TOTAL QUALITY, OPERATIONS EFFECTIVENESS AND COMPETITIVE ADVANTAGE IN HORTICULTURAL INDUSTRY IN KENYA

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DECLARATION

I declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any other university or institution for a degree. All references cited in the text have been duly acknowledged.

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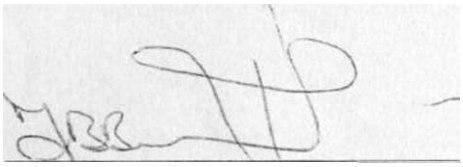
Signed:  Date:

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DEDICATION

This thesis is dedicated to all those who have never wavered in their trust and belief that Africa and Kenya in particular, can produce best quality individuals, products, systems and institutions. Informed by the total quality philosophy of everything can be improved, these great personalities have criticized the wrongs or inadequate quality exhibited by individuals or institutions. They have also given their praise and commendation where deserved in a total quality frame of mind, constantly focusing on the positives that are so much in abundance where the majority just cannot see. Their thoughts and spirits will continue to inspire.

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ABBREVIATIONS AND ACRONYMS

ACSI	American Customer Satisfaction Index
ANSI	American National Standards Institute
APC	Asia Pacific Countries
ASQ	American Society for Quality
ASQC	American Society for Quality Control
BEM	Business Excellence Model
BRC	British Retail Consortium
BSC	Balanced Score Card
BSI	British Standards Institution
CA	Competitive Advantage
CEO	Chief Executive Officer
CI	Confidence Interval
CWQC	Company Wide Quality Control
EC	European Commission
EFQVI	European Foundation for Quality Management
EU	European Union
FPEAK	Fresh Produce Exporters Association of Kenya
GAP	Good Agricultural Practices
GDP	Gross Domestic Produce
GOK	Government of Kenya
HACCP	Hazards Analysis and Critical Control Points
HCDA	Horticultural Crops Development Authority
ISA	International Federation of the National Standardization Associations
ISO	International Organization for Standardization
JQA	Japanese Quality Association
.11SE	Japanese Union of Scientists and Engineers
KCA	Kenya Flower Council
KEBS	Kenya Bureau of Standards
LTD	Limited Liability Company
MBNQA	Malcolm Baldridge National Quality Award
MITI	Japan's Ministry of International Trade and Industry

NASC	National Air Systems Command
NIST	American National Institute of Science and Technology
OE	Operations Effectiveness
PLC	Public Liability Company
QAD	Quality Assurance Department
QMS	Quality Management System
S&P	Standard and Poor
SE	Standard Error
SME	Small and Medium Enterprise
SPC	Statistical Process Control
SQC	Statistical Quality Control
SWOT	Strengths, Weaknesses, Opportunities, Threats
TOC	Theory of Constraint
TQC	Total Quality Control
TQII	Total Quality Implementation Index
TQM	Total Quality Management
UNSCC	United Nations Standards Coordinating Committee

ABSTRACT

The study focused on Kenya's horticultural industry and the aspects of total quality, operations effectiveness and competitive advantage. The literature shows that total quality brings forth competitive advantage. However, most of that literature has come from developed countries. Researches carried out in less developed countries have shown contradictory results, with some showing that total quality brings forth competitive- advantage, while others show it does not. This study aimed at understanding these contradictions, and coming out with tangible evidence of the effect of total quality to an organization's capability to acquire competitive advantage. Incorporating operations effectiveness to the conceptual framework brought in new grounds of study in the total quality paradigm. The context under which the study was undertaken is highlighted by the materials concerning the horticultural industry in Kenya. The industry is seen as a vibrant and important sector of the economy. The growth of the sector in the last fifteen years has been phenomenal. However, the sector is beset with numerous challenges, the biggest being one of quality. The sector, therefore, provided very fertile grounds for this study. The literature review brought out factors of total quality, operations effectiveness and competitive advantage. The case and empirical studies point positive relationships between total quality and competitive advantage. Conceptually, it was assumed that there is a relationship between total quality and competitive advantage with operations effectiveness acting as an intervening variable. The research methodology brings out the approach that the study took. All scientific practices including data validation and effective analysis were undertaken. This was to ensure replicability and validity of the research. Further, factors that were found to have very strong correlation, or scoring low corrected-item total correlation, were dropped before analysis was undertaken. The major findings are presented and discussed comprehensively. The study shows that total quality has a strong and positive impact on competitive advantage. Further, that there is a strong relationship between operations effectiveness and total quality. This brings the study- to new areas of know ledge in that it is shown that bringing in operations effectiveness to the equation, enhances competitive advantage so that operations management becomes an important component in strengthening an organization's competitive advantage. However, this enhancement is found to be more pronounced at low levels of total quality implementation and less pronounced at high levels. In the Kenyan

horticultural sector, it is discovered that the level of implementation of total quality is low. However, those implementing total quality are getting competitive advantage. This finding explains the contradiction seen in studies conducted in developing countries where organizations claiming to be quality oriented have posted different results. This study shows that it is not total quality that has been posting different results, but lack of effective implementation qf total quality. A crucial finding is the poor score registered on the leadership index and the tendency of taking quality certification as an end by itself. It is demonstrated that most of the certified companies do not understand the philosophy behind quality management and. therefore, cannot implement it effectively. Further, the emergence of performance measurement as a powerful principle in the total quality paradigm for enhancing competitive advantage should encourage the government of Kenya on its preoccupation with performance contracts to government institutions. However, the value that ISO 9001 certification (one of the requirements in the performance contract) is bringing to the institutions against the enormous costs incurred is not validated. The research, therefore, recommends among other things, the appreciation and understanding of the total quality philosophy or any quality management system before embarking on implementation. On theory, policy and practice, the study has the implication that that operations effectiveness should be incorporated into the total quality paradigm, institutions should be encouraged to become total quality organizations, and that at low levels of total quality implementation, firms should be encouraged to focus on operations effectiveness. Future research could take the form of a study of government institutions or firms cutting across industries that are ISO 9001 certified, their level of implementing the quality management system, and the value the system has brought to the firms.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Though challenging, quality management has become almost a norm in international business. Further, the need for firms to be viewed as quality organizations has made International Organization for Standardization's ISO 9001 certification to virtually become a mandatory requirement for exports to Europe, forcing companies in Japan to be ISO 9001 certified, not because of quality issues, but as a way of increasing market share (Tang & Kam, 1999).

There has been debate on the value of total quality management to an organization (Beer. 2003) and the impact it has. The aim of the study was therefore to contribute to this debate concerning total quality management as a strategic tool for competitive advantage. The literature in this study explores the intellectual underpinnings and concepts behind Strategic Management, Total Quality Management (TQM), Operations Effectiveness (OE) and Competitive Advantage (CA). In this study, the name Total Quality (TQ) is designated to mean Total Quality Management (TQM). The reviewed literature has led the researcher to define TQ as a set of principles, approaches, methods and techniques of management that ensures continuous improvement in the quality of all aspects of an organization's process, product and/or service, in order to satisfy customers. Further, that the conceptual approach to TQ and operations effectiveness, provides a prediction of positive outcomes for the organization in the form of competitive advantage. This position agrees with results from empirical studies carried out in the developed countries such as UK, USA, Japan, Australia and emerging economies like Malaysia as presented in the detailed literature review in chapter two of this report.

However, when these studies are contrasted with those carried out in developing countries such as Iran, Nigeria. Turkey and Kenya, there is a disconnect as the studies from developing countries show mixed results, with some showing some positive impacts, while others registering no or negative impacts. Therefore, there seems to be a clear difference between the developed and developing countries as far as TQ is concerned. One common factor of these studies is the focus on benefits to organizations implementing TQ, without discovering whether they are effectively implementing it, and if they are, the benefits that have accrued. This study aimed at

finding out. among other things, why there is such a distinct difference in results from the studies done in developed countries, and those done in Kenya and the other developing countries mentioned above. From this perspective, the researcher developed a research conceptual framework that enabled the carrying out of a comprehensive study focusing on one of the most vibrant economic sector in Kenya, the horticulture sector.

The need for this sector to have a collective international competitive advantage in view of the big challenge from other African. Caribbean and Pacific (ACP) producers in the international horticulture market, bearing in mind the huge contribution to the Kenyan economy, cannot be over emphasized. In the following sections, the major variables in the study, competitive advantage, total quality and operations effectiveness are presented.

1.1.1 Competitive Advantage

Competitive advantage denotes a firm's ability to achieve market superiority (Evans & Lindsay, 2011). This concept is the core of strategic management, as every organization searches for a vantage point that could deliver the competitive edge against its rivals. While one way of gaining competitive advantage over rivals has been identified as achieving a better cost advantage, another way to competitive advantage is product differentiation (Porter, 1985). Product differentiation by itself will be of little value unless the difference so achieved attracts and captures the imagination of customers. The needs and wants of the customer must be entrenched in the business process if the customer is to be truly satisfied. These needs and wants will be captured through customer surveys, and then become entrenched in design to production to delivery and use (Evans & Lindsay, 2011).

For the developed countries, getting into a quality management system has become commonplace. However, the same cannot be said of companies operating in developing countries, where many do not employ these systems such as ISO 9001 certification unless forced to by customer requirements. An understanding as to why Japanese companies and others in the developed world had to move to quality management systems long before ISO 9001 certification was a European Union (EU) requirement would go a long way in appreciating the value of TQ to an organization.

With this in mind, scholars in the developing countries would bring out enormous insight, if they were to carry out studies on quality management systems in these countries as it has been done in the developed countries. To do so will require a comprehensive understanding of the concept of TQ, operations effectiveness and competitive advantage.

1.1.2 Total Quality

Managing quality has been the subject of much debate that sometimes creates confusion, especially about the use of the words Total Quality or TQM (Evans & Lindsay, 2011). It is of value, therefore, if one is able to define the terminologies used in the subject. However, even the word quality has been defined differently by various leading quality authorities. The American National Standards Institute (ANSI) and the American Society for Quality Control (ASQC) define quality as the totality of features and characteristics of a product or service that bears on its ability to satisfy given needs (ASQ. 2008). Therefore, quality is the degree of conformance of a product, process or service to the requirements of the customer, or the ability of a product, process or service to consistently meet or exceed customer expectations.

The need for guarantee of product quality can be traced back to the days of craftsmanship, when craftsmen were proud of their products and gave personal guarantees. Up to today, pyramids of Egypt exhibit high precision quality of cutting and stacking the stones. The craftsman approach was lost during the advent of mass production, but regained to some extent by the USA military in the 1940s when they started using statistical process control (SPC) in the manufacture of weaponry (Evans & Lindsay, 2011, Martinez-Lorente et al, 1998). The use of statistics to follow up a process in order to assure quality at the end of the manufacturing led to the thinking that it is possible to certify a process as a quality management system such as ISO 9000.

The International Organization for Standardization (IOS) but popularly known by the name of its products ISO, was established in 1947 following the decision reached in a meeting of civil engineers from 26 countries in October 1946 in London. In essence, ISO was an amalgamation of International Federation of the National Standardization Associations (ISA) established in New York in 1926. and the United

Nations Standards Coordinating Committee (UNSCC) established in 1944. Its mandate was to promote the development of international standards focusing on engineering in order to facilitate the trade in goods and services across the world. The' founders chose the name ISO from the Greek word isos, which means equal, for the standards (Evans & Lindsay, 2011).

In 1987, ninety one (91) countries came together and agreed to develop a quality management system to document procedures and to maintain appropriate records as evidence that an organization was adhering to agreed standards and ISO 9001, 9002, 9003 and 9004 management quality standards were born. These standards were revised in 1994. 2000 and 2008 to bring forth the current ISO 9001:2008 quality management system (ISO, 2008). Companies or institutions that agree to adhere to the set management system are then ISO 9001 certified. In Kenya, the Kenya Bureau of Standards (KEBS). as the nation's representative in International Organization for Standardization, is the accredited certifying authority of ISO. However, there are other agents such as SGS Kenya Ltd., Bureau Veritas and Cotecna who also issue ISO 9001 certificates (KEBS, 2008). Most recently, ISO 9001 certification has become almost a mandatory requirement for exports to Europe, forcing many companies to be ISO 9001 certified. The Japanese companies provide some of the highest-quality products, typically using company product standards (best commercial practices) rather than external standards like ISO 9000 Quality Management System (QMS) or any U.S. military standards. However, in order to enter the European market, most have been forced to be ISO 9001 certified (Tang & Kam, 1999).

The Japan Quality Association (JQA) is responsible for ISO 9000 certification. It was established in 1958 as the Japan Management Institute (JMI) under Japan's Ministry of International Trade and Industry (MITI) for the purpose of export inspection. In 1960. JMI moved from inspection to process certification, and in October 1993, JMI was renamed JQA to more aptly identify with its mission. It has provided ISO 9000 certification in Japan since 1990 after receiving training from the British Standards Institution's (BSI) quality assurance division, and it has memoranda of understanding with both BSI and Underwriters Laboratory (UL) in the United States for reciprocal certification acceptance.

By the year 2000, Japan had 21, 329 ISO 9000 certified organizations being among the top six countries in the world (ISO, 2008). ISO 9000 certification can be used as a base for introducing the TQ approach to management (Tsiotras and Gotzamani. 1996: Kanji, 1998; Tang and Kam. 1999; Najmi and Kehoe. 2000). The concept of TQ can be traced to Japanese companies who managed to gain exceptional competitive advantage against American and European companies especially in the very visible motor vehicle industry with Toyota leading (Hino, 2005, Martinez-Lorente et al, 1998). Indeed, the study and implementation of quality and standards is a very recent phenomenon. Pioneers of quality processes such as Deming and Juran started in the 1930s, as they carried out quality inspection by way of using statistical quality control (Deming Institute, 2008; Juran Institute, 2008, Martinez-Lorente et al, 1998). On the other hand, ISO was only established in 1947 and did not get involved in quality management systems until 1987 (ISO 2008).

The quality movement in Japan began in 1946 with the U.S. Occupation Force's mission to revive and restructure Japan's communications equipment industry. General MacArthur was committed to educating the public through the radio and. therefore, needed functioning quality communication systems. Sarasohn was recruited to spearhead the effort by repairing and installing equipment, making materials and parts available, restarting factories, establishing the equipment test laboratory (ETL), and setting rigid quality standards for products. Sarasohn recommended individuals for company presidencies such as Koji Kobayashi of NEC. and he established education for Japan's top executives in the management of quality.

Furthermore, upon Sarasohn's return to the United States, he recommended Deming to provide a seminar in Japan on statistical quality control (SQC) (JUSE, 2008). Deming's 1950 lecture notes provided the basis for a 30-day seminar sponsored by the Union of Japanese Scientists and Engineers (JUSE), and provided the criteria for Japan's famed Deming Prize. The first Deming Prize was given to Kobayashi in 1952. Within a decade, JUSE had trained nearly 20,000 engineers in SQC methods. Today, Japan gives high rating to companies that win the Deming prize. In 1960. Deming was recognized for his contribution to Japan's reindustrialization when the Prime Minister of Japan awarded him the Second Order of the Sacred Treasure (Evans & Lindsay. 2011). In 1954. Juran joined the quality

movement in Japan where, in addition to Deming's, his seminars also became a part of JUSE's educational programs. He stressed the importance of systems-thinking that begins with product designs, prototype testing, proper equipment operations, and accurate process feedback. He, therefore, together with Feigenbuam's writings, provided the move from SQC to Total Quality Control (TQC) in Japan (Evans & Lindsay, 2011; Juran Institute, 2008; Martinez-Lorente et al. 1998). This included company-wide activities and education in quality control, quality circles and audits, and promotion of quality management principles.

Total Quality Control was. therefore, renamed company-wide quality control (CWQC). Ishikawa. Japan's most prominent quality expert, came up with the elements of CWQC management as:- quality comes First, not short-term profits; the customer comes first, not the producer: customers are the next process with no organizational barriers; decisions are based on facts and data; management is participatory and respectful of all employees; and management is driven by cross-functional committees covering product planning, product design, production planning, purchasing, manufacturing, sales, and distribution (Evans & Lindsay. 2011; Martinez-Lorente et al, 1998). The term TQM was developed by the Naval Air Systems Command (NASC) to describe its Japanese approach to quality improvement, and became popular with businesses in the United States and then the world in 1980s. Implementation of the concept by American companies became popular, with companies such as Ford and Xerox registering improvements in overall-product quality, and recovering most of the markets they had lost to Japanese companies due to quality problems (Evans & Lindsay. 2011; Martinez-Lorente et al, 1998).

However, though there was such good reception of TQM in the USA in the 1980s, by mid-1990s, harsh criticisms were being directed against the concept. In their haste to implement TQM, most companies failed. These failures, plus its three-letter acronym, led TQM to be labeled a fad and a cheap Japanese import. Some of the early supporters of the idea abandoned the concept. TQM was considered dead. This was, however, not to last long, for by the year 2000, American companies had gone the full circle as witnessed in 1980s. In 2002. dogged bv quality problems forcing the recall of several car models including the popular Explorer, Ford was forced to cut

35,000 jobs and close five plants. The CEO, William Ford, said it was because they had strayed from what got them to the top (Evans & Lindsay, 2011). The total quality concept was back on track as more and more companies became interested in the concept and implementation process.

