed to manage the process. Therefore Just-in-Time (JIT), planning and control systems, Total quality Management (TQM), and so on, all constitute the ‘practices’ component of the technology. By interfacing between products and processes, practice innovations have the potential to enhance firm-level capabilities either in products or processes or both. For example, adoption of lean manufacturing practices in production enables the firm to improve its processes. Extending application of lean philosophy to design and entire organization will result in enhanced product technologies as well (Greenway, 1994). Design for manufacturability involves departure from traditional design of the product. Besides leading to development of superior products and enhancing ability to frequently introduce new products, this technology results in more manufacturable products and increases production efficiencies as well (Tirupti, 2008).

In order to achieve and maintain competitiveness in the international market, small and medium enterprise manufacturers must embrace modern technologies that enable them develop efficient production (Greenway, 1994). Maintaining consistent quality of products and reducing human content are major factors affecting a firm's decision to upgrade manufacturing technology.

Advanced manufacturing technology can improve quality throughout the entire manufacturing process in areas such as materials handling, inventory control and production planning and scheduling. Advanced systems lead to quality improvements in the design stage because errors are discovered earlier in the process and more quickly. This allows adjustments to be made much faster and more accurately than without advanced manufacturing technology, helping to ensure quality in the manufacturing process (Ariss, Raghunathan & Kunnathar, 2000). Its adoption by small manufacturers gives them advantages over traditional manufacturing systems, such as lower cost quality improvements, higher productivity, and less working capital tied up in inventory (Phillips & Ledgerwood, 1994).

In his study of 20 companies equipped with advanced manufacturing technology, Zairi (1993) observed that quality was a major competitive objective of advanced manufacturing technology users. He concluded that the introduction of technological innovation is considered to be a facilitator in moving toward competitive excellence.

Technology is mainly concerned with production automation, flexible manufacturing and advanced processing equipment. Technology contributes to the competitive advantages of product quality, flexibility and low cost (Chen, 1999). Studies have shown that Kenya's small and medium enterprise manufacturers are applying relatively old technology compared to its neighbors. SMEs in Kenya are finding it difficult to access the local and export market due to poor production techniques (GoK, 2007). Most of the plants and machinery is sourced from Europe and Asia.

A survey conducted by Kenya Association of Manufacturers (KAM) in 2006 indicated most of the machines operated by the small and medium enterprises originated from Germany (19%), India (17%), and the United Kingdom (14%). The KAM survey also revealed that majority of printing presses originated from Germany, while liquidation and purification plants are from United Kingdom. In terms of age, most of these equipments are relatively old and most of them were manufactured and acquired between 1980 and 2000. Over 90% of the machines are under-utilized due to high cost of transport; high cost and poor quality of power and insufficient domestic demand. As countries continue participating in the global economy, production practices are also being standardized using ISO Certification (GoK, 2007).

The rising competition and internationalization of production systems, has made enterprises restructure their productions systems to facilitate their participation in the international value chains. Most of small and medium enterprises are still engaged in the production of a limited range of standardized products, which offer limited scope for value addition and diversification. Increasing value addition in the entire production chain is imperative if Kenya is to achieve industrialization (GoK, 2007).

Sousa and Voss (2001) found that managerial experience and prior experience in a similar or the same type of business as well as the adoption of new manufacturing technologies, the availability of resources to adopt new technology and the development of a competitive advantage were strongly related to growth. Moreno-Luzon (1993) examined the factors that were responsible for success with quality initiatives like TQM in small manufacturing firms in the Valencia region in Spain. They found that the firms experiencing greatest success with TQM placed more emphasis on innovation, in products, markets, processes and production equipment.

Use of cleaner production practices would result in eco- efficiency success factors that include the reduction of material and energy intensity of goods and services, reduction in toxic dispersion, enhancement of material recyclability, maximizing sustainable use of renewable resources, and extending product durability. In addition poor packaging makes products less competitive in the global market as well as ensuring environmental protection (GoK, 2007).

Hypothesis 4: *There is no relationship between investment in technology and adoption of quality in small and medium enterprises.*

2.3.5 Relationship Between Quality Adoption and Growth in Small and Medium Enterprises

The ever increasing intensity of market competition has made the implementation of quality practices, a prerequisite for a firm’s survival. Most empirical studies investigating the relationship between quality practices and growth have produced mixed results. Some of these studies either use stock price performance to measure growth (Jennings & Beaver, 1997) or perceptual measures developed by researchers themselves (Prajogo & Sahal, 2001; Powell, 1995; Samson & Terziovski, 1999). Researchers in this group treat quality initiatives like TQM awards as a proxy for effective quality initiative implementation (which seem to exclude SMEs) and tried to establish a link between objective measures of quality implementation and growth (stock-price performance) (Hendricks & Singhal, 1997).

A follow up study by Hendricks and Singhal (2001) based on a larger dataset revealed that the sample of effective quality initiative implementers significantly outperformed the various matched control groups in the post implementation period. None of these indicators (award winning, stock-price performance) appears to be available for SMEs, hence researchers in this domain use perceptual measures. A group of researchers use both expert rated growth measures alongside perceptual measures (Douglas, Coleman, Oddy & Judge, 2003, Kaynak, 2003). There is likely to be a strong correlation between expert rated performance and perceptual measures of organizational and financial performance (Douglas & Judge, 2001). Samson and Terziovski (1999) also report a similar correlation between quality initiative implementation and the perceptual measures of growth.

In the case of SMEs the evidence, however, appears to be equivocal. Some quality advocates argue that, due to resource problems (mainly financial and human resources) quality initiatives cannot produce consistent growth for SMEs (Schmidt & Fannigan, 1992; Powel, 1995; Strubering & Klaus, 1997). Another group of researchers, however, found some significant performance results of quality initiatives practices in SMEs (Ahire & Golhar, 1996; Hendricks & Singhal, 2001).

In comparing larger firms with smaller firms, Hendricks and Singhal (2001) argue that smaller firms tend to benefit more from quality initiatives like TQM as compared to larger firms. This argument contradicts with some of the earlier arguments on the role of quality initiatives in SMEs (that quality initiatives are less beneficial to smaller firms).

While growth is the ultimate aim of any business organization, other indicators such as innovation performance (Llorens, Ruiz & Molina 2003), market share and other non-financial performance of growth indicators may be equally important in implementing quality initiative principles. If one treats adoption of quality as a change programme for SMEs, the significance of such indicators will become more obvious. Further, implementation of quality principles may not have direct but indirect impact on growth performance (Kaynak, 2003) by increasing innovation, (Singh & Smith, 2004) changing organizational culture, (Irani Beskese & Love, 2004) market competitiveness, (Chong & Rundus, 2004) and overall organizational growth (Powell, 1995), market share and growth of market share (Kaynak, 2003), employee morale (Rahman & Bullock, 2005), productivity (Rahman & Bullock, 2005; Kaynak, 2003; Rahman, 2001).

The effectiveness of quality initiatives (QI) as a mechanism for organizational improvement has been widely debated in the literature. Proponents of quality claim that this philosophy leads to improved firm growth and this outcome has been demonstrated by a number of studies (for example, Flynn, Schroeder & Sakakibara 1995; Powell 1995; Samson & Terziovski 1999). Proponents of quality initiative like TQM also contend that the philosophy can be applied to any organization (Powell 1995).

As quality improves, so does cost, resulting in improved market share and hence profitability and growth. Improving both internal (conformance) quality and external (customer perceived) quality not only lowers cost of poor quality or “non-quality” but also serves as a driver for growth, market share and profitability. In addition to profitability and market share, quality drives growth (Oakland, 1989). The linkages between these correlates of quality are shown in figure 2.2.

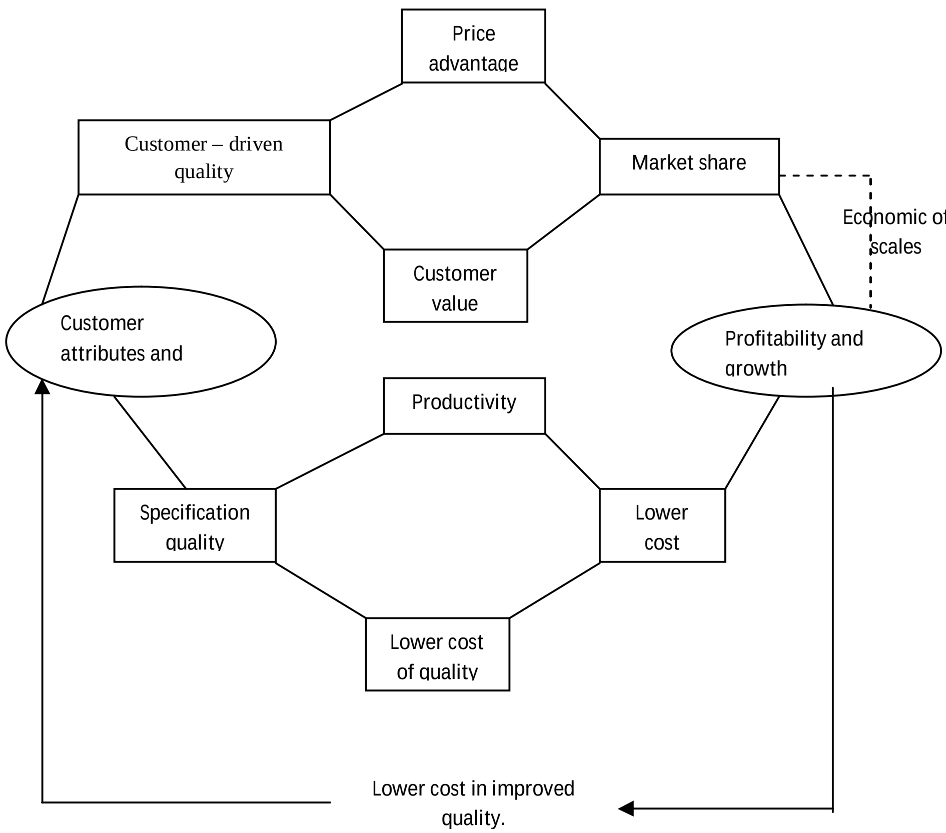


Figure 2.2 The Quality Circle (Oakland, 1989).

In that line we hypothesize that:

Hypothesis 5: *There is no relationship between adoption of quality and growth in small and medium enterprise*

2.4 Critical Factors of Quality Initiative Implementation

Implementing quality initiative needs to be a totally integrated, continuous and open system based on the commitment from top management and employees, as well as the communication with customers (Tan & Platts, 2004). An exhaustive list of critical factors consolidated from literature review on QI implementation is depicted in figure 2.3 below.

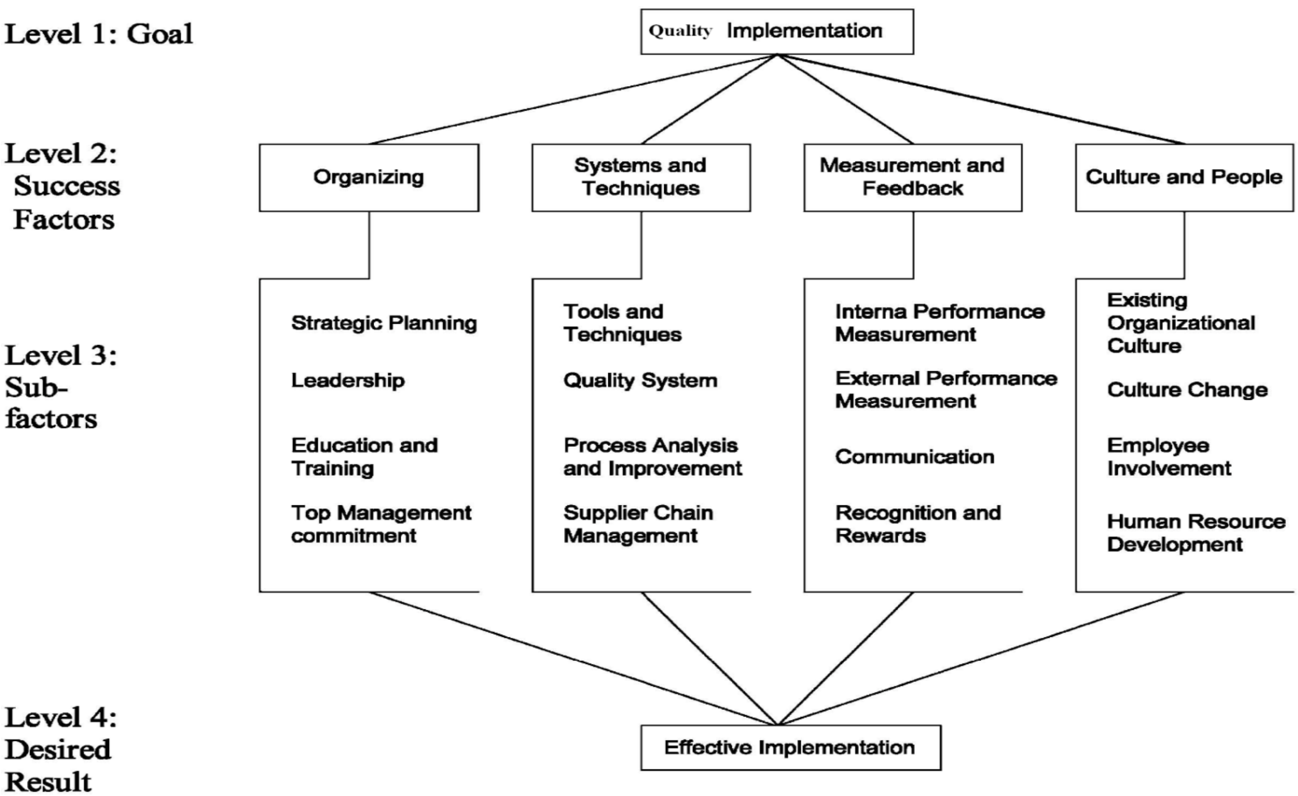


Figure 2.3 A Decision Hierarchy of Quality Initiative Implementation (Hackman & Wageman, 1995)

The model has four levels as shown in Fig. 2.3. Level 1 states the goal of the problem (that is, to decide whether implement quality initiative). Level 2 consists of the critical factors, and Level 3 lists the sub-factors of individual critical factors. Level 4 is the desired results of the quality initiative implementation (Hackman & Wageman, 1995).

For facilitating discussions, they are divided into four categories of factors or elements, namely, organizing (OG), systems and techniques (ST), measurement and feedback (MF), and culture and people (CP). Both OG and CP categories represent the *soft* factors, while ST and MF are the *hard* factors of quality initiative implementation. Each category of factors has several sub-factors as elaborated later (Hackman & Wageman, 1995).

2.4.1 Organizing

This factor involves aligning a quality program with an organization's strategic planning (SP) and providing associated plans and means that are necessary to introduce and promote continuous improvement. Organizing (OG) requires top management leadership and commitment, promotes the participation of employees, and provides company-wide education and training. Being its sub-factor, strategic planning functions as a vehicle to integrate quality requirements with business activities of an organization so that total quality is reflected in its corporate vision, mission and strategy statements (Hartz & Kanji, 1998).

The plan should match the organization’s strategic directions, and optimize the use of resource and ensure the availability of trained employees for QI implementation. This helps identify customers’ and other stakeholders’ requirement, estimate the organization’s current position against its competitors in the market, and then design and deploy a strategic plan into specific activities within the organization. Leadership associated with clear vision and directions can foster knowledge sharing and generate commitment (National Institute of Standards and Technology, 2006). Deming (1986) urges managers to institute leadership to usher the quality transformation process. Sturdy (2004) argue that leaders should exhibit role model behavior, establish clear objectives and create a supportive environment.

Education and training is another sub-factor that provides employees with the knowledge and skills to meet their overall work and personal objective. If carried out consistently and reinforced in the workplace by being real time updating, education and training can form a solid base for continuous improvement (Steel & Wester, 1992). Furthermore, Crosby (1986) stresses top management commitment as the essential element for safeguarding QI implementation. In order to communicate quality strategy across the organization, top management should create an organizational environment that focuses on continuous improvement. Their commitment promotes the creation of clear and visible quality values, along with a management system to guide all activities of the company towards quality excellence (Rao, 2006).

2.4.2 Systems and Techniques

Quality initiative embraces a wide range of systems, approaches, techniques and tools. Systems and techniques are also critical factors that have their own role in quality management. Dale et. al. (1994) argue that, because of the variety of starting points and motivations for continuous improvement, it is impossible to identify a unique implementation plan detailed clarifying the order in which particular tools and techniques should be used. Dahlgaard (1999) add that they should be selectively used according to the different stages of quality management in an organization. Process analysis and improvement is another sub-factor that helps organizations evaluate the achievements of predicted results and monitor continuous improvement efforts moving to the right direction.

Organizations should develop their quality philosophy, policy, procedures and objectives, and acquire information from employees, customers, suppliers and competitors (Deming, 1986). If a quality system already exists, periodical assessments of its organizational performance are then vital to continuously improve the system (Ho, 1999a).

2.4.3 Measurement and Feedback

Measurement and feedback provides a link between strategy and action (Sinclair & Zairi, 1995). Jennings and Beaver (1997) argue that communication of quality-related information and obtaining feedback from customers, suppliers, employees, competitors and other stakeholders form the basis for developing appropriate actions for continuous improvement. Internal performance measurement is often regarded as a means to assess internal quality issues and identify their strengths and areas for improvement. Conducting self-assessments and benchmarking exercises are the common approaches used to measure internal performance (Sinclair & Zairi, 1993).

However, more organizations have put emphasis on external performance measurement in which the assessment of quality performance is carried out or data is given by persons or institutions outside an organization (Hammer, 2001). For instance, certification bodies can assess an organization's quality performance and provide useful advice on improvements. Nevertheless, improper external performance may also bring along the pitfalls leading to incorrect decisions, wasted resources, and poor reputation of the organization (Adamson, 1995). Despite having different emphasis of performance measurement, proper communication can help the organization assure the employees, customers and other stakeholders are being informed of corporate objectives and how to attain the priorities (Burke & Jarhatt, 2004). Furthermore, it is important for organizations to have recognition and rewards tied with the performance achievements and within the employees' ability (Crosby, 1989). They can be formal or informal, and provide momentum for maintaining enthusiasm for implementing quality initiatives.

2.4.4 Culture

Quality initiative itself is a culture that advocates a total commitment to customer satisfaction through continuous improvement and innovation in all aspects of the business (Brown, Lamming & Jones, 2000). The behaviour and thoughts of people reflect their shared culture in the organization. First of all, the existing organizational culture will affect quality implementation unconsciously and in a taken-for-granted fashion. It is thus necessary to understand what the existing culture is and how it affects the quality initiative program. Dale et. al. (1994) advocate that culture change should be recognized as an ongoing process rather than a prerequisite to the introduction of quality initiative. Cruickshank (2000) also advocates that the actions for changing organizational culture towards total quality can be arranged into technological aspects and intangible aspects.

The technological aspect involves quality tools and techniques, while the intangible aspect is concerned with behavior rules, management style, organizational and communication structures. The change should be planned and carried out in a consistent and incremental manner. Top management must be prepared to resolve conflicts and resistance to change (Dale, 1999; Pun, 2001).

Moreover, with effective employee involvement, organizations can enhance people's ability to solve problems and utilize opportunities (Patel, 1995). Nevertheless, how an organization releases the full potential of its people, to a certain extent, determines whether it could improve its performance continuously and achieve business success. Deming (1986) stresses the human aspects in his 14-points for quality improvement. Other quality experts (Crosby, 1979; Juran, 1986) also underline the roles of human resource development to maximize people's ability.

2.5 Theoretical Evidence

2.5.1 Classic Economic Growth Model

The theoretical evidence on firm growth, quality and technological dynamics is rather limited and sparse. However, classic economic model sheds some light productivity, growth and technology adopted by small enterprises.

Technology diffusion is a type of technical/technological change. Various studies demonstrate clearly that this type of change plays a very important role in economic growth (Greenway, 1994). Schumpeterian trilogy (Schumpeter, 1950) provides a convenient topology of technological change. According to this invention is the generation of new ideas, innovation is the development and adoption of those ideas through first use or marketing of that idea, and technology diffusion is the spread of new technology across its potential market (Stoneman & Diederen, 1994). Although invention and innovation are important, diffusion seems to play the key role in creating productive potential and competitive advantage.

Research on invention and innovation has been rather extensive. In contrast, academic work on diffusion seems to be comparatively small and fragmented. Researchers have tried to explain various patterns of technology diffusion using a number of different frameworks. Mansfiled (1968) studied a number of innovations and demonstrated that the more profitable innovations that seem to require smaller investments of resources tend to have a much higher rate of technology diffusion. He also showed that the likelihood of introduction of new technology is directly related to the proportion of firms already using it and the probability of doing so.

Von Hipple (1977, 1982, 1986), in a number of studies, identified consumer-active and manufacture-active innovation and technology diffusion. Consumer-innovation is motivated and stimulated by consumer requirements. Whereas, in a manufacturing scenario, a technology is “pushed” onto customers without determining a specific need. Stoneman and Dideren (1994) identified two processes of technology diffusion: inter-firm and intra-firm. Inter-firm diffusion involves the growth over time in the number of firms owning or using the technology. Intra-firm quality diffusion, on the other hand, is the more intense use of the new technology by the same firm.

Rogers and Shoemaker (1971) treated technology diffusion as the process by which innovation spread to the members of a social system, and defined five attributes that govern their rate of adoption. Of these attributes, relative advantage, compatibility, trialability, and observability have a positive influence on the rate of adoption, whereas the fifth, complexity, has a negative influence on the rate.

In their review, Tornatzky and Klein (1982) showed that innovation complexity has a negative relationship to innovation adoption. Rogers (1986) conceptualized and demonstrated diffusion as a social learning process rather than a response to user needs. In such a social learning process there may be many sources of innovations, the speed of adoption may vary form one case to another, and users may react differently to innovations.

2.5.2 Stochastic Growth Theories

Later theories of firm growth emphasize random or stochastic nature of the process. One of these theories was evolved by Gibrat (1931). Gibrat states that the firm growth is independent of the firm size. The theory states that firms of all sizes face the same probability distributions of growth rates and those luckier firms grow faster and more rapidly than others. These theories may explain why firms in the same industry are more competitive than others.

Liedholm (1991) on firm growth argues that although the random nature of growth process may be a useful ingredient in any dynamic theory, the implications and assumptions are at variance with reality. These initial theories from both developed and developing countries show that firm growth has negative correlation to firm size. Gibrat (1931) theory overlooks the differing preferences and abilities of the entrepreneurs themselves. The entrepreneurs are not given any role in the dynamism of the firm.

2.5.3 Dynamic Entrepreneurial Theories

In dynamic entrepreneurial theories, the entrepreneurial management style is key to growth dynamism of the enterprise. Three dynamic entrepreneurial theories are discussed below.

2.5.3.1 Lucas Model

Lucas model incorporates the entrepreneur as a key variable in the study of the growth of the enterprises. Lucas (1978) argues that individuals have differing endowments of managerial ability or business acumen. Lucas argues that these differences are critical determinants of enterprise growth. He further argues that enterprises with better managerial ability are more efficient and operate at lower average cost curves and are likely to increase output. On the other hand, those with lower endowments of managerial capability become workers. Over time SMEs creation and failure occur when those with managerial ability shift between being workers and entrepreneurs. This growth model is deficient in that it provides little evidence about how the entrepreneurial management evolves over time. It also fails to take into account uncertainty or risk management strategies entrepreneurs develop as they try to be competitive.

2.5.3.2 Kihlstrom and Laffort Model

This growth model incorporates risk into the analysis of enterprise growth. Kihlstrom and Laffort (1979) argue that the key attribute of the entrepreneur is a 'taste of risk'. They argue that entrepreneur normally assume more risk than employees. In their theory, they contend that risk lovers become entrepreneurs while risk averters become employees.

In this regard, differing tastes for risk rather than managerial liabilities become a major determinant of enterprise start-ups, growth and failure. This growth model has more or less the same limitations as the theory propounded by Lucas (Namusonge, 2010).

2.5.3.3 Jovanovic Model

In 1992, Jovanovic synthesized key elements of the Lucas model and Kihlstrom and Laffort model and introduced both elements of managerial capability and risk. The Jovanovic model also assumes that those people who enter self-employment, gradually learn about their managerial rough and tumble business world and observing how they perform, and that as they gradually learn more about their abilities, entrepreneurs change their behavior over time. This aspect of the model gives the model unique dynamic element which is non-existent in other models discussed earlier. This model hence provides a major step towards explaining the dynamic theory of the firm.

Despite its contribution, the Jovanovic model has some deficiencies in some way. For instance, a learning process is usually known to be passive. In this model, there is no provision for the entrepreneur to enhance this managerial ability by actively investing in education or simply by gaining on job experience.

An assessment of these three models can yield some conclusions. One of these conclusions is that all these models do not state the key determinants of this managerial ability. For instance, they do not state whether managerial ability is determined by formal and informal education, on the job training experience, occupation of parents, ethnic background or other socio-political attributes of the entrepreneur, or indicators such as delegation and locus of control within the firm (Namusonge, 2010). The other criticism of these growth models is that they do not include other factors relevant in explaining enterprise evolution such as location, capacity of employees, technology diffusion, product development and adoption of quality.

2.6 A Historical Perspective of Quality

2.6.1 Introduction

Prior to the early 1900 small shops making such relatively simple products as buggies, furniture, pillows and stoves largely characterized American industry. In these shops, the individual worker was generally a crafter who was completely responsible for the "quality" of the work and could ensure it through personal selection of material, skilful manufacture and selective fitting and adjustment (Summer, 2006**).**

With the spread of the Industrial Revolution in the early 1990s, factories sprung up. People with limited training were formed into long assembly lines. Products became complex. The individual worker no longer had complete control over the quality of the product. A semi professional staff was developed (the inspection department) and became responsible for the quality. This responsibility was fulfilled by a 100 percent evaluation of all characteristics deemed important, with corrective action on discrepancies handled by the production department supervisors. During this period, quality was obtained by "inspecting it into the product" (Yong & Wilkson, 2002**).**

During the 1920s, the concepts of statistical quality control were developed, primarily through the work of Dr. Walter A. Shewhart of the Bell Telephone Laboratories. Shewhart introduced the concept of "controlling" the quality rather than inspecting it into the part. For the purpose of controlling quality, the Shewhart control chart technique was developed for in-process manufacturing operators. In addition, he introduced the concept of statistical sampling inspection to estimate whether manufactured lots were good or bad, replacing the old method of inspecting every part (Deming, 1986).

Statistical quality control, with its emphasis on in-process control of the quality, came into its own during World War II. The need for mass-produced, intricate bombsights, accurate radar, and other electronic equipment at the lowest cost possible accelerated the use of control charts and statistical sampling. These statistical techniques have been retained, refined and augmented since the end of the war (Yong & Wilkson, 2002**).**

Meanwhile, Japanese production was virtually destroyed during World War II. Rather than retool and continue to produce inferior products, the Japanese enlisted the aid of the late E. Edwards Deming of the U.S. Department of Agriculture to guide them in developing an overall plan. In a series of seminars with the Japanese he stressed a philosophy of production that is known today as Deming's fourteen points. He emphasized that quality originates from improving the process, not from "inspecting out" the unsatisfactory results of poor production (Fuchsberg, 1992a).

Deming stated that the customers determine quality. The manufacturer must be able, through market research, to anticipate the future needs of its customers. Top management, he claimed, is responsible for long-term improvement. Another of his points, one that the Japanese strongly endorsed is that, every member of the firm must contribute to this improvement. To achieve this, ongoing education and training of all employees is imperative. Also, Deming said that suppliers must continually upgrade the quality of their products (Fuchsberg, 1992a).

Deming noted that American managers are mainly interested in good news, not bad news. Good news, he points out, usually does not reveal opportunities for improvement. On the other hand, bad news opens the door to new products and allows for adoption of quality by a company (Fuchsberg, 1992a).

It should be mentioned that in his 14 points Dr. Deming did not ignore statistical quality control, which is often abbreviated as statistical quality control (SQC), total quality control (TQC), or just quality control (QC). The objective of SQC is to monitor production through the many stages of manufacturing (Fuchsberg, 1992a).

In manufacturing processes to monitor the quality of many services, firms use statistical quality control tools such as bar charts, range charts and percent defective charts.

Control charts allow the entrepreneur to identify when a production process or a service becomes “out of control,” that is, when the point is reached where an excessive number of defective units is being produced (Fuchsberg, 1992b**).**

2.6.2 The Evolving Quality and its Initiatives

Throughout the 1980s and 1990s, effective quality represented a key competitive advantage for a number of leading companies such as Toyota, Motorola, AT&T, Hewlett-Packard, and Xerox (Hayes, Pisano & Wheelrights, 2005). Quality concepts were developed in parallel with the evolution of new operations management ideas, the emergence of new quality-related techniques, and developing information technology (IT) possibilities. Quality evolution can be divided into four major phases or stages: (1) Inspection, (2) Statistical Process Control, (3) Quality Assurance, and (4) Strategic Quality Management (Garvin 1988; Rommel, Bruck, Diederichs, Kempis, Kass, Fuhly, and Kurfeess, 1996; Dahlgaard, 1999; Dooley, 2000).

Over a decade ago, Hodgetts, Luthans, and Lee (1994) depicted modern organizations as those which made a fundamental shift from a Total Quality (TQ) paradigm towards a Learning Organization (LO) and later a World-Class organization (a term that is no longer so fashionable). Later authors have extended this theme, suggesting that organizations must sustain major improvements, maintain high performance and aim towards being an ‘Excellent-Sustainable’ organization (Joseph & William, 2004). Hence, a fifth stage of development, related to quality, may now be distinguished. It emphasizes the importance of the flexible organization, responsive and able to adapt quickly to changes, responding to customer feedback and benchmarking against competitors. Table 2.1 summarizes the action, focus, methods & concepts and other characteristics of each quality era (Garvin, 1988).

Table 2.1 Five Major Phases of Quality Evolution

Stages of Quality Movement					
Identifying Characteristics	Inspection	Statistical Quality Control	Quality Assurance	Strategic Quality Management	Competitive Continuous Improvement
Scope	Product Quality	Process Quality	Total Quality		Excellent-sustainable Organization
Action	Reactive to quality problems		Proactive or preventing quality failure		Flexible, Responsive, Adapt quickly to changes
Focus	Conformance to Specifications	Conformance to customer requirements/engineering description	Total customer satisfaction: product process, system assurance	Customer comes first: strategic and management	Continuously add value to organization's stakeholders
Orientation	"Inspect" quality	"Control" quality	"Build in" quality	"Manage" quality	"CI in" quality
Methods & Concepts	Gauging and measurement	Statistics: SPC Sampling Plan Process Improvement Reduce waste & cost JIT Do It Right the First Time	Management practice: QCC, TQC, TQM(Kaizen) Control Plan Capability study DOE, MSA, FMEA	CQI by integrating management practice with process improvement IS09000 series Six Sigma Re- Engineering Lean production	Self assessment *(MBNQA, EFQM, Deming prize, Balanced Scorecard)* Benchmarking Product &process design *(QFD, Design for six sigma- Dl\'S)* Advanced statistics
Measure	Finished goods	In-process	Entire production	Quality management	Stakeholder satisfaction

		measurement	chain	system	
Primary Concern	Inspection	Detection	Coordination	Strategic impact	Continuous Improvement
Quality Target in production	No standard	Achieve AQL		Zero Defect	
Key responsibilities	Inspector	Quality department	Active involvement of entire organization		
Operating Philosophy	craftsman to mass production	mass customization		flexible specialization	

Source: Garvin, 1988

The literature related to World Class and Excellent-Sustainable organization has emphasized the ceaseless pursuit of perfection or quality in all operations (Hamel, 2001; Swinehart, Miller, Hiranyavasit, 2000; Joseph & William, 2004). As indicated in table 2.1, in the current highly competitive business environment both continual improvement and dramatic innovation must be undertaken simultaneously (Hamel, 2001; Brown et al., 2000).