1.1.3 Operations **Effectiveness**

An organization is said to have effective operations if it performs similar activities better than rivals (Porter 1990). The concept of efficiency is heavily emphasized for an effective operation. The focus here is to reduce variations in the process. One of the innovative TQC/CWQC methodologies developed in Japan is referred to as the "Ishikawa fishbone" or "cause-and-effect" diagram. After collecting statistical data, Ishikawa found that dispersion came from four common causes, namely materials, machines, methods, and measurement. Materials often differ when sources of supply or size requirements vary. Equipment or machines also function differently depending on variations in their own parts, and they operate optimally for only part of the time. Processes or work methods have even greater variations. Finally, measurement also varies. All of these variations affect a product's quality. Ishikawa's approach led Japanese firms to focus quality control attention on the improvement of materials, equipment, and processes (Evans & Lindsay. 2011: Basu. 2004).

The Japanese believe that the greatest benefit occurs when defect detection is implemented within the manufacturing sequence. This minimizes the time required for final inspection. With this achieved, the company maximizes on return on investment. At the other level, the company indirectly improves product reliability (Walton, 1988: Deming, 1986; Evans & Lindsay, 2011). This approach to business leads to costs reductions as there are fewer defects, fewer reworks and fewer recalls (Basu, 2004). Cost advantage has been identified as one way of developing competitive advantage (Porter. 1985).

1.1.4 Horticultural Industry in Kenya

The world economy recorded a negative growth of 0.8 percent in 2009 compared to positive 3.0 percent in 2008. Sub-Saharan Africa's GDP growth dropped from 5.6 percent in 2008 to 1.8 percent in 2009 mainly due to subdued demand and low prices of agricultural exports. For the East African Community, a decline in its combined GDP growth from 5.8 percent in 2008 to 4.5 percent in 2009 was recorded. In the period in consideration, the Kenyan economy grew by 2.6 per cent with agriculture and forestry recording a negative 2.6 per cent growth. Economic performance was constrained by unfavorable weather condition; the global economic recession and sluggish internal and external demand. Horticulture was one of the major economic activities in Kenya, contributing 49.4 billion shillings to the economy in that year (CBS, 2010).

Horticulture production is characterized by rapid and significant fluctuations in supply and demand for products that are highly perishable. In year 2007, horticulture was the biggest agriculture foreign exchange earner in Kenya, bringing in 56.8 billion Kenya Shillings. The sector has registered a sustained growth moving from Ksh.26.7 billion in 2002. to Kshs. 28.8 billion in 2003 (CBS, 2004), Kshs 39.4 in 2004, Kshs 44.7 billion in 2005, Kshs 48.8 billion in 2006, Kshs. 58.0 in 2008 and Kshs. 49.4 billion in 2009 (CBS, 2010). In 1995, the volume exported was 66.4 tonnes valued at 10.8 billion Kenya shillings (Feldt. 2001) compared to .180.8 tonnes in 2009 (CBS, 2010).

The evidence shows that horticulture is one of the most vibrant industries in Kenya today and has seen a phenomenal growth in the last fifteen years. From an inconsequential trickle in the seventies when the only export commodities worth talking about were tea and the "black gold" coffee, horticulture has become an extremely important foreign currency earner to the Kenyan economy, with export revenue from horticulture surpassing that of coffee in the year 2000 (Minot & Ngigi, 2003). The horticultural industry in Kenya has products such as cut flowers, fruits including mangoes, oranges, and avocadoes, French beans, baby corn, onions, cabbages, and potatoes. The Kenyan government has continued to put heavy emphasis on horticulture and to exhibit the seriousness of the matter, the Horticultural Crop Development Authority (HCDA) which was established in year 1967, has been

revamped. However, though the major export product has been French beans, the changing customer demands for value added products has seen the volume of beans exported decreasing as customer search for better value addition (Ethangata, 2004). Other lobby institutions such as Kenya Flower Council (KCA) and Fresh Produce Exporters Association of Kenya (FPEAK) have joined in to enhance performance in the sector. Challenges that face this industry are many, including competition from emerging countries such as Ethiopia. Tanzania, and Rwanda apart from old rivals such as Israel, South Africa and other African, Caribbean and Pacific Countries (ACP) (Ethangata, 2004).

However, what has constantly been highlighted has been quality, or rather, the lack of it. This problem has been compounded by the European Union's demand for high quality produce, and specifically, standard No. 178/2000, popularly known as Euro-Gap. which requires all fruits and vegetables entering the European Union to have traceability with effect from January 1, 2005. By traceability. they mean that fruits and vegetables in supermarkets should be traced back to the person who grew them and exported them, and how the growing and exporting was done (Ethangata, 2004: Riungu, 2004).

Other quality certification programmes that exporters of horticulture can be certified in include Globalgap, primarily designed to reassure consumers about how food is produced on the farm by minimizing detrimental environmental impacts of farming operations, reducing the use of chemical inputs, and ensuring a responsible approach to worker health and safety as well as animal welfare (Globalgap. 2008). The BRC Food Technical Standard under the British Retailers Consortium, is another standard that is used to evaluate manufacturers by retailers of own brand food products. It is designed to be used as a pillar to help British retailers and brand owners with their 'due diligence' defence, should they be subject to a prosecution by the enforcement authorities.

Under EU food Law, retailers and brand owners have a legal responsibility for their brands (BRC, 2008). Finally, ISO 22000-which integrates requirements for Hazards Analysis and Critical Control Points (HACCP) in the food sector and the process approach of ISO 9000 standards (ISO, 2008), is the certification that a food exporter can acquire to assure customers of high food handling standards.The FICDA

has been forced to constantly warn the stakeholders of the importance of maintaining high quality standards. This has entailed the regulator to buy advertising space in national newspapers like the one on the Daily Nation of December 17, 2003, targeting Mango and Avocado exporters, hold educative seminars, and send follow up circulars (HCDA, 2003). Most players in this sector are farmers and small, medium enterprises (SMEs), with HCDA having more than 1,400 companies and individuals registered as exporters of horticulture by June 2010 with only 10 percent being listed as active. While the effort being put in ensuring that they export high quality produce is commendable, the quality issue has continued to persist. A new approach could give the industry the needed impetus for growth and sustainability.

Total Quality as a concept of management is an approach to quality with everything an organization undertakes, focusing on the process for maximum customer satisfaction. It goes beyond quality produce to quality in all aspects of organizational activities, all geared towards satisfying customer needs (Evans & Lindsay, 2011; Zink, 1998; Hradesky, 1995; Toastmasters, 1994; Haim 1992). In such approach, operations effectiveness is achieved, thereby enhancing efficiency and cost effectiveness. Further, satisfy ing customer needs brings forth market growth and loyal customers, thereby providing an organization with competitive advantage. In Kenya, the enforcer of quality standards is Kenya Bureau of Standards (KEBS). Being a member of the International Organization for Standardization, KEBS has been enforcing engineering standards of products sold and consumed in the country. These standards include crucial health and safety parameters. Flowever, the arrival of ISO 9000 quality management systems has added another activity to Kenya Bureau (KEBS, 2008).

The Kenyan government has also been encouraging organizations to be ISO 9000 certified in the new performance contracting approach to management of public institutions (GOK, 2009). This has been more of a forced undertaking to comply with government requirements, than a voluntary search for improvement of quality. This situation forms a fertile ground for scholarly input. It would be much better to get into quality management systems for the benefits the system would bring and not because of complying with requirements of enforcement agents or overbearing shareholders such as the government. It follows, therefore, that tremendous worth would be

achieved if institutions were to discover that a quality management system (QMS) such as ISO 9000 has values beyond the performance contract requirement. As a result, this can then lead to the implementation of TQ in the organization. The above information and knowledge provided the basis under which the research problem was stated.

1.2 Research Problem

The search for competitive advantage is a fundamental business agenda as every organization seeks to survive and grow. Total quality, combined with operations effectiveness are modern management principles geared towards achieving not only a state of business survival but also a level of competitive advantage by way of focusing on overall holistic quality and process management respectively. Bearing in mind that firms, especially those involved in international markets, are competing in this modern world, it is imperative that the players are versed in these modem management concepts. Lack of utilization of modern management techniques would, therefore, make it difficult for any producer to achieve high-level value addition, quality, and hence competitive advantage. Various research studies and writings show that there are benefits gained by implementing quality management systems. Further, it is noted that quality management systems such as ISO 9000 form the basis under which an organization may implement total quality (Najmi and Kohoe, 2000).

Study by the British Standards Institute (BSI) report organizations building good relations with their customers, achieving significant revenue increases, savings on operations and energy costs, increasing market penetration among other benefits after implementing ISO 9000 (BSI. 2008). On the other hand, the American National Institute of Science and Technology (N1ST) study on Standard and Poor's (S&P) 500 companies show that Malcolm Baldridge National Quality Award recipients outperfonned the S&P 500 2.7 to 1. achieving 394.5 percent returns (NIST, 2008).

In Japan, a study commissioned on value of TQ after the country dropped from position two in 1993 to position twenty six in 2001 in global competitiveness found that TQ has the potential to increase company performance and hence, the country's competitiveness (Gomes et al. 2002). In Australia, Rahman (2001) discovered that, individually, most of the quality criteria had significant relationships

with business outcome, measured in terms of revenue, profitability and number of customers. In China, it was discovered that due to the constraints experienced by small and medium enterprises in the implementation of TQ, these companies focused on internal changes to improve quality, reduce inventory and encourage employee participation (Lee and Kelce, 2004). This somehow agrees with what Porter (1998) states, that TQ brings forth operations effectiveness as the firm focuses on the search for an effective process management that is less constraining than full implementation of total quality. In Malaysia, it was found that there was a significant role of TQ as an intervening variable between competitive advantage and financial performance (Agus & Sagir, 2001). According to Beer (2003), there is no question that when implemented properly. TQ can have a dramatic impact on the performance and culture of an organization. The failures include managers failing to solicit and receive feedback on gap between rhetoric and reality (Beer, 2003). In Iran, Rad (2005) found TQ success in Istahan University Hospitals as medium with 91.7 percent of the respondents rating the success as very low, low and medium. In Nigeria, it was found that people that do not have requisite disposition for change tend to fail in TQ implementation (Ehigie et al. 2006).

In Kenya, the few studies that have been undertaken on TQ or quality management systems such as ISO 9000 have so far produced mixed results. Some studies have shown that ISO 9000 certified companies registered some benefits such as increased market share, increased productivity and increased customer satisfaction (Kagura, 2004: Mucai, 2008). Other studies have shown that customers became more dissatisfied when TQ was implemented, management was unavailable to customers (Ambundo, 2000), and there was no recorded increase in return on assets on companies that had implemented a quality management system (Karauri, 2010). Such negative results from organizations claiming to be quality managed create confusion as to the benefits of implementing a quality management system. Further, a study on implementation of TQ in secondary schools in Kenya found that boards of governors were not providing the requisite leadership, and there was no commitment to strategic quality planning (Ngware et al, 2006). In a situation where leadership is not committed. TQ implementation would not be expected to succeed (Bayazit. 2003). If not implemented properly, it should be assumed that the benefits that are expected to accumulate would not accrue.

The studies carried out in Kenya have focused on the benefits organizations claiming to be implementing quality management systems have amassed. The studies had not assessed whether the claim that these companies are implementing TQ is valid. Further, the studies had not shown what aspects of total quality have the best impact on driving competitive advantage or the component of competitive advantage that is impacted more by a specific component of total quality. This research aimed at establishing benefits of implementing TQ by Kenyan companies operating in the horticultural sector against what the studies in the developed countries have found, by-first investigating how the recognized TQ practices were being employed and the extent of their employment before moving on to the accrued benefits in form of competitive advantage. The horticultural sector was found to be a fertile ground for the study as it is one of the most vibrant sector in the Kenyan economy while quality is a major component discussed in the sector.

Further, the research aimed at finding out the parameters of the TQ paradigm that were having the most impact on competitive advantage. The study attempted to fill the various knowledge gaps identified in the literature review such as the status of TQ implementation in Kenya, the TQ variables with strongest impact on competitive advantage, and the kind of relationship existing between TQ and competitive advantage. Bringing in operations effectiveness as an intervening factor took the research into new frontiers of knowledge in the area of total quality and strategic management. To that end. the following research questions were answered:

a) Is TQ as conceptualized being implemented in Kenyan horticultural companies and if so, to what level of implementation?
b) When effectively implemented, does TQ provide operation effectiveness and or competitive advantage to Kenyan horticultural companies?
c) Can operations effectiveness act as an intervening variable on TQ as it acts on competitive advantage?

These research questions enabled the researcher to find whether there is a connection between strategic management and total quality management. Further, the role operations management can play in the search of competitive advantage. In the following section, the research objectives are presented followed by a presentation on the value of the study.

1.3 Research Objectives

The general purpose of this research was to establish whether there are significant relationships between implementation of total quality and competitive advantage in Kenya's horticultural industry, and the role operations effectiveness plays in the relationships. Specifically, the study wanted to determine:

(i) The degree of implementation of total quality in Kenya's horticultural industry and the relationship between the degree of TQ implementation and competitive advantage

(ii) Whether total quality has an impact on operations effectiveness

(iii) Whether operations effectiveness leads to competitive advantage

(iv) Whether both TQ and operations effectiveness results in competitive advantage.

(v) Whether principles making up TQ have the same effect on specific outcomes that make up competitive advantage

1.4 Value of the Study

Effective implementation of TQ management has been shown to lead to exceptional customer satisfaction (Beer, 2003). Customer satisfaction is the ultimate goal for any organization. The customer is the 'raison de etre', the purpose for existence, for any organization or producer. Furthermore, TQ management approach has been shown to lead to higher quality profits (Evans & Lindsay, 2011; Zink. 1998: Agus & Sargi, 2001). Sending poor quality produce to the EU or any other overseas market is a very costly exercise to the Kenyan player, bearing in mind the freight cost either from Jomo Kenyatta International Airport to the foreign destination, or from the farms in Timau. Nvahururu. Kerio Valley, or Molo to Nairobi is quite significant. This is due to the bulky nature of horticultural produce, and the low costs associated with foodstuffs. The poor quality products are destroyed at the other end at costs to the farmers or exporter.

The farmers or exporters therefore suffer double loss, the loss of expected sale and loss incurred to pay for freight and disposal of the poor quality produce. The other loss is the reputation of the country's horticultural produce. A high-level customer satisfaction due to quality will translate to premium prices, (Evans & Lindsay, 2011);

the way Japanese products are currently able to fetch higher prices against other competitors from Taiwan. China, F.l'. and USA simply by carrying a label "Made in Japan". This research has the potential of assisting the government of Kenya and other stakeholders in formulating effective policies for overall competitive advantage and high-level organizational performance, not only in the horticulture industry, but also in the entire country. Specifically, the policies should enable the horticulture industry, especially in the fruits and vegetables sectors where there are many small and medium enterprises (SMEs), improve productivity, earn more foreign exchange, contribute to the gross domestic product (GDP), and create wealth.

Further, the study has a great potential in assisting institutions involved in support programmes to focus their resources to areas with the biggest impact to both the farmer and the exporter, thereby guaranteeing redemption of grants or loans brought about by high success rates. This is amplified by the fact that many small-scale farmers are involved in the growing of fruits and vegetables, while those opting to be involved in flower farming have to invest heavily so the quality awareness would improve their produce and, therefore, enhance their income levels.

The study also provides scholars and students of quality an opportunity of creating and receiving knowledge respectively for the betterment of society. To that effect, recommendations for further research have been presented. Finally, the study has come up with a generic framework for implementing TQ in Kenya that will assist Kenyan organizations, especially in the horticulture industry, to implement their TQ initiatives. These are non-prescriptive implementation guidelines constructed from lessons learnt through this study. The following section provides a detailed presentation on how this thesis is organized and also provides the introduction to chapter two.

1.5 Organization of the Thesis

This thesis is presented in chapter form. This chapter has tackled the background of the study showing that quality thinking is a phenomenon that has taken root in the developed countries and that some developing countries are joining up. The chapter has also brought out the context of the study in Kenya's horticultural industry. What follows is chapter two of the thesis. Chapter two focuses on the

relevant literature review that informs deeply the theoretical, conceptual and empirical studies in the field. The literature is arranged from the concept of strategic orientation, operations effectiveness, the major principles of total quality management as conceptualized by scholars, and competitive advantage.

Chapter three presents the comprehensive methodology the research followed from design to tests for multicollinearity while chapter four presents the attributes of the respondents and the correlations of the major factors and variables in the research. Chapter five then presents the data of the results of the tests of hypotheses as developed in the research framework. Further, the tests are interpreted and the implications stated to enable a coherent discussion to take place. In chapter six, a summary of the findings is presented, then conclusions are made and recommendations presented as well as implications on policy, theory and practice. Further, the envisaged future direction of studies in total quality is presented.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Scholars and institutions define Total Quality Management (TQM) or simply Total Quality (TQ) differently. The Union of Japanese Scientists and Engineers (JUSE), the pioneer institution in the utilization and propagation of Total Quality-Management. define TQ as a set of systematic activities carried out by the entire organization to effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price (JUSE 2007).

Feigenbaum (1991) saw total quality as an effective system for integrating, developing, maintaining and improving quality efforts of the various groups within an organization, so as to enable production and service at the most economical levels that allow full customer satisfaction. It is therefore an integrated system of principles, methods, and best practices that provide a framework for organizations to strive for excellence in everything they do. This would lead to exceptional organization performance

On their part, nine Chief Executive Officers (CEOs) of major U.S. corporations defined TQ as a people-focused management system that aims at continual increase in customer satisfaction at continually lower real cost. It is a total system approach (not a separate area or program), and an integral part of high-level strategy; it works horizontally, across functions and departments; it involves all employees, top to bottom, and extends backward and forward to include the supply chain and customer chain. It stresses learning and adaptation to continual change as keys to organization success.

The foundation of TQ is philosophical, the method scientific. Total Quality includes systems, methods and tools. The systems permit change; the philosophy stays the same. Total Quality is anchored in values that stress the dignity of the individual, and the power of community action (Procter & Gamble, 1992). In essence, therefore. TQ as a set of principles, approaches, methods and techniques of management that ensures continuous improvement in the quality of all aspects of an organization's processes, products and or services, in order to satisfy customers. This

view enabled the research to focus on the fundamentals of TQ. Further, it allowed the research to focus on finding out whether a particular organization is operating in a TQ environment. This is so when the concept is broken into principles, methods, approaches and techniques. Finally, the available literature maked it clear that TQ is a programme, not a project. It is a journey with no end. focusing on learning and continual change. It is not a quick-fix solution, but a lifetime commitment to customer satisfaction. The literature review introduces the theories, concept and philosophy of strategic management, operations effectiveness, total quality and competitive advantage. The defined principles and parameters are then discussed followed by research findings done on the subject. Finally, a table representing the conceptual literature and knowledge gaps is presented.

2.2 Strategic Management Orientation

Literature on strategic management is vast and still expanding, and the contributions are not just from the management but other disciplines as well. According to Starbuck (1965), strategic management encompasses all aspects of an organization, which are relevant to adaptation. This means that one could legitimately discuss everything that has been written about organizations, so that what biologists write about the adaptation of species can have relevance for our understanding of strategy as positioning (niche). What historians conclude about periods in the development of societies can help explain different stages in the development of organizational strategies, while physicists' descriptions of quantum mechanics and mathematics theories of chaos may provide insights into how organizations change.

On his part. Ohmae (1991) sees the classic military approach to strategy in deploying one's forces to achieve competitive advantage. Others such as Sanchez and Heene (2004) see it as the competitive moves and business approaches to produce successful performance. That is, it is management's game plan for running the business, strengthening firm's competitive position, satisfying customers, and achieving performance targets. These targets have to be designed in such a wa> as to ensure the whole product cycle is taken into consideration. The product life cycle starts with raw material extraction. With the raw materials, the organization utilizing them sources, receives and puts them through a production or manufacturing process. The finished goods are transported to the customers who use them for satisfaction.

After using the product, the customer discards, and this opens the door for recycling. At the raw material level, disposal and recycling is also in use. For each of these stages of a product life cycle, the discerning organization develops achievable targets (NIST. 2008). Clearly, strategic management is not just about values and vision, competencies and capabilities, but also about the military, crisis management and commitment, organizational learning and punctuated equilibrium, industrial organization and social revolution. All these, though diverse and sometimes sounding contradictory, are geared towards survival, growth and sustenance through competitive advantage. Indeed, a strategy can be seen as the match between qualifications and opportunity that positions a firm in its environment (Christensen et al, 1982) or a pattern or plan that integrates an organization's major goals, policies, and action sequences into a cohesive whole. A well formulated strategy would, therefore, marshal an organization's resources into a unique posture to provide a vantage point against competitors. Through an effective strategy, an organization creates a sustainable competitive advantage (Evans & Lindsay, 2011: Porter, 1985).

There have been recent developments geared towards converging TQ and strategic thinking. Among thoughts informing in this field include what has come to be known as theory of constraint, balanced scorecard, Floshin management approach to strategic planning and implementation, and six-sigma quality assurance. Each of these theories have contributed to the improvement of organization performance and competitiveness of the firm. The Theory of Constraint (TOC) is a philosophy of management and organization improvement (Rogo, 2007; Ross, 1999). It is based on the fact that, like a chain with its weakest link, in any complex system at any point in time, there is most often only one aspect of that system that is limiting its ability to achieve more of its goal. For the system to attain any significant improvement, that constraint must be identified and the whole system must be managed with the constraint in mind.

The body of knowledge and analytical tools that give power to TOC come from experience in the "accurate sciences", and are based on rigorous, but easily understood, cause-and-effect logic. These tools also provide the ability to support the development of breakthrough solutions through the premise that in the real world, all systemic conflicts that inhibit action are the result of unexamined assumptions that

can be identified and corrected for true win-win solutions (Rogo, 2007; Ross, 1999). The TOC thinking process, taken as a whole, provides an integrated problem-solving methodology that addresses not only the construction of solutions, but also the need for communication and collaboration that successful implementation requires. The thinking has been used to create powerful generic, "starting-point" solutions for various business functions, including: Production, Project Management, Distribution, Supplier Relations and Marketing, and provides the route to customizing these generic solutions for specific environments (Rogo. 2007).

Central to the concept of TOC is the acknowledgement of cause and effect analysis. The thinking process of TOC gives a series of steps, which combine cause-effect. and experience and intuition to gain knowledge, starting with observation of the world around us. One now has the tools to understand why things happen, and thus can create a better future for self. With knowledge, one can improve. One extraordinary benefit of the TOC thinking process is that it provides the ability to recognize the paradigm shifts which occur when times change, but assumptions and rules do not. One cannot constantly monitor every assumption to be sure one is in line with constantly evolving reality, so the ability to spot the shifts can be a real advantage. Those who continue their patterns of operations, regardless of the changing reality, will suffer when the effects of their actions are not those that they expect (Focused Performance, 2007; Rogo, 2007: Ross, 1999). Having identified the major constraint can allow one to focus on the balanced scorecard.

Kaplan and Norton (1996) developed the Balanced Scorecard, a performance measurement system that considers not only financial measures, but also customers, business process, and learning measures. The balanced scorecard approach is based on the position taken by Deming: - that traditional financial reporting system provides an indication of how a firm has performed in the past, but offer little information about how it might perform in the future. For example, a firm might reduce its level of customer service in order to boost current earnings, but then future earnings might be negatively impacted due to reduced customer satisfaction (Evans & Lindsay, 2011). In the industrial age, most of the assets of a firm were in property, plant, and equipment, and the financial accounting system performed an adequate job of valuing those assets. In the information age. much of the value of the firm is embedded in

innovative processes, customer relationships, and human resources. The financial accounting system is not so good at valuing such assets. The Balanced Scorecard, therefore, goes beyond standard tlnancial measures to include the following additional perspectives: the customer perspective, the internal process perspective, and the learning and growth perspective. In the financial perspective, reviews are carried out on measures such as operating income, return on capital employed, and economic value added. In the customer perspective, reviews are carried out on measures such as customer satisfaction, customer retention, and market share in target segments. In the business process perspective, measures such as cost, throughput, and quality are taken. These are for business processes such as procurement, production, and order fulfillment. In learning and growth perspective, measures such as employee satisfaction, employee retention, and skill sets are taken (Kaplan & Norton, 1996, 2004).

These four realms are not simply a collection of independent perspectives. Rather, there is a logical connection between them - learning and growth lead to better business processes, which in turn lead to increased value to the customer, which finally leads to improved financial performance. Each perspective of the Balanced Scorecard includes objectives, measures of those objectives, target values of those measures, and initiatives, defined as follows: - objectives - major goals to be achieved, for example, profitable growth. Measures - the observable parameters that will be used to measure progress toward reaching the objective. For example, the objective of profitable growth might be measured by growth in net margin. Targets - the specific target values for the measures, for example. +2 percent growth in net margin. Initiatives - action programs to be initiated in order to meet the objective (Kaplan & Norton, 1996, 2004).

The Balanced Scorecard originally was conceived as an improved performance measurement system (Kaplan & Norton, 2004). However, it soon became evident that it could be used as a management system to implement strategy at all levels of the organization in the following functions:-clarifying strategy - the translation of strategic objectives into quantifiable measures clarifies the management team's understanding of the strategy and helps to develop a coherent consensus. Communicating strategic objectives - the Balanced Scorecard can serve to translate

high level objectives into operational objectives and communicate the strategy effectively throughout the organization. Planning, setting targets, and aligning strategic initiatives - ambitious but achievable targets are set for each perspective and initiatives are developed to align efforts to reach the targets. Strategic feedback and learning - executives receive feedback on whether the strategy implementation is proceeding according to plan and on whether the strategy itself is successful ("double-loop learning").These functions have made the Balanced Scorecard an effective management system for the implementation of strategy.

Kaplan and Norton (2004) indicate that the Balanced Scorecard has been applied successfully to private sector companies, non-profit organizations, and government agencies. They cite the following benefits of using the balanced scorecard:-Focusing the whole organization on the few key things needed to create breakthrough performance; Helping to integrate various corporate programs, such as quality, re-engineering, and customer service initiatives, and. breaking down strategic measures to local levels so that unit managers, operators, and employees can see what is required at their level to roll into excellent performance overall. This approach to strategy development brings a practitioner closer to total quality thinking.

In the context of strategic planning versus balanced score card with quality management, through integrating Malcolm Baldrige National Quality Award criteria for performance excellence, Da Silva et al (2005), focused on showing the BSC perspectives in the total quality context by postulating that BSC equals strategic planning. To that end, strategic planning (SP) and information and analysis system (I), were put in the centre of a model in order to appropriately align all the company efforts toward customer satisfaction, quality and other operational goals.

Da Silva et al (2005) suggest that financial perspective should be complemented with the award's business result (BR) requirements. Customer perspective should be complemented with the Award's customer and market (C) requirements. Internal process and the Award's management process (MP) category' requirements should work together to develop core competency processes that meet stockholders' and customers' requirements. Finally, learning and innovation perspective concerns in developing the capabilities and processes necessary for the future and therefore, should work closely with the Award's leadership (L) and human

resources (HR) categories requirements as the best conceptual ways to help employees learn hov\ to know, how to do, how to work together and how to change. This perspective puts TQ, strategic planning and balanced scorecard. in the same platform. At this level, the effective deployment of strategic plan becomes important.

Hoshin Kanri. is another Japanese approach to the daunting task of improving organization's competitive advantage through effective deployment of corporate strategy and aims at providing a dramatic improvement (Hoshin Quality, 2007). Hoshin Kanri means management and control of the organization's direction needle or focus. It is a systems approach to the management of change in critical business processes using a step-by-step planning, implementation, and review process. Hoshin Kanri's aim is to improve the performance of business systems. For every business system, there are measures of performance and desired levels of performance. Hoshin Kanri provides a planning structure that will bring selected critical business processes up to the desired level of performance. Hoshin Kanri is applied at two levels: i) The Strategic Planning Strategies:- Business Simulations and ii) The Daily Management Strategies:- Business Operations. The most popular English translation of Hoshin is Policy Deployment. Most books by American scholars use Policy Deployment as the name for Hoshin. Other frequently used translations are 'Management By Policy', 'Hoshin Planning', 'Policy Management', 'Managing for Results,' Strategic Deployment' and 'Goal Deployment'. Hoshin is designed to help organizations become more competitive (Hoshin Quality. 2007).

Hoshin Kanri can be thought of as the application of Juran's Plan-Do-Check (Studv)-Act (PDCA) cycle to the management process. The PDSA cycle represents a generic approach to continual improvement of activities and processes (Evans, 2011). In the 'PLAN' step, a plan of action is developed to address a problem. Corresponding control points and control parameters are created. The plan is reviewed and agreed. In the 'DO' step, the plan is implemented. In the 'CHECK' or 'STUDY' step, information is collected on the control parameters. The actual results are compared to the expected results. In the 'ACT' step, the results are analyzed. Causes of any differences between expected and actual results are identified, discussed and agreed. Corrective action is identified. The Plan-Do-Check-Act Cycle is a logical sequence for behavior. PDCA implies that once one cycle of the sequence is completed with the 'ACT' step (in

which corrective action is identified), the 'PLAN' step (in which a plan to address how corrective action will be achieved) of the next cycle should be started. The intention is that, in companies using Hoshin Kanri. everybody is aware of management's vision, departments do not compete against each other, projects run to successful conclusions, while business is seen as a set of coordinated processes (Hoshin Quality, 2007). It therefore, can be seen as a further refinement of the balanced score card approach and theory of constraint all geared towards effective strategy development and deploy ment.

The other development in total quality field is the concept of six-sigma, whereby the focus is to ensure that virtually all produced items or service are within the agreed parameters and only 3.4 (three point four) in a million are outside the set standards, that is, 3.4 defects per million opportunities. This allows a firm to focus on the process and opportunities for error (Evans & Lindsay, 2011). Six-sigma is, therefore, a strategy to accelerate improvements and achieve unprecedented performance levels by focusing on characteristics that are critical to customers, and identifying and eliminating causes of errors or defects in processes. This leads to increased productivity and reduction in waste.

Strategic management's sole focus is to provide an organization with a platform on which to have a competitive advantage over its rivals. This competitive advantage is derived from various factors. The theory of constraint, balanced score card, six-sigma and Hoshin management approaches, as seen in the TQ literature, are derivatives of TQ thinking brought into strategic management. This marriage is geared towards making strategic management more effective in improving chances of organization survival and performance by providing competitive advantage over rivals. One way of bringing forth competitive advantage is by managing the process well to ensure an organization achieves operations effectiveness.

2.3 **Operations Effectiveness**

The journey to competitive advantage over rivals and long-term survival therefore becomes clearer after one is introduced to the concept of operations effectiveness. This concept postulates that when an organization is able to add value to the product or services with a clear aim of pleasing the customer, the customer will

invariably be satisfied and come for more, guaranteeing the company's long-term survival. Value addition, therefore, becomes a crucial component for organization survival (Porter 1986). Porter (1998) defines operations effectiveness'as performing similar activities better than rivals. It includes the concept of efficiency derived from any number of practices that allow a company to better utilize its inputs, for example, reducing defects in products. This thinking can be traced to his value chain analysis where he postulates that competitive advantage cannot be understood by just taking the macro view of the firm. Different activities can contribute to a firm's relative cost position and create a basis for differentiation. Differentiation can stem from similarly diverse factories, including the procurement of high quality raw materials, a responsive order entry system, or a superior product design (Porter 1985, 1998). A systematic way of examining all the activities a firm performs and how they interact is necessary for analysing the source of competitive advantage. Porter came up with the value chain analysis as a tool for doing this. In competitive terms. Porter defines value as the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue, a reflection of the price a product commands for the unit it can sell. A firm is profitable if the value it commands exceeds the product cost involved in creating the product. Differences among competitor value chains are therefore key sources of competitive advantage.

Value chain analysis is based on the assumption that the basic purpose of a firm is to create value for users of its product or services. In value chain analysis, managers divide the activities of their firm into separate activities that add value. Their firm is viewed as a chain of value-creating activities starting with procuring raw materials or input and continuing through design, component production, manufacturing and assembly, distribution, sales, delivery, and support of the ultimate user of its products or services (Porter, 1985). Each of these activities can add value and each can be a source of competitive advantage.

By identifying and examining these activities, managers often require an in-depth understanding of their firm's capabilities, its cost structure, and how these create competitive advantage or disadvantages, thereby creating an effective organization. Within each category of primary and support activities, three activity types play different roles. Direct - activities directly involved in creating value for the

buy er, such as assembly, parts machining, sales force operations, advertising, product design, recruiting. Indirect: - activities that make it possible to perform direct activities on a continuing basis, such as maintenance, scheduling operation of facilities, sales force administration, research administration, and vendor record keeping. Quality assurance: - activities that ensure the quality of other activities, such as monitoring, inspecting, testing, reviewing, checking, adjusting and reworking. Quality assurance is not sy nonymous with quality management, because many value activities contribute to quality. Everything a firm does should be captured in a primary or support activity. Labelling activities in service industries often causes confusion because operations, marketing and after sales support are often closely tied. Ordering of activities should broadly follow the process flow (Porter 1985, 1998).

Slack et al (1995) provide the strategic importance of operations effectiveness by pointing out five operation performance objectives. These objectives are:- doing things right, giving quality advantage to the company; doing things fast, providing speed advantage; doing things on time providing dependability advantage; changing what is done, providing flexibility advantage; and doing things cheaply, providing cost advantage. According to Porter (1998), TQ provides the thrust under which organization effectiveness can be achieved, leading to competitive advantage.

This can be achieved in a total quality environment, and it is mostly clarified when one measures the cost of quality or cost of poor quality, defined as'the costs associated with avoiding poor quality or incurred as a result of poor quality (Evans & Lindsay, 2011; Crosby, 1979). The impacts associated with poor operations effectiveness in financial terms can be calculated by looking at scrap and rework costs, downgrading costs, process failure, complaints and returns from customers, product recall, warranty claims, product liability, and subtract this from costs incurred in developing quality systems including quality planning, process control, information systems, test and inspection, instrument measurement and process measurement.

This, of course, does not tell the whole story, as the hidden costs such as poor employee morale, loss of customers, and loss of reputation among others are not included. The focus on quality is made more apparent by Deming's chain reaction philosophy, which states that, as quality improves, costs will decrease and productivity will increase, resulting to more jobs, greater market share, and long-term

survival (Evans & Lindsay 2011). Slowly and systematically, an organization is therefore expected to achieve a level of competitive advantage over rivals as it implements total quality. Each step the organization takes in implementing total quality should bring it closer to higher-level competitive advantage.