Quality themes remain very significant in business, although the concept has been broadened and is now often expressed in the language of business or organizational excellence (Sun, Li, Ho, Gertsen, Hansen & Frick, 2004). Adoption of quality has been woven and absorbed into broader business management themes, developing together towards a goal of building excellent-sustainable organizations. Cole (1998, p 43) explained that:

> 'By the mid-and the late 1990, quality disappeared as a major topic in the media and was less and less a focus of top management's attention. This is a natural process manifested in the growing normalization of quality improvement as a management activity. In this process, simplified versions of the more formal and often complex quality methodologies gradually evolved.'

At the same time, the ISO 9000 series standards showed extraordinary growth and application, and represent, perhaps, one of the most remarkable international standardization efforts ever attempted. Companies using ISO 9001 as their major quality management (QM) theme are typically smaller and less developed in organizational terms, but many of them subsequently aspire to adoption of quality or excellence awards. A broad historical perspective shows that adoption of quality and other quality initiatives such as continuous improvement (CI) approaches have emerged as a number of waves, with different origins, spread, time-scales and influence. Figure 2.4 attempts to illustrate the origin of quality and CI approaches along with the evolution of the organizational paradigm over time.

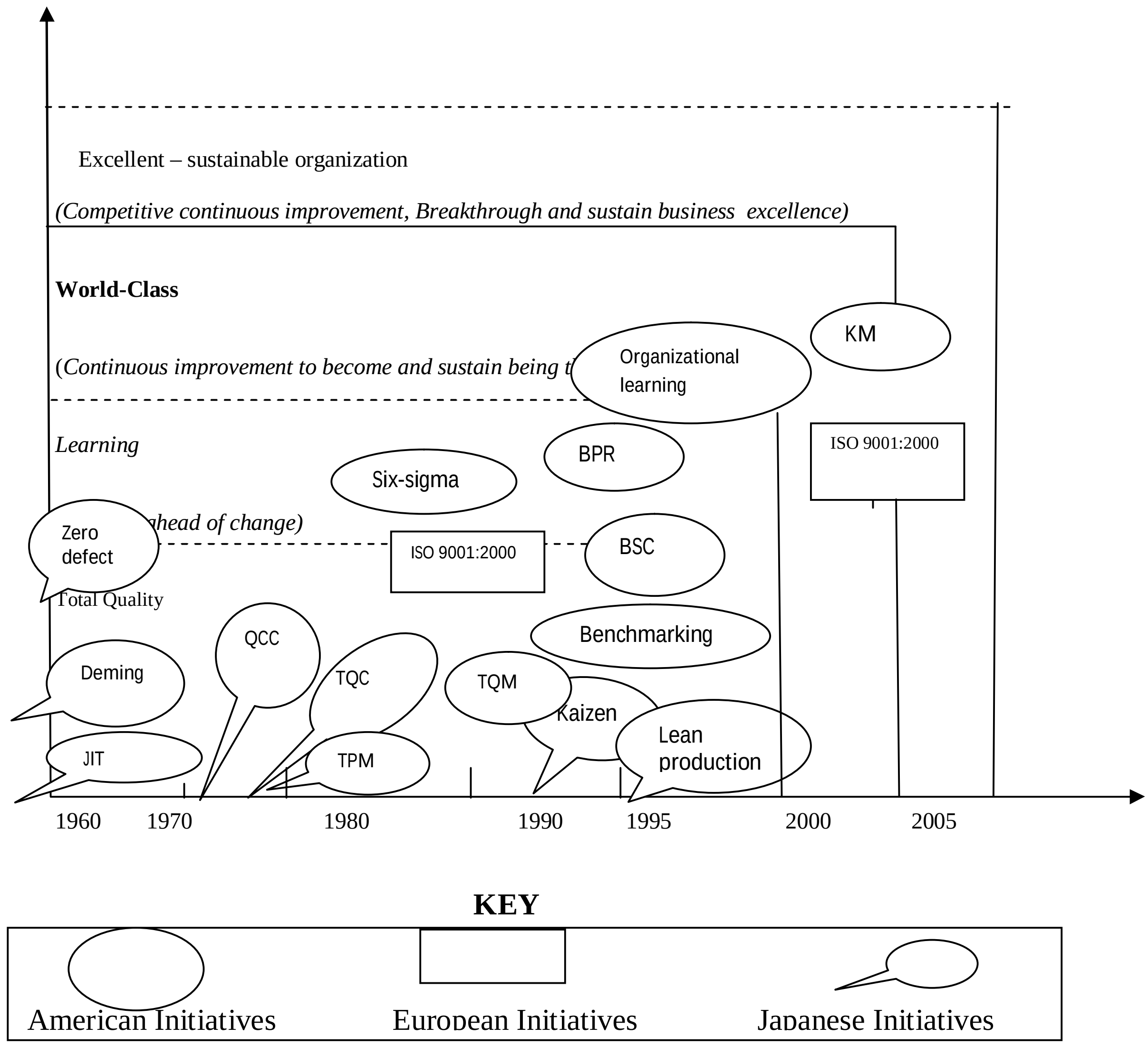


Figure 2.4. An Illustration of the Origin of Quality and CI Approaches along with the Evolution of the Organizational Paradigm Overtime (Rahman, 2001).

Japan and the United States of America (USA) have pioneered and developed most of these methods; but they travel across the globe and have been adopted and adapted in countries with different industrial cultures. Internationally, differences in QM and CI practices and timing continue. For example, using a combination of traditional Kaizen and Lean production over the period from 1994 to 2001, Japanese automotive plants showed remarkable productivity improvement and defect rates reduction, compared with those in the United States and Britain (Oliver, 2002). During the same period, the impact of business process engineering (BPR) to force radical organizational change was felt most strongly in the USA, and to some extent Europe. Currently in the USA, Six Sigma, Lean production and TQM appear to be the best-liked concepts (McNeil & Greatbank 2002; Charlesworth, 2000). In Europe, the ISO 9001 and TQM are still popular, and in Asia the ISO9000, Kaizen, 5S and TQM are favorite techniques (Wheatley, 1998; Bain & Company, 2005b).

In a new direction of quality, quality awards are used as organizational self-assessment for the excellence in quality and business: Deming prize was instituted in 1951 (Garvin, 1988, p.183), the Malcolm Baldrige National Quality Awards (MBNQA) was established in 1987 (Hodgetts, Kuratko & Hornsby, 1999), and the European Quality Award (EQA) was introduced in 1991 (Sun et al., 2004). Nevertheless, there are some weaknesses in quality implementation in terms of a lack of structured improvement method, lack of appointed tools to be utilized, and lack of formalized training.

Thereafter a better-structured programme has been introduced under the name of Six Sigma (Oliver, 2002).

Six Sigma, which recently became the most prominent programme in the United States of America (USA), was promoted as an engine to drive business performance and organizational transformation (Adam, Gupta, & Wilson, 2003; Smith & Blakeslee, 2002; Bhote 2002, 2003; Pande, Neuman & Cavanagh, 2000). Six Sigma is known as a set of methodologies (that is,Define, Measure, Analyse, Improve, and Control or DMAIC) and techniques aiming to reduce process variation, cycle time and waste.

Statistically, Six Sigma is a specific measure of quality- namely 3.4 defects per million opportunities (DPMO). It is so effective and successful because its package is easy to implement and it shows success from a large amount of cost savings at Motorola, General Electric, Honeywell, DuPont, and Dow Chemical. However, Hammer (2002) gives a rather negative feedback and identified limitations of Six Sigma efforts in the case of Bombardier Company. Hence, Six Sigma projects concentrate on low level and small-scale activities and the aggregate projects do not contribute to larger corporate goals. Therefore dramatic breakthrough or change cannot occur. Furthermore, unlike the TQM results, the study by Goh, Low, Tsun & Xie (2003) has proved that Six Sigma activities did not show outstanding performance on a macro scale of stock prices.

ISO 9000 series standard is an internationally recognized standard for quality management system. The first version, the ISO 9000: 1987, focused on quality control in manufacturing (Dooley, 2000). The second version, launched in 1994, emphasized on adoption of quality and required documentation, procedures, and evidence of compliances. Lately, the ISO 9001: 2000 was introduced as a new concept of process effectiveness and had a significant change to focus more on continuous improvement and customer satisfaction, compared with the previous versions (Zuckerman, 2000; Bridget, 2000). According to the ISO survey of certification in 2005 (ISO 2005), the number of certified companies to ISO 9000 series standard has rapidly increased and the total numbers of certified firms worldwide has reached almost 80,000 (Appendix X1V).

Another popular quality approach is lean production. McKellen (2002) suggests that in order to continuously improve quality and productivity, organizations need to adopt and combine modern manufacturing philosophies such as Kaizen, Lean, Quick response, Agile, and Six Sigma. Lean thinking, an extended JIT principle and a developed concept from Toyota, focuses on reducing waste with an aim for improving manufacturing performance (Oliver, 2002; Dahlgaard & Dahlgaard, 2001; Zayko, Broughman, & Hancock, 1997). With a combination of kaizen and lean production over the period from 1994 and 2001, the Japanese automotive plant had higher increase in productivity and a better quality performance, compared with the United States and the United Kingdom (Oliver, 2002).

For breakthrough changes, Williams, Davidson, Waterworth and Partington (2002), Prajogo and Sohal (2001), and Hammer (2001) suggest Business Process Reengineering (BPR) to stimulate invention and force radical organizational change. Hammer and Champy (2001) define BPR as 'the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed.' Both incremental improvement and innovation are essential to achieve and maintain competitive advantage. Although each has a different approach, continual improvement by TQM, Six Sigma, or Lean focus on the existing system and improve its performance using a bottom-up approach, while radical change by BPR tends to start from the beginning, using top-down methods (Hammer & Champy, 2001).

Widely adopted and utilized quality programmes nowadays are TQM, BPR, change management, Six Sigma (Bain & Company, 2005b), as well as ISO 9001, Business excellence (BE) self-assessment, and Lean. All these techniques and philosophies are developed with the ambition to continuously improve in quality and productivity. Figure 2.5 illustrates the presently popular quality approaches in manufacturing industry: TQM, ISO 9001, Six Sigma, BPR, Lean, and Business Excellence (BE) self-assessment by quality awards (e.g. MBNQA, EFQM).

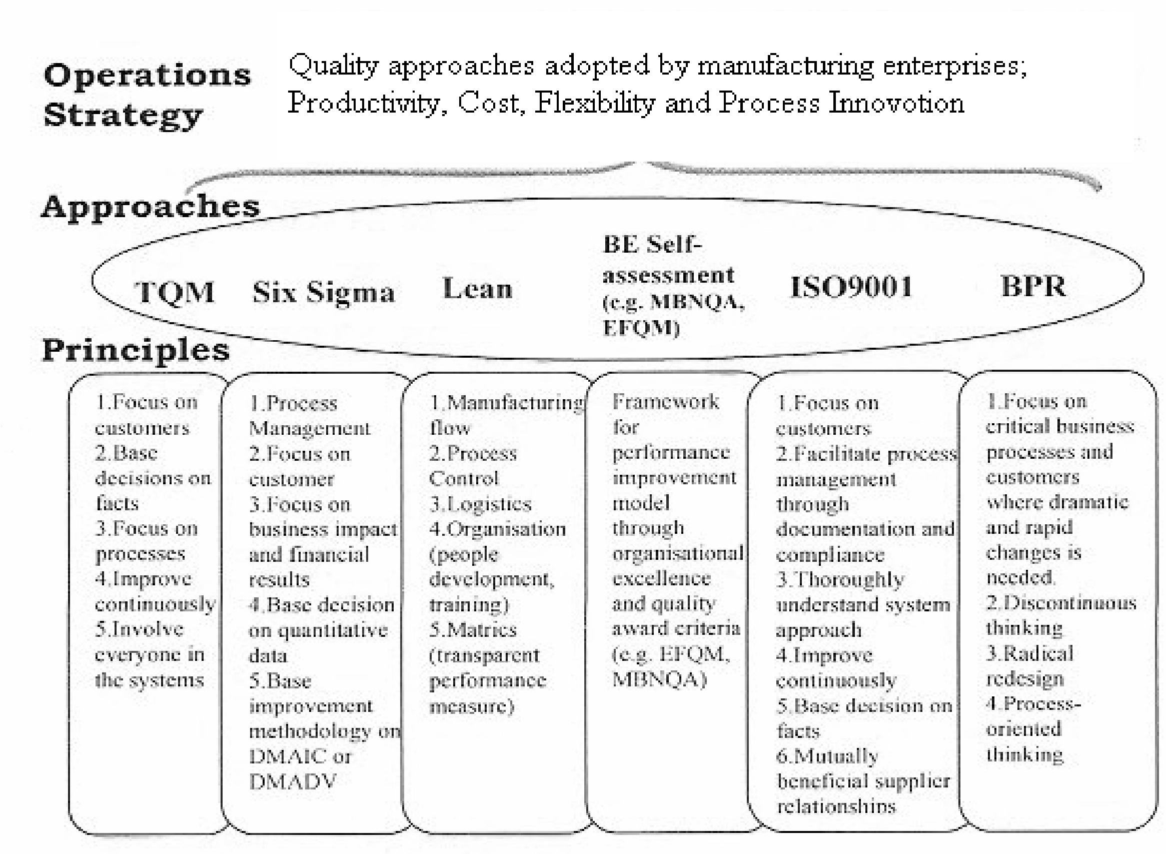


Figure 2.5 Quality Approaches Adopted by Manufacturing Enterprises (Bain & Company, 2005b).

Although many companies now adopt quality for breakthrough innovation and new technology development (Sower & Fair, 2005), incremental improvement is still important to achieve long-term and sustainable success. The nature of such improvements can be divided into two kinds: Incremental and Breakthrough (see Table 2.2). Incremental improvements are generally achieved through changes in and by an organization’s infrastructure (e.g. people, systems, values and behaviour), while breakthrough improvements are generally focused on major structural changes (e.g. equipment, facilities, sourcing) (Hayes, Pisano, Upton & Wheelwright, 2005).

Table 2.2 Nature of Improvement Sought (Hayes et al. 2005)

Nature of Knowledge Base	Incremental/Infrastructural	Breakthrough/Structural
Tactic: Learning by Doing	• Individual Learning • Within Group Improvement (e.g. Kaizen, PDCA, TQM, JIT)	• Toyota Production System, Long-term 'stretch' goals (e.g. Six Sigma)
Explicit: Learning before Doing	• Across Group Improvements; Benchmarking/Best Practices	• Into Group Improvement: BPR, World-Class practices

Conti (2004) recommends that organizations need to reconcile both standardizations by ISO 9001 and differentiation by TQM or BE models. Organizations, especially small and medium enterprises, require standards to communicate and do business with others, while differentiation is used to aim at excellence. Douglas et al. (2003) and Magd and Curry (2003) suggest first implementing ISO 9001 (to create stability and consistency) then introducing TQM to enhance employee motivation and operational efficiency. The Thailand Productivity Institute (TPI) (1999) also suggests applying TQM to support ISO 9001 more effectively. A statistical analysis by Sun et al. (2004) indicate that in Europe ISO 9001 contribute more in a highly-developed TQM environment and both are complementary to each other; however, it is not necessary to start ISO 9001 before TQM.

Numerous authors have proposed various specific ‘blending recipes’. For example, Warnack (2003) and Gupta (2004) suggest that integrating Six Sigma with ISO 9001 would protect a business from improvement failure, since ISO 9001: 2000 creates the mentality of process management. Another state-of-the-art recipe for quality is to blend Lean with Six Sigma. Devane (2004,) points out that Six Sigma alone does not focus on improving the speed of a process, and inventory reduction, while Lean individually does not bring processes under statistical control. Lean lacks both a method for evaluating variations and a linkage between quality and statistical tools for the diagnosis of a root cause. The combination of Six Sigma and Lean allows an organization to compensate for these missing elements (Devane, 2004). Kubiak (2003) recommends integrating the BE criteria, balanced scorecard, Six Sigma and ISO 9001 for driving organizational excellence.

Byrne and Norris (2003) believe that integrating Baldrige improvement initiatives with the Six Sigma ability could deliver concrete and measurable results for ongoing organizational transformation. Bhote (2003) has modified and improved the effectiveness of a Six Sigma campaign by integrating the BE self-assessment process with the Six Sigma company. Hutton (2000) considers that processing a performance measuring assessment is a crucial method while employing the Six Sigma programme. Seeing the pitfall of inability to sustain the breakthrough results, Joseph and William (2004) propose integrating the Juran Trilogy with Six Sigma in order to uphold the improvement results.

The phenomenon of adoption of various quality initiatives is not only suggested by many authors, but has also occurred in United Kingdom (UK) industry. A survey from 45 large organizations with over a thousand employees in UK shows that many companies, which adopted Six Sigma, have also implemented both ISO 9001 and TQM (Antony & Baneulas, 2002). Development of a ‘blending recipe’ for effective Operational Effectiveness (OE), in the current literature, mainly centers around TQM and Six Sigma programmes. Figure 2.6 depicts the other ingredients which are typically suggested as appropriate during adoption of quality.

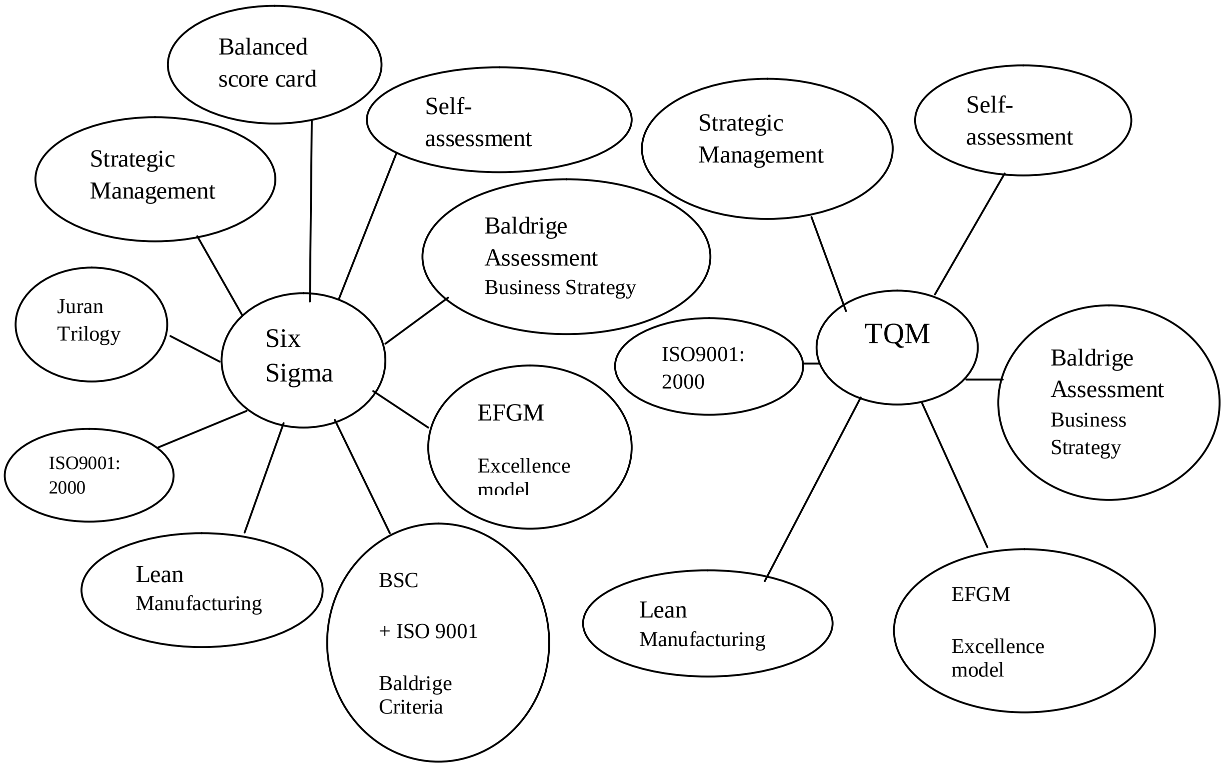


Figure 2.6. Blending Recipe for Various Quality Initiatives (Natcha, 2007).

According to Klefsjo, Bregquist, and Edgeman (2006), Six Sigma, an appropriate methodology within the TQM frame, should be integrated with TQM, 'or else you may end up with too thin a soup that may separate and come apart.' Perhaps the time is ripe for a new theme to emerge. From the Engineering Quality Forum (EQF) project survey in UK, complied by McNeil and Greatbanks (2002), 40 percent of the respondents felt that adoption of quality has positively contributed to the objective of product quality while 28 percent believed in the opposite. They noted that there is no 'one best way', not all quality tools are appropriate and in fact too many quality initiatives can be confusing and if used at the same time can actually reduce the overall effectiveness.

The challenges here are how the firm especially small and medium enterprise, chooses the right approaches for their organization, whether the selected quality programme suits their culture, delivers and sustain the desired results and whether their employees have the capability to execute and handle the quality tools. Joseph and William (2004) stated two predicaments of adoption of quality, that (a) results do not occur fast enough and (b) results cannot be sustained long enough. Kaye and Anderson (1999) have demonstrated that achieving quality and continuous improvement is not easy, since there are many complex variables within an organization. Seeing that one individual quality technique could not fully cover the quality concept, these authors have suggested ten essential criteria to support quality activities, which are (1) management commitment, (2) leadership, (3) stakeholder focus, (4) integration of quality activities, (5) culture for quality, (6) employee focus, (7) critical processes focus, (8) Quality Management System, (9) measurement and feedback system, and (10) the learning organization. These supportive elements for quality activities also appear in the critical success factors of some firms.

2.7 Rational and Irrational Theories of Adoption

The selection of management initiatives may be based on both systematic evaluation and other less rational influences including the fashion phenomenon, impulse, persuasion, power, or culture (Sturdy, 2004). There are two fundamental theories regarding the adoption of management initiatives-rational and irrational. One believes that the diffusion of ideas is fluctuating like a fashion and the popularity of the idea depends on the power of the fashion setters' e.g. academic gurus, consultants, and hero managers (Greatbatch & Clark 2005; Jackson, 2001).

Boje, Grace and Robert (1997) stated that 'New programmes often are introduced at points of crisis attributed to failure of the old programme or at the point that organizations worldwide including consulting firms are seeking to change for a new fashion.' This theory of fashionable management ideas focuses upon irrational behaviour, informality, intuitive, and emotional influences in decision-making. On the contrary, general management theory, in particular the areas of strategic decision-making and operations strategy, emphasize and support the importance of a rational, structured, and systematic decision-making process. Table 2.3 compares these perspectives.

Table 2.3. Theoretical Perspectives on the Adoption of Ideas and Practices

No.	Perspective	Reason	Strength	Weakness
1.	Rational	Effective for organization	Perspective	Idealistic
2.	Psychodynamic	Anxiety/identity	Emotion focus	Essentialism
3.	Dramaturgical	Rhetoric	Integrative	Mono-directional
4.	Political	Interests/effect	Critical	Functionalist
5.	Cultural	Fits values	Contextual	Apolitical
6.	Institutional	Imposed/legitimation	Comparative/integrative	Deterministic
7.	Multi-dimensional	Various	Inclusive	Non-integrative
8.	Contingency	It depends	Flexibility	Relativist

Source: Sturdy, 2004

Although general management theory has created an awareness of rational decision-making and suggested some useful criteria, it does not provide a clear process and methodology to evaluate these factors. However, the theory of strategic decision-making has clarified the process. It describes decision-making based on a combination of both a ‘bounded rational’ and a political process (Eisenhardt & Zbaracki, 1992; Eisenhardt, 1999).

To increase the likelihood of a rational decision being made, more information with diverse viewpoints is required; hence, building collective intuition, stimulating constructive conflict, maintaining time pacing, and avoiding politics are the keys to strategy (Eisenhardt, 1999). Two frequently-asked questions by strategic decision-makers are ‘Where do you want to go?’ and ‘How do you get there?’ (Eisenhardt, 1999). The strategic decision-making theory incorporated these questions into a structured, step-by-step, and sequential process starting from identifying strategic gaps in relation to the company’s internal and external environment e.g. strengths & weaknesses, opportunities & threats, then formulating objectives, identifying criteria and finally making choices (Bhushan & Rai, 2004; Harrison, 1999).

Matching and alignment between an action plan and organizational focus and context is an important key concern in manufacturing and operations strategy theory (Hill, 1995; Platts & Gregory, 1990; Slack & Lewis, 2002; Voss, 1995, 2005). This theory holds that the degree of fit between the chosen quality initiative and the company’s focus and context (such as competitive priorities, capability, resource usage, etc.) has a significant impact on enterprise growth (Sousa & Voss, 2001). This shows that the entrepreneur would firstly and most importantly ask the question ‘Where are we now?’ and provides his/her managers with a tool or framework to compare action plans with the firm's health and success as the main criteria.

Three prominent frameworks for developing operations strategy, which is the fit for the organization, are the Hill framework, the Platts-Gregory procedure, and the Slack and Lewis importance/growth/ performance matrix. The Hill framework proposes alignment between corporate objectives, marketing strategy and operations strategy through the customer's requirement or the competitive priorities, which are categorized into 'order winner' and 'qualifier' factors (Hill, 1995).

The Platts-Gregory profiling addresses the strategic choice by assessing the gap between the market requirement and the actual operational performance (Platts & Gregory, 1990). The importance and growth matrix proposed by Slack and Lewis (2002) also determines the operations strategy by identifying the level of fit between marketing requirements and resource capabilities and reconciling the two. Combining these various academic discourses has enriched understanding of the adoption phenomenon and has shaped the content for selection criteria.

Table 2.4 summarizes the propositions of management initiative adoption, which vary from irrational influences to a more rational and structured decision-making process. In summary, the four relevant theories - organizational behavior, general management, strategic decision-making and manufacturing and operations strategy - have provided a conceptual background to the selection factors and required process. Although entrepreneurs may focus their decision on the firm's strategic priorities, it is clear that irrational influences cannot be neglected in the overall selection decision (Hill, 1995; Platts & Gregory, 1990; Slack & Lewis 2002; Voss, 1995, 2005).

Indeed they should be surfaced and if possible re-integrated into the rational decision picture. As suggested by these theories, key contents of the conceptual selection model will be composed both of irrational criteria – related to fashion setting – and rational criteria e.g. pay-offs, competitive priority, firm's capability and resources, and resource consumption. However, the evidence and claims, which appear to support both 'irrational and rational' decision-making, may still be ambiguous. Do fashions really exist in the adoption of management and quality initiatives? If pay-off is one core criteria, what are the pay-offs from these quality initiatives and which pay-offs appeal the most to entrepreneurs?

Table 2.4 The Propositions of Management Initiative Adoption

Adoption influence	Theory	Researchers	Propositions of the Adoption
IRRATIONAL Less structured and systematic evaluation	Organizational behaviour	Greatbatch & Clark (2005), Clark (2004), Clark & Greatbatch (2004), Williams (2004), Jackson (2001), Grint (1997), Abrahamson (1991, 1996).	**Fashion setters create process and supply the idea with ability to draw followers' collective beliefs:** • Fashion suppliers e.g academics, gurus, consultants, hero managers • Persuasion power • Institutional theory-resembles best practices • Human intuition-past experience
	General management	Rigby and Bilodeau (2005) Norhia et al. (2003), Miller & Hartwick (2002), Gibson & Tesone (2001), Cagliano & Spina (2000)	**More skeptical, more conscious about fashion setting and engage in deeper level of critical questioning:** • Competitive priority, organizations needs • Pay-off and effectiveness of the initiative • Company's capability and resources • Organizational culture • Cost and time to result
	Strategic decision making	Bhushan & Rai (2004), Eisenhardt (1999), Eisenhardt & Zbaracki (1992), Harrison (1999)	**Interweaving both bounded rational and political process.** • Improve rationality, cut-off debate, and close decision by using more information, create diverse viewpoints and gain consensus agreement • Have structured decision-making process e.g. Gap analysis, set objectives, and make choice • Key decision criteria include company's vision, competitive priority, and environment (technology, economic, political and social system)
RATIONAL More structure and systematic procedure	Manufacturing and operations strategy	Voss (1995, 2005), Tan & Platts (2003, 2004), Slack & Lewis (2002), Hill (1995), Platts & Gregory (1990), Slack et al. (2006)	**Rigid procedure to develop strategy concerning the degree of fit to company context.** • Competitive priorities or customers requirements • Gap between market needs and operational performance • Resource capabilities

Source: Natcha, 2007

2.8 Selection Views of Quality Initiatives

Approaches for choosing and adopting quality programmes are varied. The British Quality Foundation survey (Charlesworth, 2000), conducted in the UK, revealed that the information and selection of quality improvement approaches mostly came from customers, colleagues' recommendation, and Internet searches. The 2004 Annual Survey of Quality (ASQ) survey by Weiler (2004) with responses from 603 entrepreneurs reflected a similar response: the source of information which would influence an executive to adopt a particular business improvement technique were 89 percent from conversation with peers, 77 percent from testimonial of a successful implementer, 73 percent from a case study, and 51 percent from competitors' financial results.

In the United States, Bain and Company (2005a) suggested four principles for the usage of quality tools: 1) Get the facts e.g. strengths, weaknesses, full effects and side effects of each quality tool, 2) Champion realistic and strategic directions, not fleeting fad, 3) Choose the best quality tools for the job, and 4) Adopt quality tools to the business system but not vice versa. Cagliano and Spina (2000) suggested the factors that influence the choice are (1) strategic priorities, (2) past experiences on quality programmes and (3) internal and external environment. Their research also shows that the most up-to-date quality programmes show lower alignment with competitive priorities, which occur in a 'fashion setting organization' (Abrahamson, 1996).

Clark and Greatbatch (2004) believe that an entrepreneur's ideas become popular not because the ideas actually work, but because they are perceived to be practical, beneficial and relevant. At the conceptual development stage, more accessible and reliable information which provides the mass of entrepreneurs with a trustworthy perception and persuasion came from books, research papers and journal articles, which suggested benefits showed the advantage of each individual initiative (Pay-Off), perhaps in a 'why choose me' comparison section.

Many organizations have implemented quality programs with great success, while others have failed to achieve much competitive advantage. Evidence from Powell (1995) tended to show that quality -adapting firms do obtain a competitive advantage over the firms that do not adopt quality. More recently Douglas and Judge (2001) found relatively strong support for the relationship between the degree of adoption of quality and competitive advantage gained. They also reported some support for the moderating influence of organizational structure on quality implementation effectiveness.

Not all companies adopting quality have had success in transforming their firm's competitive performance. Grant (2005) argue that quality and conventional management practices are inherently incompatible and affect the dissemination, acceptance, and success of quality. He believes the origins and pattern of quality are quite different from other management innovations such as Management by Objective and Time Based Management that have swept through the business world during the post war period.

It appears that many firms begin the adoption process of quality, but the majority never reaches completion (Ahire, Waller & Golhar, 1995). Absence of complementary assets that must be combined with quality (Carmen 1996; Waldman & Gopalakrishnan, 1996), and the failure to implement fully all the key practices (Hackman & Wageman, 1995) have been proposed as reasons for the failure to achieve competitive advantage in some cases. Flynn et al. (1995) commented on why quality has failed in many businesses and highlighted some of the mistakes, and Shin, Kalinnowski and El- Enien (1998) argued that quality programs fail due to an inefficient system for executing the quality principles. A relatively recent survey in Norway (Sun, 1999) found that although nearly all organizations had attempted to implement a quality management program, very few had achieved full implementation.

The doubts being raised about the legitimacy of quality as a permanent change in management paradigms as opposed to management fads are typical of the latter diffusion stages of any innovation (Rodger & Shoemaker, 1971). Quality is essentially a type of process innovation and as such it is important that a supportive organizational structure be in place to enhance its implementation effectiveness (Shea & Howell, 1998; Waldman & Gopalakrishnan, 1996).

While there is agreement on the building principles of quality, Shin et al. (1998) indicate that actual implementation is the major challenge. For successful implementation of quality organizational structure must both standardize and at the same time keep the organization open and flexible to new ideas (Sutcliffe, Sitkin & Browning, 1999). Management training and development still receives comparatively little attention, particularly in small companies (Banfield, Jenning & Beaver,1996), while Ryan et al. (2001) show that quality training has a significant impact on growth. According to Rodger (1986), Selegna and Fazel (2000), lack of understanding contributes to the lack of acceptance and failure of fundamental and comprehensive management changes like quality.

2.9 The Quality Management Approach to the Selection of Quality Initiatives

Many quality management specialists: gurus, experts and consultants have provided their own approaches to quality initiative selection. Some of them recommend a broad framework for business excellence (Kano, 1993; Oakland, 2005) but not specific proposals of 'what to adopt' and 'when to adopt it.'

For more directive authors, the proposed models tend towards a fixed and prescriptive type of approach; these authors mostly base their guidelines on propounding the convincing benefits of the quality techniques (Bendell, 2005) and explain how levels of advancement in implementation will be linked to benefits gained (Ho, 1999a,b; Krasachol, 2000). Examples of a prescriptive path to adoption are illustrated in figure 2.7 below.

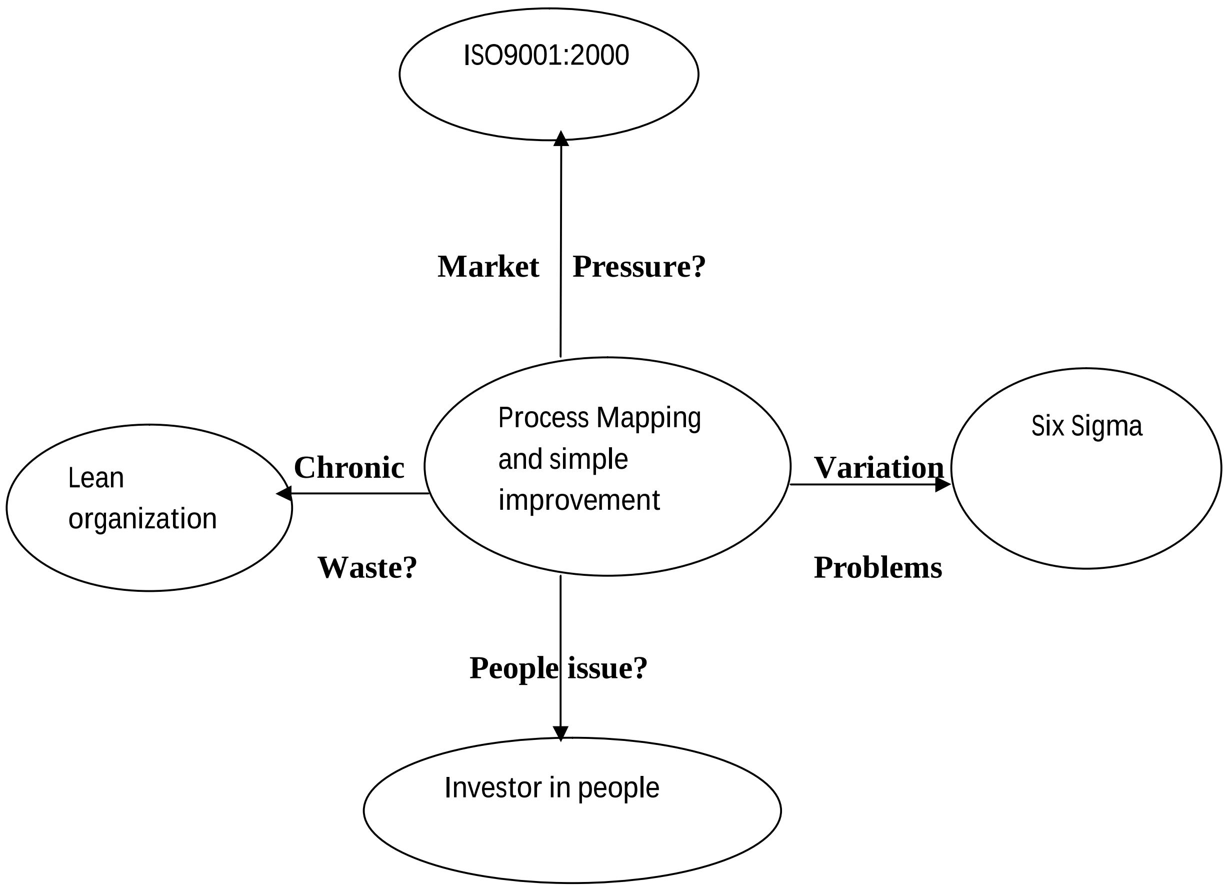


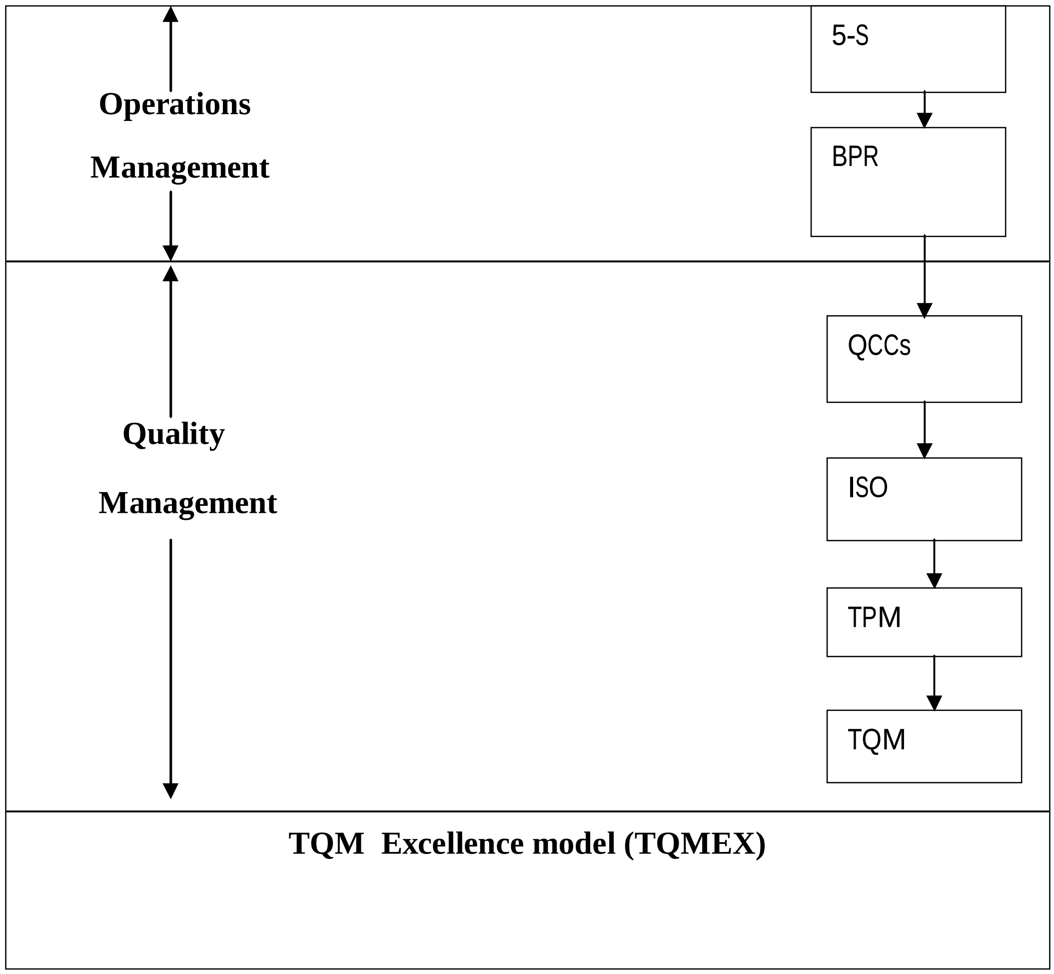
Figure 2.7 Decision Path of Business Process Improvement Methodologies

Source: Bendell, 2005

The decision path of business process improvement methodologies by Bendell (2005) starts from a company's problem and links it to the initiative's main benefit i.e. if the main issue for a company is market pressure; it should adopt ISO9001, if it is chronic waste, then Lean would be more suitable, if it is variation problem, and then implement Six Sigma. When it is a people issue, invest in people will solve it.

The TQM Excellence model by Ho (1999a) suggests a sequence of adoption starting from sifting, sorting, seeping, standardize and sustain (5S), business process reengineering (BPR), quality control circle (QCC), international organization for standardization (ISO), total productive maintenance (TPM)and total quality management (TQM) as indicated in Table 2.5.

Table 2.5 Prescriptive Approach to the Selection of Quality Management Techniques



Source : Ho, 1999a

In addition to using pay-offs as selection criteria, the United Kingdom (UK) Department of Trade and Industry (2004) has connected together quality approaches such as ISO 9001, Self-assessment, BPR, and Benchmarking, and suggested a framework for Operational Excellence. The Department of Trade (DTI) framework as illustrated in

Figure 2.8 which is concerned with the organization's direction (Vision, Mission, and Key Performance Indicators - KPIs) and the prioritization of all activities to the company's critical success factors. This guideline is coherent with the process of Operations Strategy concerning the match between action and operational objectives. It emphasizes the importance of the organization's objectives in the decision about which quality approach to adopt.

Although these guidelines are simple and easy to follow, they could only be used as a general suggestion in an early stage of the adoption decision, since they are not tailored to an individual company's needs and context. Other considerations and motivations for the adoption of quality, apart from the expected pay-offs, may influence the selection decision such as the firm's objectives, fashion issues, and so on.

An empirical investigation of quality practices and the manufacturing strategy context by Sousa and Voss (2001) supports the position that quality practices are contingent on a plant's manufacturing strategy. Moreover, the study by Benson, Sarah and Schroeder (1991) has indicated that entrepreneurs' perceptions of quality are influenced by the business unit including internal factors such as the degree of employees support, the organizations past quality performance and external factors such as the degree of competition and the government regulation of quality. The adoption of quality should therefore take into account the enterprise's contingencies.

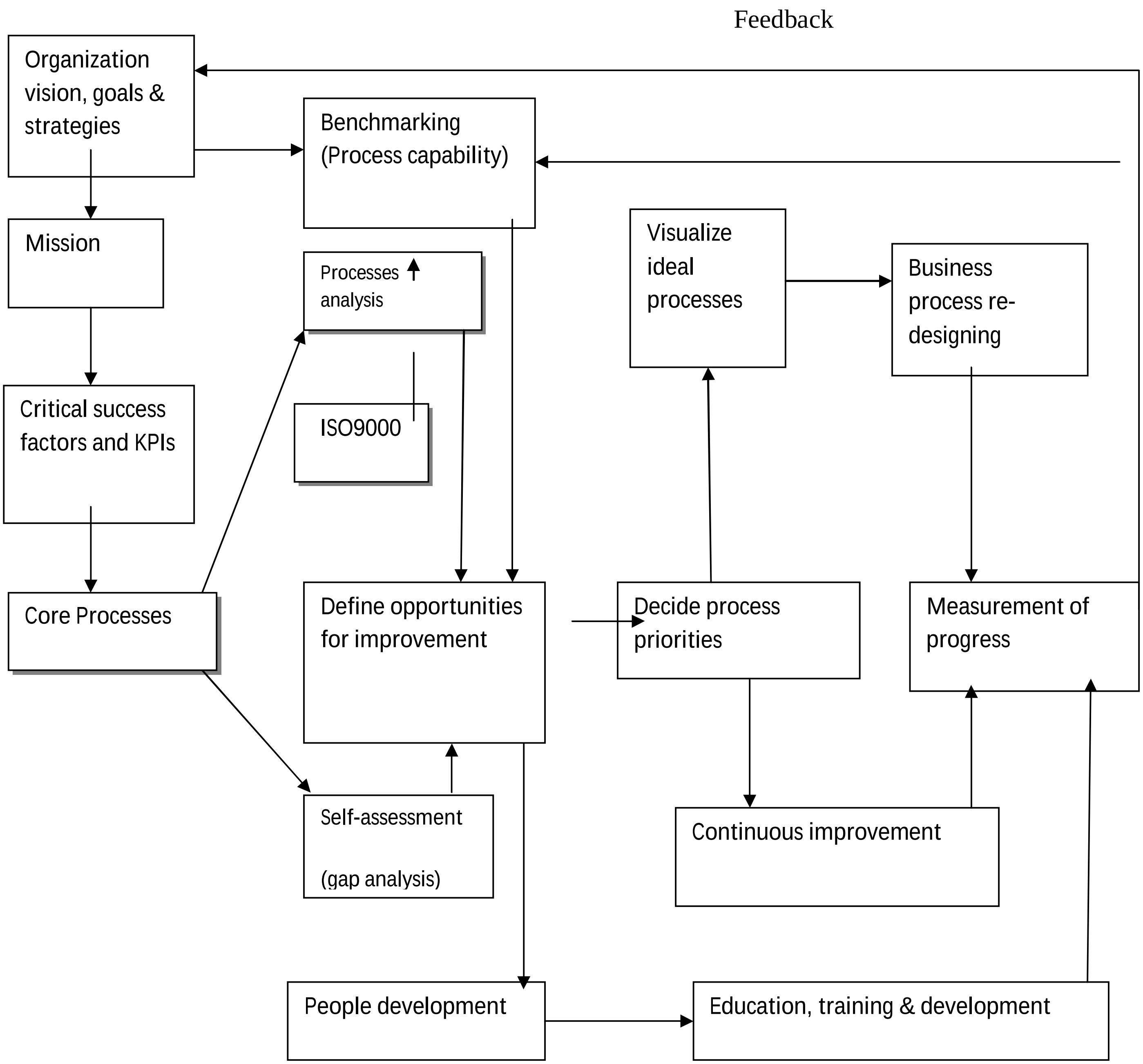


Figure 2.8 An Implementation Model for Organizational Excellence (DTI, 2004).

2.10. Quality Management in Small and Medium Enterprises

Much has been written over the past couple of decades about various quality management models and techniques that can be applied in any organization to improve operational, managerial and ultimately financial performance via the emphasis on quality products/services and processes. The models and techniques prescribed have taken many forms and labels over the years, and to this day continue to evolve in order to remain relevant in various organizational contexts, and in changing business environments. In the last decade, the most prevalent of these models have quality assurance/certification and TQM. Quality assurance refers to the evaluation and certification by a second (i.e. customer) or third party (i.e. an independent certification body) of an organization's quality system, to demonstrate that a "specific quality system standard has been met" (Husband & Mandal, 1999). The International Organization for Standardization (ISO) 9000 quality system standards are often used in this procedure, although industry-specific standards have also been developed in recent years (Husband & Mandal, 1999).

The key distinction between quality assurance and TQM is that TQM focuses on the whole organization rather than on its quality system. Total quality management involves a holistic approach to quality and espouses a quality culture that permeates the organization from top-level management down to 'shop-floor' employees. Quality becomes ‘everyone’s business’ and the customer is redefined to include internal (as well as external) entities.

Total quality management (TQM) utilizes a broader definition of quality than does quality assurance, and has therefore been viewed as the logical next (and perhaps final) step for an organization on the quality ‘journey’. Nevertheless, there are many organizations that choose not to proceed to the TQM level, even after obtaining system certification (e.g. Van der Wiele & Brown, 1998). Research shows that an even smaller percentage of SMEs have implemented formal quality initiatives like TQM compared with quality assurance practices (Chittenden, et al., 1998). However, studies have also shown that organizations often practice TQM activities without labeling them as such. Instead they are considered simply as good management practices (Chittenden, et al., 1998). Thus, often firms – particularly small – employ ‘informal’ quality management techniques (Van der Wiele & Brown, 1998).

The reported level of success enjoyed by SMEs with (formal and informal) quality initiatives varies. Not many studies were identified that examined the relationship between quality practices and business growth and development (McMahon, 2001). Chittenden, et al. (1998) examined whether there are differences in SME business growth (measured by sales growth) between users and non-users of ISO 9000. Their study looked at both historic and projected sales growth percentages. It concluded there were no significant differences between users and non-users, suggesting a lack of association between “adoption of ISO 9000 and sales performance” (p.78).

2.10.1 Growth of Small and Medium Enterprises

Firm growth is a central focus area in strategy, organizational and entrepreneurship research. As other authors have noted, there is no single theory which can adequately explain small business growth and little likelihood of such theory being developed in the future (Gibb & Davies, 1990: Garnsey, 1996). The growth agenda however, varies from one entrepreneur to another even when they operate in the same market (Matthews & Scot, 1995). In McMahon’s (2001) research, exploratory cluster analysis was used with key enterprise age, size and growth variables to find out if there appears to be any stable development pathways evident in a Business Longitudinal Study (BLS) panel of data. Each of four annual data collection for the longitudinal panel of manufacturing SMEs was separately examined using cluster analysis.

Comparisons were then made of cluster analysis outcomes over time. Three relatively stable SME development pathways were discernible in the longitudinal panel results- low, moderate and high growth. The low growth development pathway appears to account for approximately 70% of SMEs in the panel. The moderate growth pathway seems to be followed by roughly 25% of the panel. And around 5% of the panel looks to lie on the high growth pathway, which is in accord with the observed rarity of substantial growth amongst SMEs world-wide (McMahon, Holmes, Hutchinson & Forsaith, 1993). Differences between the identified SME development pathways in terms of enterprise, age, size and growth variables are highly significant in a statistical sense, thus underpinning confidence in the development taxonomy (McMahon, 2001).

It would appear that the development pathways and the pace of SME development in the McMahon (2001) study match well with those in earlier research of a similar nature undertaken by Hanks, Watson, Jansen and Chandler (1993). Both development models lead towards the same range of SME configuration that is widely recognized in the relevant research literature (McMahon, et al. 1993): (1) Traditional SMEs following the low growth development pathway generally have few, if any, growth aspirations. They principally exist to provide their owner-managers with a source of employment and income, and are frequently operated in a manner consistent with the lifestyle aspirations of their owner-managers, (2) Capped growths SMEs following the moderate growth development pathway generally have modest growth aspiration. Bounds to growth could be externally imposed by the nature of their competitive environment; or may be intrinsic given the nature of their operations.

Frequently though, growth is deliberately capped by owner-managers to a rate that limits dependence upon external financing-thus minimizing surrender of control and accountability obligations this support would normally bring, (3) Entrepreneurial SMEs following the high growth development pathway generally have ambitious growth aspirations. They are most often associated with entrepreneurial aptitude, international outlook, technical and commercial innovation and other business qualities that could see them eventually become large enterprises (McMahon, et al., 1993).

Employment, profit, value addition, turnover, total assets and market share are the major parameters of growth suggested by theorists. But high- performing small manufacturing firms also place emphasis on new product development, product improvement and adoption of new methods in addition to the indicators measuring current business performance such as product quality, customer service, employee productivity and efficiency and employee welfare (Kotey & Meredith, 1997). Recent literature (Reid, 2007; Steffens, Fitzsimmons, & Davidsson, 2006) has begun to describe and evaluate quality as a potential source of competitive advantage and enterprise growth.

The implementation of quality is accomplished through a set of practices within the quality philosophy, which dictates that the practices operate as an interdependent system that can combine with other organizational assets and resources to generate competitive advantage (Steffens et al., 2006). Adoption of quality is generally being described as the process of making quality the concern of everyone in the organization. It is an organizational culture committed to customer satisfaction through continuous improvement. Powell (1995) broadly stated it as an integrated management philosophy and set of practices that emphasize, among other things, continuous improvement, meeting customer's requirements, reducing rework, long-range thinking, increased employee involvement and team work, process redesign, competitive benchmarking, team-based problem solving, constant measurement of results and closer relationship with suppliers.

Small and medium enterprise growth is often closely associated with firm overall success and survival (Scott & Bruce, 1987). Growth has been used as a simple measure of success in business (Pitelis, 2002). Also, as Davidson and Wiklund (2000) suggest, growth is the most appropriate indicator of the performance for surviving small firms. From the point of view of an SME, growth is usually a critical precondition for its longevity (Pitelis, 2002). Patel (1995) advocated for a carefully crafted strategic growth plan with a high degree of entrepreneurial intensity in order to create a niche.

In SMEs, growth objectives are often bound up with the owner-manager's personal goals (Jennings & Beaver, 1997), and so it's important that they support each other. Entrepreneurs' attitudes and their decisions pertaining to growth, influences the growth of small organizations (Burke & Jarhatt, 2004). Growth and performance of small organizations are influenced by the personality (Miller & Toulese, 1986) and abilities (Davidson, 2002) of the entrepreneurs. However, aversion to growth has been said to be the principal reason why most SMEs stagnate and decline (Clark, Berkeley & Steuer, 2001).

2.10.2 Is Adoption of Quality For Larger Firms?

Although the majority of previous studies in quality focus on large multi-national companies, quality has become the basis of global competition for all firms regardless of industry, location and size (Temtime & Solomon, 2002). Boon and Monder (1998) also stated that quality in its various aspects is applicable to all firms regardless of size and context. Today, SMEs are the center of interest in the quality debate for several reasons. One, according to Brown, Hamilton and Medoff (1990) is that larger organizations will not be able to improve the quality of their products, services and processes, unless their suppliers or the second-tier suppliers also grow to higher level of quality maturity. Amongst these suppliers there are many SMEs. There is evidence (McTeer & Dale, 1994) that SME are no less concerned with quality than their larger company counterparts, but that they are less comfortable with the formal approaches that are often advocated as part of ISO 9000 series registration, and the introduction of TQM.

Small and Medium Enterprises have their own unique characteristics that differentiate them from larger firms. Some studies (Lee & Oakes, 1995; Yosuf & Aspinwall, 1999; Ghobadian & Gallear, 1997) have attempted to identify the characteristics, strengths and weakness of SMEs when it comes to the implementation of quality. Yosuf and Aspinwall (1999) have the characteristics of SMEs into five categories (structure, systems and procedures, culture and behaviour, human resources, markets and customers) and discussed the advantages and disadvantages under each category.

Lee and Oakes (1995), argue that if an entrepreneur or supervisor is convinced of the need for quality, then it is easier for entrepreneurs to inspire and motivate their employees. Because organizational systems and structure are simple in SMEs, the process of quality implementation can be made visible more easily. The people dimension is easier to tackle on face-to-face relationships because of the lower number of employees. Kuratko and Hornsby (1990) found that, visibility of entrepreneurship leadership and improvement teams are easier in SMEs. Employees are closer to the products and services and thus feel more responsible for quality, and they would have a better understating of service and the overall profitability of the organization. Furthermore, decision-making processes are simpler in SMEs than in large firms.

According to Hartz and Kanji (1998), SMEs can be characterized as easy to survey and understand, having short lines of communication and flexibility in relation to the implementation of new management philosophies and approach. While Ahire and Golhar (1996) found that there are no operational differences in quality implementation attributable to firm size, Sun and Cheng (2002) showed that quality practices like TQM are different between SMEs and large firms and that the contribution of quality to growth varies. Although many proponents of quality openly praise quality initiatives like TQM, others (Mathews & Kate, 1992) have identified significant costs and implementation obstacles.

As a planned approach to organizational changes, a quality initiative like total quality management (TQM) needs systematic business planning and policy deployment. The increasing intensity of competition has made continuous planning and quality improvement a prerequisite for the survival of not only large firms but also for small-to medium-sized enterprises (SMEs). Firm size, representing organizational resource endowments, has an important relation with planning because the formulation and implementation of strategies require commitment of scarce resources (Temtime & Solomon, 2002). Since the implementation of quality initiatives is influenced by the planning behaviour of firms, which is in turn affected by firm size, the need for a quality management model or framework customized to the SME setting is apparent.

Adoption of quality by SMEs may be the result of pressure from government or associated companies or customers. For example, many SMEs feel forced to adopt ISO9000 standards but then do not move to adopt other quality management systems (Van der Wiele & Brown 1998). Pressure from customers forces small firms to adopt just-in-time (JIT) philosophy (Sturdy, 2004). Chen (1999) while studying Taiwan manufacturing SMEs observed that product quality was ranked the first competitive priority by SME operators. This indicates the strong awareness of the importance of quality and/ or the achievement of quality advantage in SMEs. Almost all Taiwanese manufacturing SMEs attribute their firm's growth or success to product quality (Chen, 1999). A study conducted by Tan and Platts (2004) in Singapore, on factors that contribute to success of small businesses, identified quality as an essential factor to be considered by small business entrepreneurs

Small and medium enterprises also have several problems that affect the implementation to quality. Investment in training and education to instill quality culture in employees, the need to free up people from their normal work without disrupting ongoing processes, lack of resources, inflexibility and rigidity of the outlook of the owner or manager are major obstacles for quality implementation in SMEs (Lee & Oakes 1995).

Some studies (Deshpande, Farley, & Webster, 1993; Kuratko, & Hornsby, 1990) indicated that effective human resources management (HRM) is one of the most crucial problems faced by SMEs. Djerdjour (2000) identified lack of proper training and education as a major obstacle in implementing systems and fulfilling ISO 9000 standards in Pakistan. High employee turnover restrains an entrepreneur from making the necessary investment in training and development in employees. Centralized decision-making was also a major problem, as decision-making revolves around a few top people in most SMEs (Kiggundu, 1989). Teaching and orienting employees about quality requires open communication, decentralization and participatory management style. According to Kakkar (1995) (cited in Djerdjour, 2000), the barriers faced by Indian organizations in implementing quality includes, among other things, lack of management commitment and inadequacy, poor attitude from front line managers, and lack of employee involvement in planning and goal setting.

Adoption patterns may also be influenced by the characteristics and preferred abilities of SMEs (Cagliano & Spina, 2000). Smaller firms may lack sufficient financial and human resources required for the implementation of some technological processes, resulting in lower levels of adoption of more costly technologies. For example, lack of resources is identified as a problem in implementing statistical process control and just in time manufacturing (McKellen, 2002).Another problem in small businesses may be the lack of experience and knowledge of the business owner (Harrison, 1999). Business owners need to be convinced to introduce technology and introducing statistical process controlling in small businesses (McKellen, 2002). Small business managers may also distrust consultants who could provide assistance (Ghobadian & Gallear 1997). Due to their size, SMEs may also lack bargaining power with suppliers and customers (Sturdy, 2004). This can make it difficult to get the cooperation needed for adoption of quality management systems and just –in-time manufacturing, particularly just-in-time delivery (Sun, Li, Ho, Gertsen, & Frick, 2004).

The opening of markets to global competition, the adoption of free market, the provision of training in quality improvement techniques, the establishment and widespread of bureau of standards and regional trade agreements are indicating that the developing countries are beginning to see improvements in quality. Quality may be successfully adopted in SMEs, and aspects such as leadership, and education and training are key factors to quality initiatives like TQM in SMEs (Tari, 2005).

2.11 Research Gaps

Madu and Kuei (1995) performed a comparative analysis in manufacturing firms in United States of America and Taiwan. Their findings showed associations between the quality constructs and growth but no casual relationships were established. Furthermore, these relationships were different for four types of firms based on age and size. Even within the same firm types, there were differences among countries.

Most firms especially SMEs in developing countries suffer from: lack of employee involvement and participation in quality improvement efforts; lack of management commitment and motivation; perception of quality as an optional extra; traditional belief that quality costs money; lack of cooperation between suppliers and dealers, management and trade unions; unorganized and indifferent customers; lack of political support; and lack of established standards (Lakhe & Mahanty, 1994; Djerdjour, 2000).

There is evidence (McTeer & Dale, 1994) that SMEs are more concerned with quality than their larger company counterparts, but that they do not conform as easily with the formal approaches that are often advocated as part of ISO 9000 series registration, and introduction of quality.

Many SMEs simply jump on the quality bandwagon without fully understanding what quality initiatives like TQM means for them or its possible consequence (Temtime & Solomon, 2002). Firms especially, SMEs should avoid wishful thinking that quality will fix short-term problems and quickly generate business growth; quality is not a destination but a journey requiring a long-term, unwavering commitment to the improvement of product, services and processes, a means to an end rather than end in itself (Shin, Kalinowski & El-enien, 1998).

Flynn et al. (1995) did an exploratory study about quality management practices at the plant level and concluded that there are other factors that contribute to competitive advantage and suggested that focusing solely on adopting to quality and quality improvement may not be a sufficient means for a plant to attain and sustain competitive position. Powell (1995) concluded that “firms that acquire the soft elements of quality can outperform competitors without the accompanying quality ideology”. Evidence from literature on quality failure emphasizes the neglect of the “soft” side of quality management wherein the human resource and organizational behavioral aspects of quality management are not given their deserved emphasis (Wilkinson, Redman, Snape & Marchington, 1998; Cruickshan, 2000).

Although there has been much interest in understanding small firm growth, there is still not much of a common body of well-founded knowledge about the causes, effects or processes of growth (Davidsson & Wiklund, 2000). Moreover, although several determinants of firm growth have been suggested, researchers have been unable to achieve a consensus regarding the factors leading to firm growth (Weinzimmer, 2000). Most of the research work in this area fails to provide convincing evidence of the determinants of small firm growth as a basis for informing policy makers (Gibb & Davies, 1990). Attempts to build models for predicting the future growth of the firm, that is, picking winners, have not been particularly successful. Moreover, as Spilling (2001) reminds us, the status of being a growth firm may be rather temporary.

2.12 Conclusion

Today's successful organizations believe that they must achieve breakthrough improvements, maintain high performance by continuously improving their operations, and plot a course towards excellence and sustainability. To simultaneously achieve these challenging goals, the selection of effective quality themes remains vital. Yesterday's solutions may not deliver competitive performance. The entrepreneurs' challenge is to choose the best approach for their enterprises. They must determine whether adoption of quality suits their culture, will deliver and sustain the desired results, and whether their people have the capability to handle the techniques of adoption.