2.4 Total Quality Concepts and Theories

The concept of total quality can be traced to Japanese companies who managed to gain exceptional competitive advantage against American and European companies especially in the motor vehicle industry with Toyota leading the onslaught (Hino, 2005. Martinez-Lorente et al. 1998). The quality movement in Japan began in 1946 with the U.S. Occupation Eorce's mission to revive and restructure Japan's communications equipment industry. General MacArthur was committed to educating the public through the radio and, therefore, needed functioning quality communication systems. Sarasohn was recruited to spearhead the effort by repairing and installing equipment, making materials and parts available, restarting factories, establishing the equipment test laboratory (ETL), and setting rigid quality standards for products (Tsurumi, 1990). Sarasohn recommended individuals for company presidencies, like Kobayashi of NEC, and he established education for Japan's top executives in the management of quality. Furthermore, upon Sarasohn's return to the United States, he recommended Deming to provide a seminar in Japan on statistical quality control (SQC). The seminars provided the criteria for Japan's famed Deming Prize for quality. The first Deming Prize was given to Kobayashi in 1952. Within a decade. Union of Japanese Scientists and Engineers (JUSE) had trained nearly 20,000 engineers in SQC methods. Today, Japan gives high rating to companies that win the Deming prize. Deming's work impacted industries such as those for radios and parts, transistors, cameras, binoculars, and sewing machines.

In 1960, Deming was recognized for his contribution to Japan's ^industrialization when the Japanese Prime Minister awarded him the Second Order of the Sacred Treasure. In 1954. Juran of the United States raised the level of quality management from the factory to the total organization. He stressed the importance of systems-thinking that begins with product designs, prototype testing, proper equipment operations, and accurate process feedback. Juran's seminar also became a part of JUSE's educational programs. Juran provided the move from SQC to total

qualit> control (TQC) (Evans & Lindsay. 2011) in Japan. This included company-wide activities and education in quality control, quality circles and audits, and promotion of quality management principles. Ishikavva. one of the fathers of companywide quality control (CWQC) in Japan, outlined the elements of CWQC management as: Quality comes first, not short-term profits; the customer comes first, not the producer: Customers are the next process with no organizational barriers; Decisions are based on facts and data: Management is participatory and respectful of all employees; Management is driven by cross-functional committees covering product planning, product design, production planning, purchasing, manufacturing, sales, and distribution (Evans & Lindsay. 2011).

One of the innovative TQC methodologies developed in Japan is referred to as the "ishikawa fishbone" or "cause-and-effect" diagram. After collecting statistical data. Ishikawa found that dispersion came from four common causes: - Machines, Methods. Materials, and Measurement. Materials often differ when sources of supply or size requirements vary. Equipment or machines also function differently depending on variations in their own parts, and they operate optimally for only part of the time. Processes or work methods have even greater variations. Finally, measurement also varies. All of these variations affect a product's quality. Ishikawa's diagram has led Japanese firms to focus quality control attention on the improvement of materials, equipment, and processes (Evans & Lindsay, 2011). The Japanese believe that the greatest benefit occurs when defect detection is achieved within the manufacturing sequence, thus minimizing the time required for final inspection, maximizing return on investment, and indirectly improving product reliability (Deming, 1986; Evans & Lindsay, 2011).

The major objective of TQ is the search for customer satisfaction. It is a call for an organizational commitment to meeting or exceeding customer expectations (Besterfield et al 2003). This is borne from the knowledge that the customer is the organization's "raison d'etre", its purpose for existence. Without the customer, an organization cannot survive (Ohmae 1991. 2000, 2005). Strategies therefore should be designed all aimed at ensuring customers are satisfied. Indeed, the aim should be total customer satisfaction. The customer should be given maximum focus, maximum care, and maximum respect. All organization activities should be geared towards the goal

of pleasing customers. Emphasizing customer satisfaction will result in many benefits for the organization, including repeat sales, word-of-mouth advertising, reputation and goodwill building, and pointers for improvements through customer complaints and suggestions (Juran & Godfrey, 1998; Deming, 1986. 1993; Ohmae 1991, 2005). This knowledge has been synthesized into the TQ philosophy.

The TQ concept is presented in form of principles, methods, approaches and tools. While JLSE has been able to define TQ.Vl, it also presents the principles for purposes ofjudgment of organizations for the Deming Application Prize, as Policies; The organization and its operations; Education and dissemination; Information gathering and communication; Analysis; Standardization; Control/management; Quality assurance; Effects; and Future plans; (JUSE, 2007). These judgment criteria form the basis under which the assessors are able to determine whether an organization is implementing TQ and the score for the year in consideration. While other countries have established national quality awards, the most internationally known quality awards after Deming Prize include Malcolm Baldridge National Quality Award (MBNQA) started in 1987 for American companies, and the European Foundation for Quality Management (EFQM) Excellence Award started in 1991 for European companies (Evans & Lindsay, 2011).

The MBNQA has criteria for performance excellence made up of Leadership; Strategic Planning; Customer and Market Focus; Information and Analysis; Human Resource Focus; Process Management; and Business Results (NIST. 2008). The EFQM Excellence Award is founded on EFQM principles of Result Orientation; Customer Focus; Leadership and Constancy of Purpose: Management by Processes and Facts: People Development and Involvement: Continuous Learning, Innovation and Improvement; Partnership Development; and Public Responsibility.

These principles are consolidated into the EFQM Excellence Model for assessing organizations into two major components designated as Enablers and Results. Enablers bring out the concepts of Leadership; People: Policy and Strategy; Partnerships and Resources; and Processes while Results focus on People Results; Customer Results; Society Results; and Key Performance Results (EFQM, 2008). The ISO 9001-2008 has eight principles used during the certification process, namely Customer Focus; Leadership; Involvement of People; Process Approach; System

Approach to Management; Continual Improvement: Factual Approach to Decision Making; and Mutual Beneficial Supplier Relationship (ISO 2008). These principles form the basis under which any organization wishing to develop a qualitv management system will use as a template for process tracking. According to Khan (2003), TQM philosophy consists of four basic beliefs, which are absolute customer focus; employee empowerment, involvement and ownership; continuous improvement; and use of systematic approaches to management. The core of the TQM philosophy is "absolute customer focus". Belief in "employee empowerment, involvement and ownership", "continuous improvement" and the "use of systematic management" help the organization achieve continual increase of customer satisfaction at a continually lower real cost.

Other scholars have come up with various frameworks depicting TQM implementation. Baidoun (2004) came up with a framework structured around four recognizable labels defined as constructs that represent the critical quality factors. These factors were grouped into two major components, hard and soft constructs. The constructs were in common with the published literature to that date while foundation elements that must be addressed by top management in the pre-launch stage were incorporated to enhance the applicability of the framework. While the major quality awards, the ISO 9000 certification process, and the various constructs all have different criteria, some of the concepts are common across the different institutions and scholars.

Besterfield et al (2003) have synthesized these different factors into six principles or concepts of TQ as Leadership: Customer Satisfaction; Employee Involvement; Supplier Partnership; Continuous Improvement and Performance Measurement. The literature on TQ will focus on the above six principles. It will also highlight some of the tools and techniques used in TQ for purposes of analysis and understanding TQ implementation. These will provide the knowledge required to assist to make informed conclusions on whether the objective of TQ of satisfying customers is achieved, and how this achievement brings forth competitive advantage. Perhaps the most important element of TQ is strong management leadership to provide strategic direction. All the leading scholars of quality such as Deming, Juran and Crosby have taken this position. It is this understanding that made Deming, for

example, to deal only with CEOs of the American companies that came to him late in his life (Evans & Lindsay, 2011). In TQ context, true leadership means using influence to get people to do something, or to behave in a particular way by recognizing the humanness of human beings. Influence means positive personal bonds between two or more people (Najmi & Kehoe, 2000; Evans & Lindsay, 2011, Covey 1992; Latzko & Saunders, 1995). This kind of approach in leadership is achieved through the transformational leadership theory which Jooste (2004) looks at as inspiring and influencing ordinary people to do extraordinary things.

It is, therefore, a broad, vision-oriented leadership approach encompassing charisma, inspiration, intellectual stimulation and individualized considerations. To that effect, transformational leaders will strive to create trust among their followers. They will stimulate their organizations intellectually. They will develop leadership qualities in others. They will seek to achieve objectives that are beyond their own immediate, as well as the group, needs. This approach has been strongly correlated with lower staff turnover, higher productivity and quality, and higher employee satisfaction (Evans & Lindsay, 2011).

On their part, Besterfield et al (2003) indicate that a good leader will focus on both internal and external customers. The leader will be empathic and will trust and empower subordinates through training and development rather than control them. Further, the leader will put emphasis on prevention rather than cure, encourage collaboration rather than competition within teams and the whole organization, consider problems as opportunities to learn, value communication, be committed to quality by word and deed, consider suppliers as partners, provide enabling environment to support quality efforts, and recognize and reward individuals and teams.

With the above attributes, the leader will recognize that quality is first, everything else is secondary. That doing it right the first time and always, will always be cheaper. So that if each step of a process builds quality into a product or service, then the finished product or completed service will be of high quality, making final and intermediate inspection activities unnecessary (Deming, 1986). In other words, improving quality enables an organization to achieve all its other performance goals and objectives such as high profits, bigger market share, long-term survival, growth

and development. This means that the decision or action that advances total quality-most. should always be the one to be taken. One should, therefore, maximize value adding, simplicity and waste reduction (Crosby 1979. Deming 1986. Evans & Lindsay 2011). By 1979, Herbert Simon had already recognized that the major duty of management is to reduce complexity. The management can achieve this by .simplifying decision-making processes and decisions themselves. Further, the management should develop systems that support organization participants in making these decisions (Simon, 1979). The leader will therefore recognize that the whole is greater than the sum of all its parts (Ansoff 1988). that cooperative, organized and coordinated group work is probably the most powerful system for enhancing human productivity. To that effect, the leader will maximize teamwork, team spirit or "esprit de corps" in the organization.

As the provider of inspiration to the team, the leader will have to think of balancing the needs of stakeholders by exercising highest possible levels of justice, fairness and equity (Kaplan & Norton 2004) if social peace, progress and prosperity are to be achieved. The understanding here is that justice is the legal integrity, respect for established laws, rules and regulations; fairness is the moral and ethical fortitude, respect for human rights, humanness, civilized treatment of others; while equity is commensurate or proportionate (not necessarily equal) sharing of the organization's burdens/costs and benefits/profits according to ability and contributions. This balanced way of looking at issues enhances human resource management and focus on major factors that add value to the organization (Deming, 1986, 1993; Evans & Lindsay 2011: Juran & Godfrey 1998, Pickett. 2005). The leader will, therefore, epitomize the drive for quality in the organization as it searches for ways of satisfying the customers.

In order to satisfy customers, there is need for the coordination of functions between business processes, with the focus of entrenching customer needs by way of constructing the "house of quality". This refers to a set of matrices used to relate the voice of the customer or customer requirements to a product's technical requirements, components requirements, process control plans, and manufacturing operations. This is followed by quality function deployment, which is the horizontal integration of the various business processes, from inception to delivery and follow-up of the product or

service, for best overall customer satisfaction (Evans & Lindsay, 2011). This implies that all resources along the product/service chain and the associated processes are coordinated. Effective customer surveys and process coordination will be undertaken to achieve the desired goals (Evans & Lindsay, 2011; Ross, 1999). The end product will therefore be of the desired quality as expected by the customer.

An organization is only as good as the people who make it up, and people are only as good as they are knowledgeable, skilled and experienced. It follows, therefore, that any organization with the ambition of being among the world's best-in-class leaders in performance excellence must put enormous effort and investment in the education, training and exposure of its members (Deming, 1986, 1993; Crosby, 1979). Appreciation of empowerment as an important principle of TQ is further informed by the thoughts that the capacity to find and administer solutions for organizational problems is widely, not narrowly, distributed in an organization. This thinking brings forth what Simon (1979) called bounded rationality, the realization that indeed, others have solutions that not only we do not have but have not even thought about. Nobody has a monopoly of genius, virtue or high ideals. Conversely, nobody is without a degree of ignorance, evil or base motives. As such, no person should have a monopoly of power, authority or influence over others. Consequently, power and/or authority, and/or influence should be widely distributed in the organization through a win-win thinking (Kreitner & Kinicki, 2004). Furthermore, it has been discovered that an empowered employee is able to address customer needs quickly, and directly and more often at lower costs (Evans & Lindsay, 2011).

Recognition that what suppliers deliver determines what one produces goes a long way in appreciating the value of suppliers to an organization. Research shows that there is a strong positive correlation between supplier management practices, and quality management practices, with partnership offering a means of organization performance improvement (Theodorakioglou et al, 2006: Szwejczewski et al. 2005). Strong customer and supplier relationship is guided by the following principles: recognizing the strategic importance of suppliers in accomplishing business objectives; developing win-win relationships; and establishing trust through openness and honesty. Supply of quality products coupled with commitment to quality improvement from suppliers guarantees an edge over the competition (Deming, 1986.

1993; Latzko & Saunders. 1995: Evans & Lindsay, 2011). The concept of performance measurement requires that managers use objective data in making decisions with an understanding that if you cannot measure it, you cannot manage it, and if you cannot manage it, you cannot improve it. Although in simpler cases previous experiences are valuable in making quick judgments, complicated cases warrant data to be gathered on the issues and decisions made accordingly. Total Quality is a highly scientific management system. One must measure everything as accurately as possible, as objectively as possible. One must have maximum statistical data. This gives the management system a high degree of precision, accuracy and objectivity (Porter & Tanner, 1998; Fellers, 1994). The goal of taking measurements is to permit managers to see their company more clearly, from many perspectives, and hence to make wiser long-term decisions.

The Baldridge Criteria (2007) booklet reiterates this concept of fact-based management by stating that businesses depend upon measurement and analysis of performance. Measurements must drive the company's strategy formulation and provide critical data and information about key processes, outputs and results. Data and information needed for performance measurement and improvement are of many types, including customer, product and service performance, operations, market, competitive comparisons, supplier, employee-related costs, and financials. Analysis entails using data to determine trends, projections, and cause and effect that might not be evident without analysis. Data and analysis support a variety of company purposes, such as planning, reviewing company performance, improving operations, and comparing company performance with competitors' or with 'best practices' benchmarks.

The Baldridge booklet goes further to define performance measures or indicators as measurable characteristics of products, services, processes, and operations the company uses to track and improve performance. The measures or indicators should be selected to best represent the factors that lead to improved customer, operation, and financial performance. A comprehensive set of measures or indicators tied to customer and/or company performance requirements represents a clear basis for aligning all activities with the company's goals. Through the analysis of data from the tracking processes, the measures or indicators themselves may be

evaluated and changed to better support such goals assisting in crafting corporate as well as operational strategies (Porter. 1987). Though we all yearn for perfection, every passing day teaches us that everything can be improved. That nothing is perfect. This is a powerful principle of TQ and a driving force for organization relevance. This means, among other things, that the business of improving processes, products and services is endless. In order to discover continuously new and better ways of doing things, this principle is operationalized or applied through a policy of maximizing research, creative imagination and experimentation (Deming 1972; Crosby 1979; Juran & Godfrey, 1998).

Working closely with improvement is the tool of benchmarking, informed by the knowledge that there is no need of re-inventing the wheel. Benchmarking is the search for best practices, in any company, in any industry, anywhere in the world, that lead to superior performance. By reviewing practices from several best-in-class (BIC) companies, one may be able to form a set of practices that is adaptable and will lead to even better performance. Benchmarking may be used as a tool for leap-frogging to superior performance (Evans & Lindsay, 2011: Ross, 1999).

Given that management concepts such as strategic, marketing, lean production, balanced scorecard, six-sigma, TQ and others overlap and each of them has strengths and weaknesses, initiatives to integrate them are not new. The dominating approach in TQ is to obtain the ISO 9001 certificate first, and then to use the resulting quality system as a platform for a continuous improvement of quality of products and or services, in accordance with the Total Quality model (Kanji, 1998; Tang and Kam, 1999; Lisiecka, 1999; Najmi and Kehoe, 2000). This approach is explained mainly by the assertion that TQ is considerably wider, far more expensive and demanding in its implementation than are other systems such as ISO 9000 (Rao and Tang, 1996; Al-Dabal, 2001).

A different approach has been offered by Sun (1999). He sees a way for integrating the TQ and ISO 9000 concepts in the current position of company, and differentiates three such ways: TQ-then-ISO, ISO-then-TQ, and balanced path. Further. Sun (2000) recognizes size and advancement of the company, as the factors that influence which model will be predominant. He recommends explicitly that ISO 9000 should be incorporated with the philosophy and methods of TQ. Quite similarly.

Zhang (2000) sees the ISO 9000 certification only as an element of TQ rather than the basis for it. Further, it has been noted that some managers generally lack an understanding of the concepts and principles of quality management. They, for instance, still erroneously connect quality' mainly to the area of operations, rather than to the area of human resources as well, where quality management is least practiced. They are also frustrated with the slow bottom-line payback from, the implementation of quality management practices, which they look on as tools and techniques for problem solving at the shop-floor level, rather than as a philosophy (Najmi and Kehoe, 2000).

It is this expressed fear that ISO 9001-2000 edition, the revised version of ISO 9000-1994, seemed to address as it sought to adopt the core attributes of TQ (Lewis et al, 2006). This has been retained in the ISO 9001-2008 edition. One would, therefore, envisage a strategic approach to TQ implementation by first, appreciating the philosophy behind TQ, and then identifying the strategic importance of undertaking such an investment, all geared towards attaining competitive advantage.

2.5 Competitive Advantage

Competitive advantage denotes a firm's ability to achieve market superiority (Evans & Lindsay, 2011). This concept is the core for strategic management as every organization searches for a vantage point that could deliver competitive edge against the rivals. Porter provided a framework that models an industry as being influenced by five forces, (Porter, 1985). His advice was that the strategic business manager seeking to develop a competitive advantage over rival firms can use this model to better understand the context in which the firm operates. While one way of gaining competitive advantage over rivals has been identified as achieving a better cost advantage as seen in the operations effectiveness section, another way to competitive advantage is product differentiation (Porter, 1985).

Product differentiation by itself will be of little value unless the difference so achieved attracts and captures the imagination of customers. The needs and wants of the customer must be entrenched in the business process from customer surveys, to design, to production, to delivery, and use, if the customer is to be truly satisfied (Evans & Lindsay, 2011). This can be achieved through implementation of TQ. The

1970s and early 80s were tumultuous years for the powerhouses of the world's motor vehicle industry, with Ford. GM, Chrysler on the verge of closing down and they had to turn to total quality to survive and recapture their markets (Evans & Lindsay 2011). When Porter (1986) published his second book on competitive strategy focusing on value chain, he moved away from his focus on the five forces, namely bargaining power of suppliers^ threat of substitutes, bargaining power of buyers, threat of new entrants and rivalry among competitors, which all focused on external environment. He had realized that internal value creation is a crucial component to competitive advantage. Value creation depends on organizational competencies. Organization competencies are made up of strategic assets such as pool of experience, knowledge, systems, skills and technologies (Hamel & Prahalad, 1994; Markides & Williamson, 1994). Later, Porter was able to postulate that Total Quality Management provides the thrust under which organization effectiveness can be achieved (Porter, 1998).

According to Ohmae (1991), an organization with effective strategic thinking will gain competitive advantage with the resultant outcome of better satisfied customers. Better satisfied customers lead to bigger market share leading to increased revenue (Evans & Lindsay, 2011) while the effectively developed and executed strategy should be one that has marshaled the organization's resources to a unique posture that can take advantage of internal resources (Ohmae, 1991. 2005). This taking advantage leads to better productivity, while the productivity will only come about when there is reduced waste. Coupled with satisfied customers, employee satisfaction increases (Evans & Lindsay, 2011). In the following section, the connection between competitive advantage, operations effectiveness and total quality is tackled.

2.6 Total Quality, Operations Effectiveness and Competitive Advantage

As noted earlier, competitive advantage can be summarized as an organization's ability to achieve market superiority (Evans & Lindsay, 2011), so that in the long-run. a sustained competitive advantage will provide above average organization performance. Two major ways of gaining competitive advantage are having a better cost structure than competitors, and/or having the ability to differentiate the business from the competitors (Pearce & Robinson, 2007). Furthermore, competitive advantage is characterized by being driven by customer

needs and wants. Competitive advantage therefore makes a significant contribution to the success of the business while matching the organization's unique resources w ith opportunities in the environment. Additionally, competitive advantage is durable and long lasting, and difficult for competitors to copy while at the same time providing a basis for further improvement, plus direction and motivation to the entire organization (Wheelwright, 1989).

In traditional industrial movement, "quality control" and "zero defects" were important activities. In order to shield the customer from receiving poor quality products, aggressive efforts were focused on inspection and testing at the end of the production line. The problem with this approach, as pointed out by Deming (1986), is that the true causes of defects could never be identified, and there would always be inefficiencies due to the rejection of defects. What Deming saw was that variation is created at every step in a production process, and the causes of variation need to be identified and fixed. This thinking converges with all the major total quality experts such as Juran. Crosby, Feigenbaum and Ishikawa emphasizing on prevention and not detection (Martinez-Lorente et al., 1998).

If prevention can be done, then there is a way to reduce the defects and improve product quality indefinitely. To establish such a process, Deming emphasized that all business processes should be part of a system with feedback loops (Evans, 2011). The feedback data should be examined by managers to determine the causes of variation, the processes with significant problems, and then focus attention on fixing that subset of processes. Here, possibilities of identifying the weakest link as per theory of constraint thinking are enhanced.

As earlier noted, the balanced scorecard has strong similarities to Hoshin Planning or *hoshin kanri,* the organization-wide strategic planning system used widely in Japanese companies. Both seek breakthrough performance, alignment, and integrated targets for all levels. While the balanced scorecard suggests which specific areas should be measured for a balanced picture, this is not contradictory to Hoshin Planning. One thing that the Japanese emphasize is "catchball". the process of give and take between levels. This helps to define strategy in Japanese companies (Ohmae 1991). The balanced scorecard method seems to be more of a one-way street - the executive team creates the strategy, and it cascades down from there.

You tend to get what you aim for. since people will work to achieve the explicit targets which are set. According to Evans and Lindsay (2011), Deming feared this effect, noting that people would skew their work to meet particular incentive pay targets. For example, emphasizing traditional financial measures tends to encourage short-term thinking - like rigging shipping schedules to make the monthly sales look good, or aggressively discounting to meet year-end targets. Kaplan and Norton (1996), recognizing this, urged a more balanced set of measurements. Even so. people will work to achieve their scorecard goals, and may ignore important things which are not on the scorecard. Or, if the scorecard is not refreshed often enough, what looked like an important goal in January may not be very relevant in June. To that effect, therefore, Kaplan and Norton came up with an understanding that sustained value creation depends on managing four internal processes, namely operations, customer relationships, innovations, and regulatory and social processes (Kaplan & Norton 2004). The balanced scorecard incorporates feedback around internal business process *outputs*, as in TQ, but also adds a feedback loop around the *outcomes* of business strategies. This creates a "double-loop feedback" process.

One cannot improve what one cannot measure. Consequently, metrics must be developed based on the priorities of the strategic plan. This provides the key business drivers and criteria for metrics that managers must desire to watch. Processes are then designed to collect information relevant to these metrics, and reduce it to numerical form for storage, display, and analysis. Decision makers then examine the outcomes of various measured processes and strategies, and track the results to guide the company and provide feedback (Kaplan & Norton, 1996, 2004). So the value of metrics is in their ability to provide a factual basis for defining strategic feedback, to show the present status of the organization from many perspectives for decision makers. Metrics provide diagnostic feedback into various processes to guide improvements on a continuous basis, trends in performance over time as the metrics are tracked, feedback around which the measurement methods themselves, and which metrics, should be tracked, and quantitative inputs to forecasting methods and models for decision support systems. Performance measurement and fact-based decision making, is. therefore, a powerful TQ principle.

One of the major drivers of competitive advantage espoused by Porter (1985, 1986) is price structure. As noted, the drivers of costs as clearly produced in the value chain analysis are internal processes plus supplier relations. Total Quality goes to the core of the cost drivers. Further, it allows differentiation and product innovation to become a central and integral value of the organization, as it searches for continuous improvement. It then brings forth external factors by incorporating customer needs and desires through customer focus and quality function deployment. Some of the benefits associated with implementation of TQ in an organization include: - improved quality of products, customer satisfaction, improvements in employee participation, employee satisfaction, team work, working relations, productivity, communication, profitability and market share (Evans & Lindsay, 2011, Besterfield et al, 2003). Through cases and empirical studies, as highlighted in the following section, many scholars have shown that these benefits do accrue when organizations effectively implement TQ.

2.7 Cases and Empirical Studies on Total Quality

Various cases and empirical studies (BSI, 2008; N1ST, 2008) show that TQ and operations effectiveness lead to competitive advantage. The British Standard Institute (BSI) has had a long history with quality matters. Its approach has seen it carry many studies on the impact of quality on various organizations. The cases, as presented by BSI (2008) are clear on the value of quality management systems to an organization. For example, in the case of Jewson, UK's leading supplier of timber and building products to the trade, it is reported that ISO 9001 certification enabled it to build good relations with its customers.

This was after the company introduced the programme in 2004 at its eight regional sales offices, as well as its national sales office. The certification process took just six months. On its part, Taylor Woodrovv Construction, a subsidiary of Taylor Woodrovv pic, saw a significant revenue increase in year ending 31 December 2005 after implementing ISO 14001. Aberdeen Fluid System Technologies also produced savings on operation and energy costs, reduced packaging costs to virtually zero, and opened up new markets among companies that looked favourably upon businesses complying with ISO 9000 standards. In the property-management business, for Alldun, providing high quality services has always been important.

However, after implementing ISO 9000, the improved customer service resulted in higher volumes of repeat business and recommendations. What is more, the company found the standard surprisingly flexible, while the certification process took only two months. Other BSI reports on case studies contributed by the owners and managers of a variety of small and medium-sized enterprises in the United Kingdom show that each business has benefited from both the adoption of standards and engagement in the standardization process itself. The experiences of these organizations demonstrate the increasing importance of standards implementation to small and medium-sized enterprises, particularly those wishing to compete with larger companies on more even terms.

Anglo Felt Industries, manufacturer of a range of products made from recycled and waste fibres, reported that the implementation of ISO 9000 has helped increase customer satisfaction, all-round improvements to business and provided avenue for continual assessment process leading to enhanced performance. Shield Security Services, which provides tailor-made security solutions, indicate that compliance to standards helped attract new contracts with an added benefit of risk reduction and protection. MC Fire Protection, suppliers and maintainers of fire-safety equipment and providers of fire-safety assessments and consultancy services, indicate that being ISO 9000 certified increased customer confidence, promoted competitive advantage, and improved internal organization processes. On its part Sapphire Technologies, working in the information security sector, is clear that implementing quality management system has provided immediate financial rewards, competitive advantage in the marketplace and strengthened internal processes.

The American National Institute of Science and Technology (NIST) that manages the Malcolm Baldrige National Quality Award (MBNQA), provides insightful empirical evidence of the value of implementing TQ in an organization. They do so by tracking Baldrige Award winners over a long period of time as reported in the following empirical study which was last updated on 19th September 2001 (NIST, 2008). In the first case, a hypothetical sum was invested in each of the 1988-1996, publicly-traded Baldrige Award recipient's common stock, in the year they applied for the Award. The investment was tracked from the first business day of the month following the announcement of the Award recipients (or the date when they

began public trading, if public trading began after the company got the award) through December 1, 1997. SI,000 was invested in each whole company, and for subsidiaries the sum invested was SI.000 multiplied by the percent of the whole company's employee base the subunit represented at the time of its application. The same total dollar amount was invested in the Standard and Poor's (S&P) 500 on the same day. If a subunit was sold to another parent company, or if a company divested, it was the subunit whose progress was followed, not the parent company.

The value of the original stock at the time of sale was determined, and that dollar amount was reinvested in the new parent company. Adjusting for stock splits, the value on December 1, 1997 was calculated to ensure there is consistency throughout the study. Information was reported two ways: - all publicly-traded Award recipients and only whole company Baldrige Award recipients. The 18 publicly-traded Award recipients, as a group, outperformed the S and P 500 by approximately 2.4 to 1, achieving a 362.3 percent return compared to a 148.3 percent return for the S and P 500. The group of six, publicly traded, whole company Award recipients outperformed the S and P 500 by 2.7 to 1, achieving a 394.5 percent return compared to a 146.9 percent return for the S and P 500.

In their study of general medical hospitals in the USA, Douglas and Judge (2001) found that hospitals operating with relatively high structural control exhibited a stronger relationship between the TQM practices implemented and financial performance, and that hospitals with relatively lax structural controls did not demonstrate a significant relationship between TQM practices and financial performance. Similarly, hospital structures with a relatively high level of structural exploration appeared to enhance the relationship between the TQM practices implemented and financial performance. In contrast, the relationship between TQM and financial performance was weakened in those firms with lower levels of structural exploration. In summary, however, they found strong empirical support for a positive relationship between the degree of TQM implementation and organizational performance with one important aspect of TQM success being the degree to which the entire TQM philosophy has been implemented. The hospitals that had more completely implemented a comprehensive array of TQM practices outperformed those that had less well-developed programs. In Japan, a study commissioned to find

out the value of TQ after the country dropped from position two in 1993 to position twenty six in 2001 in global competitiveness, found that TQ has the potential to increase company performance and hence the country's competitiveness (Gomes et al, 2002). This fits well with the thinking of customer satisfaction and the economy that postulates that customer satisfaction determines economic performance. Empirical results show that there is a significant relationship between customer satisfaction and economic performance in general (Anderson et al., 2004; Fomell 2001; Rust, Moorman, and Dickson 2002).

Many countries are therefore getting involved in measuring customer satisfaction as a barometer to measure economic performance. In the USA, the country-wide customer satisfaction scores for year 2011 indicate that the industries that registered high customer satisfaction are manufacturing for both durable and nondurable goods at 81.3 percent where electronics such as TVs and DVDs lead at 85 percent followed by soft drinks at 84 percent. Public administration/government scores the lowest at 66.9 percent with local government registering better customer service satisfaction at 68.3 compared to federal government's 65.4 percent. This annual measurement has been in existence in the USA since 1994 (ACS1, 2011).

In the same context, others have postulated that the economic performance drives customer satisfaction (Frank & Enkawa, 2008). To that end. the customer satisfaction level is affected by the available disposable income and that could cause the marketing department to be misled by assuming a certain level of customer satisfaction has been brought about by activities in the company while the reality is that the economic performance has affected the customer satisfaction score. However, for both positions, the need to ensure customers are satisfied and the importance of measuring customer satisfaction are emphasized. It is shown that at the company level, customer satisfaction determines the organization's performance. And while not dismissing Frank and Enkawa's argument, it follows that if all organizations are providing satisfactory customer service, then they will collectively perform well. This will impact on the overall economy positively. While the impact of available disposable income will affect perceptions, this impact can be looked as a moderating variable that will inform marketers to be cautious while celebrating organization performance brought about by better economic performance. Utilizing the Australian

business excellence framework model. Rahman (2001), was able to find out the impact of total quality in SMEs in Western Australia. The major factors of total quality in the study were leadership, information and analysis, customer focus, strategy and planning, process and product services, and people. These factors were tested against organization performance. From the study, it was discovered that, individually, most of the quality criteria had significant relationships with the business outcome, measured in terms of revenue, profitability and number of customers. To that end, SMEs in Western Australia were found to be beneficiaries after implementing total quality.

In Malaysia, a study was carried out to find out the relationships between Total Quality Management (TQM), competitive advantage and bottom line financial performance. A structural model was tested on data gathered on a stratified random sample of Malaysian manufacturing companies. The results showed that there was a unique contribution of TQM practices, and that there was a significant role for TQM as an intervening variable in the relationship between competitive advantage and financial performance (Agus & Sagir. 2001). On their part, Demirbag et al. (2006), in the study of Turkish SMEs, developed the structural relationship between TQM and financial performance. In this study, TQM factors TQM1 to TQM7 were given as quality data and reporting; role of top management; employee relations; supplier quality management; training; quality policy; and process management respectively. The financial performance was made up of revenue growth over the last three years; net profits; profit to revenue ratio; and return on assets. The results showed that TQM has a moderate positive impact on financial performance at a standardized regression weight of .24 ($p < .05$).

At the same time, TQM was found to have significant impact on non-financial performance such as market development and orientation at a standardized regression weight of .67 ($p < .01$). On their part, the non-financial factors have an impact on financial performance. In China, a study on implementation of TQ in small and medium enterprises found that small companies faced hindrances related to size, such as lack of bargaining power with suppliers, and lack of resources (Lee and Kelce, 2004). These companies, therefore, focused on internal changes to improve quality, reduce inventory and encourage employee participation. The researchers also found

out that while many Chinese firms, especially large corporations, were investing in quality improvements, the implementation of TQ in SMEs was low. In Iran. TQ success in Isfahan University Hospitals was on average, medium, with 91.7 percent of the respondents rating the success as very low, low and medium. This was because of ineffective implementation of TQ in the said hospitals (Rad, 2005). In Nigeria, it was found that people that do not have requisite disposition for change tend to fail in TQ implementation (Ehigie et al, 2006).

In Kenya, studies of various organizations that have implemented quality management systems including TQ have shown mixed results (Chesaina, 1999; Mucai, 2008; Kagura, 2004; Ngware, et al, 2006). A study of the University of Nairobi found that many aspects of the University service such as curriculum and methodology of teaching for students and terms and conditions of service to staff were found to be of poor quality. Further, other issues touching directly on quality, such as communication, staff and student morale, and state of physical structures were found to be of poor standards. The management system was bureaucratic. However, the same study found out that introduction of Total Quality Management would have a positive impact on the managerial structures and would be desirable to the staff and students (Chesaina, 1999). Other case studies have shown that implementing ISO 9000 principles has brought some benefits to organizations. These benefits include increased market share, increased profitability, and increased customer satisfaction (Mucai. 2008; Kagura 2004).

At Barclays Bank of Kenya, though after implementing TQM there was improved awareness of importance of the customer to the organization, improvement in training of staff and improved staff cooperation, management was found to be unavailable to customers leading to dissatisfied customers (Ambundo, 2000). Other studies have shown that there has been no significant benefit on implementing quality-system such ISO 9000 on such an important fundamental financial factor of return on assets (Karauri, 2010). Finally, a study on implementation of TQ in secondary schools in Kenya found that boards of governor were not providing the requisite leadership and there was no commitment to strategic quality planning (Ngware et al, 2006). The studies carried out in Kenya have focused on the benefits organizations claiming to be implementing quality management systems have accrued without assessing whether

the claim is valid. In Pakistan. Khan (2003) advised the export oriented Pakistan textile and knit-wear industry to embrace TQ in the face of serious market loss to Bangladesh and India, giving examples of organizations that had done well on implementation of TQ on areas such as profitability, increased revenue and reduced costs. On the other hand, Hoang and Tritos (2006) found that TQM, considered as a set of practices, had a positive impact on Vietnamese firms' innovativeness, with some practices having more impact than others.