During Japan's 'quality revolution' in the 1950s and 1960s, there were relatively few choices in terms of quality techniques. Today, by contrast, there is a plethora of quality approaches and techniques to choose from. The evolving nature of quality, with its developing themes, overlapping approaches and techniques can make for difficult decisions. Is it the right time to adopt Six Sigma? Is it better than TQM, and indeed what is the difference? Should we try to reengineer our business processes first? Is our ISO 9001 system helping or holding us back? These questions are increasingly significant to small and medium enterprises in such low-cost manufacturing countries as China, India, Vietnam, and Kenya. Not long ago, ISO certification was the main goal of most such enterprises. Now, many are striving to enhance their quality and productivity in order to attract strategic partners in the developed countries wishing to outsource their manufacturing capacity.

Today's leading small and medium manufacturing enterprises take a global view of their business, and compete via their supply chains, as well as through internal operational effectiveness (OE). Their expectations of supplier OE capability are high. To become their suppliers, low-cost manufacturers must demonstrate capability in reliably producing high-quality products and services at competitive cost.

The literature review identified a clear gap in adoption of quality and has attempted to clarify some of the background to the choice of a quality approach, and explored the explanatory variables that would assist in the selection process. These variables include entrepreneurial management which is a form business orientation that highlights the dimensions that will affect entrepreneurial orientation development of a firm, capacity enhancement of employees which consists of training and education, participation in decision-making, suggestion systems, incentive mechanisms and work autonomy, market orientation which is perceived as a system of corporate beliefs and values pivoting around and involve (1) the creation of superior customer value at a profit while not neglecting the interest of other key stakeholders, (2) the shaping of the company's internal environment and climate so that the company can be responsive to market information and technology (Process & Machinery) in this study referred to the elements of the framework as defined by Chang (1995), viz products, processes and practices.

Most SMEs loose between 5%-15% of sales revenue as a result of the lack of attention to quality. Quality drives market share. In addition to profitability and market share, quality drives growth. This suggests that formal quality management systems are important tools contributing to the growth and development of SMEs. This study aimed to address the gap in research on the relationship between quality initiatives and SME growth in Kenya. In order to bridge the gap and provide SMEs with practical assistance in dealing with this issue, this research used a sample of manufacturing SMEs within Kenya to examine whether quality inevitably contributes to growth of a firm.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Chapter two reviewed the literature on quality improvement programs approaches, the adoption and this chapter describes the research design and the methodology used to fulfill the research aim and objectives. First section 3.2 discusses the research design and justifies the chosen design. Sections 3.2 to 3.10 describe the target population, sampling technique, sample size, research instruments, pilot testing, measurement and scaling techniques, data collection procedures, and data analysis.

3.2 Research Design

The study adopted an exploratory approach using a descriptive survey design, which ensured ease in understanding the insight and ideas about the problem. It aimed to investigate four objectives and testing of five hypotheses formulated from the review of the literature. According to Creswell (2003), descriptive survey designs are used in preliminary and exploratory studies, to allow researchers to gather information, summarize, present data, and interpret it for the purpose of clarification.

Also according to Osman (1984), descriptive survey design involves large numbers of persons, and describes population characteristics by the selection of unbiased sample. It involves using questionnaires and sometimes interview tests, and generalizing the results of the sample to the population from which it is drawn. In this study, descriptive survey design was used to obtain information from a sample of 123 respondents and for testing hypotheses on adoption of quality by SMEs. Descriptive survey design is flexible enough to provide opportunity for considering different aspects of a problem under study (Kothari, 2004). This design was further appropriate for this study since Borg, Gall & Gall (2003) note that descriptive survey research is intended to produce statistical information about the aspects of the research issue (in this case quality) that may interest policy makers and SME entrepreneurs.

Exploration serves other purposes as well. The area of investigation is new and a researcher needs to do an exploration just to learn something about the dilemma facing the SME operator (Cooper & Schindler, 2003).

3.3 Target Population of the Study

The study focused on manufacturing SMEs in Nairobi and its selected environs namely Ruiru, Athi River and Limuru. This is because manufacturing SMEs in Nairobi and its environs have formal procedures or processes that are documented and registered with regulatory government bodies (Gok, 2007).According to Ministry of Industrialization 2005 data base, 2,120 manufacturing SMEs are registered as formal enterprises. 1,258 manufacturing SMEs are located in Nairobi and its selected environs. This number

(1,258) was further divided into sub-sectors, using International Standard Industrial Classification. The sub-sectors are agro-based, chemical and mining and finally engineering and construction. According to the Ministry of Industrialization, 582 enterprises are in the agro-based sub sector, 300 enterprises are in the chemical and mining sub-sector and 354 enterprises are in the engineering and construction sub-sector all based in Nairobi and its selected environs.

According to Gay (1981), ten percent of the accessible population is enough therefore the study investigated 123 manufacturing SMEs. A list of all manufacturing SMEs in Nairobi was sourced from Ministry of Industrialization and Kenya Association of Manufacturers.

3.4 Sampling Technique

The type of manufacturing industry was used as a parameter for stratification to select the SMEs to be included in each stratum. With ideal stratification, each stratum is homogeneous internally and heterogeneous with other strata (Cooper & Schindler, 2003).

This criterion required SMEs only involved in manufacturing products and classified using International Standard Industrial Classification, which was used as a stratification factor together with the number of employees.

3.5 Sample Size

Using proportional allocation, 58 agro-based, 30 chemical and mining and 35 engineering and construction enterprises were visited. Stratification is also called for when different methods of data collection are applied in different parts of the population. The ideal stratification was based on the primary variable under study, that is, adoption of quality (Cooper & Schindler, 2003).

3.6 Research Instruments

3.6.1 Powell Instrument (1995)

Although different TQM proponents emphasize different features or frameworks, Powell (1995) suggested that complete TQM programs tend to share the following factors:-

1. *Committed leadership or executive commitment* – long term commitment by top managers to the philosophy usually under a name something like TQM, Continuous Improvement, or Quality Improvement.
2. *Adoption and communication of TQM or adopting the philosophy* – use of tools like the mission statement, and themes or slogans.
3. *Closer customer relationships* – determining customers' requirements (both inside and outside the firm), then meeting those requirements no matter what it takes.
4. *Closer supplier relationships* – working closely and cooperatively with suppliers

(often sole-sourcing key components), ensuring they provide inputs that conform to customers' end-use requirements.

5. *Benchmarking* – researching and observing best competitive practices.
6. *Training* – usually includes TQM principles, team skills, and problem solving.
7. *Open organization* – lean staff, empowered work teams, open horizontal communications and a relaxation of traditional hierarchy.
8. *Employee empowerment* – increased employee involvement in design and planning, and greater autonomy in decision-making.
9. *Zero-defects mentality* – a system in place to spot defects as they occur, rather than through inspection and rework.
10. *Flexible manufacturing* – this is applicable only to manufacturing firms and can include just-in-time inventory, cellular manufacturing, and design for manufacturability, statistical process control, and design of experiments.
11. *Process improvement* – reduced waste and cycle times in all areas through cross-departmental process analysis.
12. *Measurement* – goal and zeal for data, with constant performance measurement, often using statistical methods.

3.6.2 Adaptation of Research of Powell instruments

Whereas Powell (1995) used the following 12 constructs with their 47 associated variables, executive commitment, adopting the quality philosophy, customer focused, supplier focused, benchmarking, training, open organization, employee empowerment, zero defects, measurement, process and flexible manufacturing, this research used 10 constructs, by refining the Instrument. The Powell instrument (1995) as used in this study were; 1.Executive Commitment, 2. Adopting Quality Philosophy, 3. Customers focus, 4. Supplier Focus, 5. Benchmarking, 6. Training, 7. Open Organization, 8. Employee Empowerment, 9 Zero Defects 10. Measurement.

3.6.3 Refinement of Existing Powell Instruments

Model refinement was conducted utilizing the following methods namely; Scale Reduction, Dropping Items, Inclusion of New Items and Revising Existing Items. The following subsection provides refinement made to the Powell Instrument and draws on literature review to provide support where other studies have used similar methods.

i) Scale Reduction

The first modification to the Powell instrument involved the scale measuring the implementation of each practice. Powell utilized a scale involving a six-point interval scale (1-5) where 5 = highly advanced in implementation; 1 = have not begun implementation but intend to; 0 = do not intend to implement. This instrument dropped the last scale (0) as it was argued that those not intending to would not even respond to the questionnaire. The scale was extended from 1-5 to 1-7 in order to improve on the reliability of the scale. A Cronbach alpha of 0.666 (Sekaran, 2003) measure of reliability, set as the minimum was easily met using this extended scale, indicating that the scales were internally consistent. This also shows that the answers are reliable.

ii) Dropping Items

Model refining may entail splitting potentially confusing items. In this study all the items relating to Manufacturing Flexibility were dropped from the instrument. The construct of Process improvement was equally dropped as it was closely related to customer focus and supplier focus. The construct of flexible manufacturing with its seven associated variables was dropped from the instrument because the Powell Instrument does state that these are specifically meant for the Manufacturing setting only but this study included engineering and construction, chemical and mining and agro-processing manufacturing sub-sectors of SMEs' .Therefore it can be stated that the following items were dropped mainly for the following reason: Lack of relevance of items in the SMEs under study.

The second construct dropped with its associated five variables was that of Process Improvement as the items included were more manufacturing specific and excluded other sectors studied in this research paper. An examination of the instrument revealed that Process improvement involved accounting for variation either through taking customer and supplier's requirements into account. These needs are already reflected in the supplier focus and customer focus.

The Open Organization construct had its four item scale reduced to three by dropping the following item "Frequent use of cross-department teams" as it would be confusing for SMEs especially in the construction sub-sector which may not have departments. Moreover, usage of cross-department teams is prevalent in well established large manufacturing firms.

iii) Revising Existing Items

The third item of the second construct namely adopting the philosophy read as follows; "Entering a Baldridge Award competition". As this award is targets American firms, it was changed to include the Towards IS0 9001 Certification, thus the new revised item read as follows “Towards the attainment of ISO 9001 Certification.”

iv). Renaming Existing Scales

The closer to suppliers and closer to customers were renamed supplier focus and customer focus respectively. In terms of a standardized quality programs research used by Anderson (1983), he had proposed the seven constructs as adequate for the definition of quality programs. The seven are: leadership, process management, employee fulfillment, customer focus, learning, continuous improvement and cooperation. They argue that the seven constructs either explicitly or implicitly summarize the appropriate operational constructs that best define quality programs. However it can be argued that the constructs used in this study as suggested by Powell (1995) adequately covers all the seven constructs.

3.6.4 Principle Research Tools

A self-administered questionnaire, face-to-face standardized interview schedules, and observation were the three principal tools of data collection. Primary data was collected using these three tools. An observation checklist provided a reliable and valid account of what was happening in various SMEs. Target questions were used in the questionnaire. Target questions addressed the investigative questions of a specific study. The target questions in this study were structured (presented the respondents with a fixed set of choices, often called closed questions) or unstructured (they did not limit responses but do provide a frame of references for respondents answers, sometimes referred to open-ended questions) (Cooper & Schindler, 2003).

Some of the survey questions were designed with alternative answers expressed in a Likert scale of 1-5. “1” denotes “strongly disagree, “2” denotes “disagree”, “3” denotes “not sure”, “4” denotes “agree”, and “5” “strongly agree”. Closed questions were chosen to provide the researcher with standardized data and can be presented in an appropriate format that lends itself to being quantified and compared. Also it is utilized in providing

pre-coded data, which can be analyzed easily and gathered data tend to be reliable and valid. The questionnaire was structured to according to the specific objectives that is entrepreneurial management, technology, market orientation and capacity building.
Questionnaires are popular within the various studies on quality initiatives like ISO 9000: 2000 due to the fact that they are stable, consistent and uniform statistical measure, provide less opportunity for bias or error than interviews, provide greater assurance of anonymity and can be completed at the participants' convenience (Kumar, 2000). Questionnaires were chosen for this study, partly because of the popularity of this method in quality management research (Bavagnoli & Perona, 2000). Questionnaires have been used to study quality management techniques in different countries or regions, as in the case of Taiwan (Chang & Lu, 1995). Further, quality management questionnaires are utilized to also focus on a specific firm's sector, as in the present study.

The study also used an interview schedule and an observation checklist which was analogous to the questionnaire. Personal interview method and structured observation were used (Kothari, 2004).

In addition, secondary data was collected from the library, public and private organizations. It was largely desk review of published literature on quality and SME growth. Identification letters introducing the researcher were obtained from the university to ease the data collection process.

3.7 Pilot Testing

To ascertain the validity and reliability of questionnaire, interview and observation schedules a pre-test and pilot survey was conducted. The pre-test consisted of a first revision of these instruments with four people (an academic, a small or medium firm owner/manager and two quality consultants) in order to guarantee a suitable coverage of domain of each construct. A pilot survey was then performed on the first 21 SMEs (7 each from the sub-sectors) studied, selected at random, which made it possible to modify and delete some variables. The purpose of pilot testing was to establish the accuracy and appropriateness of the research design and instrumentation and to provide proxy data for selection of a probability sample (Saunders, Lewis, & Thornhill, 2007).

To maximize reliability of the questionnaire, the approach to research design construction included: framing each question tightly and clearly to reduce ambiguity and avoid any demand bias; sequencing onerous questions towards the end of the survey; keeping open questions to a minimum; devising response scales that were increased the variability of response, thereby ensuring high statistical value from data; in addition to the questions tapping into key issues, the inclusion of questions that provided a profile of respondents, enabling the detection of response differences across demographic characteristics (Cooper & Schindler, 2003).

Reliability of these instruments was then tested through the Cronbach's alpha method (Cronbach, 1951). Using item inter- item correlation matrix as a guide, items that did not strongly contribute to alpha, and whose content was not critical, were eliminated (Mugenda, 2008). Cronbach's alpha has the most utility for multi-item scales at the interval level of measurement, requires only a single administration and provides a unique, quantitative estimate of the internal consistency of a scale (Cooper & Schindler, 2003: Mugenda, 2008). A reliability co-efficient (Rho) of 0.8 and above was considered adequate for this (Mugenda, 2008). In general, reliabilities less than 0.6 are considered to be poor, those in the 0.70 range, acceptable, and those over 0.80 good (Sekaran, 2003). The content validity was considered suitable because quality items were obtained from a review of the literature and the Powell model, and a pilot test.

3.8 Measurement and Scaling Technique

Both quantitative and qualitative techniques were used since the study focused on deductive and inductive modes of reasoning by SME operators towards quality (Kothari, 2004). Deduction is a form of inference that purports to be conclusive-the conclusion must necessarily follow from the reasons given. These reasons are said to imply the conclusion and represent a proof. For a deduction to be correct, it must be both true and valid. A deduction is valid if it is impossible for the conclusion to be false if the premises are true. Inductive reasoning moves from specific facts to general but tentative conclusions. Statistical inference is an application of inductive reasoning (Cooper & Schindler, 2003).

Qualitative technique took into account the respondents feelings, opinions, statements and suggestions. Quantitative technique assisted in multiple regression analysis of raw data using both descriptive and inferential statistical methods. This analysis is adopted when the researcher has one dependent variable, which is presumed to be a function of two or more independent variables (Kothari, 2004). Following the data collection stage, the responses were coded to enable them to be computer processed. Statistical Package for Social Sciences (SPSS) a software package was used to analyze data (Nicole, Kemp & Sneglar, 2000).

The study used ordinal scale for measurement purpose and summated scale as its scaling technique. The ordinal scale places events in order, but there is no attempt to make the intervals of the scale equal in terms of some rule. Rank orders represent ordinal scales and are frequently used in research relating to qualitative phenomena (Kothari, 2004). The numbers do not indicate absolute quantities, and they do not indicate that the intervals between the numbers are necessarily equal. For example it cannot be assumed that the differences between the categories Credit, Merit, Pass, Fail represent equal differences (Osman, 1984).

Summated scales (or Likert-type scales) are developed by utilizing the item analysis approach wherein in a particular item is evaluated on the basis of how well it discriminates between those respondents total score is high and those whose score is low. Those items or statements that best meet this sort of discrimination test are included in the final instrument (Kothari, 2004). In this study, summated scale was used to calculate the overall score of the respondents, which l represented their position on the continuum of favourable-unfavourableness towards adoption of quality, by their enterprises.

Likert-type of scale is considered more reliable because under it respondents answer each statement included in the questionnaire The researcher also chose the use of Likert style rating scale, because it communicates interval properties to respondents, and therefore to produce data that can be assumed to be related to an interval scale. The data collected from the Likert scale can be evaluated easily through standard techniques that is, principal component analysis (PCA), factor analysis and regression analysis (Montgomery, Peck & Vining, 2001).

3.9 Data Collection

The questionnaire and interviews were administered through the face- to- face method of collecting data. The questionnaire was designed based on the empirical work by Powell (1995). The questionnaire designed in this study comprised seven sections. The first part included the organization characteristics; this was designed to determine fundamental issues including the size of the organization, nature of business activity, turnover, and number of years since it started deploying quality programs, the size of permanent labor force and type of legal organization. The rationale for stating whether employees were permanent is that involvement of permanent employees is a special consideration, which may also greatly aid quality programs (QP) implementation. A covering letter explaining the purpose of this study was attached together, assuring the respondents of the confidentiality of their responses.

The second part was devoted to the identification of the factors for the implementation of QP and these ten implementation constructs are indicated in table 4.0 along with the detailed variables in table 4.9. Respondents rated their levels of implementation on a calibrated scale of 1 to 7, where 1 and 7 indicated have not begun implementation and highly advanced in Implementation respectively. The third to the sixth part of the survey document explored the how entrepreneurial management, capacity of employees, market orientation and investment in technology in that order, play a role in adoption of quality programs. Part seven dealt with the assessment of growth of the studied firms for a period of five years starting 2003. Growth was defined through a number of constructs which included; turnover, asset, labor force, product diversification, production throughput, market size, employees skills ratio, customer satisfaction index and finally level of zero defects.

The other instrument used was the interview schedules on entrepreneurs meant to supplement information not captured in the questionnaire. An observation schedule was also used to assess existence of implementation of quality programs in a firm. However, the results of some sections of part three on significance of criteria used was not reported in this paper because it was thought to have a subjective and therefore a weak association in measuring effectiveness of quality programs.

3.10 Data Analysis

The data from the questionnaires, observation schedule, and the interview schedule was coded and the response on each item put into specific main themes. The data obtained from the three research instruments was analyzed by use of descriptive statistics (frequencies and percentages) and inferential statistics. Descriptive statistics in form of frequencies, means and standard deviations were utilized to analyze data obtained from the SME observations schedule (pre-test and post-test results). Analysis of variance (ANOVA) was used to analyse the degree of relationship between the variables in the study (for example the relationship between entrepreneurial management and adoption of quality). This indicated the strength and direction of association between the variables.

The multiple regression analyses determined whether the group of factors proposed together predicted adoption of quality which would also influence growth. The analysis was done using the SPSS computer program to generate the t- value.

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was undertaken. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values (between 0.5 and 1.0) indicate factor analysis is appropriate. Values below 0.5 imply that factor analysis may not be appropriate (Magd, 2008).

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The study employs various statistical tools for extracting significant factors contributing effectively towards role of quality in growth of manufacturing Small and Medium Enterprises (SMEs) in Kenya. For this purpose, the various statistical analysis tools like cronbach's alpha, multiple regression analysis, spearman rank, relative advancement index, t-test and factor analysis have been employed to investigate the contributions of holistic quality implementation initiatives towards realization of growth in the manufacturing SMES in Kenya.

4.2 Response Rate

The sample for the study consisted of 123 manufacturing SMEs in the various sub-sectors namely manufacturing, agro-based SMEs, chemical and mining and engineering and construction industries. A total of 123 organizations were surveyed to ascertain contributions made by quality initiatives towards realization of growth and responded. This resulted into 100% responses rate (Appendix XII).

4.3 Reliability and Constructs Validity

The reliability of each construct was examined to ensure the items collectively measured their intended construct consistently as recommended in the extant literature (Saunders, Lewis & Thornhill, 2003). Internal consistency reliability was examined in the way of Cronbach's alpha (Nunnally, 1978). Generally, 0.70 or higher value is considered to be an acceptable value for Cronbach's alpha reliability (Sekaran, 2003).

Table 4.0 indicates, Cronbach's alpha values were well above 0.70, so the results were acceptable. Convergent validity exists if a group of indicators are measuring one common factor. Convergent validity can be assessed at the individual and construct level by examining individual item loadings (squared multiple correlations). Individual item loadings, which represent squared multiple correlations, of 0.70 or greater imply that the indicator shares more variance with its construct than error variance (Kumar, 2000).

Table 4.0 Internal Consistency Analysis

Implementation construct	Number of items	QP-organizations (n= 88)		Crobach apha -**C**
		Mean	Rank	
Executive commitment	3	4.50	1	0.8072
Adopting the philosophy	3	3.77	4	0.8084
Customer focus	4	4.02	2	0.8057
Supplier focus	3	3.37	6	0.8033
Benchmarking	3	2.60	10	0.7993
Training	4	2.85	9	0.8007
Open organization	3	3.57	5	0.8090
Employee empowerment	4	3.05	8	0.8083
Zero defects	3	3.93	3	0.8056
Measurement	4	3.25	7	0.7978
Overall mean- **A**		3.47		

A loading of 0.70 indicates that about one half of the items variance (the squared loading) can be attributed to the construct. But later, Ford, McCallum and Tait (1986), believe that the 0.70 level is too high, and they suggest that the 0.4 will be the least level. Thus 0.4 is the minimum level for item loadings on established scales (Montegomery, Peck & Vining, 2001).

As shown in appendix XI, of the 33 items in the various scales, all had 0.5 and higher. Squared multiple correlations of 0.5 or greater (Montegomery, et. al., 2001) demonstrates the construct as a whole shares more variance with its indicators compared to error variance. The calculations emerging from item loadings analysis (Appendix XI) surpassed the recommended threshold for each construct.

4.4 Sampling Adequacy

Nunnally, (1978) because of the small sample (88 firms) of firm's adopting quality programs; a measure of the sampling adequacy the Kaiser-Meyer-Olkin (KMO) was carried out and generated an index of 0.530 as indicated in table 4.1. It is recommended that the value of KMO should be between 0.5 and 0.99 if the sample is to be adequate (Magd, 2008). The above result of 0.530 indicates that the sample was adequate for each un-factorial determination considered SMEs' with the number of employees between 11 and 100.According to Montegomery, et. al. (2001), a critical aspect fundamental theory in any management concept is the development of good measures to obtain valid and reliable estimates of the construct of interest. The measurement instrument had to satisfy the requirements of reliability and validity.

Table 4.1 Kaiser-Meyer-Olkin Test

Kaiser –Meyer – Olkin Measurer of Sampling Adequacy	
.530	
Df	528
sig	
.000	

4.5 Content Validity

This can be examined at the level of the entire instrument and that of individual items (Cooper & Schindler, 2003). Content validity at the instrument level expresses how the instrument's sub-scale represents the target or content domain being measured. Content validity at the item level measures the target or content domain, which it is supposed to measure. This present instrument has been re-defined and developed based on the detailed analysis of the Powell (1995) instrument thus ensuring validity as the instrument has been previously tested in SMEs'.

4.6 Profile of Responding Small and Medium Enterprises and Respondents

Analysis of the results shows the highest number of respondents, about 22 (17.9 per cent) of the respondents had between 81 and 90 employees, followed by 16 (13 %) in the

71-80 ranges. For comparative purposes, the two categories of between 11-50 and 51-100 were categorized as Small and Medium Enterprises respectively. The results indicated that 46 (37.4%) of the firms studied were by definition Small enterprises, while 77 (62.6%) were Medium-Enterprises. These results are tabulated in Table 4.2.

The issue of size of an enterprise has been found to be relevant factor in determining the success of quality initiatives. Ghabadian and Gallear (1997) examined features of quality management and differences between large and small enterprises highlighting where small enterprises had advantages and disadvantages. Chandler and McEvoy (2000) reported that some of the benefits of being small in quality adoption include; change can come quicker owing to fewer management layers, the ability to make decisions quicker, fewer staff to train and the ease of communication. If the entrepreneur wants quality, it is easier to implement in a small organization because the entrepreneur is visible to employees on a daily basis so, can emphasize the importance of quality. Research by North, Blackmann and Curran, (1998) showed that manufacturing SMEs and service organizations generally use less formal means of managing quality.

Table 4.2 Distribution of Employees

Firm having Employees	Frequency	Relative Frequency	Cumulative Frequency
11- 20	12	9.8%	9.8%
21-30	8	6.5%	16.3%
31- 40	16	13%	29.3%
41-50	10	8.1%	37.4%
51-60	14	11.4%	48.8%
61-70	14	11.4%	60.2%
71-80	16	13%	73.2%
81-90	22	17.9%	91.1%
91-100	11	8.9%	100%

4. 7 Distribution of SMEs based on Legal Ownership

Table 4.3 indicates, majority 66 (53.7%) were liability limited companies, followed by partnerships and cooperatives which both had each 24 (19.5% each). These results indicate that the SMEs in Kenya are formal. The types of businesses studied included: chemical and mining (30), agro-based (58), and engineering and construction (35).

Table 4.3 Distribution of SMEs Based on Legal Ownership

Nature of Business	Type of Legal Ownership				
	Sole trader	Partnership	Co-op	Limited Liability Company	Total
Chemical and mining	1	3	4	22	30
Agro-based	4	17	9	28	58
Engineering and Constructions	4	4	11	16	35
Total	9	24	24	66	123

4.8 Distribution of Small and Medium Enterprises Based On the Entrepreneurial Culture

Small and medium enterprises studied indicated that 45 (36.6%) had a growth culture, while majority 56 (45.5%) indicated that they had an efficiency-centered, while others adopted different cultures. Similarly, the type of entrepreneurial orientation pursued by the firms studied varied. Majority, 42 (34.1%) were said to be proactive, followed by 37 (30.1%) were said to be risk takers. The rest pursued a combination of one or both of the entrepreneurial cultures. The results are tabulated in table 4.4.

The study on entrepreneurial culture is important because researchers have attributed entrepreneurial culture to growth in SMEs. Covin and Slevin (1991) established that entrepreneurial companies outperformed conservative firms. Additionally, the adoption of quality initiatives requires entrepreneurial firms with growth cultures. The results in table 4.4 below imply that more that 51% (45/88) of the firms adopting quality initiatives pursued a growth culture.

Table 4.4 Distribution of Small and Medium Enterprises Based on The Entrepreneurial Culture

	The Entrepreneurial Culture of the Organization			Total
Nature of Business	Growth Culture	Efficiency Centered culture	Others	
Chemical and Mining	15	9	6	30
Agro-Based	16	31	11	58
Engineering and Constructions	14	16	5	35
Total	45	56	22	123

4. 9 Distribution of Small and Medium Enterprises Adopting Quality Programs

Table 4.5 indicates, majority 88 (71.5%) of the responding firms had implemented a formal quality program and based on results. SMEs were classified as either quality initiative deploying or non-quality initiative deploying.

The 88 respondents, with formal quality initiatives were used for the analysis regarding the business and organization growth measures. This would seem relatively high (71.5%) since North et al. (1998) found that many SMEs tend to practice quality in an informal way. Studies have also shown that firms often adopt to quality initiatives like TQM without labelling them as such. Instead they are considered simply as good management practices. Thus, often firms- particularly small- employ 'informal' quality management techniques (Van der Wiele & Brown, 1998).

Table 4.5 Distribution of Small and Medium Enterprises Adopting Quality Programs

Subsector: Adopting quality programs	Agro-based	Chemical and Mining	Engineering and Construction	Total
Yes	40	26	22	88
No	17	5	13	35
Total	57	31	35	123

4.10 Distribution of Sub-Sectors Based on when the SME started Quality Programs

Table 4.6 indicates majority (47%) of the quality initiative deploying organizations had up to 2-5 years since commencement of their quality program, 16 % had more than 6 years but less than 10 years, while only one (1%) organization had the experience of above 16 years and only 4 (5%) firms had between 11-15 years of quality implementation. Small and medium enterprises with least (1 year) experience in quality implementation accounted for 31.8 %.

The results indicated reluctance of SMEs to adopt quality initiatives. The length of time using the quality initiatives significantly enhances the relationship between quality and growth. The results supports what is held by quality initiatives for example TQM, researchers that quality needs to be implemented with long-term vision, and not considered as a ‘quick fix tool’.-whilst these findings of sticking to quality initiatives ultimately provides growth benefits. Time may represent a range of variables such as training and the overall integration of quality principles into daily management processes and systems that will determine the impact of quality initiatives on the firm.

Most (47%) of the quality initiatives were adopted between 2-5 years ago, with few (31%) firms having adopted 1 year ago and the trend seems to be gradually declining. The results indicate a pattern of adoption of quality initiatives. However, it cannot be argued that the declining interest in quality programmes indicates that most SMEs in Kenya have adopted quality. This is because nearly, 30% (35 out of 123) of the firms in the sample did not adopt any formal quality initiative, which may truly reflect the population of the SMEs in Kenya.

The more plausible inference of the declining trend of adopting quality programmes is that they have lost popularity among the Kenyan firms for a variety of reasons. One possible reason is some quality initiative implementations are voluntary, while others are a making of the market forces. For example the certification to ISO 9001, is largely driven by the demands of the customers (Magd, 2008). Another plausible inference is that many firms prefer to implement quality initiatives without necessarily devising them into a formal program or those who had initiated quality programmes may have abandoned such formality and continued with certain quality principles (Van der Wiele & Brown, 1998).

From the diffusion theory, time of adoption also explains the extent to which quality initiatives adoption would impact on performance. This is because early adopters of quality initiatives (reflected in longer years of implementation) would be more likely to accrue more benefits than the later adopters, who would simply jump onto' bandwagon' without carefully tailoring management practices to the unique conditions of their organizations (Powell, 1995; Westphal, 1997).

Studies also indicate that there is significant relationship between the length of adoption of quality initiatives and the level of quality of management practices as reported by Powell (1995). The length of quality adoption is also significantly correlated to quality performance (e.g. productivity), which has a similar scope with quality performance.

Similarly, the study by Oakland (2005) suggests that the success derived from quality initiatives implementation is significantly associated with the time since adoption.

Table 4.6 Distribution of Sub Sectors Based on When the Firm Started Quality Programs

Nature of Business	When the SME started Quality Programs					
	1	2-5	6-10	11-15	>16 years	**Total**
Chemical and Mining	7	13	5	1	0	26
Agro-based	14	18	5	2	1	40
Engineering and Constructions	7	10	4	1	0	24
Total	28	41	14	4	1	88

4.11 Entrepreneurial Management and Adoption of Quality Programs

Table 4.7 indicates that few 11 (8.9%) manufacturing SMEs had a combination of all the three entrepreneurial management constructs (risk, proactive, and innovativeness). In line with Miller (1983), Lumpkin and Dess introduced in 1996 a concept of ‘entrepreneurial orientation’ of a firm. The responsibility for adoption of quality lies with the entrepreneurs as the policy makers.

For risk taking orientation like adoption of quality initiatives, characterizes the propensity of a firm to engage large amount of resources into projects which have high uncertain return. Innovativeness reflects ‘the firm’s tendency to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes (Lumpkin & Dess, 1996).