According to Bavazit (2003), a study of TQ practices in Turkish manufacturing organizations found that upper management visible support, employee involvement and focus on customers are major factors that contribute to the success of TQ efforts in companies. And while looking at impact of TQ on work-related attitudes in Malaysia, Karia and Asaari (2006) found that some practices such as empowerment, teamwork and continuous improvement, have significant impact on staff involvement, satisfaction and commitment to TQ initiative. It is seen that according to Beer (2003), when implemented properly, TQ can have a dramatic impact on the performance and culture of an organization.

To that effect, failures of TQ to persist are failures of implementation, such as managers failing to solicit and receive feedback on gap between rhetoric and reality. However, of importance, the failures are as a result of three major factors: - poor quality of direction, made up of ineffective top team, top-down or laissez-faire top management style, and unclear strategies and priorities; poor quality of learning, made up of closed vertical communication; and poor quality of implementation, made up of poor coordination between functions and business, and inadequate down the line leadership skills and development. The quality of total quality implementation therefore is an important component before studying the value of total quality in an organization. However, very few researches have focused on the level of implementation of total quality in organizations (Hackman & Wageman, 1995). Indeed, Hackman and Wageman found that only 4 percent of the 99 articles published between 1989 and 1993 on TQVI assessed the degree to which TQM interventions actually were in place. Only one research paper quoted above focused on degree of implementation. Porter (1998), states that operations effectiveness is achieved through the use of Total Quality Management and utilizing strongly the use of continuous

improvement as witnessed in Japanese companies. Covey (1992) is very clear that Total Quality Management was the key to Japan's economic ascendancy. This thought confirms that even a whole country could achieve competitive advantage over its competitors through TQ as validated by the research of Gomes et al (2002). Looking at the available conceptual literature together with results from empirical research studies, various knowledge gaps exist to enable the development of the conceptual framework and the related hypotheses as presented in the following sections.

2.8 Empirical Literature and the Knowledge Gaps

The literature review is summarized on Table 2.1, which identifies knowledge gaps that the study sought to investigate. The presentation is done by focusing first on the holistic concept of total quality. Thereafter, other aspects of TQ implementation, individual principles of TQ, the concept of operations effectiveness, and the concept of total quality and competitive advantage, are analysed and presented as the knowledge gaps emerge.

Table 2.1: Empirical literature and knowledge gaps

Scholar	Variable	Findings	Knowledge Gaps
Besterfield et al., 2003; Baldridge Award; Khan, 2003; Baiduon, 2004	Total Quality	A set of activities that can be summarized in six principles namely leadership; customer focus and satisfaction: employee empowerment; performance measurement: supplier partnership; and continuous improvement.	Are these the only variables making up the TQ conccpt and how well sre they understood by practitioners?
Lee & Kelce, 2004	Implementing TQ	There is low implementation of TQ in SMEs in China	Is the situation the same in a sector specific study of all sizes of firms?
Rad, 2005		Successful implementation of TQ practices was medium to low	
Beer, 2003		Failures of TQ to persist are failures of implementation	
Besterfield et al., 2003	Leadership	Leader will focus on internal and external customers	Docs focusing on these factors lead to competitive advantage?
Ngware et al., 2006		Failure of implementation of TQ in Kenya's Secondary schools is due to lack of leadership	
BSI, 2004	Customer Focus	Customer satisfaction leads to increased sales and revenue	Does this apply in Kenya's Horticultural sector?
Kreitner & Kinicki, 2004	Employee Empowerment	Empowered employees have win-win thinking	What is the situation in Kenya's Horticultural sector?
Baldridge Award Criteria for performance excellence	Performance Measurement	An organization implementing quality mgmt must use measurement to drive company's strategy formulation and analysis of performance	How important is performance measurement?

i Scholar	Varijble	Findings	Knowledge Gaps
| Slack etal. 1995	Operations Effectiveness	Operations effectiveness is achieved through doing things right, doing things fast...	Is there a relationship between operations effectiveness and TQ?
Porter, 1998		TQ provides the thrust under which operations effectiveness can be achieved leading to competitive advantage	How important is operations effectiveness to competitive advantage?
Aeus & Sagir, 1 2001	Operations Effectiveness Competitive Advantage and Total Quality	Total quality is an iniervening variable between competitive advantage and tlnancial performance	Is TQ an intervening variable or an independent variable?
Rahman, 2001		.Most quality criteria had significant relationships with business outcomes measured in terms of revenue, profitability and number of customers	Which criteria have more effect on competitive advantage?

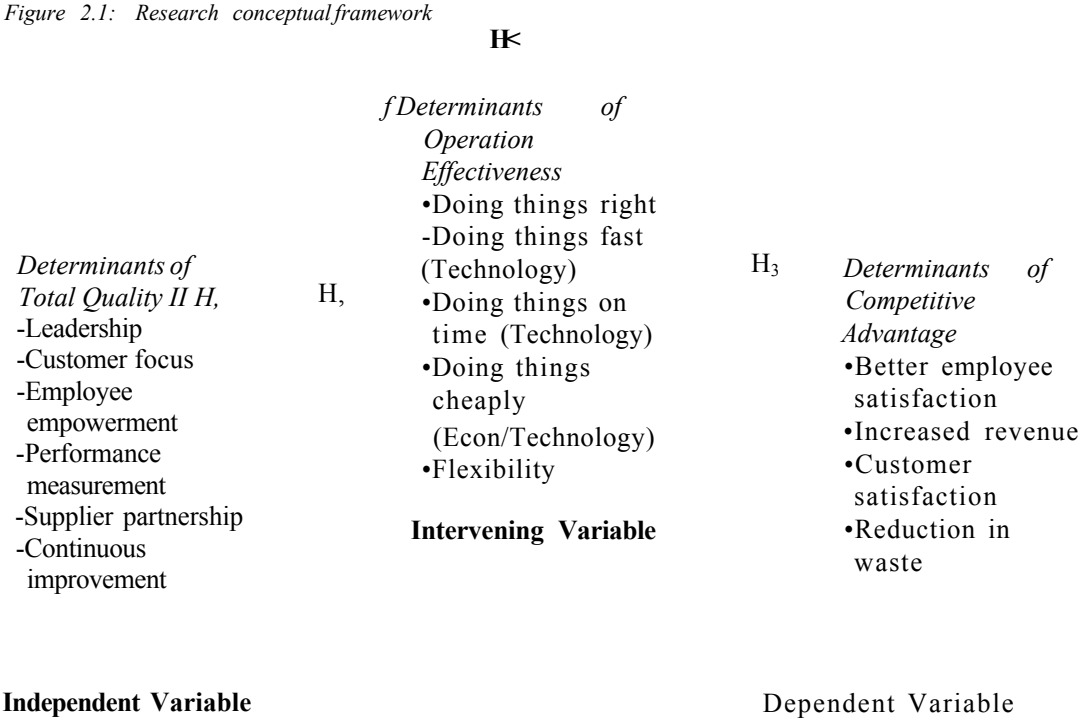
Source: Author, 2012

2.9 Conceptual Framework

In conceptualizing the research framework, the researcher took into consideration the purpose of the study as seeking to find out whether TQ is a source of competitive advantage in horticultural companies in Kenya and whether the degree of implementation determines the level of the positive relationship between TQ and competitive advantage. The link between TQ and competitive advantage was enhanced by operations effectiveness acting as an intervening variable. Further, the specific variables making the concept of total quality such as leadership or customer focus were expected to have varying impact on the competitive advantage outcomes such as increased revenue or customer satisfaction. The conceptual framework that came out of this thinking is depicted in Figure 2.1.

The aim was to satisfy the various elements of a dynamic model showing causation relationship between TQ, operations effectiveness and competitive advantage. The independent variable, TQ, had specific criteria categories of leadership, customer focus, employee satisfaction, performance measurement, supplier relationship and continuous improvement. Operations effectiveness (OE), as achieved through doing things right, fast, on time and cheaply plus flexibility was an intervening variable. Competitive advantage (CA), with better employee satisfaction, increased revenue, customer satisfaction and reduction in waste as the factors, was the dependent variable.

Figure 2.1: Research conceptual framework



Source: Author, 2012

2.10 Research Hypotheses

In the research, key variable indicators were identified to test the following hypotheses:

H_{ia}: Level of implementing TQ in Kenya's horticultural industry is high

Hit,: There is a positive relationship between the level of TQ implementation and competitive advantage

H_2: Implementing TQ leads to operations effectiveness in Kenya's horticultural companies in the international market:- $Y=ao+biXi + b_2X_2+\ldots+ b_nX_{n+} e$

H_3: Operations effectiveness leads to competitive advantage for Kenya's horticultural companies in the international market:- $Y=ao+biXi + b_2X_2+\ldots+ b_nX_{n+} e$

H_4: Competitive advantage is a function of TQ for Kenya's horticultural companies in the international market with operations effectiveness as an intervening variable:- $Y=ao+b]X) + b_2X_2+\ldots+b_nX_{n+} e$.

Us Most quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue; customer satisfaction: reduction in waste; increased employee satisfaction.

2.11 Chapter Summary

From the literature review and the case studies, it can be conclude that quality management systems have immense benefits to organizations and. by extension, the whole country. Management theorists, including prominent strategists, agree that Japan was able to rise to the world's economic peak through effective employment of TQ in their institutions. On its part, United States of America has used the Malcolm Baldrige National Quality Award to gain or reclaim competitive advantage for many of their products, while Malaysia has become a newly industrialized country by copying Japan and implementing TQ (Agus & Sagir, 2001: Jomo, 1994).

It is seen that various benefits accrue such as better returns on assets, profitability, productivity and expansion of market share, when one implements TQ. Other benefits highlighted include better customer satisfaction, better employee satisfaction, improved levels of motivation, and better internal processes. Total quality can. therefore, be used as a strategic tool for operations effectiveness and competitive advantage. Further, quality products and services will always be needed by customers, making quality management mandatory for organizations hoping to survive in the long-term. This allows movement to the next chapter where the methodology used to carry out the research is presented.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on how the research was carried out. However, the philosophy of research and the underpinnings that allow one to get a stronger value out of the research start the section as a foundation to gathering of knowledge. The chapter presentation then moves to how the research was designed, followed by the population that the research targeted.

The data collection section provide the methods used in gathering data, while operational definition introduce the variables being tested or used for testing the hypotheses which are highlighted under data analysis and hypotheses testing section. Finally, reliability and validity testing and other tests such as test for multicollinearity, heteroscedasticity, normality and factor analysis close the chapter, providing a comprehensive report on the methodologies employed in this study.

3.2 Research Philosophy

Every research has its own unique attributes that inform the final findings. These unique attributes could sometimes be to the detriment of objective knowledge and future replication. To that effect, the researcher took into cognizance the two major positions taken on the approach to social sciences enquiry, namely the positivists position of approach to knowledge from a purely scientific underpinning by way of employing objective, impartial and value-free methods of research with clear operational definitions, objectivity, hypothesis testing, causality and replicability, against the phenomenologists' position of focus on immediate experience to provide unique human characteristics and cognition by way of identifying, understanding and interpreting shared meanings.

The positivists described above form the group of researchers using the quantitative research methods. This can be contrasted to the qualitative approach to knowledge development used by the phenomenologists. The quantitative research uses numbers and statistical methods. It tends to be based on numerical measurements of specific aspects of phenomena; it abstracts from particular instances to seek general description or to test causal hypothesis; it seeks measurements and analysis that are easily replicable by other researchers (King et al., 1994). The intention is to make the

research as free of subjectivity as possible to bring out a higher level of objectivity and. therefore, prediction. On the other hand, the qualitative researchers seek to make sense of personal stories and the way in which they interact. Qualitative inquiry is an umbrella term for various philosophical orientations to interpretive research. For example, qualitative researchers might call their work ethnography, case study, phenomenology, human ethnology, ethnography of communication, symbolic interactionism (Glesne & Peshkin, 1992). In summary, these are the phenomenologists who have a belief that to achieve an effective understanding of human action, the social scientist must seek to identify, understand and interpret shared meanings.

A researcher is not restricted to either quantitative or qualitative position on the method to use and can use two or more methods (Nachmias & Nachmias, 1998; Thomas, 2003). This is called triangulation, and has the added advantage of allowing one to combine quantitative and qualitative methods, thereby providing an avenue of overcoming deficiencies that can arise from using one method. To take this advantage, triangulation method was used whereby both quantitative and qualitative methods were employed. However, the research relied more on the quantitative method for an objective and scientific analysis to enable development of models for prediction as highlighted under the research design section below.

3.3 Research Design

The research was a cross-sectional survey targeting the horticulture industry. A survey is a detailed inspection of wide and inclusive coverage with the search for tangible facts. It takes into account a specific point of time and involves empirical research. Further, the choice of research design is determined by the research philosophy (Cooper & Schindler, 2006). The focus of this research was on TQ, organization effectiveness and competitive advantage. The industry has both large and small-scale firms.

The research design was one that was capable of capturing as much information from the organizations as possible to reduce possibilities of making wrong conclusions. Starting with the source of data, the design of the study ensured all possible data sources were captured. Further, the questionnaire was designed with

objectivity in mind to enable data analysis and reporting that brings forth replicable scientific report. This formed the quantitative part of this study. On the other hand, how the human beings behave in their natural settings in the target organizations formed part of the study. The research assistants were trained to observe such phenomena as to how the target organizations answer the phone, the welcoming nature of the guards,. secretaries, and senior managers. The population that was studied follows.

3.4 Population of the Study

A population is the total number of items from which an inference is made (Cooper & Schindler, 2006). The population consisted of all companies registered with the Horticulture Development Authority (HCDA) as of 30th June 2010 as exporters of horticulture and designated as "active companies". Of the 1390 companies registered with HCDA, some with licences long expired between 2003 and 2007, 146 companies were listed as active, 108 of which had traceable address. This list did not indicate the sizes of companies.

However, it was assumed that the companies vary in sizes in terms of turnover as well as number of employees. A census approach to the research was employed. A census is the method of obtaining information about every member of a population. This can be compared to sampling in which information is only obtained from a subset of a population (Cooper & Schindler, 2006). While it was assumed the "active" companies were available, the census approach was used to ensure that as many companies participated, as it was possible. This enabled the data collection process to take place.

3.5 Data Collection

A self-administered questionnaire whose design incorporated aspects of control/ collaboration/ confirmation was used. The questionnaire was either self-administered and returned by post or email to the researcher or completed in the presence of the researcher or in his assistants. The target informant was the Chief Executive Officer or the person in charge of quality systems. The questionnaire incorporated both quantitative and qualitative data. The main reason for this approach was to achieve a more in-depth understanding of the various factors impacting on the

organizations, and hence be in a position to make informed conclusions. Further, the questionnaire was framed in such a way as to incorporate close-ended questions, some requiring response on a five-point Likert scale questions, and providing two levels of agreement, no opinion and two levels of disagreement for wide choice of fitting descriptions. Others were open-ended questions.

The open-ended questions were set in such a way as to ensure there is no direct answer on the complex nature and factors informing on quality management. This was designed to remove, as much as possible, any bias that could develop. A pilot test was administered on some respondents. A coding system was used to capture the various components. Attributes of the target informants was built into the questionnaire, based on variables and indicators obtained from the conceptual framework.

3.6 Operational Definition of Variables

The set variables were operationalized as indicated in Table 3.1. Total quality, made up of leadership, customer focus, employee empowerment, performance measurement, supplier partnership and continuous improvement is the independent variable. Operations effectiveness made up of doing things right, doing things fast, doing things on time, flexibility and doing things cheaply is the intervening variable, while competitive advantage, made up of increased revenue, customer satisfaction, reduction in waste, and employee satisfaction is the dependent variable.

Table 3 I Operationalization of variables

Key Variable of the Study	Indicator	Questionnaire
Total Quality *Independent Variable* X_t	• Leadership • Customer Focus • Employee Empowerment • Performance Measurement • Supplier Partnership • Continuous Improvement	Section B No. 6 to 16 Section C No. 17(1-9)
Operations Effectiveness *Intervening Variable* X_2	• Doing things right • Doing things fast (technology) • Doing things on time (technology) • Flexibility • Doing things cheaply (economy/Tech)	Section C No. 17(1 9) Section E 19(4)
Competitive Advantage *Dependent Variable Y,*	• Increased revenue • Customer satisfaction • Reduction in waste • Employee satisfaction	Section D No 18(1-15) Section E No 19(1-6)

Source: Author, 2012

3.7 Data Analysis and Hypotheses Testing

Data analysis involves reducing accumulated data to manageable size, developing summaries, looking for patterns, and applying statistical techniques necessary to extract usable information (Cooper & Schindler, 2006). The first step was cleaning of received data by way of confirming areas that were not clearly filled or discarding unusable questionnaires to reduce bias and errors.

The cleaning process required the researcher to go through all the questionnaires to separate usable and non-usable materials. Those questionnaires or parts thereof that were not usable were discarded. The edited data was then fed into computer software for in-depth analysis including initial analysis of central tendency and dispersion for re-examination of the quality of data and distribution. The hypotheses were then tested as per Table 3.2.