Table 4.7 Distribution of Firms Based on Entrepreneurial Management

Entrepreneurs Orientation	Nature of Business			
	Chemical and Mining	Agro-Based	Engineering and Constructions	
Innovative	12	14	7	33
Proactive	8	17	17	42
Risk taker	10	16	11	37
Innovative, Proactive and Risk takers	0	11	0	11
Total	30	58	35	123

4.12 Opinion of Employees on Adoption of Quality Practices

Appendix VI, indicates the opinions of employees towards adopting quality programs. The last column in the appendix indicates that more than 50% of the respondents agree that adopting quality programs reduce products service non-conformities, increase productivity, enhance efficiency, provide practical formalized improvement, foundation of process automation , enhance inventory management, improve competitiveness, and does not interrupt process management operations .

However, less that 50% but above 25% of the respondents is not sure if adopting quality programs would lead to improved workflow, create fast and flexible and accessible information, build a foundation of continuous improvement, improve organization culture and research and development, accelerate and maintain organizational improvement, and finally enhance top management commitment and feedback. Finally, less than 25% disagree that adoption of quality would lead to provide employee rewards and recognition, help monitor process improvement, motivate intensive training, and articulate the critical business needs and improvement.

Studies by Ferrell, Fraedrich & Ferrell (2004) have shown that an employee is more willing to support quality initiatives of their company if the organization communicates a commitment to ethical conduct. The attitudes towards quality programs will largely influence its success. This is because those who work in an ethical organizational climate are likely to believe that they must treat all their business partners with respect, regardless of whether they operate in or outside the organization. It becomes essential for them to provide the best possible value to all stakeholders and customers. The results of this study indicate that majority (> 50%) of the employees working in the SMEs studied had positive attitudes towards adoption of quality programs.

4.13 Quality Programs Implemented by Small and Medium Enterprises and Reasons for Implementing

Appendix IV tabulates the frequency distribution of the type of quality programs implemented by SMEs studied. Majority (25%) of the SMEs studied, adopted the BPR quality initiative, followed by Lean production (22.7%), and 18% are working towards ISO 9001 Certification. The least of the quality initiative programs implemented are; Excellence self-assessment (5%) and Benchmarking (5.7%). The maximum number of hours spent is 56 hours in a week on quality matters, and a minimum of 2. The mode is 6 hours. The number of suggestions made by employees towards improvement was found to be 50 per annum, and a mode of 2. The number of suggestions made reflect low level of participation of employees and empowerment in quality initiatives. Empowerment of employees is important to successful implementation of quality programs. The empowerment is also done through training.

Tabulated also in Appendix IV, is the average numbers of hours each of the SME studied spend on quality. The study found that majority (56%) of the firms studied spent at least 48 hours per year in training employees in quality programs. The mode of 20 hours training of employees per year is suggestive of low level of empowerment of employees in quality. It indicates that SMEs put little attention to empowering of employees in quality programs.

Many quality experts have provided their own approaches to quality initiative selection. Some of them recommend a broad framework for business excellence. The decision path of businesses process improvement methodologies by Bendell (2005) starts from a company's problem and links it to quality initiative as main benefit. That is, if the main issue for a company is market pressure, it should adopt ISO 9001. If its problem is chronic waste, the Lean production would be more suitable. If the problem is a variation problem, then it should implement Sigma Six. When it is a people issue, investment in people will fix it.

The TQM Excellence model by Ho (1999a) suggests a sequence of adopting quality starting from sifting, sorting, seeping, standardize and sustain (5S), business process reengineering (BPR), quality control circle (QCC), international organization for standardization (ISO), total productive maintenance (TPM). The results of this study, going by Bendell’s (2005) concept, indicates that manufacturing SMEs have adopted BPR, Lean production and ISO 9001 in that order .

The plausible explanation is that SMEs studied have largely adopted quality initiatives programs due to the need for a performance improvement philosophy that aims to achieve quantum improvements by primarily rethinking and redesigning the way that business processes are carried out. This is a dramatic turn round rather than a gradual process that focuses on the structure, systems and process of how things are done in the organization. Secondly, the other explanation for adopting Lean production is to reduce waste in the value chain .Finally, market pressure would explain adoption of IS0 9001. The study concludes that SMEs in Kenya have adopted to quality mainly for the need for change, to reduce waste and as a result of market pressure.

This study further confirms the findings of previous researchers that SMEs adopt quality initiatives not from internal initiatives but mainly from external market pressures. Furthermore, SMEs often implement quality practices in response to external pressures rather than as the result of internally generated initiatives to improve quality or reduce costs (Sun & Cheng 2002). Shea and Gobeli (1995) looked at whether quality initiatives like TQM was a worthwhile investment and, based on interviews with ten SME owners, concluded that quality initiatives could be used to improve small business growth.

4.14 Distribution of Quality Initiatives Implemented Based on Sub-Sectors

Table 4.8 indicates the distribution of quality initiatives implemented by manufacturing SMEs in sub-sector form. Majority (22) of the manufacturing SMEs have adopted BPR as their preferred quality initiative. For breakthrough changes, Williams et al. (2002), Prajogo and Sohal (2001), and Hammer (2001) suggest Business Process Reengineering (BPR) to stimulate invention and force radical organizational change. Hammer & Champy (2001) define BPR as 'the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed.' Both incremental improvement and innovation are essential to achieve and maintain competitive advantage.

The agro-based sub sector has more (40) firms implementing quality initiatives. The reason for this might be the agro-based owners/managers have a rational view of adopting to ideas based on objective evaluation which provides a causal link between the adopted idea for example, any quality initiative that will ensure customer satisfaction and firm's growth performance as suggested by Sturdy (2004), Voss (1995, 2005), Tan & Platts (2003, 2004), Slack & Lewis (2002), Hill (1995), Platts & Gregory (1990), Slack, Chambers, Johnston, & Betts (2006) have developed a management and operational strategy theory that stipulates that a firms decision to adopt to a management initiative maybe as a result of realization of existence of a gap between market needs and operational performance. This initiative is only adopted where there's an existence of well defined rational and structured decision-making process.

Table 4.8 Distribution of Quality Initiatives Implemented by SMEs in Various Sub-Sectors.

	Nature of Business			
Quality Initiatives Implemented	Chemical & Mining	Agro-based	Engineering & Construction	**Total**
Benchmarking	1	4	0	5
ISO 9000:9001	0	16	0	16
Business Process Engineering	0	12	10	22
Lean production	20	0	0	20
Excellence Self assessment	5	0	0	5
Six sigma	0	5	5	10
TQM,QCC and suggestion system		3	7	10
Total	26	40	22	88

4.15 Level of Implementation of Quality Initiatives

Tabulated in Appendix V, indicates the level of implementation of the quality initiatives in SMEs studied. Ranking of the ten constructs is based on the mean values, 1-as the most important and 10-as the least important. For firms adopting quality, executive commitment is ranked highest and Benchmarking is ranked last. Overall, the SMEs level of quality initiatives implementation is below average (mean = 3.49). This indicates reluctance among SMEs to adopt quality programs. The overall level of quality initiative implementation only for those SMEs implementing quality has been analyzed into two: Quality Initiative Implementation and Relative Advancement Index.

The Advancement Level measured as Relative Advancement Index (RAI) to measure the level of advancement in adopting any quality initiative. The Relative Advancement Index (RAI) derived to summarize the advancement of each implementation construct was computed as:

$$\textbf{RAI} = \frac{\sum w}{AxN} \quad \textbf{..........................equation 1}$$

Where: w = weighting as assigned by each respondent in a range 1 to 7, where 1 implies 'have not begun implementation' and 7 implies 'highly advanced in implementation';

A = the highest weight (7); N= the total number in the sample = 88 (those implementing quality initiatives).

These results confirm findings of other researchers like Van der Wiele and Brown (1998). In examining quality adoption, research by Van der Wiele and Brown (1998) found that whilst many SMEs could be classified as adopting a minimalist approach to quality initiatives like TQM, simply to gain the certificate and little else, a small proportion had adopted a more enlightened approach (termed converts or committed) and others had also engaged in broader activities that might be termed quality compliant.

The experience of the converts and committed was that by involving employees and providing the appropriate training, that could in fact produce beneficial outcomes. Those having ISO 9001 certification, had helped define quality, which could be used to develop broader quality processes and systems. However, the predominant view of smaller enterprises was that they felt compelled to adopt quality initiatives and generally took a minimalist approach. The level of Advancement in quality initiatives (measured in RAI) is indicative of the minimalist approach. However, research to date has not linked these strategies to quality performance.

4.15.1 Quality Initiative Implementation Advancement

Quality Initiatives Index (QII) is for measuring the level of advancement in quality initiatives implementation .In order to assess the levels of quality initiative advancement, an average value for all the ten constructs was deemed to represent the levels of advancement of quality initiative. This approach of adopting the vector was used by Saraph, Benson and Schroeder (1989). Similarly, Woon (2000) used the same selective approach in measuring the quality initiative levels within the Singapore's productivity leaders.

The QII for the firms studied are tabulated in Table 4.9

a - The scores for each construct are on a scale of 1-7,

b - Ranking based on the mean values, 1 as most important factor/construct and 10 as the least.

c - Cronbach alpha used for determining the internal consistency analysis (values > 0.7 is acceptable).

d - Overall level of QI Implementation found by the vector of the averages for ten implementation constructs (1 to 10).

Table 4.9 Level of Quality Initiative Implementation

Implementation Construct **N=10**	∑Wi = the sum of the average of each construct. $\underline{\sum Wi}$			
	5 to 7	**4 to <5**	**3 to <4**	**0 to 3**
Executive Commitment	1.57	4.87	3.04	.52
Adopting the Philosophy	1.49	3.82	3.71	.96
Customer Focus	1.5	4.07	3.19	1.24
Supplier Focus	1.08	4.1	3.2	1.63
Benchmarking	1.2	4.55	3.04	1.22
Training	1.26	3.29	3.66	1.79
Open Organization	1.19	4.33	3.63	.84
Employee Empowerment	1.06	3.52	3.71	1.70
Zero Defects	1.25	3.14	3.74	1.87

Level of QI Implementation = $\frac{\sum Wi}{N}$ **………………………………equation 2**

Where: ∑Wi = the sum of the average of each construct N= the total number of the Implementation Constructs (N = 10). The results of the analysis are presented in table 4.9 and table 4.10. The level of quality initiative implementation in Kenya's SMEs is reflected by the overall indicator. The distribution of the mean score for this indicator and for all ten constructs is divided into four bands, high (6 to 7), medium (4 to < 5), average (3 to 4) and low (0 to < 3).

Table 4.10 Level of Quality Initiative Implementation in SMEs

Frequency of Organizations Implementing Quality Initiative	Average Score ∑QII (a)	RAI (b)	QI level
12	6.0 to 7.0	0.8 to 1.0	High
34	4.0 to < 5.0	0.6 to < 0.8	Medium
29	3.0 to < 4.0	0.4 to < 0.6	Average
13	0 to < 3.0	0.2 to < 0.4	Low
88	Total sample of 88 organizations		

4.15.2 Effectiveness of Quality Initiative Programs Implemented

To measure the effectiveness of the quality programs implemented, then Quality Initiatives Implementation Index (QII) was computed as follows:- Mathematically, an organizations QII is defined as:

$$\textbf{QII = 100 x} \quad \frac{[E\{n\} - Min\ \{n\}]}{[Max\ \{n\} - Min\ \{n\}]} \quad \textbf{………………..equation 3}$$

Where E {mean}, Min {1.0} and Max {7.0} denotes the expected, minimum and maximum range value of the variable, for example, the Executive Commitment Construct has the Ex.mean value of 4.50 which is the mean aggregated value of its three variables, the Min and Max Values are 1.0 and 7.0 respectively, therefore the QII for the Executive Commitment Construct can be computed as follows:

100 x [4.50 - 1.00] / [7.0-1.0] = 58.33% (indicates the performance index for measuring effectiveness of the Quality Initiatives, given 100% as the most effective). A similar approach of using the QII was used by Joseph and William*s* (2004) in his study of the Indian Manufacturing industries. The results of analysis for effectiveness are tabulated in table 4.11.

A mean score 4.50 is indicative of moderate advancement in implementing the Executive commitment construct, which is found to be 58.33% effective in performance. The second in line is Customer focus, (mean = 4.02) and 50.33% effective. The rest of the constructs of quality programs are below moderate (mean lies between 2.85 and 3.93) with an effective rate of below 50%. This means that though SMEs are implementing QI, they fall far below the average.

The firms committed to adopting quality are still at the executive commitment level and customer focus. The implementation of product quality in SMEs revolves around the role and responsibilities if the manager/owner. The success or otherwise of implementing quality initiatives like TQM is often down to the owner/manager of the business who constitutes the driving force behind adoption of quality (Van der Weile & Brown, 1998; Walley 2000).

The voice of the customer serves as a significant source of information for making improvements to a firm’s products and services (Summers, 2006). Consumers are increasingly demanding International Standards Organizations (ISO) Certification since they act as signals for quality, health and safety, and environment best practices (GoK, 2007).

Table 4.11 Performance Index for Quality Practices Implementation by Small and Medium Enterprises

Quality Practices Constructs	Small and Medium Enterprises Implementing Quality Initiatives		
	MEAN	QII	RANK
Executive Commitment	4.50	58.33	1
Adopting the Philosophy	3.77	46.17	4
Customer Focus	4.02	50.33	2
Suppliers Focus	3.37	39.50	6
Benchmarking	2.60	26.67	10
Training	2.85	30.83	9
Open Organization	3.57	42.83	5
Employee Empowerment	3.05	34.17	8
Zero Defects	3.93	48.83	3
Measurement	3.25	37.5	7
OVERALL	3.49	41.15	

4.16 Results of Observation

The results of the observation are tabulated in table 4.12 and appendix X. The results were analyzed based on relative frequency. The results were interpreted along the majority frequency. The results indicated majority (56%) of the firms studied had a quality training program for employees, approximately 85% of the firm's employees practice teamwork, 49% SMEs had provided safety wear for its employees and 22% of the SMEs had a suggestion box.

Majority (61%) of the SMEs carry out a quality inspection exercise and 53% of the SMEs had adopted a Kenya Bureau of Standards mark of quality. Few (28%) of the SMEs did not have a defined quality program in place. In addition, majority (54%) of the SMEs had installed new machinery so as to improve productivity and not quality. The technology is modern (78%) but few (44%) SMEs had a maintenance schedule despite having 53% mechanical problems. A high percentage of mechanical problems/breakdowns indicated a high percent (56%) of rework. This was a clear demonstration by entrepreneurs that they disregard technology as an important item in adopting quality.

The observation results also indicated that 50% of the SMEs had a product label indicating ingredients and few (46%) SMEs had a customer service line. Surprisingly few (38%) of the entrepreneurs are ever present in their firms during working days. The observation results may suggest that while SMEs studied may be implementing quality programs, much of that implementation remains paper work and executive commitment to quality programs with very little pragmatic results. Frequent training of employees on quality issues and the suggestion box would serve as conduit for empowering employees to improve on the quality of a firm's products and processes. Additionally, an entrepreneur who is present most of the time within the business premises serves as an impetus for quality adoption.

Table 4.12 Results of Observation

Observed item	Manufacturing Sub - Sectors						Overall Total	
	Chemical and Engineering		Agro-based		Construction and Mining			
	Yes	No	Yes	No	Yes	No	Yes	No
Is there a training room?	12	18	39	19	15	20	66	57
Is rework going on?	22	8	41	17	9	26	72	51
Is there teamwork?	25	5	55	3	24	11	104	19
Is there a suggestion box?	8	22	13	45	6	29	27	96
Is there new machinery installed?	18	12	21	37	28	7	67	56
Is the process automated?	10	20	36	22	12	23	58	65
Is there quality inspection?	15	15	46	12	14	21	75	48
Is Factory Act displayed?	6	24	17	41	22	13	45	78
Are employees wearing safety clothing?	19	11	34	24	7	28	60	63
Is the entrepreneur present?	13	17	20	38	14	21	47	76
Is there a quality program in place?	26	4	40	18	22	13	88	35
Is process flow displayed?	14	16	29	29	8	27	51	72
Is there a dedicated customer service line?	17	13	30	28	10	25	57	66
Is the technology modernized?	23	7	48	10	25	10	96	27
Is there a KEBS mark on their products?	18	12	34	24	13	22	65	58
Does the firm experience frequent machine breakdowns?	16	14	28	30	21	14	65	58
Is there a maintenance schedule displayed?	18	12	27	31	9	26	54	69
Does the company have advert banners for its products?	10	20	34	24	18	12	62	61
Is there a training program timetable for employees?	17	13	41	17	11	24	69	54

4.17 Hypothesis Testing

To test a hypothesis means to tell (on the basis of the data the researcher collected) whether or not the hypothesis seems to be valid (Kothari, 2004). The purpose of hypothesis testing is to determine the accuracy of the study hypotheses due to the fact that the researcher has collected a sample of data, not a census (Cooper & Schindler, 2003). In hypothesis testing the main question is: whether to accept the null hypothesis or not to accept the null hypothesis (Kothari, 2004).

Hypothesis 1*:* *There is no relationship between Entrepreneurial Management and adoption of quality in small and medium enterprise*

To test this hypothesis, which had the null hypothesis that there is no linear relationship between the two variables a linear regression F-test was carried out. Using the Analysis of Variance (ANOVA) to determine whether there is a regression relationship, between entrepreneurial management (EM) and adoption of quality in SMEs. Table 4.13 indicates the linear regression F-test results and with F= 5.037, and 121 degrees of freedom, and the critical values for F-test (1, 120, at 0.05 alpha is 1.2255) is less than the computed F-value, then we reject the null hypothesis and conclude that there is a linear relationship between the variable entrepreneurial management and adoption of quality in SMEs.

Table 4.13 F-statistic Linear Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.005	1	1.005	5.037	.027[a]
Residual	23.954	120	.200		
Total	24.959	121			

To test the significance of regression relationship between EM and adoption of quality in SMEs, the regression coefficients, the intercept, and the significance of all coefficients in the model were subjected to the t-test. The t-test, tests the null hypothesis that the coefficients is zero. Since it is based on a sample, the t-test is carried out to see if the regression relationship established was statistically significant (test whether the relationship established in the study, actually exists in the population or if it is the result due to sampling error) (Montogomery, Peck & Vining, 2001).

The null hypothesis state that, β (beta) = 0, and therefore, there is no relationship between EM and adoption of quality in SMEs. It was desired to test the null hypothesis that the slope β is equal to some specified value β0 (often taken to be 0, in which case the hypothesis is that x and y are unrelated. The t-test was done at n-2, degrees of freedom.

The formulae for t-test is $$t_{\text{score}} = \frac{\widehat{\beta} - \beta_0}{SE_{\widehat{\beta}}}$$ **equation………………………4**

To test this hypothesis**,** the beta coefficient was computed and t-test used to the relationship between entrepreneurial management and adoption of quality. It was tested at 5% significance level. The results are tabulated in Table 4.14. The results indicate that the t-test found that the beta coefficient was found statistically significant, because (t value, at 0.05 = 1.244, is less than critical t, = 1.645 at 005, df, 120). The null hypothesis was rejected and therefore the t-test indicated that beta co-efficient was different from zero, at 5% significance level.

The findings are in support of other research studies that indicate that entrepreneurial management has positive influence on the adoption of quality initiatives in SMEs. As many firms have discovered that the key to customer satisfaction and competitive success lies in emphasizing and achieving product and service quality as a strategic weapon in performing business (Pulat, 1994; Krasachol & Guh, 2001; Reed, Lemak, & Mero, 1999).

Table 4.14 Relationship Between Entrepreneurial Management and Adoption of Quality

	Un-standardized Coefficients		Standardized Coefficients	
Model	B	Std. Error	Beta	t
(Constant)	1.275	.041		31.097
Entrepreneurial management	.098	.064	.201	1.531

Beta is significant at 5% level (two tailed)

In addition, to measure the effect size of the constructs of entrepreneurial management on the adoption of quality ANOVA was done to determine the eta-squared. The eta-squared as used within the context of ANOVA describes the degree of relationship between a predictor or set of predictors and the dependent variable (Block & Aguinis, 2004). The statistical analysis used in this study was eta-squared. The Eta-squared (η^2) describes the ratio of variance explained in the dependent variable by a predictor while controlling for other predictors (Cohen, 1992).The interpretation of the eta squared is based on the rule of the thumb benchmarks as either small, (0.01), medium (0.06) or large (0.14) (Kittler, Menard & Phillips, 2007).

Table 4.15 tabulates the results of the effect size of the constructs on the adoption of quality as indicated by the ANOVA results. It is clear that that entrepreneurial orientation construct had the largest effect size (Eta squared = 0.211) and the time spent on quality improvement programs (eta squared = 0.144) are major factors of management that influence adoption of quality.

However, the style of management (eta squared = 0.028), type of corporate strategy pursued (eta squared = 0.027), whether the firm sought advice on quality programmes ,(Eta squared =0.00193) and the type of organization the firm sought advice on quality implementation(0.051) are within the range 0.01 and 0.06 benchmark (Kittler, Menard & Phillips, 2007), so they all have medium effect size on the quality adoption in SMEs.

The results confirm other studies that indicate that a firm that has developed an entrepreneurial orientation will incorporate strategic planning as a visionary tool. Strategic planning functions as a vehicle to integrate quality requirements with business activities of an organization so that total quality is reflected in its corporate vision, mission and strategy statements (Crosby, 1986; Deming, 1986; Juran, 1992). Close control by the entrepreneurs in these firms supports easy translation of entrepreneurial vision and action.

Table 4.15 Entrepreneurial Management Constructs Influencing Adoption of Quality

Entrepreneurial Management	Eta	Eta squared
The entrepreneurial orientation	0.459	0.2107
Type of corporate level strategy	0.166	0.0275
Style of management	0.169	0.0285
Time spent on quality improvement programmmes	0.379	0.1436
Whether a firm seeks advice on quality programmes	0.044	0.0019
Type of organization the firms seeks advice on quality programmes	0.226	0.0510

Hypothesis 2: *There is no relationship between Marketing Orientation and Adoption Adoption of Quality in Small and Medium Enterprises*

To test hypothesis, linear regression F-test which had the null hypothesis that there is no linear relationship between the two variables was carried out. Using the ANOVA to determine whether there is a regression relationship, between market orientation (MO) and adoption of quality in SMEs. Table 4.16 indicates the linear regression F-test results and with F= 1.56, and 121 degrees of freedom, and the critical values for F-test (1, 120,at 0.05 alpha is 1.2255) is less than the computed F-value , then we reject the null hypothesis and conclude that there is a linear relationship between the market orientation and adoption of quality in SMEs.

Table 4.16 F-statistic for Linear Regression Model

Model	Sum of Squares	df	Mean Square	F
Regression	.032	1	.032	1.56
Residual	24.927	120	.208	
Total	24.959	122		

To test the significance of regression relationship found, between MO and adoption of quality in SMEs, the regression coefficients, the intercept, and the significance of all coefficients in the model were subjected to the t-test. The t-test, tests the null hypothesis that the coefficients is zero. It was desired to test the null hypothesis that the slope β is equal to some specified value β0 (often taken to be 0, in which case the hypothesis is that x and y are unrelated. The t-test was done at n-2, degrees of freedom at 5% significance level.

The results are tabulated in Table 4.17. The null hypothesis was rejected , and study concluded that beta coefficient for market orientation was not equal to zero and therefore the relationship found between MO and adoption of quality was statistically significant at 5% level (t value ,at 0.05 = 1.609, is less than critical t, = 1.645 at 005, df, 120).

The results of the hypothesis indicate that there is a relationship between MO and adoption of quality initiatives in SMEs studied. This supports the definition of market orientation as advanced by Mandal (2000), who postulated that definition of market orientation shares some common dimensions of quality initiatives philosophies. However, there is paucity of empirical research examining the relationship between market orientation and adoption of quality.

The findings of this research further confirm what other researchers have established. Though most empirical evidence appears somewhat sketchy (Raju & Lonial, 2002), it has been established that both market orientation and quality implementation require close coordination among other departments in the organization. Value creation for customers also calls for close coordination between marketing and quality departments (Slater & Narver, 1995).

Table 4.17 Relationship Between Market Orientation and Adoption of Quality

Model	Un-standardized Coefficients B	Un-standardized Coefficients Std. Error	Standardized Coefficients Beta	df	t-value
(Constant)	1.286	.041		121	31.164
market orientation	.066	.041	536	121	1.609

In addition, to measure the effect size of the constructs of market orientation on the adoption of quality, ANOVA analysis was done to determine the eta-squared. The eta-squared as used within the context of ANOVA to describe the degree of relationship between a predictor or set of predictors and the dependent variable (Block & Aguinis, 2004). The statistical analysis used in this study was eta-squared. The Eta-squared (η^2) describes the ratio of variance explained in the dependent variable by a predictor while controlling for other predictors (Cohen, 1992).The interpretation of the eta squared is based on the rule of the thumb benchmarks as either small, (0.01), medium (0.06) or large (0.14) (Kittler, Menard & Phillips, 2007).

Table 4.18 tabulates the results of the effect size of the constructs on the adoption of quality as indicated by the ANOVA results. It is clear that a firm that has quality strategies reflect the realities of the market had the largest effect on adoption of quality (Eta squared = 0.16484) , followed by a firm that has a strong market function to new product development with moderate effects (eta squared = 0.12461) . The rest of the marketing attributes had low effect size (below 0.01) (Kittler, Menard & Phillips, 2007).

Studies indicate that there is a positive and direct strong relationship between market orientation and quality implementation in SMEs has been supported by findings and confirmed by empirical studies. Given the information oriented nature of quality practices and market oriented firm, quality implementation may offer a rich array of tools that organizations could be transformed in achieving marketing orientation. Day (1994) in his study confirms this relationship between market orientation and adoption of quality initiative like TQM, but warns that the weakness in adoption of quality to achieve market orientation is that the effectiveness of quality practices is internally contained and a repetitive process which may not go beyond the bounds of the organization.

Table 4.18 Market Orientation Constructs Influencing Adoption of Quality

Marketing Orientation Aspect	Eta	eta –squared
Organization understands needs of target customers	0.066	0.00436
Organization has a quality philosophy	0.009	0.00081
Quality strategies reflect the realities of the market	0.406	0.16484
Orientation to market responsiveness	0.007	0.00049
Firm has a well-designed information system	0.025	0.000625
Firm has a strong market function to new product development	0.353	0.12461
Firm has realistic quality adoption costs reflected in marketing costs	0.082	0.00672
Organization has system for collecting, analyzing and evaluating new product	0.028	0.000784
Firm undertakes sufficient market research on new product ideas	0.247	0.061
Firm's new product development are sufficient for market objectives	0.025	0.000625

Hypothesis 3: *There is no relationship between adoption of quality and capacity of employees in small and medium enterprises*

To test hypothesis, linear regression F-test which had the null hypothesis that there is no linear relationship between the two variables was carried out. Analysis of variance (ANOVA) was used to determine whether there is a regression relationship, between adoption of quality and capacity of employees in SMEs.

Table 4.19 indicates the linear regression F-test results and with F= 3.75, and 121 degrees of freedom, and the critical values for F-test (1, 121,at 0.05 alpha is 1.2255) is less than the computed F-value , then we reject the null hypothesis and conclude that there is a linear relationship between the adoption of quality and capacity of employees in SMEs. These findings confirm other studies that show that employee involvement in implementing quality initiatives is critical for its successful implementation.

Studies show that employees' involvement in quality initiatives like ISO 9000:2000 has increased (Cruickshank, 2000). The study further supports the arguments that in order to be fully successful and self sustaining, QI requires an extensive refashioning of 'softer' practices (Schonberger, 1994; Dale et al, 1994) whose elements consist of essentially dimensions of human resources management (Wilkinson *et al*, 1998; Dale *et al*, 1994).

Table 4.19 F-statistic for Linear Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.756	1	.756	3.750	.055[a]
Residual	24.203	120	.202		
Total	24.959	121			

To test the significance of regression relationship found, between adoption of quality and capacity of employees in SMEs, the regression coefficients, was subjected to the t-test .It was desired to test the null hypothesis that the slope β was equal to zero and the t-test was done at n-2, degrees of freedom at 5% significance level. The results are tabulated in table 4.20. The null hypothesis was rejected, and study concluded that beta coefficient for capacity of employee was not equal to zero and therefore the relationship found between capacity of employees and adoption of quality was statistically significant at 5% level (t value, at 0.05 = 1.439, is less than critical t, = 1.645 at 005, df, 120). The results of the hypothesis indicate that there is a relationship between adoption of quality initiatives and capacity of employees in SMEs studied.

The research findings further support the proponents of soft aspects of adoption of quality as essential to its success (Juran, 1992; Cruishhank, 2000). Research in basic quality initiative implementation argues that for successful quality implementation, soft aspects such as; teamwork, extensive training, high level of communication, employee involvement, empowerment and organizational culture must be observed. Employee empowerment is effective in SMEs where most frequently the customer's perception of quality stands or falls based on the action of the employee in one-on-one relationship with customer (Temtime & Solomon, 2002). Focusing on delivering customer value in implementing quality initiative like ISO or BPR, encourage entrepreneurs to make the best use of employees and resources in order to create products that customer values (Chapman & Al-Khawaldeh, 2002).

Table 4.20 Relationship Between Capacity of Employees and Adoption of Quality

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.278	.041		31.170	.000
Capacity of employees	.059	.041	.174	1.439	.050

In addition, to establish the effect size of various employee attributes is influenced by adoption of quality, eta squared was determined. The results are tabulated in Table 4.21. It is clear that spending more hours training employees on quality had the greatest effect as a result of adoption of quality adoption (Eta squared = 0.2209), The rest of the aspects of employee attributes had moderate effects resulting from quality adoption in SMEs, (0.01 < eta squared < 0.06). That is, training of staff through workshops (eta squared = 0.01144), training of staff on the importance of quality on firms growth (eta squared = 0.04), organizations training staff on quality (eta squared = 0.0552), and finally, employees being motivated to participate in quality programmes (eta squared = 0. 0380). The interpretation of the eta squared is based on the rule of the thumb benchmarks as either small, (0.01), medium (0.06) or large (0.14) (Kittler, Menard & Phillips, 2007).

Table 4.21 Capacity of Employees Constructs Influencing Adoption of Quality

Capacity of employee attribute	Eta	Eta squared
Organization trains staff on quality	0.2 35	0.0552
Training of staff in SME'S through workshops and seminars	0.107	0.0114
Training of staff on the importance of quality for firms' growth	0.200	0.04
Employees are motivated to participate in quality programs	0.195	0.0380
Hours spent in employee quality training	0.470	0.2209

Hypothesis 4: *There is no relationship between investment in technology and adoption of quality in small and medium enterprises*

To test hypothesis, linear regression F-test which had the null hypothesis that there is no linear relationship between investment in technology and adoption of quality in SMEs was carried out. Analysis of Variance (ANOVA) was used to determine whether there is a regression relationship, between investment in technology and adoption of quality in SMEs.

Table 4.22 indicates the linear regression F-test results and with F= 0.68, and 121 degrees of freedom, and the critical values for F-test (1, 121, at 0.05 alpha is 1.2255) is more than the computed F-value, then we accept the null hypothesis and conclude that there is no linear relationship between the investment in technology and adoption of quality in SMEs. The rejection of this hypothesis is a reverse of past studies by Philips and Ledgerwood (1994); Zairi, (1993); Scott-Morton, (1991); Ariss, Raghunathan and Kunnathar (2000) who had stated small firms could adopt technologies to gain significant advantages over their competitors.