Table 3.2: Questionnaire and hypotheses testing

Questions	Objective	Hypotheses	Tvpe of Analysis	Interpretations
Section B No. 10-16	Assess the level of TQ implementation in the company	$H_{,a}$ - Level of implementing TQ in Kenya's horticultural industry is high	Weighted Performance Index Analysis giving Total Quality Implementation Index (TQII)	91 to 100 indicates company mostly implementing TQ, 81 to 90 partially implementing, 71 to 80 learning to implement and 70 and below not implementing
Section B No. 6 to 16 Section D No. 17(1-9) Section E No 19 (1-6)	Assess the nature of relationship between TQ and CA in Kenyan companies •	H_{lb}: There is a positive relationship between the level of TQ implementation and competiiive advantage	Pearson's correlation coefficient *(r)* plus Multiple regression	Correlation coefficient range:- +1 to -1 Degree of Correlation is Positive or Negative
Section C No. 17(1-9) Section B No 6-16	Establish the influence of TQ on OE in Kenyan companies	H_2 -Implementing TQ leads to OE in Kenya's horticultural sector	**Multiple regression. Regression model $Y=a_0+b,X_1 + b_2X_.+\ldots+ b_{,,}X_{,,}. e$ ANOVA**	**R^2-To indicate how much the outcome can be explained by the factor(s) Beta Cocfficicnt-The degree of change in competitive advantage resulting from each unit change in Total Quality and Operations Effectiveness F-Statistics F-test and P-value T-Statistics Durbin-Watson**
Section C No. 17(1-9) Section D No. 18 (1-15)	Establish the influence of OE and CA in Kenyan companies	$H_,$ -OE leads to CA in Kenyan companies in the horticultural sector		
Section B No. 6 to 16 Section C No. 17(1-9) Section D No. 17(1-9) Section E No 19(1-6)	Establish the influence of interaction between TQ, OE and CA	Hi - CA is a function of TQ with OE intervening		

Questions	Objective	Hvpothescs	Tvpe of Analysis	Interpretations
! Section B No. 6 to 16 ! Section D No. 17(1-9) Section E No 19 (1-6)	Establish the nature of interaction between specific variables of TQ and specific variables of CA	H_5 - Most quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue,	Pearson's correlation coefficient (r) plus Multiple regression	Correlatior. coefficient range.- +1 to -1 Degree of Correlation is Positive or Negative

Source: Author, 2012

3.8 Reliability and Validity Testing

Apart from examining the data on distribution and dispersion, the data was subjected to reliability tests to check on consistency of the measurement sets, and validity tests to check on whether the instruments were testing what they should be testing. Validity tests ensured that the reliability tests could be carried out, as it confirms that the results are interpretable and generalizable (Field, 2009; Cooper & Schindler, 2006).

In validity testing, such tests as content validity involved the systematic examination of the test content to determine whether it covers a representative sample of the behaviour domain such as leadership or customer focus to be measured. Further, the items or factors were compared to other research factors covering the parameter in question to ensure that there was consistency, and that the factors covered what was to be measured. Reliability tests employed the Cronbach's a (alpha) to achieve a high level of precision in the measurement tools that were used. The Cronbach a (alpha) is a measure of the reliability of a scale by looking at the variance within the item and the covariance between a particular item and any other item on the scale. Combining both reliability and validity tests would ensure that the measurement instruments achieve accuracy and precision (Field. 2009; Cooper & Schindler, 2006).

3.9 Test for Multicollinearity, Heteroscedasticity, and Normality of Data

According to Field (2009), multicollinearity exists when there is a strong correlation between two or more predictors in a regression model, and poses a problem only for multiple regression and not on simple regression. Muliticollinearity poses several problems such as increases in the standard errors of the p coefficients, meaning that the |3s have relatively higher variability across samples and less likely to

represent the population. The second problem is limiting the size of /?.-the measure of the multiple correlation between the predictors and the outcome, and ff-the variance of the outcome for which the predictors account, making the second predictor to account for very little of the remaining variance. The other problem posed by multicollinearity is that it reduces the importance of predictors, making it difficult to assess the individual importance of a predictor.

Variance inflation factor (VIF) was used to diagnose the collinearity of the data. The VIF indicates whether a predictor has a strong linear relationship with other predictors with concern raised if VIF is 10 and above (Myers. 1990). At each level of the predictor variable(s), the variance of the residual terms is expected to be constant (homoscedasticity). If variances are very unequal, there is said to be heteroscedasticity (Field, 2009). The data was subjected to Levene's test, which tests the null hypothesis that the variances in different groups are equal. The residual terms were tested for autocorrelation, where residuals are said to be correlated instead of being independent as expected (Field, 2009).

Finally, tests for normality of data was undertaken. The probability-probability plots (P-P plots) were used for visual test of normality of data, while Kolmogorov-Smirnov (K-S) test and Shapiro-Wilk test, which compares the scores in the sample to a normally distributed set of scores, was carried out. Other tests included Durbin-Watson test that tests for serial correlation between errors in regression models, which is useful in assessing the assumption of independence of errors (Field, 2009).

3.10 Chapter Summary

In this chapter, the philosophical underpinnings of research methodology and how this influenced the design of the research have been introduced. The research framework has been operationalized with clearly marked parameters against identified knowledge gaps. It is shown how the research was carried out from population sampling to data collection. After data'collection, the researcher has shown that the data was cleaned to ensure high levels of reliability of results of analysis.

The various stages of data analysis from descriptive to correlation to multiple regression have also been presented. Further, the various statistical tests carried out to improve and assure quality of data analysis from reliability to tests of multicollinearity, heteroscedasticity, and normality of data have been highlighted. This leads to the next chapter that will deal with research findings and presentation of attributes and correlation coefficients of the major factors and variables as per the conceptual framework.

CHAPTER FOUR: ATTRIBUTES AND CORRELATION OF FACTORS

4.1 Introduction

This chapter aims at providing the detailed results of analysis carried on the data that was received from target organizations in the horticultural sector in Kenya. The presentation starts with data test results providing insight on what was undertaken before data analysis commenced to provide confidence that the data was good for analysis. Descriptive statistics such as company turn over, number of employees, and five year sector performance are presented. The report then moves to correlation of variables to show relationships that will be used for discussions.

4.1.1 Data Test Results

The questionnaire was emailed to all the 146 listed companies by HCDA as active with email addresses, while those with no emails were contacted by telephone and their address ascertained. The questionnaire was then hand delivered to these organizations. However, a number of organizations were found to be trading in different names, some of the "active" companies were found to have closed down, while others could not be traced. The list of available companies for the study, therefore, reduced to 108 organizations out of which, 51 responded, giving a response rate of 47 percent. As mentioned in the research methodology, the received data was subjected to various tests before analysis commenced. In this section, we present the results that were achieved for every test and the implication on the study.

The test for reliability on 79 items provided a Cronbach's alpha of .964, which is an excellent measure for reliability (Field, 2009). On the individual items (factors), all those that scored below .3 in the corrected item-total correlation were dropped as they are said not to be correlating with the final score. No items were found to have values that were substantially greater than the overall alpha of .964, when deleted, which could have required that they also be dropped (Field, 2009). However, factors scoring .3 and below were also found to have high scores of Cronbach's alpha if item deleted. Table 4.1 shows the first ten items and those that were dropped. The full table is shown in the appendices.

Table 4.1 Item-total statistics

Item-Total Statistics				
Factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The company always follows a written strategic plan	234.06	889.056	.402	.943
All managers can state the Vision and Mission of the company at any time	233.00	898.000	.353	.943
The strategic plan is reviewed in intervals within a year	232.88	895 546	.486	.942
Managers have developed positive bonds with their juniors	232.86	891.481	.530	.942
The managers strive to create trust among workers	232.84	917.375	.141	.944
Managers ensure that workers are trained to take bigger responsibilities	232.75	909.674	.251	.944
Managers encourage collaboration rather than competition in the organization	232.71	895.572	.521	.942
Managers show lots of respect to suppliers	236.88	920.746	.219	.943
Company rewards quality efforts	233.59	895.287	364	.943
Managers work to simplify rather than complicate work processes	232.45	907.133	.501	.943

Source Author, 2012

The Cronbach's alpha for the major parameters in the conceptual framework were all good registering a score of .541 to .947 as shown in Table 4.2. This showed that the data was reliable for analysis.

Table 4.2: Reliability test scores for major factors

Major Factor	No. of Items	Cronbach's alpha (a)	Reliability
Leadership	12	.846	Excellent
Customer Focus	6	.541	Good
Supplier Partnership	7	.745	Very good
Performance Measurement	17	.947	Excellent
Continuous Improvement	5	.893	Excellent
Employee Empowerment	7	.833	Excellent
Operations Effectiveness	10	.818	Excellent
Competitive Advantage	15	.926	Excellent

Source: Author, 2012

Performance measurement followed by competitive advantage showed the highest levels of reliability at .947 and .926 respectively while customer focus registered the lowest level at .541, though this score is still considered as a good measure of reliability (Field. 2009).

Variance inflation factor (VIF) was used to diagnose the collinearity of data. None of the factors were found to register VIF greater than 10, and so the problem of collinearity of data was not there. The data was subjected to Levene's test, which tests the null hypothesis that the variances in different groups are equal. No variance was found to have a significant value of less than .05 hence homogeneity of variance was assumed. The Durbin-Watson test was used to test for autocorrelation. No score was found to be less than 1 or greater than 3, and so the residuals were found to have independent errors. The probability-probability plots (P-P plots) were used for visual test of normality of data, while Kolmogorov-Smirnov (K-S) test and Shapiro-Wilk test, which compares the scores in the sample to a normally distributed set of scores was used. The results were not significant at $p < .05$, and so the data was assumed to be normally distributed.

4.1.2 Factor Extraction

Confirmatory factor extraction was carried out to confirm the groupings of the items and the adequacy of the sample. The factor analysis brought out eleven items, namely leadership, customer focus, employee empowerment, performance measurement, supplier partnership, continuous improvement, increased revenue, customer satisfaction, reduction in waste, better employee satisfaction, and operations effectiveness. The factor extraction table is presented in the appendices. On the other hand, measure of sampling adequacy registered a KMO of-.722 on the major factors making up total quality, operations effectiveness and competitive advantage, while Bartlett's test of sphericity was significant at $p < .001$, showing that the data variables against the sample size was good for the number of variables being investigated (Field, 2009).

Table -I 3: KMO and Bariletl's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.722
Bartlett's Test of Sphericity	Approx. Chi-Square	500.137
	df	105
	Sig.	.000

Source: Author, 2012

4.2 Respondents Attributes

The research was designed to capture the different attributes that each organization had. Some of these attributes in are presented in the tables and figures below starting with the number of employees followed by company turnover as a measure of size enabling a comparison on the way the companies have employed permanent staff against the turnover.

4.2.1 Number of Permanent Employees

The number of permanent employees were grouped in the ranges of 1-25, 26-50, 51-100 and 100 plus categories. The majority of respondents were at the 1-25 employees at 67 percent, while companies with over 100 employees were 14 percent. Table 4.4 gives the distribution. The mean number of employees was 1.71 with the standard deviation of 1.119 out of the 4 maximum score of groups meaning about 36 employees on average and 31 employees as the deviation from the average. The median and the mode was 1 confirming that most respondents had 1-25 employees.

Table 4.4 Sumber ofpermanent employees

No of permanent employees		
Group	Frequency	Percent
1-25	34	66.7
26-50	5	9.8
51-100	5	9 8
Over 100	7	13.7
Total	51	100.0

Source: Author, 2012

4.2.2 Company Turnover

The turnover of the companies was analyzed and the distributive statistic is presented in Table 4.5. Most companies studied, 32 out of 51, had annual turnover of below 100 million Kenya shillings. This can be explained by the large number of companies registered by the HCDA, plus the emerging trend of growth in the horticultural sector attracting many new entrants.

The sector seems to be dominated by the small and medium enterprises with a turnover of 100 million shillings and below. Only four companies in the study had an annual turnover of over 500 million shillings. The mean and standard deviation was

2.78 and 1.254 respectively out of score of 5 meaning that mean turnover was about 78 million with a standard deviation of about 18 million. The mode and median were both 2, which is 5-50 million turnover range.

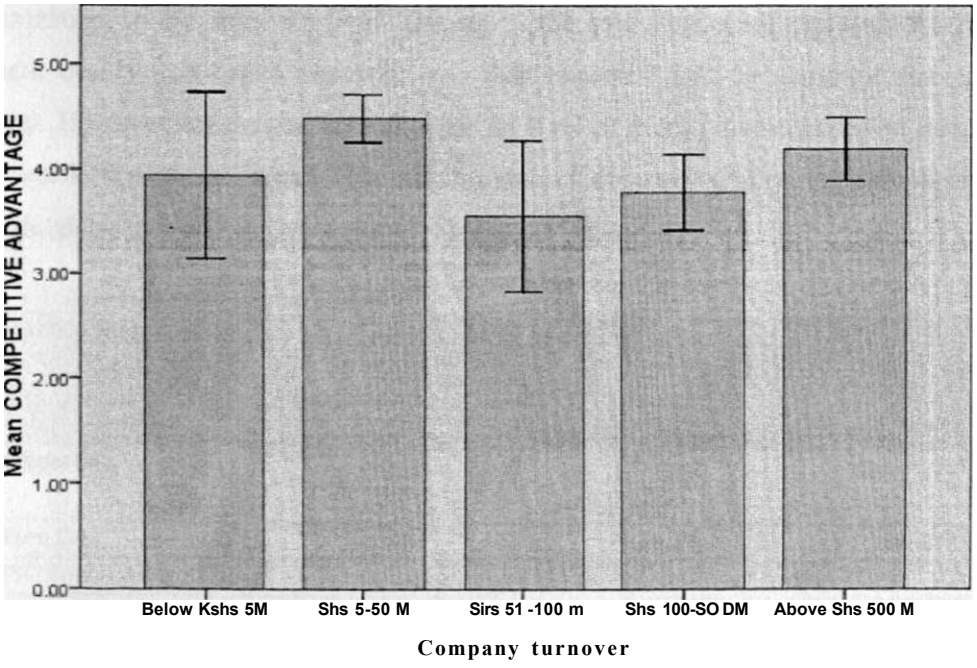
Table 4.5: Annual turnover

Company turnover		
Size	Frequency	Percent
Below Kshs 5M		15.7
Shs 5-50 M	18	35.3
Shs 51-100 m	6	11.8
Shs 100-500M	15	29.4
Above Shs 500 M	4	7.8
Total	51	100.0

Source: Author, 2012

The mean value of the competitive advantage was analyzed against company turn over. The result is as per Figure 4.1. The standard error (SE) bars, depicting the way the individual mean deviated from the group mean competitive advantage, were constructed at 95 percent confidence interval (CI).

Figure 4.1: Company turnover versus competitive advantage



Source: Author, 2012

The turnover did not seem to be a significant decider on the level of competitive advantage as those with 51-100 million shillings turnover had lower mean competitive advantage than those with below 5 million and also 5-50 million.

The error bar, refelctive of variance and constructued at 95 percent confidence interval, for the 51-100 million group, was also wide, posting a value of about 1.4, though not as wide as in the group with below 5 million shillings turnover which posted a value of about 1.8. In this group, the error bar indicates that some companies had a mean competitive advantage of about 3.00 while others had a mean competitive advantage of about 4.80, way above the best posted results in the group with a turnover of above 500 million shillings. This can be interpreted tc mean that the micro enterprises with a turnover of 5 million shillings and below are more unstable while those with a turnover of over 500 million shillings are more stable. Further, that the small companies can achieve high competitive advantage due to its agility.

4.2.3 Quality Certification

Quality certification was taken as an important milestone for companies aiming to be total quality organizations. The number of companies that had a quality certificate were analyzed against those with no quality certificate. The largest portion of companies, 73 percent, under the study indicated they are quality certified by one organization or the other. Only 27 percent in the study were not certified. At 73 percent quality certified companies, it is then expected that the sector is one of quality. However, the results from analysis on level of quality implementation make the certification seem suspect. The organizations that have certified the companies include global gap and euro gap as indicated in the Table 4.6.

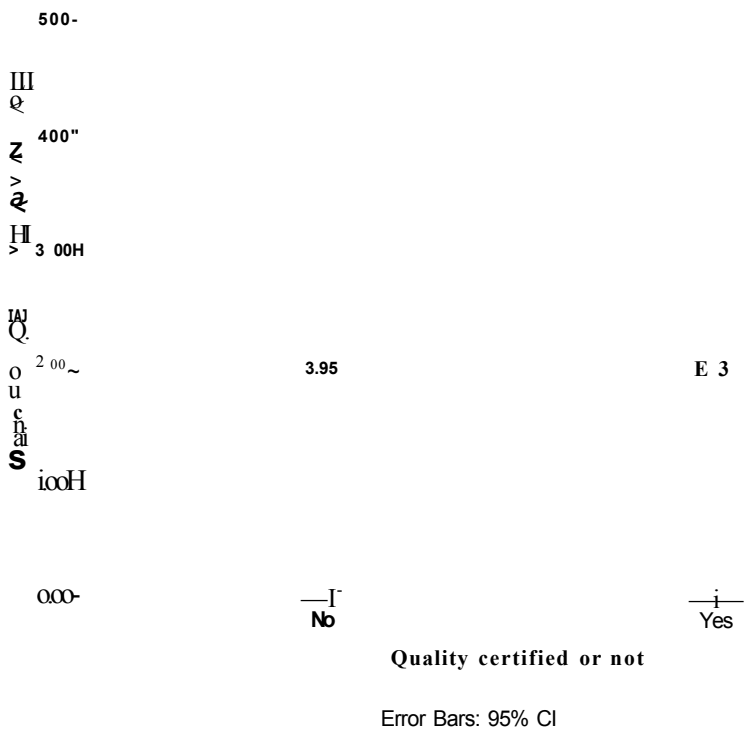
Table 4 6: Institutions certifying the companies

Certifying Body	Frequency	Percent
Global Gap	4	7.8
Euro Gap	26	51.0
ISO 9001 - 2000	1	2.0
Others	6	11.8
Total	37	72.5
Missing	14	27.5
Total	51	100.0

Source: Author, 2012

Euro Gap has the largest share at 70 percent followed by others. Global Gap is catching up. ISO 9000 has only one company while other certifications take the balance. Euro Gap case is understandable in the horticulture sector as most players are shipping to Europe where most customers demand the certification. Global Gap is new and is to replace Euro Gap so it is expected to have more companies as time progresses.