Studies have shown that Kenya's small and medium enterprise manufacturers are applying relatively old technology compared to its neighbors. SMEs in Kenya are finding it difficult to access the local and export market due to poor production techniques (GoK, 2007). The manufacturing SMEs also suffer from poor power quality supply thus limiting them from investing in new technology for competitive excellence.

Table 4.22 F-statistic for Linear Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.014	1	.014	.068	.794[a]
Residual	24.945	120	.208		
Total	24.959	121			

To test the significance of the results found, the t-test was carried out on beta coefficients assumed to be zero. It was desired to test the null hypothesis that the slope β is equal to some specified value β_0 (often taken to be 0, in which case the hypothesis is that x and y are unrelated. The t-test was done at n-2, degrees of freedom at 5%

significance level. Table 4.23 indicates the results for t-value. The t-test for significance, indicate that the beta was not different from zero and therefore there is relationship between investment in technology and adoption of quality.

The null hypothesis was accepted because the computed t-value (1.9677) is outside the acceptance zone compared with the critical t –value (t, = 1.645 at 005, d.f, 121) at 5% significance level and therefore indicating no relationship at all. Smaller firms may lack sufficient financial and human resources required for the implementation of some technological processes, resulting in lower levels of adoption of more costly technologies (Cagliano & Spina, 2002).

The study results may be explained by the fact that even though technologies can improve quality throughout the entire manufacturing process, to maintain consistent quality, small firms need to upgrade their manufacturing technology (Ariss, Raghunathan & Kunnathar, 2000). In addition, manufacturing SMEs may not quickly adopt new technology despite consulting a quality inspection firm, because of largely having “traditional” owners or managers (Schroeder, Gopinath & Congden, 1989), who exhibit a fear of technology, which may cause them to create a barrier to the adoption of advanced manufacturing technology.

Table 4.23 Relationship Between Investment in Technology and Adoption of Quality

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.287	.041		31.169	.000
Investment in technology	.061	.031	.524	1.9677	.794

In addition, to establish the effect size of investment in technology attributes influences by adoption of quality, eta squared was determined. The results are tabulated in Table 4.24 below. It is clear that involvement of quality experts like Kenya Bureau of Standards in quality implementation , in new product and new processes has a moderate effect on adoption of quality in SMEs (eta squared = 0.065) . The rest of the technology constructs were found to have low effects on adoption of quality (eta squared < 0.06) (Kittler, Menard & Phillips, 2007).

Table 4.24 Investment in Technology Constructs Influencing Adoption of Quality

Investment in Technology Attribute	Eta	Eta squared
Technology has influenced quality	0.132	0.0174
Firm has sought advice on new technology	0.044	0.00193
Type organization where advice is sought	0.226	0051
Investment in technology in the last three years	0.033	0.00108
Firm has a structured method of adopting new technology	0.044	0.00193
Firm involves KBS in new products and processes	0.255	0.065

Hypothesis 5: *There is no relationship between adoption of quality and growth in small and medium enterprises*

To establish the strength and the direction of the relationship between adoption of quality programs and growth in firms studied, rankings were made of the various aspects of growth based on whether a firm had adopted any quality initiatives as indicated in table 4.25. The study then utilized the Spearman's rho coefficient to indicate the strength and direction of the relationship between adoption of quality and growth in SMEs. Spearman's Rho coefficient (*p)* is used with categorical data where both variables are rank- ordered (ordinal) (Mugenda, 2008). Rho correlates ranks between two ordered variables (Cooper & Schindler, 2003) as indicated in Table 4.25.

Data and preliminary calculations obtained from table 4.25 are substituted into Spearman's rho formula below;-

$$r_S = 1 - \frac{6\sum d^2}{n(n^2-1)} \text{……………..…..} \textbf{equation 5}$$

Where:

r_S is the rank correlation coefficient

n is the number of subjects being ranked

$$r_S = 1 - \frac{6(74.5)}{9(9^2-1)} = 0.379$$

The study established that there exists a moderately positive correlation (r = + 0 .379) between the quality programs and growth of firms studied. Therefore, the null hypothesis was rejected and study confirmed that there is a relationship between growth and adoption of quality initiatives in SMEs.

In addition, to estimate the explained variation, a coefficient of determination (r^2) explains the extent to which implementing quality initiatives in SMEs influence growth in which is, in this case ($r^2 = .144$) was computed . The explanations are that variations in various aspects of a firm's growth can be explained by the implementation of quality programs by 14.4 %, while random or other factors explain other variations in growth aspects accounting for 85.6%. Research shows that most SMEs loose between 5%-15% of sales revenue as a result of the lack of attention to quality (McMahon, 2001).This suggests that formal quality management systems are important tools contributing to the growth and development of SMEs.

To test the significance of the relationship between growth and adoption of quality programmes in SMEs, t-test was carried out, at 5% level. The test of the null hypothesis that r is no different from zero and that the relationship between adoption of quality is due to chance ($r_s = 0$). The formula used for the determination of t –test was:

$$t = r_s \sqrt{\frac{n-2}{1 - r_s^2}}$$ ……………**equation 6**

$$= 0.379 \sqrt{\frac{7}{1 - 0.144}} = 1.084$$

$= 1.08$ (2 decimal places)

The computed t = 1.08 was compared with the critical t-test, at 0.05 alpha, d.f = n-2 = 1.645). The null hypothesis was rejected which supposed not relationship, because the computed t-value (1.08) is within the acceptance zone compared with the critical t – value (t, = 1.645 at d.f, 121) at 5% significance level and therefore indicating a relationship between adoption of quality and growth is statistically significant (it exists in the population and therefore did not happen by chance) .

The results findings support the hypothesis that indicates that there is a positive relationship between adoption of quality and growth in the firms studied. The findings empirically support the notion that SMEs with a higher quality commitment for example ISO 9000, do obtain increased results. These results confirm studies done by previous researchers in this area such as (Douglas & Judge, 2001). Kaynak (2003) also reports a similar correlation between quality initiatives implementation and the perceptual measures of growth. Also Samson and Terziovski (1999) and Dow, Samson and Ford (1999) conducted research in Australia and New Zealand and found a significant relationship between quality management practices and organizational growth performance.

In the case of SMEs the evidence, however, appears to be equivocal. Some quality advocates argue that, due to resource problems (mainly financial and human resources) quality cannot produce consistent growth for SMEs (Schmidt & Finnigan, 1992; Powell, 1995; Strubering & Klaus, 1997). Another group of researchers, however, found some significant performance results of quality practices in SMEs (Ahire & Golhar, 1996; Hendricks & Singhal, 2001).

In comparing larger firms with smaller firms, Hendricks and Singhal (2001) argue that smaller firms tend to benefit more from quality practices as compared to larger firms. This argument contradicts with some of the earlier arguments on the role of quality in SMEs (that quality initiatives are less beneficial to smaller firms).

Table 4.25 Ranking of Levels of Growth Based on Whether a Firm is Implementing Quality

GROWTH /DECLINE SINCE 2003	QI- Geometric Mean Growth		NON-QI Geometric Mean Growth		Rank Differences	Squared Differences
	Mean	Rank (a)	Mean	Rank (b)	(a-b)	$(a-b)^2$
Turnover	2.5	5	2.45	7	-2	4
Assets Growth	3.8	4	3.10	5	-1	1
Size of Permanent Labor Force	3.90	3	4.10	2	1	1
Product Diversification	6.3	1	2.5	6	-5	25
Production Throughput	2.46	6	3.15	4	2	4
Market Size	4.50	2	4.57	1	1	1
Change in Skills Ratio of Employees	2.0	7.5	1.15	8	-0.5	0.25
Customer Satisfaction Index	1.80	9	3.3	3	6	36
Zero Defects Level	2.0	7.5	1.1	9	-1.5	2.25
$\sum d^2$						74.5

Hypothesis 6: *The entrepreneurial management, market orientation, capacity of employees and investment in technology together do not influence the adoption of quality*

To test this hypothesis, multiple linear regressions of variables were carried out. Table 4.26 is a summary of model and indicate the Adjusted R squared used as test for model fitness. The F -test was carried out to test the significance of the regression model in predicting the dependent variable (adoption of quality).

From the results, it is clear that the four independent variables moderately predict the adoption of quality in SMEs (adjusted R squared = 0.245). That means the model explains 24.5 % the variance in adoption of quality in SMEs. To test the significance of regression model (adjusted R) the null hypothesis stated that, R = 0, that is, it was not different from zero and the relationship found may have been due to chance. R varies from 0-1, and the closer it is to 1.0, the better the relationship between Xs and Y, in this case predictor variables and response variable.

Table 4.26 Multiple Correlation Coefficient Between Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.519[a]	.269	.245	.86912249

a. Predictors: (Constant), investment in technology, capacity of employees, market orientation, Entrepreneurial management

Table 4.27 below indicates the F-test results for the regression model. The null hypothesis was rejected because the linear regression F-test results, (F= 10.128, and 118 d.f) compared to the critical values of F-test (4, 118 ,at 0.05 alpha is 1.2455), indicates that the critical F value is less than the computed F-value. Therefore the null hypothesis was rejected and concluded that, the regression model linearly explains the adoption of quality in SMEs.

Table 4.27 F-test for Multiple Regression Model

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	32.866	4	8.216	10.877	.000[a]
Residual	89.134	118	.755		
Total	122.000	122			

Table 4.28 below indicates the coefficients of the model as generated from the regression analysis. The beta coefficients indicate the relative importance of each independent variable in influencing the dependent variable. From the proposed model, it's clear that adoption of quality in SMEs largely depends on the Entrepreneurial orientation (Beta = .520) is the most important in influencing adoption of quality in SMEs. However, capacity of employees was found to have the weakest influence on adoption of quality in SMEs and that relationship though positive (near zero) is insignificant (beta= 0.043).

Table 4.28 Regression Analysis Between Independent and Dependent Factors

	Un-standardized Coefficients		
Model	B	Std. Error	t
(Constant)	.001	.078	.0128
Capacity of Employees	.043	.079	.544
Entrepreneurial Management	.520	.079	6.582
Market Orientation	.113	.079	1.430
Investment in Technology	.049	.082	.597

The beta coefficient is the predictive power of the assumed model variable relationships.

Re-modeling the proposed framework will look like the following:

$Y= 0.001 + .520\ X_1 + 0.043\ X_2 + .049\ X_3 + 0.113\ X_4 + \acute{\varepsilon}$

Where:

Y = Adoption of quality

0.001 = Constant

X_1 = Entrepreneurial Management

X_2 = Capacity of employees

X_3 =Investment in technology

X_4 = Market Orientation.

$\acute{\varepsilon}$ = Random factors

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study sought to establish whether quality adoption strategy among SMEs in Kenya is a growth determinant. The starting point was that quality is an important growth strategy for manufacturing SMEs (Chen, 1999). The study examined theoretical and empirically how various variables are considered when adopting quality by manufacturing SMEs. In assessing quality adoption, the study focused on how select factors (entrepreneurial management, market orientation, capacity of employees, and investment in technology relate to adoption of quality among the studied firms. Additionally, the study advanced the argument that quality adoption relate to the level of growth adopting firms experience over time. This chapter captures the summary of findings, from which conclusions were drawn and recommendations made.

5.2 Summary of Findings

The response rate by the respondents was 100% that is all the 123 manufacturing SMEs issued with the data collection tools respondent positively. The response rate is quite reasonable compared with other studies in the field of quality management systems (Dissanayaka, Kumaraswamy, Karim & Marosszeky, 2001). Out of these 123 firms studied, majority (63%) was medium enterprises and 37% were small enterprises. The definition of SMEs in terms of employees size is 11- 50 for Small enterprises and 51-100 for Medium enterprises the issue of size of an enterprise has been found to be relevant factor in determining the success of quality initiatives. Ghabadian and Gallear (1997) have looked at features of quality management and differences between large and small enterprises highlighting where small enterprises had advantages and disadvantages.

The respondents had been categorized into 3 manufacturing sub-sectors, that is, chemical and mining (30), agro-based (58) and engineering and construction (35). The distribution of employees among the sub-sectors was found to as follows; 31 (53%) of the firms in the agro-based sector were classified as small enterprises and 27 firms were classified as medium enterprises. In the chemical and mining sub-sector, 8 (27%) were small Enterprises, while 22 (73%) were medium enterprises. In the engineering and construction sub sector, 14 (40%) were classified as small enterprises, 21 (60%) were medium enterprises. According to sectors the study had response rate distributed as follows; 66 (53.66%), were liability companies, partnerships and cooperatives 24 (19.51%) respectively and 9 (7.32%).

The study established that out of 123 firms studied, 72% (88) had either started adoption of quality programs or were at advanced stages of adopting quality. This would seem relatively high since North et al. (1998) have found that many SMEs tend to adopt and practice quality in an informal way. This can be attributed to their growth culture propensity which was quantified at 36%. More (16/45) of agro-based SMEs had adopted to the entrepreneurial culture. The responsibility for adoption of quality lies with the entrepreneurs as the policy makers. For risk taking orientation like adoption of quality initiatives, characterizes the propensity of a firm to engage large amount of resources into projects which have high uncertain return.

The study also established that, majority (47%) of the quality initiative deploying SMEs had up to 2-5 years since commencement of their quality program, 16% had more than 6 years but less than 10 years, while only one (1%) organizations had the experience of above 16 years and only 4 (5 per cent) had between 11-15 years of quality initiative implementation. Small and medium enterprises with least (1 year) experience in quality implementation accounted for 31%. The results are indicative of the reluctance of SME's to adopt quality initiatives. The length of time using the quality initiatives significantly enhances the relationship between quality and growth. Studies indicate that there is significant relationship between the length of adoption of quality initiatives and the level of quality of management practices as reported by Powell (1995).

The length of quality adoption is also significantly correlated to quality performance (e.g. productivity) which has a similar scope with quality performance. Similarly, the study by Oakland (2005) suggests that the success derived from quality initiatives implementation is significantly associated with the time since adoption.

The research also indicated that more than 50% of the respondents employees agree that adopting quality programs reduce products service non-conformities, increase productivity, enhance efficiency, provide practical formalized improvement, foundation of process automation , enhance inventory management, improve competitiveness, and does not interrupt process management operations. Studies have shown that an employee is more willing to support quality initiatives of their company if the organization communicates a commitment to ethical conduct.

The attitudes towards quality programs will largely influence its success (Ferrell, Ferrell & Fraedrich, 2004). Less than 25% of the respondents' employees were negative on adoption of quality because they believed quality implementation does not articulate the critical business needs and improvement. Whereas quality adoption may be a management or entrepreneurial issue, employee's involvement and attitudes count because employees are actually the implementers of any quality programs. The 50% or higher in positive response among the employees surveyed indicates that there is general high awareness for the need to implement quality among the firms studied.

Additionally, manufacturing SMEs that had adopted quality programs had different types of quality programs. It was clear that majority 22 (25%) of the SMEs had implemented business process reengineering (BPR), which focuses on critical business processes and customer need, and Lean Production (23%). The least popular of the quality programs is Excellence self- assessment (6%) and benchmarking (6%). A moderate number 16 (18%) are adopting quality towards ISO 9001. The plausible explanation is that SMEs studied have largely adopted quality initiatives programs due to the need for a performance improvement philosophy that aims to achieve quantum improvements by primarily rethinking and redesigning the way that business processes are carried out.

The agro-based sub sector has more 40 (45 %) firms implementing quality initiatives, followed by the chemical and mining, had 26 firms (30%) and finally engineering and construction with 22 firms (25%). The reason for this might be the agro-based owners/managers have a rational view of adopting to ideas based on objective evaluation which provides a causal link between the adopted idea for example, any quality initiative that will ensure customer satisfaction and firm’s growth performance as suggested by Sturdy (2004).

Additionally, firms’ studied adopted quality programs for different reasons. Among the top reason given by majority respondents firms was to improve productivity 23 (26%), followed by ‘to improve products /service (16), to enhance organization’s competitiveness (17) and equally ‘for costs reduction (17). Among the least of the reasons given by the respondent firms for adopting quality was ‘improve process or working system’ (7).

This management initiative is only adopted where there’s an existence of well defined rational and structured decision-making process (Voss 1995, 2005; Tan & Platts 2003, 2004; Slack & Lewis 2002; Platts & Gregory 1990; Slack et al., 2006). Another possible reasons, agro – based entrepreneurs have adopted to Javanovic model (1992) which introduced managerial capability and risk elements which Lumpkin and Dess (1996, 2001) identified as important elements in entrepreneurial management.

The time spent on quality was found to be 56 hours per week as maximum. However, the mode of hours spent on quality per week was 6 hours a week (40 hour week). Respondent employees made 50 maximum suggestions on quality per year and mode of 4 per employee. The minimal mode hours and the few suggestions suggest of less empowered employee that is likely to hamper effectiveness in quality adoption by candidate firms. Training hours for employees were also found to be dismally few (mode = 20 hours per year).

The SMEs level of quality initiatives implementation is below average (mean = 3.49). This indicates reluctance among SMEs to adopt quality programs. These results confirm findings of other researchers like Van der and Brown (1998). In examining quality adoption, research by Van der Wiele and Brown (1998) found that whilst many SMEs could be classified as adopting a minimalist approach to quality initiatives like TQM, simply to gain the certificate and little else, a small proportion had adopted a more enlightened approach (termed converts or committed) and others had also engaged in broader activities that might be termed quality compliant.

The levels of advancement in adopting quality were classified as, high, medium, average or low. The score was based on Relative Advancement Index (RAI) and the level of commitment in adopting quality measured in form of Quality Program Index (QPI). Those that registered high level of QP implementation accounted for only 13.6% (12), Medium, 38.6% (34), Average (32.95%) and low level (14.85%).

Further analysis indicate that most implemented quality programs among the firms studied was because of executive commitment (mean = 4.5 and QPI = 58.3%), the least being Benchmarking (mean = 2.60, QPI = 26.67). The entrepreneur/manager influences work attitudes through the development and communication of a clear strategy that identifies the nature and direction of the organization as including quality performance, thus, encouraging goal congruency (Douglas & Judge, 2001). The ten constructs of quality adoption was a modification of the Powell instrument (1995).

Majority (90%) of the firms' studied upon physical observation were not having any of the following; training room, suggestion box, team work, quality inspection , and the entrepreneur was rarely present in the business premises . The study established that though high percentage (71.5%) had taken a journey into quality adoption, lack of clear programs of implementing the programs as indicated by the observation results, mean that SMEs quality programs exist in paper.

5.3 Objectives Summary

Objective 1: To investigate whether adoption of quality in SMEs influences entrepreneurial management.

Aspects of entrepreneurial management had been influenced by adoption of quality programs. The entrepreneurial orientation (eta squared = 0.2104) and time spent on quality improvement programs (eta squared = 0.1436) were found to have relatively strong influence on the adoption of quality programs by SMEs studied, while benchmarked against, measures by Kittler, Mernard and Phillips, (2007).

To test the objective hypothesis**,** the beta coefficient was computed and t-test used to the relationship between entrepreneurial orientation and adoption of quality. It was tested at 5% significance level. The null hypothesis was rejected because the calculated t-test (1.531, with 121 d.f) was found to be smaller than the critical t-value (1.645, at 0.05) and therefore confirmed a relationship between entrepreneurial management and adoption of quality.

It is clear that quality has emerged as a strategic competitive tool for organizational success (Yong & Wilkson, 2002). In today's business environment, organizations cannot afford to ignore the strategic implications of quality for its competitive position. In the light of this, it is vital for SMEs to develop or adopt an effective Quality Management System (QMS) very often associated with quality initiatives such as ISO 9000 series (Rohitrana & Boon-Itt, 2001).

Furthermore, Crosby (1986) stresses top management commitment as the essential element for safeguarding quality initiative implementation. In order to communicate quality strategy across the organization, top management should create an organizational environment that focuses on continuous improvement. Their commitment promotes the creation of clear and visible quality values, along with a management system to guide all activities of the company towards quality excellence (Rao, 2006).

The study concludes that the entrepreneur/manager influences work attitudes through the development and communication of a clear strategy that identifies the nature and direction of the organization as including quality performance, thus, encouraging goal congruency (Douglas & Judge, 2001). The active involvement, attention, and direction of the entrepreneur is crucial in assuring firm- wide quality adoption.

Objective 2: To investigate whether adoption of quality in SMEs influences market orientation.

The study established that marketing orientation (MO) and adoption of quality programs of the SMEs studied was found to be statistically significant (F test = 1.56, d.f 120,) at 5% level, and the critical F-value (1.2255), indicating a liner model relationship between MO and adoption of quality.

However, different aspects of MO had varying effects size on adoption of quality. For example, SMEs which have in place quality strategies that reflect the realities of the market (eta squared = 0.16484), and SMEs that have a strong market function to new product development (eta squared = 0.12461) all serve as influencers of firms to adopt quality programs. Quality is a customer determination based on the customer’s actual experience with the product or service, measured against his or her requirements stated or unstated, conscious or merely sensed, technically operational or entirely subjective and always representing a moving target in a competitive market (Cole, 2002). If the market demands quality, firms have to measure up to that.

As many firms have discovered that the key to customer satisfaction and competitive success lies in emphasizing and achieving product and service quality as a strategic weapon in performing business (Pulat, 1994; Krasachol & Guh, 2001; Reed, Lemak & Mero, 1999). Though most empirical evidence appears somewhat sketchy (Raju & Lonial, 2002), it has been established that both market orientation and quality implementation require close coordination among other departments in the organization.

This study established that majority (45%) of the SMEs that have adopted quality practices are found in the agro-based subsector. This might be because the agro-based sub sector has many (582) SMEs so competition is high so as to be able sustain a market share.

Objective 3: To determine whether SMEs in the manufacturing sector have the employee capacity to introduce and ensure adoption of quality.

The study established that adoption of quality has an influence on the capacity of employees. The null hypothesis was tested through F-test and results indicated that there is a relationship between adoption of quality and capacity of employees in SMEs.

However, the size of beta (0.043) was the least among the other variables , indicating that capacity of employees had the weakest influence, although the beta coefficient was found to be statistically significant (did not happen by chance).

The aspects of employee capacity that was found to have large effect size on the adoption of quality programs in the SMEs studied was, hours spent in employee quality training (eta squared = 0.2209), based on Kitter, Menard and Phillips (2007). This confirms a study conducted by Steel and Wester, (1992) on sub factors to consider when a firm is implementing TQM. According to Steel and Wester, (1992), education and training is another sub-factor that provides employees with the knowledge and skills to meet their overall work and personal objective. If carried out consistently and reinforced in the workplace by being real time updating, education and training can form a solid base for continuous improvement.

Studies show that employees' involvement in quality initiatives like ISO 9000:2000 has increased (Cruickshank, 2000). The study further supports the arguments that in order to be fully successful and self sustaining, adoption of quality initiatives like TQM requires an extensive refashioning of 'softer' practices (Schonberger, 1994; Dale et al., 1994) whose elements consist of essentially dimensions of human resources management (Dale et al., 1994).

The study therefore concludes that SMEs should continue enhancing an employee's capacity so as to be able to adopt and implement quality as a growth strategy.

Objective 4: To investigate whether adoption of quality technology influences investment in technology (plant).

The study established that there is no linear relationship between the investment in technology and adoption of quality in SMEs studied. This is because the computed F-value (F= 0.68, and 121 degrees of freedom), is less than the critical values for F-test (1, 121, at 0.05 alpha is 1.2255) thus accepting the null hypothesis. The only construct that had a moderate effect size on adoption of quality was the 'firm involve KBS in new product and processes '' (eta squared = 0.065). This result is a reverse of a study by Ghobadian and Gallear (1997) which indicated small business owners/ managers distrust consultants who could provide assistance.

Smaller firms may lack sufficient financial and human resources required for the implementation of some technological processes, resulting in lower levels of adoption of more costly technologies (Cagliano & Spina, 2001). Studies have shown that Kenya's small and medium enterprise manufacturers are applying relatively old technology compared to its neighbors. SMEs in Kenya are finding it difficult to access the local and export market due to poor production techniques (GoK, 2007). In terms of age, most of these equipments are relatively old and most of them were manufactured and acquired between 1980 and 2000. Over 90% of the machines are under-utilized due to high cost of transport; high cost and poor quality of power and insufficient domestic demand (KAM, 2006). Despite consulting a quality inspection firm, another possible reason why manufacturing SMEs are not quickly adopting new technology is having “traditional” owners or managers (Schroeder, Gopinath & Congden, 1989), who exhibit a fear of technology, which may cause them to create a barrier to the adoption of advanced manufacturing technology.

Objective 5: Role of quality in growth of SMEs in Kenya.

The study established the significance of adoption quality programs on growth of the firms studied. The relationship between adoption of quality and growth, was tested using the Rank correlation coefficient (Rho Coefficient, p). The study established that adoption of quality influence growth of the firms studied. The correlation is moderate (0.379) and positive. That means the influence of adoption of quality programs on growth of SME’s was found to be 14.4% (coefficient of determination, $r^2 = 0.144$).

By implication other factors called random or chance account for 85.6 % in determining growth of the firms studied. The computed $t = 1.08$ was compared with the critical t-test, at 0.05 alpha, d.f = n-2 = 1.645). This indicated the correlation coefficient was statistically significant. The findings support findings by Kaynak (2003) who reports a similar correlation between quality initiative implementation and the perceptual measures of growth. Garvin (1988) studied quality practices and growth performance in the room air conditioner industry, and Roth, DeMeyer and Amano (1989) compared the relationship of various quality practices to quality performance in the United States of America (USA), Europe and Japan. Roth and Miller (1989) found quality programs to be a strong predictor of manufacturing strength.

Objective 6: The entrepreneurial management, market orientation, capacity of employees and investment in technology together influence the adoption of quality

To establish the linear model between variables, multiples regression indicated that all the four variables had positive coefficients but each had different relative importance as indicated by their beta coefficients. The study established that entrepreneurial management was the most important (beta = 0.520). However, capacity of employees was found to have the weakest influence on adoption of quality in SMEs and that relationship though positive (near zero) is insignificant (beta= 0.043). These results concur with other studies by Van der Weile and Brown (1998) and Warnack (2003) that the successful implementation of quality revolves around the entrepreneur who is the driving force behind adoption of quality. Also it is indicative from the above results that, small and medium enterprises put only an average emphasis on the importance of employee empowerment and involvement in quality implementation. This is in line with a study conducted by Temtime and Solomon (2002) that indicated SMEs put an average emphasis on the importance of employee empowerment and involvement on matters pertaining to quality. The study established that the proposed variables explained 24.5% as a reason to adopt to quality while random or chance variables account for 75.5%

5.4 Conclusion

While there is no single type of strategy, which was associated with growth, the best performing SMEs in the study were those, which were the most active along a number of dimensions while being particularly active in managing their products and markets. In this respect, the study confirms with other research findings that the success of quality adoption appeared to rely more on executive commitment, open organization and employee empowerment rather than on benchmarks and process improvement.

This study confirms the direct relationship between quality practices and organizational growth. Chen (1999) while studying Taiwan manufacturing SMEs observed that SME operators ranked product quality the first competitive priority. Almost all-Taiwanese manufacturing SMEs attributes their firm's growth or success to product quality (Chen, 1999). The findings can help practitioners focus more on specific practices rather than focusing on all practices. For example, many SMEs feel forced to adopt ISO9000 standards but then do not move to adopt other quality management systems (Van der Wiele & Brown 1998). This will help practitioners to devote both time and resources appropriately to improve business processes in need of urgent re-modifications.

This study also confirmed that the rate of quality adoption amongst manufacturing SMEs in Kenya is low. This confirms Husband and Mandal (1999) study of manufacturing Australian SMEs, that SMEs have been very slow to implement formal quality models, and where they have, the outcomes are inconclusive. This might be as a result Kenya's manufacturing SMEs putting a below average emphasis on the need to develop quality sensitive organizational culture and philosophy. This is also confirmed by the fact the SMEs rarely consult professional firms when implementing formal quality initiatives despite dedicating some hours training their staff of on quality matters. Despite having a large number (88) of manufacturing SMEs adopting some quality practices, many simply jump on the bandwagon without fully understanding what quality means for them or its possible consequences.

The findings of this study differ from past research on the extent of adoption of quality-related practices by manufacturing SMEs. A high percentage (72%) of the manufacturing SMEs in Kenya had introduced a business improvement program- that is, BPR or ISO. This compares with relatively lower percentages reported by other studies - 17.5% of manufacturing SMEs (Lobo & Jones, 2002). One possible explanation for this divergence in results may be the high incidence of use of "informal" quality practices that were identified the research period.

Matching and alignment between mission and organizational focus and context is an important key concern in manufacturing and operations strategy theory (Hill 1995; Platts & Gregory 1990; Slack & Lewis 2002; Voss 1995, 2005). Also this study confirms the manufacturing and operations strategy theory, that the degree of fit between the chosen quality initiative and the company's focus and context (such as competitive priorities, capability, resource usage, etc.) has a significant impact on enterprise growth (Sousa & Voss 2001).

5.5 Recommendations

This study based on the findings recommends the following;-

1. Institutional managers for both local and foreign, non-governmental organizations (NGOs), funding agencies and the government should assist and train manufacturing SMEs to acquire appropriate technology. The government should waive tax on advanced manufacturing technology being imported by SMEs. The government can also assist the SMEs to pay training costs charged by expatriates. This will go a long way in assisting SMEs in initiating quality practices supported by technology.

2. The decision criteria for selecting quality approaches need to be identified, and a rational decision aid framework needs to be developed to assist entrepreneurs of small and medium enterprises when they want to adopt to various quality initiatives.

Management consultants who have the expertise in the area of quality management must be consulted for assistance. The implementation of quality management is said to be expensive so absolute care must be taken so as not to put firms into financial stress.

3. Organizations like Kenya Bureau of Standards (KEBS) that run quality inspection programs for manufacturing firms, should restructure their programs to include quality management practices and its implementation in SMEs. Or a consultative committee can be formed, chaired by the Managing Director of KEBS, to assist both the development, training and implementation of particular quality initiatives targeting manufacturing SMEs in Kenya. Kenya Bureau of Standards could assist SMEs to implement the proposed model of organization excellence framework proposed by United Kingdom Department of Trade and Industry (2004).

4. Non Governmental Organizations (NGOs) and funding agencies whose main objective is assisting and supporting SMEs by giving financial assistance must redirect their focus on helping these firms understand and implement quality management. This will help them meet customer demand thereby increasing their market base, which eventually goes to increase profit, customer satisfaction, market share and growth. Some of their programs must centre on quality management practices, which will enable SMEs to produce or manufacture quality products.

Government, businesses and institutions should embark on a quality revolution to create the awareness for all to know the importance of quality and quality management practices.

5. Manufacturing SMEs in Kenya must know themselves and what quality really means for them before they start the quality journey. They must create a culture that is conducive to and supportive of quality implementation. They must align quality implementation with their goals and competitive environment. Operators' observations and ideas for process improvement should be actively sought and rewarded. They should understand the necessary time and effort. Adoption and implementation of quality should be unique to each SME, it should be noted that there is no "one-size-fits-all". Quality activities should be integrated not fragmented. Adoption and implementation of quality is not a destination but a journey requiring a long-term unwavering commitment to the improvement of product, services and processes, a means to an end rather than end in itself.

5.6 Areas of Future Research

Although an association between quality initiatives and SME growth can clearly be established, the direction of this relationship and causation cannot be termed without further research. That is, is the use of quality initiatives driving the rate of SME growth, or conversely, are higher growth SMEs just more likely to adopt sophisticated management practices and techniques than lower growth SMEs? Even if the direction of the relationship could have been established with this data, causation would have been difficult to determine. This is a common limitation with exploratory studies such as this; however, further qualitative research could shed more light on the issue. Nevertheless, the study does show a positive relationship between quality initiatives and the rate of SME growth for Kenyan manufacturing SMEs, and this is a good starting point for further, in depth research.

The existing and new quality initiatives need more empirical research into their effectiveness and impact on manufacturing SMEs, particularly in the process improvement area, in which credibility from publications is needed to support the decision about adoption. The author believes that further research is needed to provide more empirical evidence about the effectiveness of various quality initiatives specifically targeting manufacturing SMEs in developing economies.

It is also proposed that a wider range of employees' affective reactions such as task characteristics, role ambiguity, role conflict, career satisfaction, organizational commitment and job involvement can be incorporated into a more comprehensive study, as this study chooses to cover only one type of employee attitude. It will be also valuable for future studies to adopt a longitudinal approach by examining the expected benefits derived from a well-implemented quality programme over an extended period.

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APPENDICES

APPENDIX I: Questionnaire

Section A

BACKGROUND INFORMATION

(i) Name of the Institute/Organization.

………………………………………………………………………………..

(ii) Physical Address.

…………………………………………………………………………………

(iii) Type of legal organization (tick)

a) Sole Trader (Individual Ownership) ☐

b) Partnership ☐

c) Cooperative ☐

d) Registered Company ☐

e) Any other Specify………………………………………………………….

If organization is a partnership or company, please state the number of shareholders or partners

☐ 2 - 5 ☐ 6 - 10

☐ 11 - 15 ☐ 16 – 20

(iv) (a) What are the activities of your enterprise

☐ Chemical & Mining ☐ Agro - based

☐ Engineering & Construction ☐ Others (Specify)

……………………………………………………………………………........

(v) For how many years has your Company been in operation?

2 – 5 ☐ 6 – 10 ☐ 11- 15 ☐ 16 - 20 ☐

(vi) Did you receive any technical advice or assistance at the beginning?

Yes ☐ No ☐

If yes, (a) Who provided the technical advice?

Government Organizations (e.g. KEBS) ☐ Private consultants ☐

NGOs ☐ Academic Institute (e.g. University) ☐

Others (Specify) ……………………………………………………………......

(vii) What is the current turnover size per annum?

a) 1 Million and below ☐

b) 2 – 3 Million ☐

c) 3 – 5 Million ☐

d) Above 5 Million ☐

Section B

Structured Questionnaire for the Entrepreneur/Manager

Introduction

To become a competitive organization, quality is a key operating dimension which is necessary to regain and maintain a competitive advantage in the global market. Hence, many organizations invest a considerable amount of capital and resources implementing new techniques to ensure growth.

The following questions relate to various activities undertaken by an enterprise. For each question tick Yes or No as your appropriate answer/response.

Entrepreneurial Management

1. In your opinion how would you describe the owner's / manager's of the company?

   a) Innovative ☐

   b) Proactive ☐

   c) Risk takers ☐

   d) Innovative, proactive and risk takers ☐

2. How would you describe the entrepreneurship strategy / corporate level strategies of the company?

   a) Strategy seen to be totally and explicitly devoted to innovation and opportunities at the expense of efficiency (Prospector strategy) ☐

   b) Strategy offers one aspect aimed at efficiency and on growth (Analyzer Strategy) ☐

   c) Strategy centered on the optimization of resources in a stable environment ☐

   d) Strategy that focuses on market reactions (Reactor Strategy) ☐

3. In your opinion , to what extent does the management style practiced by your organization contribute to successfully setting up or initiating quality programs for growth**?**

Moderate ☐ Less ☐ High ☐

4. In your opinion, how would you describe the entrepreneurial culture in your organization?

a) Growth culture (new ventures and new products) ☐

b) Efficiency centered culture (cost cutting in operations) ☐

c) Others ☐

Part 2: Continuous improvement and company's practice in quality improvement program

1. "Quality is an important issue in business and adoption of quality is necessary for business's health and will lead to business excellence and a world-class organization", do you agree?

   Yes ☐ No ☐

   (ii) If NO, why?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

2. a) Which quality improvement programs exist in your organization?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

   ……………………………………………………………………………………

   b) When did your organization start implementing quality improvements programs?

   1 year ago ☐ 2 - 5 year ☐ 6 – 10 years ☐ 11 – 15 years ☐

   >16 years ☐

2.1 Executive Commitment

3. Indicate the extent to which top management is committed to quality programs improvement.

Where 1- not began implementation, 5- highly advanced in implementation.

	1	2	3	4	5
Fully Committed					
Championing a Quality Program					
Communicating a Quality Commitment					

2.2 Adopting Quality Philosophy

4. Indicate the extent to which your firm has adopted the quality philosophy

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Quality Principles in either Mission and Vision Statements					
An overall Theme Based on Quality Programme					
Entered any Quality Award Competition					

2.3 **Customer Focus**

5. Indicate the extent your company has embraced customer focus

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Direct Personal Contacts with Customer					
Seeking Customer Inputs					
Customer's Involvement in Design					

2.4 **Suppliers Focus**

6. Indicate the extent your company has embraced supplier focus.

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Working Closely with Suppliers					
Suppliers Meet Strict Quality Specifications					
Suppliers to Adopt Quality Programs					

2.5 Benchmarking

7. Indicate the extent your company has embraced benchmarking.

Where 1 – not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
A competitive Benchmarking Program in Place					
Researching on the Best Practice of Other Organizations					
Visiting Other Organizations					

2.6 Training

8. Indicate the extent your company has embraced training of employees.

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Management in Quality Principles					
Employees in Quality Principles					
Employees in Problem Solving Skills					
Employees in Teamwork					

2.7 **Open Organization**

9. Indicate the extent your company has embraced open organization concept

   Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Open, Trusting Organization Culture					
Less Bureaucracy					
Use of Empowered Work Teams					

2.8 Employee Empowerment

10. Indicate the extent your company has empowered its employees for quality.

    Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
In Design and Planning					
Active Employee Suggestion System					
Interaction With Customers and Suppliers					

2.9 **Quality Initiatives / Zero Defects**

10. Indicate the extent your company has adopted quality or a zero defect program

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
An announced Goal of Zero Defects					
A program for Continuous Reduction					
A plan to Drastically Reduce Re-Work					

2.10 Measurement

Indicate the extent your company has adopted appropriate measurement system Programs.

Where 1- not began implementation, 5- highly advanced in implementation

	1	2	3	4	5
Of Quality Performance in all Areas					
Graphs and Charts to Measure And Monitor					
Appropriate Statistical Measures					
Employee Training in Statistical Methods					

11. Which quality programme has your organization used to drive improvement and what are the reasons for undertaking these improvement programmes?

Y	Quality Improvement programs	Start in DD/MM/YY	Stop in DD/MM/YY Frequency of implement	Slow down in /why	Future plan to implement in three year's time (Y/N)	Key reason to implement (use numbers below)
☐	TQM, QCC, Suggestion systems etc				Yes /No	
☐	ISO9001				Yes /No	
☐	Six Sigma/ process				Yes /No	
☐	Lean production				Yes /No	
☐	Business process Reengineering				Yes /No	
☐	Excellence Self-assessment (MBNQA, EFQM, Deming prize, KEBS Quality Awards)				Yes /No	
☐	Benchmarking				Yes /No	

1) Improve productivity	2) Improve product /service quality
3) Improve organization’s competitiveness	4) Improve process/ working system
5) Cost reduction	6) Improve financial performance
7) Enhance customer’s satisfaction	8) Create company’s reputation
9) Employee development	10) Reduce amount of resources
11) Increase quality awareness	12) Increase work participation
13) Increase export sales	14) Increase Kenya market sales
15) Fashionable programme (Company image)	16) Others………………………

3. (a)Has your organization adopted to quality?

Yes ☐ No ☐

(b) Which quality improvement tools (programmes) are you using now?

(i)………………………………………………………………………………

(ii)……………………………………………………………………………

(iii)……………………………………………………………………………

(iv)……………………………………………………………………………

5. How effective have these programmes been in achieving quality in your organization?

			Level of Effectiveness					
Quality improvement programmes	Estimate the cost of implementing (set up cost, Annual cost) (THB)	Estimate time for implementing (From start to be able to fully run) (Month)	No Practice	Not at all effective	Not Very Effective	Moderate	Effective	Very Effective
TQM (QCC, Suggestion system, 5S etc.			0	1	2	3	4	5
ISO9001:2000			0	1	2	3	4	5
Six Sigma/Process Excellence			0	1	2	3	4	5
Lean production			0	1	2	3	4	5
Business Process Reengineering			0	1	2	3	4	5
Excellence Self-assessment (MBNQA, EFQM, Deming prize, KEBS Quality Awards)			0	1	2	3	4	5
Benchmarking			0	1	2	3	4	5

6. (i) What are the major factors, which drive your organization to adopt to quality improvement programmes?

Product leadership ☐ Consumer reaction ☐

Competition ☐ Government regulations ☐

Others (Specify)

………………………………………………………………………………………..

(ii)Which factors hinder implementation of quality improvement programmes in your organization?

…………………………………………………………………………………………

…………………………………………………………………………………………

7. Do you have a structured methodology for selecting quality programme?

Yes ☐ No ☐

8. Does your firm involve KEBS or any other quality inspection institute when initiating quality oriented programmes?

Yes ☐ No ☐

9. Please indicate growth or decline experienced by your company in the last five years in terms of turnover, asset growth and number of employees and other criteria indicated in the table below after adopting quality, by taking year 2004 as starting point. Express the growth or decline or decline / improvement or deterioration as percentage of previous years. For example, if the company has experienced growth of 5% in year 2006 compared to year 2005, then write 105% in year 2006. If the decline was 10% for similar period, then write 90% in 2006.

Constructs considered	Annual Growth or Decline as % age						Overall Annual Growth
	2003=100%	2004	2005	2006	2007	2008	
Turnover							
Assets growth							
Size of Permanent Labour or Contract Work Force							
Product diversification							
Production throughput							
Market size							
Skills ratio of employees							
Customer satisfaction index							
Zero defects level							

Section C

Employee Questionnaire

Capacity of Employees.

1. Does the organization frequently train its staff about quality?

   Yes ☐ No ☐

2. Are the staff members allowed to attend seminars and conferences that relate to small and medium enterprise development?

   Yes ☐ No ☐

3. Do you think adoption of the quality is important for the company's growth and competitiveness?

   Yes ☐ No ☐

4. What makes you enjoy quality improvement activities?

   ………………………………………………………………………………………

   ………………………………………………………………………………………

5. Are employees motivated to participate in quality improvement activities?

   Yes ☐ No ☐

6. (a) Do the employees encounter difficulties in implementing any quality programmes?

   Yes ☐ No ☐

(b) If **YES** which ones?

Leadership ☐ Motivation ☐ Skills ☐

Equipment (Machinery & Operating Systems) ☐

7. How are those difficulties overcome?

Difficulties	Action taken to overcome them
……………………………	………………………………..
……………………………	…………………………………

8. How many hours per week do you spend in quality improvement programme?

……………………………………………………………………………

9. How many hours are employees trained on quality per month?

……………………………………………………………………………………..

10. What are your opinions towards quality? Please tick below if it is true to you.

No	Employee's Attitude on Adoption of Quality	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	Reduce product/service nonconformities or defects	1	2	3	4	5
2.	Increase productivity	1	2	3	4	5
3.	Reduce amount of resource usage (time /people/material etc)	1	2	3	4	5
4.	Increase dexterity or flexibility of workman	1	2	3	4	5
5.	Provide rewards and recognition	1	2	3	4	5
6.	Reduce process variability, create process stability, stable variation, process predictability and control	1	2	3	4	5
7.	Provide formalized, systematic and practical improvement methodology	1	2	3	4	5
8.	Provide a set of quality improvement tools	1	2	3	4	5
9.	Promote work and procedural standardization, and help understand core systems/processes and critical linkages.	1	2	3	4	5
10.	Foundation for process documentation, maintainable systems.	1	2	3	4	5
11.	Improve workflow, reduce NVA, and waste	1	2	3	4	5
12.	Create fast, flexible, and accessible information (transparent business processes)	1	2	3	4	5

13.	Enhance inventory management	1	2	3	4	5
14.	Monitoring process improvement progress	1	2	3	4	5
15.	Improve competitiveness, effectiveness and flexibility of a whole organization.	1	2	3	4	5
16.	Build a foundation for continuous improvement	1	2	3	4	5
17.	Create agile and learning organization	1	2	3	4	5
18.	Not interrupting operations or not require involvement from the whole organization	1	2	3	4	5
19.	Motivate intensive trainings	1	2	3	4	5
20.	Improve organizational culture, R&D	1	2	3	4	5
21.	Articulate the critical business needs for change and improvement (gain outsiders or expert review)	1	2	3	4	5
22.	Accelerate and maintain organizational improvement efforts, and energize employees	1	2	3	4	5
23.	Motivate quality awareness and increase total participation in improving organization	1	2	3	4	5
24.	Resource and time consuming (distract and increase your workload?)	1	2	3	4	5
25.	Top management commitment is important	1	2	3	4	5
26.	Effective communication and feedback are important	1	2	3	4	5
27.	Effective team working, people engagement and empowerment are important	1	2	3	4	5

Section D

Technology – Plant and Machinery

1. Does technology influence adoption of quality?

   Yes ☐ No ☐

2. (a) Has the firm sought any advice on which technology to acquire so as to improve its manufacturing process?

   Yes ☐ No ☐

   (b) If so, from whom did you seek the advice?

   Government Institute (e.g. KIRDI) ☐ Private Consultant ☐

   NGOs ☐ Academic Institute (e.g. ☐ Universities) ☐

   Others (Specify)

   ………………………………………………………………………………………

3. Has the company invested in any process improvement technology?

   Yes ☐ No, go to 5. ☐

4. If **Yes**, state: the nature of investment.

   ………………………………………………………………………………………

5. If **NO,** give a brief description.

……………………………………………………………………………………

……………………………………………………………………………………

12. Which quality programme has your organization used to drive improvement and what are the reasons for undertaking these improvement programmes?

Y	Quality Improvement programs	Start in DD/MM/YY	Stop in DD/MM/YY Frequency of implement	Slow down in /why	Future plan to implement in three year’s time (Y/N)	Key reason to implement (use numbers below)
☐	TQM, QCC, Suggestion				Yes /No	
☐	ISO9001				Yes /No	
☐	Six Sigma process				Yes /No	
☐	Lean production				Yes /No	
☐	Business process				Yes /No	
☐	Excellence Self-assessment (MBNQA,				Yes /No	
☐	Benchmarking				Yes /No	

1) Improve productivity	2) Improve product /service quality
3) Improve organization's competitiveness	4) Improve process/ working system
5) Cost reduction	6) Improve financial performance
7) Enhance customer's satisfaction	8) Create company's reputation
9) Employee development	10) Reduce amount of resources
11) Increase quality awareness	12) Increase work participation
13) Increase export sales	14) Increase Kenya market sales
15) Fashionable programme (Company image)	16) Others…………………………

Section E

Market Orientation

1. Is there a good understanding within the enterprise of the needs, wants and behavior patterns of targeted customers?

   Yes ☐ No ☐

   ii. If **No,** why?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

2. Does the enterprise have a quality philosophy?

   Yes ☐ No ☐

   ii. If **No,** why not?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

   Do the enterprise's quality strategies reflect the realities of the market place (Including the competitive situation)?

   Yes ☐ No ☐

ii. If **No,** why not?

………………………………………………………………………………………

………………………………………………………………………………………

3. Is the enterprise organized in such a way that it can be more responsible to marketing opportunities and threats than its less successful competitors?

Yes ☐ No ☐

4. (i). Does the enterprise have a well-designed marketing information system?

Yes ☐ No ☐

ii. If **No,** why?

………………………………………………………………………………………

………………………………………………………………………………………

5. Is there a strong link between the marketing function and adoption of quality when developing new products?

Yes ☐ No ☐

ii. If **No,** why?

………………………………………………………………………………………

………………………………………………………………………………………

6. Is adoption of quality incurring unrealistic marketing cost?

Yes ☐ No ☐

ii. If **Yes,** Why?

………………………………………………………………………………………

………………………………………………………………………………………

iii. If No, Why not?

………………………………………………………………………………………

………………………………………………………………………………………

7. How well organized is the procedure for collecting, generating and evaluating new product ideas?

………………………………………………………………………………………

………………………………………………………………………………………

8. Is sufficient market research and analysis conducted before proceeding with new product ideas?

Yes ☐ No ☐

ii. If No, why?

………………………………………………………………………………………

………………………………………………………………………………………

9. Is the rate of new product development and product modification sufficient to achieving marketing objectives?

Yes ☐ No ☐

ii. If No, why?

…………………………………………………………………………………………

……………………………………………………………………………………………..

APPENDIX II: Interview Schedule

Section A - ENTREPRENEUR

1. Do you consult Kenya Bureau of Standards on quality practices?

Yes ☐ No ☐

2. How often do you carry out a quality audit on your products?

…………………………………………………………………………………………

3. How many people are involved in the decision making process?

…………………………………………………………………………………………

…………………………………………………………………………………………

4. (i) Do you think that it is better to have a structured methodology for selection of your quality programmes?

Yes ☐ No ☐

(ii) I f YES why?

Reduce cost ☐ Reduce time ☐ Reduce complexity in decision –making ☐

Select the right programme for the needs ☐ Reaction to market condition ☐

Enhance confidence in implementation ☐ Others (Specify) ☐

………………………………………………………………………………………….

5. (i) What are the key factors to be considered in quality programmes selection?

…………………………………………………………………………………………

…………………………………………………………………………………………

(ii) Should the factors below be used for judgment and what else should be incorporated?

Company needs (Current practice Versus Target) ☐

Company's strategies ☐

Company capability ☐

Company's history in quality improvement programme ☐

Other constraints…………………………………………………………………..

6. What are the evaluation criteria to be considered in judging the effectiveness of quality programme? Please put your degree of agreement in number as follows (Not significant = 0 Yes with low =1, Medium =2, High =3

Evaluation Criteria	Sub-criteria		**NO**	**YES** 1	**2**	**3**
Shareholders	Increase stock market price					
Firm's performance	Financial performance	Changes in sales				
		Return on assets				
		Return on sales				
		Changes in total assets				
		Revenue/turnover growth				
Criteria	Cost reduction					
	Sub-criteria					
	Quality performance (Product nonconformities)					
	Operating performance (Productivity)					
Marketing	Market share/Brand recognition					
Customers	Customer's satisfaction					

Human resources	%change in number of employees				
	Amount of resource usage (e.g. space, capital,				
	Dexterity or Flexibility of workman (increase				
	Provide rewards and recognition scheme to				
	Employees' attitude to organization (Royalty, negative feedback)				
Process improvement	Process innovation breakthrough				
	Reduce process variation, create process stability, process predictability and control.				
	Provide a set of quality improvement tools				
	Promote work and procedural standardization, and help understand core systems/processes and				
	Foundation for process record for tractability, a				
	Improve workflow, reduce Non Value Added				
	Create fast, flexible, and accessible information				
	Enhance inventory management				
	Monitoring process improvement progress				
Organization	Fashionable technique, Company image				
	Improve competitiveness, effectiveness and				
	Build a foundation for continuous improvement				
	Create agile and learning organization				
	Not interrupting operations or not require involvement from the whole organization.				
	Motivate intensive trainings				

	Improve organizational culture, R& D				
	Articulate the critical business needs for change and improvement (Gain outsiders or expert				
	Accelerate and maintain organizational improvement efforts and energize employees.				
	Motivate quality awareness and increase total participations in improving organization.				
Resource consumption	Resource and time consuming				
	High investments				
Impact to organization from implementation	No instruction of which tools to be used when				
	Quality performance will not improve if the followed processes are not suitable for				
	Not cover all requirements for business improvement criteria (MBNQA)				
	Focus on whole organization rather than				
	Large transformation and cultural change				
	Focus too much on process not enough on practice or people				
	Too slow to face with rapid changing competitive requirement				
Critical success factor	Should be extended to company's supply chain				
	Top management commitment				
	Effective communication and feedback				

	Effective team working, people engagement and				
	Others (please specify)………………………………. …………………………………………………...... ... …………………………………………………. …				

Section B - EMPLOYEES

1. Why do you think adoption of quality is important for the company?

…………………………………………………………………………………………

…………………………………………………………………………………………

2. What makes you enjoy working in quality improvement programmes?

………………………………………………………………………………………

………………………………………………………………………………………

3. How many suggestions towards adoption of quality have you made in the last one year? Please indicate below.

0	1	2	3	4	5	6	7	8	9	10	11	12	>12

Section C

TECHNOLOGY – PLANT AND MACHINERY

1. How often do you invest in new technology?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

2. Do you involve Kenya Bureau of Standards when commissioning new production lines?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

3. Do you train your employees on trouble shooting during operation?

……………………………………………………………………………………

……………………………………………………………………………………

4. Do you experience frequent machinery breakdown?

   Yes ☐ No ☐

5. Do you have a maintenance schedule?

   Yes ☐ No ☐

Section D

MARKET ORIENTATION

1. (i) Does your firm conduct a market research?

   Yes ☐ No ☐

   (ii) If **YES**, which consultant(s) do you collaborate with?

   Government Institutions ☐ Private Consultant (e.g. Steadman) ☐

   Academic Institute ☐ NGOs ☐

   Others (Please specify) ☐

   ……………………………………………………………………………………

   (iii) If **NO**, why not?

   ……………………………………………………………………………………

   ……………………………………………………………………………………

2. Do you advertise new products?

   Yes ☐ No ☐

3. Do you involve employees when developing an advertising campaign?

   Yes ☐ No ☐

4. Do you carry out a survey about how products are performing in the market?

Yes ☐ No ☐

5. Do you have a customer service line?

Yes ☐ No ☐

6. How do you inform consumers that your are a quality conscious company?

News papers and Magazines ☐

Seminars ☐

Television and Radio Advertisements ☐

Business Exhibitions ☐

Bill boards ☐

Company Brochures ☐

APPENDIX III: Observation Schedule/Checklist

1. Does the organization have a training room?

   Yes ☐ No ☐

2. Is there rework taking place at the enterprise?

   Yes ☐ No ☐

3. Is there teamwork?

   Yes ☐ No ☐

4. Is there a suggestion box within the enterprise's compound?

   Yes ☐ No ☐

5. Is quality inspection part of the manufacturing process?

   Yes ☐ No ☐

6. Are there any new machinery?

   Yes ☐ No ☐

7. Is the process automated?

   Yes ☐ No ☐

8. Is the Factory Act displayed within the enterprise premises?

   Yes ☐ No ☐

9. Are the employees wearing safety clothing?

Yes ☐ No ☐

10. Is the entrepreneur always in the office?

Yes ☐ No ☐

11. Is there a quality initiative program being implemented within the organization?

Yes ☐ No ☐

12. Are the process ingredients formulation displayed within the production area?

Yes ☐ No ☐

13. Does the company have a customer service line?

Yes ☐ No ☐

APPENDIX IV: Quality Programs Being Implemented and Reasons by SMEs Studied

Quality Programs Being Implemented and Reasons by SMEs Studied

Quality programs being implemented	Improve productivity	Improve product /service quality	Improve organization's competitiveness	Improve process /working system	Cost reduction	Improve financial performance	Frequency	Relative frequency
TQM , QCC , Suggestion System , 5's etc	**4**	**0**	**0**	**0**	**6**	**0**	**10**	**11.4%**
ISO 9001	**6**	**5**	**2**	**0**	**3**	**0**	**16**	**18%**
Six Sigma /process Excellence	**0**	**0**	**4**	**3**	**3**	**0**	**10**	**11.4%**
Lean production	**11**	**3**	**1**	**1**	**3**	**1**	**20**	**22.7%**
Business process reengineering	**0**	**8**	**4**	**3**	**0**	**7**	**22**	**25%**

Excellence self-assessment (MBNQA, EFQM, Deming prize,KEBS Quality Awards.	2	0	**2**	0	1	0	5	**5.7%**
Benchmarking	**0**	**0**	**4**	**0**	**1**	**0**	**5**	**5.7%**
Time spent in QP per week (hours per week								**max = 56** **min= 2** **mode = 6**
Number of suggestions per year								**max = 50** **min= 2** **mode =4**
Training hours per year								**max = 48** **min= 14** **mode =20**

APPENDIX V: Quality Initiative Advancement Level measured as Relative Advanced Index (RAI)

Quality Initiative Advancement Level Measured as Relative Advanced Index (RAI)

Implementation construct	Weight (sum of values)	**RAI =** $\frac{\sum w}{AxN}$
Executive Commitment		
Fully committed	570	0.925
Championing a quality program	467	0.758
Communicating a quality commitment	487	0.790
Adopting the quality philosophy		
Quality principles in mission and vision statements	560	0.901
An overall theme based on a quality programme	583	0.946
Towards ISO 9001 certification	562	0.912
Customer Focus	540	0.876
Direct personal contacts with customers	459	0.745
Customer inputs to requirements	409	0.664

Seeking customers inputs	475	0.771
Customer's involvement in design	500	0.811
Supplier Focus		
Working more closely with suppliers	367	0.596
Suppliers meet stricter quality specifications	389	0.631
Suppliers to adopt Quality Programs	390	0.633
Benchmarking		
A competitive benchmarking program in place	534	0.867
Researching on the best practice of other organizations	471	0.764
Visiting other organizations	586	0.951
Training		
Management in quality principles	504	0.821
Employees in management principles	453	0.735
Employees in problem solving skills	476	0.772
Employees in team work	455	0.738
Open Organization		

Open, trusting organization culture	513	0.832
Less bureaucracy	406	0.659
Use of empowered work teams	329	0.534
Employee Empowerment		
In design and planning	389	0.631
Active employee suggestion system	447	0.725
Interaction with customers and suppliers	311	0.504
Quality initiatives/ Zero defects		
An announced goal of zero defects	412	0.668
A program for continuous reduction	473	0.767
A plan to drastically to reduce rework	459	0.745
Measurement		
Of quality performance in all areas	322	0.522
Graphs and charts to measure and monitor	345	0.560
Appropriate statistical measures	255	0.413
Employee training in statistical methods	543	0.881

APPENDIX VI: Attitude of Employees on Quality Improvement Programs

Attitude of Employees on Quality Improvement Programs

NO	Employees' Attitude on Quality Improvement Programs **N= 88 (those implementing QP)**	1 –Strongly Disagree	2- Disagree	3- Not Sure	4-Agree	5-Strongly Agree	**No**	**Yes**	**Conclusions**
1	Reduce product /service non-	0	13	15	56	4	28(32%)	60(68%)	>50% agree
2	Increase productivity	0	5	20	21	42	25(28%)	63(72%)	
3	Reduce the amount of resources usage (time/people/material	2	25	13	16	32	40(45%)	48(55%)	
4	Increase dexterity or flexibility of	8	19	15	18	38	32(36%)	56(64%)	
5	Provide rewards and recognition	12	17	40	12	7	69(78%)	19(22%)	< 25% disagree
6	Reduce process variability , create process stability , stable	0	24	15	22	27	39(44%)	49(56%)	>50% agree
7	Provide formalized , systematic and practical improvement	9	13	12	6	48	34(38%)	54(62%)	
8	Provide a set of quality	0	0	53	21	14	53(60%)	35(40%)	>25%<50%
9	Promote work and procedural standardization and help	15	18	20	9	26	54(61%)	34(39%)	not sure
10	Foundation for process documentation maintainable systems	2	4	6	55	21	12(14%)	76(86%)	>50% agree

11	Improve workflow reduce NVA	0	0	55	25	8	55(62.5%)	33(37.5%)	>25%<50%
12	Create fast flexible and accessible information transparent business processes)	12	25	34	7	20	61(69%)	27(31%)	not sure
13	Enhance inventory management	0	0	45	40	3	40(45%)	48(55%)	>50% agree
14	Monitoring processes improvement progress	17	29	36	5	1	82(93%)	6(7%)	< 25% disagree
15	Improve competitiveness, effectiveness and flexibility of a whole organization	0	0	0	60	28	0(0%	88(100%)	>50% agree
16	Build a foundation for continuous improvement	4	17	33	23	11	54(61%)	34(39%)	>25%<50% not sure
17	Create agile and learning organization	15	22	17	26	8	54(61%)	34(39%)	>25%<50% not sure
18	Not interrupting operations or not require involvement from the whole organization	11	10	12	33	22	33(37.5%)	55(62.5%)	*>50% agree*
19	Motivate intensive trainings	0	25	50	12	1	75(84%)	13(16%)	< 25% disagree

20	Improve organizational culture , R and D	8	10	42	20	8	50(62.5%)	38(37.5%)	>25%<50% not sure
21	Articulate the critical business needs for change and improvement (gain outsiders or experts view)	34	26	12	9	7	73(83%)	15(17%)	< 25% disagree
22	Accelerate and maintain organizational improvement efforts and energize employees	25	25	12	10	16	60(68%)	28(32%)	>25%<50% not sure
23	Motivate quality awareness and increase total participation in improving organization	3	6	7	45	27	16(18%)	72(82%)	>50% agree
24	Resources and time consuming (distract and increase workload)	14	13	12	19	30	39(44%)	49(56%)	>50% agree
25	Top management commitment and feedback are important	0	0	0	55	33	55(62.5%)	33(37.5%)	>25%<50% not sure
26	effective communication and feedback are important	0	0	0	0	88	0	88(100%)	>50% agree

27	Effective team working , people engagement and empowerment are important	0	6	5	4	73	11(12.5%)	77(87.5%)	>50% agree

APPENDIX VII: Organizations Responses and Ranking of the Advancement in Implementation of the Quality Features

Organizations Responses and Ranking of the Advancement in Implementation of the Quality Features (n=88 for QP organizations)

Implementation construct	**Relative frequency of respondents Advancement Scoring (%)**						**Relative Advancement Index (RAI)**
	5-7	4 to<5	4 to <3	1-3	Mean	Std. Deviation	
Executive Commitment							
Fully committed	13%	47.1%	34.2%	5.7%	4.81	1.405	0.925
Championing a quality program	13.8%	43.8%	34.2%	8.2%	4.70	1.573	0.758
Communicating a quality commitment	20.3%	55.2%	22.7%	1.8%	3.99	1.295	0.790
Adopting the quality philosophy							
Quality principles in mission and vision statements	14.6%	39.8%	34.9%	10.7%	4.06	1.599	0.901
An overall theme based on a quality programmes	15.4%	34.2%	38.2%	12.2%	3.45	1.665	0.946
Towards IS0 9001 award competition	14.6%	40.7%	38.3%	6%	3.80	1.499	0.912
Customer Focus							0.876

Direct personal contacts with customers	17.0%	47.2%	22%	13.8%	4.00	1.318	0.745
Customer inputs to requirements	17.8%	47.2%	26%	9%	5.07	1.301	0.664
Seeking customers inputs	14.6%	34.2%	36.6%	14.6%	3.71	1.708	0.771
Customer’s involvement in design	10.6%	34.2%	43.1%	12.2%	3.30	1.573	0.811
Supplier Focus							
Working more closely with suppliers	14.6%	46.4%	22.8%	16.3%	3.86	1.387	0.596
Suppliers meet stricter quality specifications	8.1%	28.5%	39%	24.4%	2.88	1.706	0.631
Suppliers to adopt Quality Programs	9.8%	48%	34.1%	8.1%	3.37	1.438	0.633
Benchmarking							
A competitive benchmarking program in place	14.6%	43.1%	26.8%	15.4%	2.67	1.761	0.867
Researching on the best practice of other organizations	9.8%	38.1%	42.3%	9.8%	2.41	1.552	0.764
Visiting other organizations	11.4%	55.2%	22%	11.4%	2.72	1.554	0.951
Training							
Management in quality	11.4%	26%	39%	23.6%	3.02	1.864	0.821

principles							
Employees in management principles	8.9%	29.3%	39.8%	22%	2.03	1.664	0.735
Employees in problem solving skills	17%	39%	35.8%	8.2%	2.97	1.647	0.772
Employees in team work	13%	37.4%	31.7%	17.9%	3.38	1.667	0.738
Open Organization							
Open, trusting organization culture	9.8%	37.4%	47.2%	5.6%	3.51	1.411	0.832
Less bureaucracy	17.9%	47.9%	25.2%	9%	3.72	1.601	0.659
Use of empowered work teams	8.1%	44.7%	36.6%	10.6%	3.48	1.495	0.534
Employee Empowerment							
In design and planning	9.8%	35.7%	42.3%	12.2%	3.32	1.511	0.631
Active employee suggestion system	11.4%	39%	30.1%	19.5%	3.24	1.808	0.725
Interaction with customers and suppliers	10.6%	30.9%	39%	19.5%	2.49	1.785	0.504
Quality initiatives/ Zero defects							
An announced goal of zero defects	14.6%	34.9%	35%	15.5%	4.46	1.710	0.668

A program for continuous reduction	9.8%	30.1%	31.7%	28.4%	3.92	1.777	0.767
A plan to drastically to reduce rework	13%	29.3%	45.5%	12.2%	3.41	1.664	0.745
Measurement							
Of quality performance in all areas	14.6%	33.3%	33.4%	18.7%	3.30	1.774	0.522
Graphs and charts to measure and monitor	6.5%	33.4%	35.8%	24.4%	2.96	1.715	0.560
Appropriate statistical measures	12.2%	45.5%	24.4%	17.9%	3.58	1.746	0.413
Employee training in statistical methods	17.1%	42.3%	22%	18.7%	3.16	1.504	0.881

APPENDIX VIII: F Distribution Critical Values for P=0.05

F Distribution Critical Values for P=0.05

Denominator

Numerator DF

DF	1	2	3	4	5	7	10	15	20	30	60	120	500	1000
1	161.45	199.50	215.71	224.58	230.16	236.77	241.88	245.95	248.01	250.10	252.20	253.25	254.06	254.19
2	18.513	19.000	19.164	19.247	19.296	19.353	19.396	19.429	19.446	19.462	19.479	19.487	19.494	19.495
3	10.128	9.5522	9.2766	9.1172	9.0135	8.8867	8.7855	8.7028	8.6602	8.6165	8.5720	8.5493	8.5320	8.5292
4	7.7086	6.9443	6.5915	6.3882	6.2560	6.0942	5.9644	5.8579	5.8026	5.7458	5.6877	5.6580	5.6352	5.6317
5	6.6078	5.7862	5.4095	5.1922	5.0504	4.8759	4.7351	4.6187	4.5582	4.4958	4.4314	4.3985	4.3731	4.3691
7	5.5914	4.7375	4.3469	4.1202	3.9715	3.7871	3.6366	3.5108	3.4445	3.3758	3.3043	3.2675	3.2388	3.2344
10	4.9645	4.1028	3.7082	3.4780	3.3259	3.1354	2.9782	2.8450	2.7741	2.6996	2.6210	2.5801	2.5482	2.5430
15	4.5431	3.6823	3.2874	3.0556	2.9013	2.7066	2.5437	2.4035	2.3275	2.2467	2.1601	2.1141	2.0776	2.0718
20	4.3512	3.4928	3.0983	2.8660	2.7109	2.5140	2.3479	2.2032	2.1241	2.0391	1.9463	1.8962	1.8563	1.8498

30	4.1709	3.3159	2.9223	2.6896	2.5336	2.3343	2.1646	2.0149	1.9317	1.8408	1.7396	1.6835	1.6376	1.6300
60	4.0012	3.1505	2.7581	2.5252	2.3683	2.1666	1.9927	1.8365	1.7480	1.6492	1.5343	1.4672	1.4093	1.3994
120	3.9201	3.0718	2.6802	2.4473	2.2898	2.0868	1.9104	1.7505	1.6587	1.5544	1.4289	1.3519	1.2804	1.2674
500	3.8601	3.0137	2.6227	2.3898	2.2320	2.0278	1.8496	1.6864	1.5917	1.4820	1.3455	1.2552	1.1586	1.1378
1000	3.8508	3.0047	2.6137	2.3808	2.2230	2.0187	1.8402	1.6765	1.5811	1.4705	1.3318	1.2385	1.1342	1.1096

APPENDIX IX: Values of the T-Distribution (Two-Tailed)

Values of the T-Distribution (Two-Tailed)

DF	A	0.80	0.90	0.95	0.98	0.99	0.995	0.998	0.999
	P	0.20	0.10	0.05	0.02	0.01	0.005	0.002	0.001
1		3.078	6.314	12.706	31.820	63.657	127.321	318.309	636.619
2		1.886	2.920	4.303	6.965	9.925	14.089	22.327	31.599
3		1.638	2.353	3.182	4.541	5.841	7.453	10.215	12.924
4		1.533	2.132	2.776	3.747	4.604	5.598	7.173	8.610
5		1.476	2.015	2.571	3.365	4.032	4.773	5.893	6.869
6		1.440	1.943	2.447	3.143	3.707	4.317	5.208	5.959
7		1.415	1.895	2.365	2.998	3.499	4.029	4.785	5.408
8		1.397	1.860	2.306	2.897	3.355	3.833	4.501	5.041
9		1.383	1.833	2.262	2.821	3.250	3.690	4.297	4.781
10		1.372	1.812	2.228	2.764	3.169	3.581	4.144	4.587
11		1.363	1.796	2.201	2.718	3.106	3.497	4.025	4.437
12		1.356	1.782	2.179	2.681	3.055	3.428	3.930	4.318

13	1.350	1.771	2.160	2.650	3.012	3.372	3.852	4.221
14	1.345	1.761	2.145	2.625	2.977	3.326	3.787	4.140
15	1.341	1.753	2.131	2.602	2.947	3.286	3.733	4.073
16	1.337	1.746	2.120	2.584	2.921	3.252	3.686	4.015
17	1.333	1.740	2.110	2.567	2.898	3.222	3.646	3.965
18	1.330	1.734	2.101	2.552	2.878	3.197	3.610	3.922
19	1.328	1.729	2.093	2.539	2.861	3.174	3.579	3.883
20	1.325	1.725	2.086	2.528	2.845	3.153	3.552	3.850
21	1.323	1.721	2.080	2.518	2.831	3.135	3.527	3.819
22	1.321	1.717	2.074	2.508	2.819	3.119	3.505	3.792
23	1.319	1.714	2.069	2.500	2.807	3.104	3.485	3.768
24	1.318	1.711	2.064	2.492	2.797	3.090	3.467	3.745
25	1.316	1.708	2.060	2.485	2.787	3.078	3.450	3.725
26	1.315	1.706	2.056	2.479	2.779	3.067	3.435	3.707
27	1.314	1.703	2.052	2.473	2.771	3.057	3.421	3.690

28	1.313	1.701	2.048	2.467	2.763	3.047	3.408	3.674
29	1.311	1.699	2.045	2.462	2.756	3.038	3.396	3.659
30	1.310	1.697	2.042	2.457	2.750	3.030	3.385	3.646
31	1.309	1.695	2.040	2.453	2.744	3.022	3.375	3.633
32	1.309	1.694	2.037	2.449	2.738	3.015	3.365	3.622
33	1.308	1.692	2.035	2.445	2.733	3.008	3.356	3.611
34	1.307	1.691	2.032	2.441	2.728	3.002	3.348	3.601
35	1.306	1.690	2.030	2.438	2.724	2.996	3.340	3.591
36	1.306	1.688	2.028	2.434	2.719	2.991	3.333	3.582
37	1.305	1.687	2.026	2.431	2.715	2.985	3.326	3.574
38	1.304	1.686	2.024	2.429	2.712	2.980	3.319	3.566
39	1.304	1.685	2.023	2.426	2.708	2.976	3.313	3.558
40	1.303	1.684	2.021	2.423	2.704	2.971	3.307	3.551
42	1.302	1.682	2.018	2.418	2.698	2.963	3.296	3.538
44	1.301	1.680	2.015	2.414	2.692	2.956	3.286	3.526

46	1.300	1.679	2.013	2.410	2.687	2.949	3.277	3.515
48	1.299	1.677	2.011	2.407	2.682	2.943	3.269	3.505
50	1.299	1.676	2.009	2.403	2.678	2.937	3.261	3.496
60	1.296	1.671	2.000	2.390	2.660	2.915	3.232	3.460
70	1.294	1.667	1.994	2.381	2.648	2.899	3.211	3.435
80	1.292	1.664	1.990	2.374	2.639	2.887	3.195	3.416
90	1.291	1.662	1.987	2.369	2.632	2.878	3.183	3.402
100	1.290	1.660	1.984	2.364	2.626	2.871	3.174	3.391
120	1.289	1.658	1.980	2.358	2.617	2.860	3.160	3.373
150	1.287	1.655	1.976	2.351	2.609	2.849	3.145	3.357
200	1.286	1.652	1.972	2.345	2.601	2.839	3.131	3.340
300	1.284	1.650	1.968	2.339	2.592	2.828	3.118	3.323
500	1.283	1.648	1.965	2.334	2.586	2.820	3.107	3.310
	1.282	1.645	1.960	2.326	2.576	2.807	3.090	3.291

APPENDIX X: Observation Schedule Results

Observation Schedule Results

Construct	Yes	No	Comment
	Relative Frequency	Relative Frequency	
training room	35.45%	65.54%	>50% No
rework going on at the enterprise	56.21%	43.79	> 50% Yes
Team work	48.56%	52.90%	> 50% No
Suggestion box	45.10%	55.34%	>50% No
New machinery in the premises	57.23%	43.42%	> 50% yes
Process automated	62.10%	38.81%	> 50% yes
Quality inspection	44.23%	56.65%	> 50% No
Factory Act displayed	60.9%	40.20%	> 50% yes
Employees on safety clothing	59.52%	41.43%	> 50% Yes
Entrepreneur is present	26.12%	74.11%	> 50% No
Quality program in place	72.45%	28.90%	> 50% yes
Process ingredients formulation displayed	37.78%	63.30%	> 50% No
Dedicated customer service line	52.87%	48.24%	> 50% yes

Investment in new technology	64.2%	35.8%	> 50% yes
Involves KBS in new products and processes	67.5%	32.5%	> 50% yes
Train employees in process trouble shooting	59.3%	40.7%	> 50% yes
Firm experiences frequent machine breakdowns	81.3%	18.7%	> 50% yes
Firm has a maintenance schedule	63.4%	36.6%	> 50% yes
Advertise new products	80.5%	19.5%	> 50% yes
Carries out post market launch surveys	47.2%	52.8%	> 50% No

APPENDIX XI: Item-Total Statistics for Construct Reliability

Item-Total Statistics for Construct Reliability

construct	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation (loadings)	Cronbach's Alpha if Item Deleted	Crobach's Aplha for each construct
Executive Commitment						
Fully Committed to Quality Programs Improvements	143.63	399.686	-.109	.527	.817	
Championing a Quality Program	143.74	367.809	.415	.639	.800	0.807
Communicating a Quality Commitment	143.15	378.711	.301	.554	.805	
Adopting the Philosophy						
quality Principles In Mission and Vision Statements	143.80	382.410	.168	.637	.809	
An overall Theme Based on A Quality programme	144.01	369.275	.364	.637	.802	0.808
Towards ISO 9001certification	143.64	388.664	.078	.590	.812	
Customer focus						
Direct Personal Contacts With Customers	143.44	371.215	.442	.697	.800	
Customer Inputs to Requirements	143.36	383.317	.206	.525	.808	0.8057
Seeking Customers Inputs	144.02	386.850	.085	.689	.813	

Customer's Involvement in Design	144.12	370.910	.366	.795	.802	
Supplier focus						
working more closely with Suppliers	143.60	385.893	.141	.683	.810	
Suppliers meet Stricter Quality Specifications	144.56	372.382	.307	.705	.804	.8033
Suppliers to Adopt Quality Programmes	143.82	362.333	.566	.700	.796	
Benchmarking						
A Competitive Benchmarking Programme in place	143.89	359.463	.491	.741	.797	.7993
Researching on best Practice of other Organization	144.03	366.849	.442	.688	.799	
Visiting other Organizations to Learn on Quality Programmes	143.74	370.963	.368	.822	.802	
Training						
Management Training in Quality Principles	144.42	367.446	.348	.758	.803	0.8007
Training Employees in Quality Principles	144.42	372.196	.325	.756	.804	
Training Employees in Problem Solving Skills	143.81	363.455	.466	.683	.798	
Training Employees in Team Work	144.07	362.746	.472	.672	.798	
Open organization						

Embraced Open ,Trusting Organization Culture	143.91	402.783	-.163	.561	.819	0.8090
Embraced Less Bureaucracy	143.56	368.482	.398	.651	.801	
Use of Empowered Work Teams	143.97	380.499	.220	.565	.807	
Employee empowerment						
Empowering Employees in Design	144.12	377.153	.273	.733	.805	0.8083
Active Employee Suggestion System in Place	144.21	395.232	-.041	.651	.819	
Interaction of Employees With Customers and Suppliers	144.40	365.910	.390	.730	.801	
Quality Initiatives /Zero Defects						
An Announced Goal of Zero Defects	143.98	368.016	.372	.770	.802	0.8056
There is a Programme for Continuous Defects Reduction	144.55	369.033	.344	.763	.803	
There is a Plan to Drastically Reduce Rework	144.22	385.541	.112	.714	.812	
Measurement						
Measurement of Quality Programs in all Areas	144.15	358.611	.502	.730	.796	0.7978
Graphs and Charts to Measure and Monitor Quality	144.49	385.952	.098	.765	.812	
Appropriate Statistical Measures	143.86	349.055	.662	.803	.790	
Employee Training In Statistical Methods	143.59	358.344	.615	.801	.793	

APPENDIX XII: Item-Total Statistics-Binary Questions.

Item-Total Statistics- Binary Questions.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Are Employees involved in Decision Making	30.88	13.629	.292	.601
The Firm Has S Structured Method	30.92	13.233	.407	.588
Investment In New Technology	31.02	14.256	.132	.619
Firm involves Kenya Bureau of Standards in New Product and Processes	31.06	13.145	.471	.582
Firm Trains Employees in Process Trouble Shooting	30.98	13.611	.306	.600
Firm Experiences Frequent Machine Breakdowns	31.19	14.898	-.029	.632
Firm has a Maintenance Schedule	31.02	15.173	-.118	.645
Firm Advertises New Products	31.18	13.670	.385	.595
Firm Carries' out Post Market Launch Surveys	30.85	13.879	.223	.609
Firm has a Dedicated Customer	30.75	14.125	-.019	.671

Service Line				
Firm has a Training Room	31.06	12.683	.618	.565
Firm is Undertaking Rework	31.10	14.172	.174	.615
Firm has Team Work	30.95	14.014	.189	.613
Firm has a Suggestion Box	30.92	13.663	.237	.607
The Firm Inspection of Quality is Part of its Manufacturing Process	31.02	13.223	.430	.586
Firm Processes are Automated	30.91	14.512	.053	.628
factory Act is Displayed in the Firm Premises	30.84	14.684	.008	.633
Firm Employees Wears Safety clothing	30.92	14.671	.011	.633
Firm's Entrepreneur Spends lots of Time in the Business	31.16	13.113	.565	.577
Firm is Currently Implementing Quality Initiative Programmes	31.10	14.403	.105	.622
Firm Has A Displayed Process Flow	30.81	13.146	.435	.584
Employees Suggestions on Quality	30.85	14.606	.028	.631
Firm has a Customer Care Desk and a Dedicated Line	30.83	13.797	.247	.606

APPENDIX XIII: List of Firms Studied

List of Firms Studied

No.	Firm Name	Sector	No. of Employees (perm.& contract)	Years since Adopting Formal Quality Programs
1	Samaki Industries	Agro-based	87	2-5 years
2	Crystal Ice Cream	Agro-based	52	6-10 years
3	High Energy Foods Limited	Agro-based	26	6-10 years
4	Chania Construction Limited	Engineering and construction	50	2-5 years
5	Broadways Construction Limited	Engineering and construction	45	2-5 year
6	Orbit Engineering Limited	Engineering and construction	54	2-5 years
7	Associated Battery Manufacturers	Egineering and construction	62	2-5 years
8	Accrow Contractors Limited	Engineering and construction	38	2-5 years

9	Malva Engineering Coach Body Building	Engineering and construction	46	1 year ago
10	Farmchem Limited	Agro-based	43	2-5years
11	Fourstar Construction Limited	Engineering and construction	76	6-10 years
12	Synresins	Chemical and mining	62	2-5 years
13	Kahawa West millers limited	Chemical and mining	19	1 year ago
14	Malaika Coffee Limited	Agro-based	20	2-5 years
15	Kikabo Industries	Agro-based	47	1 year ago
16	Trufoods Limited	Agro-based	100	11-15 years ago
17	Choda Fabrictaors	Engineering and Construction	36	1 year ago
18	Spin Knit Dairy Limited	Agro-based	90	6-10 years ago
19	Gilok Company Limited	Agro-based	62	1 year ago
20	Specialised Towel Manufacture Ltd	Agro-based	40	2-5 years
21	Mulsons limited	Agro-based	88	1 year ago

22	Akiyda 2000 Ltd	Agro-based	49	2-5 year
23	Kenya Millers Limited	Agro-based	24	1-2 years ago
24	East Africa Seeds Company	Agro-based	100	2-5 years
25	Kisumuwala oil industries	Agro-based	46	1 year ago
26	Kenya Thread Industries	Agro-based	26	1 year ago
27	Aromatic Food Limited	Agro-based	98	2-5 years ago
28	Deepa Industries	Agro-based	38	2-5 years
29	Unipack limited	Agro-based	48	2-5 years
30	Kartasi Industries Ltd.	Agro-based	48	2-5 years
31	Pembe Flour Mill Ltd	Agro-based	40	2-5 years
32	Excel Chemicals Ltd.	Agro-based	76	2-5 years
33	Reckitt Benckiser Ltd.	Chemical and mining	100	6-10 years
34	Biodeal Laboratories Ltd.	Chemical and mining	26	2-5 years
35	Wyco Paints	Chemical and mining	34	2-5 years
36	United Chemical Industries	Chemical and mining	98	2-5 years

37	Avon Rubber Co. limited	Chemical and mining	36	2-5 years
38	Twiga Chemicals Ltd	Chemical and mining	88	2-5 years
39	Sadolin Paints	Chemical and Mining	56	6-10 years
40	Crown Berger Kenya Ltd.	Chemical and Mining	78	6-10 years
41	Elite Oil limited	Agro-based	83	2-5 years
42	Oil extraction limited	Agro-based	72	1 year ago
43	Mashamabani limited	Agro-based	38	1 year ago
44	Car and General	Engineering and Construction	100	11-15 years ago
45	Bobmill Industries Ltd.	Chemical and Mining	18	1 year ago
46	Haco Industries	Chemical and Mining	96	2-5 years
47	Cosmos Ltd	Chemical and Mining	75	2-5 years
48	Vicks Products E.A. Ltd.	Chemical and Mining	26	2-5 years
49	Basco Products	Chemical and Mining	62	2-5 years
50	Manhar Brothers Limited	Chemical and Mining	26	1 year ago
51	Karsan Ramji and Sons Limited	Chemical and Mining	38	1 year ago

52	Steel Stone Limited	Chemical and Mining	100	2-5 years
53	Welrods Gases Limited	Chemical and Mining	72	1 year ago
54	Wax and Polupack limited	Chemical and Mining	75	6-10 years
55	Kiwi brands limited	Chemical and Mining	84	11-15 years
56	Spectra Chemical Limited	Chemical and Mining	100	2-5 years
57	Bilco Engineering Limited	Engineering and construction	70	1 year ago
58	Labhsons Limited	Engineering and construction	60	2-5 years
59	Kenbro Industries	Chemical and mining	60	1 year ago
60	Teeson Enterprises	Chemical and mining	23	6-10 years ago
61	Embakasi Stone Suppliers	Chemical and mining	100	1 year ago
62	Insteel Limited	Engineering and construction	52	1 year ago
63	Sava Industries Limited	Agro-based	77	2 -5 years ago
64	Golden Grains Limited	Agro-based	68	1 year ago

65	Premier Flour mills	Agro-based	32	2-5 years
66	Patco Industries	Agro-based	85	11-15 years
67	Cremex Limited	Agro-based	73	1 year ago
68	Markro Food Industries	Agro-based	89	2-5 years ago
69	Snack Products Limited	Agro-based	36	1 year ago
70	Bio Food Products	Agro-based	88	6-10 years ago
71	Hindustan Spice Limited	Agro-based	60	1 year ago
72	Manchester Outfitters Ltd.	Agro-based	46	1 year ago
73	Prime Textile Mills Limited	Agro-based	49	2-5 years ago
74	Welcome Outfitters	Agro-based	18	1 year ago
75	Prime Carton Limited	Agro-based	15	1year ago
76	Limuru Milk Processor	Agro-based	72	2-5 years ago
77	Associated Steel Limited	Engineering and Construction	89	2- 5 years ago
78	Steel Wool Africa Limited	Engineering and Construction	31	6-10 years ago

79	Broadways Construction Limited	Engineering and Construction	73	1year ago
80	Tononoka Steels Limited	Engineering and Construction	79	2-5 years ago
81	Mabati Rolling Mills Limited	Engineering and Construction	90	6-10 years ago
82	Nanak Kenya Limited	Engineering and Construction	52	1year ago
83	Cementers Limited	Engineering and Construction	85	2- 5 years ago
84	Alloy Steels Limited	Engineering and Construction	82	2-5 years ago
85	Chamuda Construction	Engineering and Construction	62	1year ago
86	Mechanical Works Limited	Engineering and Construction	73	6-10 years
87	Kenya Co-Operative Creameries	Agro-based	100	6-10 years
88	Premier Food Industries	Agro-based	98	over 15 years ago

	Firms not Implementing Formal Quality Programs			
89	Small Scale Industries	Engineering and Construction	83	-
90	Tamarind Fish Company	Agro-based	56	-
91	KPCU Dandora /Town	Agro-based	100	-
92	Nairobi Food Products Limited	Agro-based	90	-
93	W.E Tilley Limited	Agro-based	85	-
94	Sagga Industries	Agro-based	60	-
95	Kenya Cold Storage	Agro-based	64	-
96	Tarpo Industries	Agro-based	56	-
97	Universal Garments	Agro-based	68	-
98	Alpha Knits	Agro-based	34	-
99	Santowels Limited	Agro-based	63	--
100	Motex Knitwear Mills	Agro-based	27	-
101	TSS Spinning Weavings	Agro-based	62	-
102	Razco Limited	Agro-based	25	-

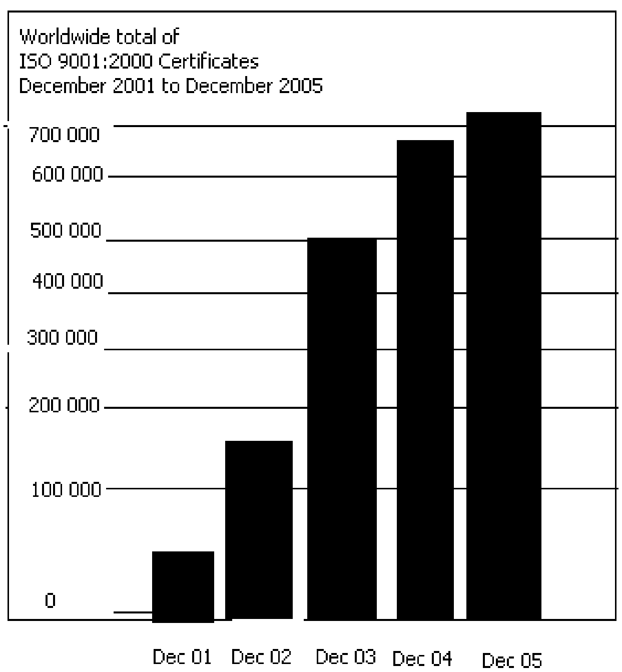
103	Polo Industries	Agro-based	34	-
104	Lucas Engineering Works Limited	Engineering and Construction	62	-
105	Grader Products	Agro-based	70	-
106	M.A Cuisine Ltd	Agro-based	35	-
107	Crova Industries	Agro-based	18	-
108	Metco Limited	Engineering and Construction	67	-
109	Morrison Products	Engineering and Construction	20	-
110	Auto Fabricators	Engineering and Construction	20	-
111	Fehmi Nails Limited	Engineering and Construction	17	-
112	Dk Engineering	Engineering and Construction	85	-
113	Associated Vehicle Assembler	Engineering and	56	-

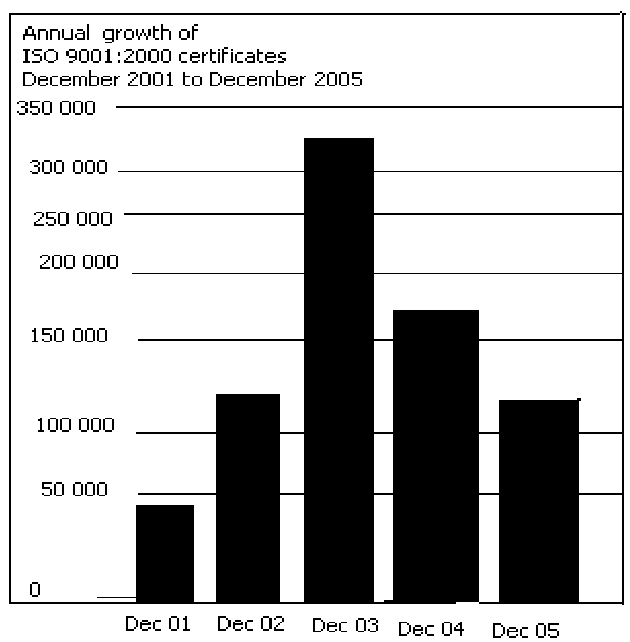
		Construction		
114	Electro Plumbing Engineering	Engineering and Construction	18	-
115	Kenya Industrial Plastics	Chemical and Mining	32	-
116	Devki Steel Mills	Engineering and Construction	78	-
117	Kenya Engineering Industries	Engineering and Construction	98	-
118	Stainless Steel Product Limited	Engineering and Construction	40	-
119	Nutread Tyres Limited	Chemical and Mining	75	-
120	Ashut Engineering	Engineering and Construction	90	-
121	Paramount Industries	Agro - Based	56	-
122	National Retreaters Limited	Chemical and Mining	86	-
123	ACME Containers Limited	Chemical and Mining	51	-

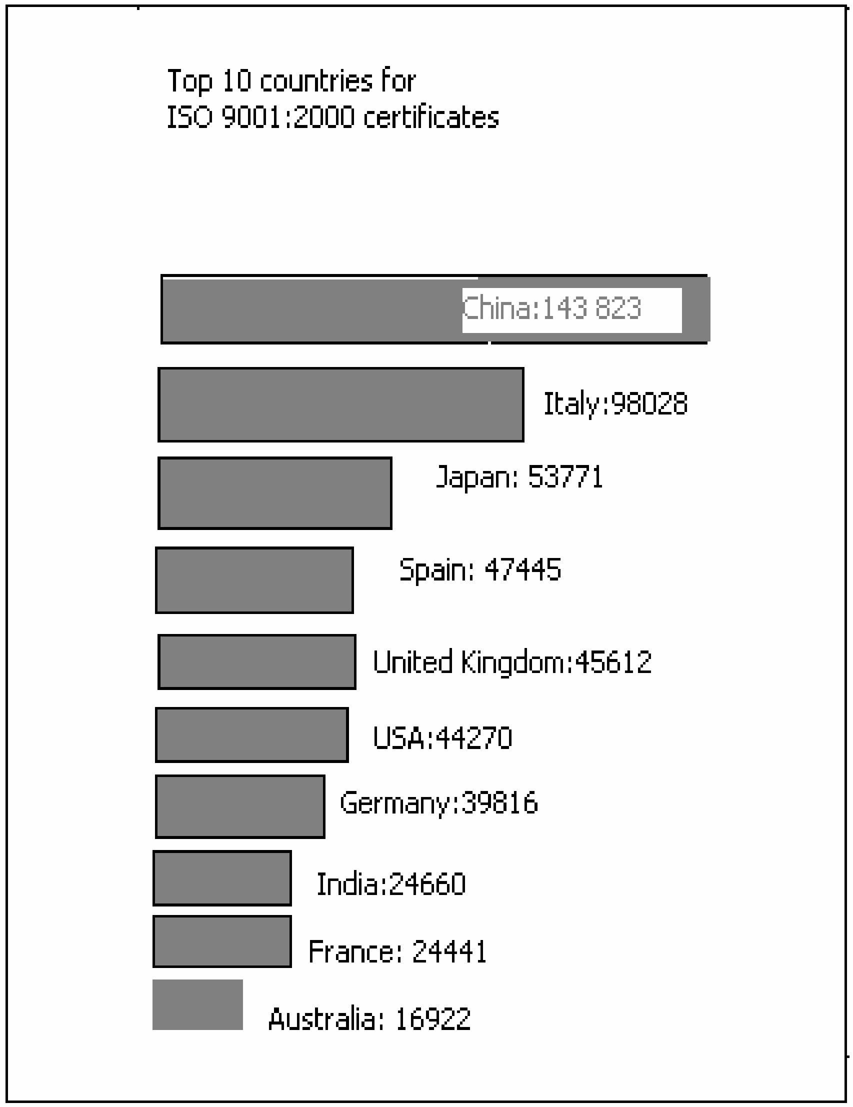
APPENDIX XIV: Worldwide Numbers of ISO 9000 Certificates (Based on ISO Survey 2005)

ISO 9001:2000 Principle Results

World result	**Dec 2001**	**Dec 2002**	**Dec 2003**	**Dec 2004**	**Dec 2005**
World total	44388	167124	497919	660132	776608
World growth		122736	330795	162213	116476
Number of countries/economies	97	133	149	154	161






Top 10 countries for
ISO 9001:2000 certificates
China:143 823
Italy:98028
Japan: 53771
Spain: 47445
United Kingdom:45612
USA:44270
Germany:39816
India:24660
France: 24441
Australia: 16922