'Figure 4 2. Quality certification versus competitive advantage



Source: Author, 2012

On the relationship between certification and competitive advantage, the mean score was registered in Figure 4.2. The average competitiveness of the companies was very similar at 3.95 for those not certified and 4.11 for those certified, a difference of only 4 percent. However, the error bar. reflective of variance, for companies with certification is narrow indicating that the mean competitive advantage for these companies is nearer to the group mean competitive advantage. This means that the companies that are certified are more likely to post a better level of competitive advantage than those not certified. Flowever, error bars cross each other indicating that the advantage cannot be said to be absolute.

4.2.4 Number of Years Company has been Certified

It is expected that the number of years one has been certified will make one more adept in implementing the quality management system, and hence more able to be a total quality organization. This should lead to better competitive advantage. The data was analyzed for years of certification and is presented in Table 4.7.

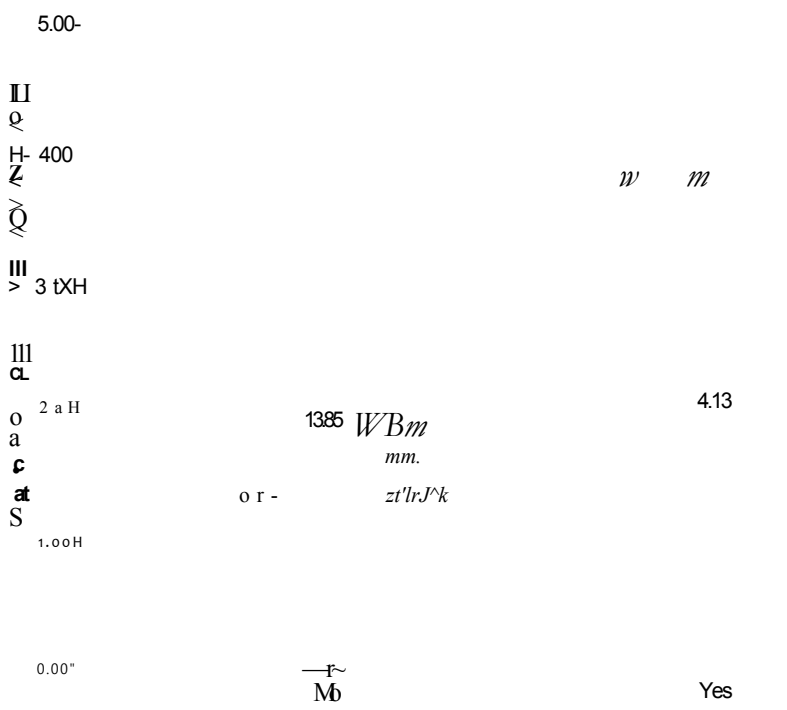
Table 4.7: Years company has been certified and Strategic Plan

Number of years company has been certified		
Group	Frequency	Percent
Not Certified	14	27 5
This Year	4	7.8
Last Year	11	21.6
2 Years Ago	9	17 6
3 Years Ago	6	11.8
More than 4 Years	7	13.7
j Total	51	100.0
Mean: 2.2; SD: 1.75;	Mode: 0	
No Strategic Plan:- 59%	Have Strategic Plan:- 41%	

Source: Author. 2012

Majority of the companies, 24 out of 37 that are certified, have less than three years since they were certified. The other thirteen have three years and above. This shows that most companies are new in the area of quality management though at almost 26 percent of the total number of companies studied, those with three years and above post a strong presence. The mean and standard deviation was 2.2 and 1.755 respectively out of the 7 groups with not certified being coded as zero. This indicates that the years certified are about 2.2 and the standard deviation is 1.755 years. The mode was 0, that is, not certified, while the median was 2. The group was also analyzed to find out whether there is a significant difference between companies that have a quality assurance department and those that do not have against competitiveness of the company. The results are presented in Figure 4.3.

Figure 4 3: Having quality assurance department versus competitive advantage



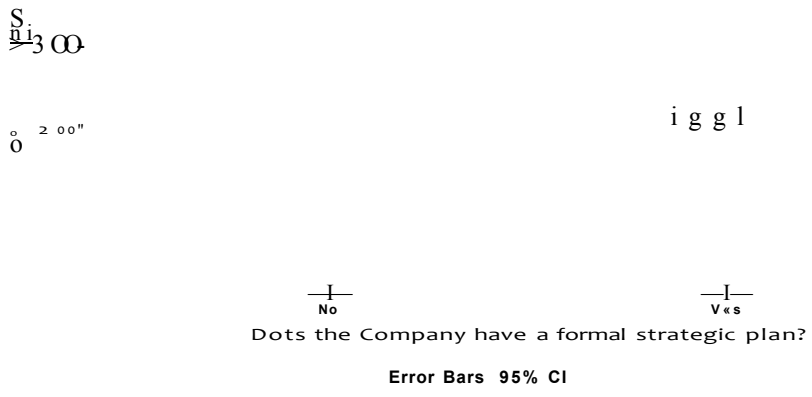
Source: Author. 2012

Companies with quality assurance department registered an average competitive advantage score of 4.13 against 3.85 for those with no quality assurance department. This was 7.3 percent better in competitiveness. The error bars, reflective of variance, for those with quality assurance department were close, showing the score is close to the average for the companies with quality assurance department while error bars for those with no quality assurance department were wide. This can be interpreted to mean that companies that have quality assurance departments are more likely to post better competitive advantage than companies that do not have quality assurance departments. However, the error bars for companies with quality assurance departments and those who do not cross each other, indicating that better competitive advantage score is not absolute.

4.2.5 Companies with Formal Strategic Plans versus those which do not

Strategic planning is expected to be an important undertaking for any organization more so those intending to be quality organizations. It is assumed that organizations will systematically search for competitive advantage by way of developing coherent and far sighted strategic plans. The companies were analyzed to find out the number that had formal strategic plans and those who did not (Table 4.7). The number of companies that have formal strategic plans reduced dramatically compared to the number of companies that are quality management system certified from 73 percent to 41 percent. The majority of companies, that is. 59 percent, have no formal strategic plans. This can be explained by the fact that most customers are demanding quality certfication while strategic planning is not mandatory. However, without effective planning, implementing the quality management system becomes a challenge. For those with formal strategic plan, the level of competive advantage against those who do not have is presented in Figure 4.4.

Figure 4. -!: Having strategic plan versus competitive advantage



Source: Author, 2012

The groups did not register a significant difference, with those who have strategic plans having a 6 percent advantage over those who do not have on the level of competitive advantage. However, the error bar, reflective of variance, for those with strategic plan is wider compared to those with no formal strategic plan. This does not fit well with the theory of planning as it would be expected that those who plan have better level of predicting than those not planning. Whether the companies are

incorporating quality planning in their strategic planning could determine why the wider standard error to mean competitive advantage. Later in this paper, there will be a contrast of companies with formal strategic plans and those with quality assurance department to see whether there is a significant difference in the mean competitive advantage.

4.2.6 Customer Focus

It is expected of customer focused organizations to measure how satisfied their customers are in order to concentrate on improving the level of service. In the study, the number of companies with established annual customer satisfaction index is presented on Table 4.8.

Table 4.8: CSI or no CSI

The company has an established yearly customer satisfaction index		
Parameter	Frequency	Percent
No	40	78.4
Ves	11	21.6
Total	51	100.0

Source: Author. 2012

Only 22 percent had an established CSI with 78 percent having none. This is a sign that measuring customer satisfaction is not taken very seriously in the sector. However, during discussions, a number of the participants indicated that unsatisfied customers inform them and they use that feedback to improve. On the other hand, others expressed their displeasure with some of the customers, with blanket condemnation of horticultural customers as con men. To that end, they indicated that some customers raise issues of quality to evade paying for the produce and this being a perishable commodity, they, the customers, know that it is hard to travel to Europe to verify the claim even if one had the means.

They therefore felt that the lobby organizations, KCA and FPEAK, and most importantly, the authority HCDA, should be doing more to identify and weed out these customers who run from one supplier to another sometimes leaving the company bankrupt. It was difficult to verify these claims, but looking at the number of companies that had closed down, it is possible that the country is losing millions of shillings to international criminals in the sector.

4.2.7 Seven-years Sector Performance in Major Parameters

Respondents were asked to provide data for the last seven years on the registered growth in the various parameters that would indicate improvement. The sector indicated exceptional growth in turnover, confirming the statistics presented by the Kenya National Bureau of Statistics. However, employment of permanent staff was found to be declining. Table 4.9 gives more details, while Figure 4.5 provides the sector picture of these parameters.

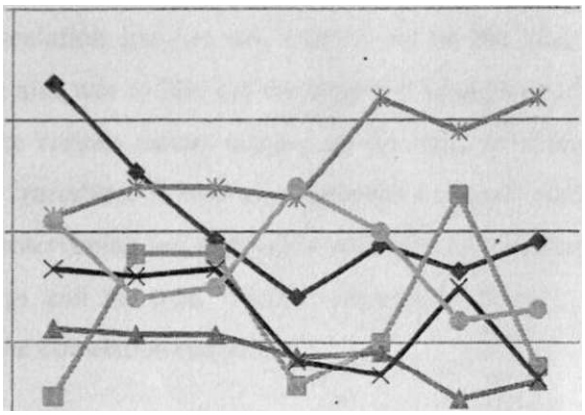
Table 4.9 Sector scores in various parameters (2003-2009)

Parameter	2003	2004	2005	2006	2007	2008	2009
Permanent staff employment	83	75	69	64	69	66	69
Customer Satisfaction	55	68	68	56	60	73	58
Rejects by customers	61	61	61	59	59	55	56
Spoilt product in production	67	66	67	58	57	65	57
Growth in turnover	71	74	74	73	82	79	82
Staff productivity	71	64	65	74	70	62	63

Source: Author, 2012

Table 4.9 provides the growth weighted scores for each parameter from year to year. Customer satisfaction was found to have been very poor in 2003, but improved in 2004/5, declined thereafter and picked in 2008 before dipping in 2009. The trends are easily seen in Figure 4.5.

Figure 4 5 Sector trend on various parameters (2003-2009)



Source: Author. 2012

Figure 4.5 presents a clearer picture of the performance of the sector. Turnover is clearly seen as growing. This could be explained by the volumes of produce exported over the years in the horticultural sector, and the players enjoying part of that volume by their sheer presence. The staff productivity on the other hand is declining, while the industry players seem to prefer employment of casual or contract workers rather than permanent workers.

The amount of product spoilt in production has not improved in the last seven years while customer satisfaction improved in some years and declined in other years posting the highest and the lowest in year 2003 and 2008 respectively. This shows that the industry has not been able to develop strategies geared towards focusing on customer satisfaction.

4.3 Types and Strengths of Relationships on Factors

Correlation analysis was carried out on the main variables depicted in the study. The aim was to find out the type and strength of relationships if any, existing between the various factors making up the main variables, within the variables, and across the variables. It was also intended to show whether the main variable or predictor, intervening and dependent exhibited any relationship, the strength of those relationships and the type, whether negative or positive. This section presents the results of the correlation analysis.

4.3.1 Total Quality Factors

Table 4.10 shows the results of Pearson correlation on factors making up the predictor variable total quality (TQ) in the conceptual framework. The factors are the main principles of total quality as documented in this research, namely: - leadership, customer focus, supplier partnership, performance measurement, continuous improvement and employee empowerment.

Table 4.10: Correlation coefficient for total quality factors

Correlations							
VARIABLE	R + **Sig**	1	2	3	4	5	6
LEADERSHIP 1	Pearson Correlation	1					
	Sig.						
CUSTOMER FOCUS 2	Pearson Correlation	.430	1				
	Sig.	.002	.				
SUPPLIER PARTNERSHIP 3	Pearson Correlation	.440	.461	1			
	Sig.	.001	.001				
PERFORMANCE MEASUREMENT 4	Pearson Correlation	.416	.490	.523	1		
	Sig	.002	.000	.000			
CONTINUOUS IMPROVEMENT 5	Pearson Correlation	.331	.260	.399	.610	1	
	Sig.	.018	.066	.004	.000		
EMPLOYEE EMPOWERMENT 6	Pearson Correlation	.296	.309	.428	.444	.531	1
	Sig.	.035	.027	.002	.001	.000	
*. Correlation is significant at the 0.05 level (2-tailed).							
*". Correlation is significant at the 0.01 level (2-tailed).							

Source: Author, 2012

Under total quality, performance measurement was found to correlate significantly and consistently to all other five factors with .523 *r* at p<.01 against supplier partnership being the highest, followed by customer focus at .490 and p<.01 with all the other factors correlating significantly at the .01 level. The other factors showing strong correlation with other factors is leadership and employee empowerment, showing significant correlation with all factors but at lower levels.than performance measurement. The factors showing lowest correlation are supplier partnership and continuous improvement, with significant correlation at p<.01 with performance measurement only.

4.3.2 Operations Effectiveness Factors

Factors making up the intervening variable, operations effectiveness (OE), were doing things right, doing things fast, doing things on time, flexibility and doing things cheaply. The correlation analysis carried out against these factors and the results are as per Table 4.11.

Correlations

VARIABLE	R + Sig	DOING THINGS FAST	DOING THINGS ON TIME	DOING THINGS RIGHT	DOING THINGS CHEAPLY	FLEXIBILITY
DOING THINGS FAST	Pearson Correlation	1				
	Sig (2-tailed)					
DOING THINGS ON TIME	Pearson Correlation	.632"*	1			
	Sig. (2-tailed)	.000				
DOING THINGS RIGHT	Pearson Correlation	.605"	.842"	1		
	Sig (2-tailed)	.000	.000			
DOING THINGS CHEAPLY	Pearson Correlation	.417"	.307'	.407"	1	
	Sig (2-tailed)	.002	.029	.003		
FLEXIBILITY	Pearson Correlation	.583"	577"	.618"	.837"	1
	Sig (2-tailed)	.000	.000	.000	.000	

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

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

Source: Author, 2012

The correlation coefficients for factors making up operations effectiveness showed that flexibility was correlated to all other factors, with doing things cheaply registering .837 at p<.01. Doing things right followed flexibility registering a

correlation coefficient of .842 with doing things on time at .632. No factor registered a correlation coefficient of lower than p<.05. This indicates that factors making up operations effectiveness are closely related and require to be implemented together to make an impact.

4.3.3 Competitive Advantage Factors

The dependent variable, competitive advantage (CA), was also subjected to Pearson correlation analysis. Factors making up this variable, namely employee satisfaction, customer satisfaction, waste reduction, and increase in revenue showed the below correlation values as depicted on Table 4.12.

Table 4.12: Correlation of competitive advantage factors

Correlations					
VARIABLE	R + Sig	EMPLOYEE SATISFACTION	CUSTOMER SATISFACTION	WASTE REDUCTION	INCREASE IN REVENUE
EMPLOYEE SATISFACTION	Pearson Correlation	1			
	Sig. (2-tailed)				
CUSTOMER SATISFACTION	Pearson Correlation	.595"	1		
	Sig. (2-tailed)	.000			
WASTE REDUCTION	Pearson Correlation	.500"	.680"	1	
	Sig. (2-tailed)	.000	.000		.
INCREASE IN REVENUE	Pearson Correlation	.667"	.757"	.483"	1
	Sig (2-tailed)	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Author, 2012

All factors correlated significantly a! p<.01 with each other with customer satisfaction showing highest correlation with increase in revenue at .757 and waste reduction at .68, followed by increase in revenue correlating with employee satisfaction at .667. The lowest correlation was posted by increase in revenue against waste reduction at .483. However, this was still significant at p<.01.

4.3.4 Factors making up Total Quality against Operations Effectiveness

To see the relationship between factors making up TQ and those making up OE. correlation analysis was carried out. The results are presented in Table 4.13.

Table -/. 13: Correlation between total quality and operations effectiveness

Correlations												
VARIABLE	R + Sig	1	2	3	4	5	6	7	8	9	10	11
LEADERSHIP 1	*r*	1										
	Sig											
CUSTOMER FOCUS 2	*r*	430"	1									
	Sig	002										
SUPPLIER PARTNERSHIP 3	*r*	440"	46 r	1								
	Sig	.001	.001									
PERFORMANCE MEASUREMENT 4	r	.416"	490"	523"	1							
	Sig.	.002	000	.000								
CONTINUOUS IMPROVEMENT 5	*r*	.331"	.260	.399"	.610"	1						
	s-g.	.018	066	004	000							
EMPLOYEE EMPOWERMENT 6	*r*	296'	.309'	.428"	444"	.531"	1					
	Sig.	.035	.027	.002	001	000						
DOING THINGS FAST 7	*r*	.215	.354'	.315"	.370"	401"	.149	1				
	Sifl	.129	.011	.024	.008	.004	297					
DOING THINGS ON TIME 8	*r*	297'	339	.235	.288'	.157	260	.632"	1			
	Sifl.	034	.015	.097	.040	271	065	.000				
DOING THINGS RIGHT 9	r	362"	.482"	.413"	.491"	338'	.289'	605"	842"	1		
	Sifl.	009	.000	003	000	.015	.040	.000	000		•	
DOING THINGS CHEAPLY 10	r	282'	287'	479"	440"	.283'	360"	.417"	307'	.407"	1	
	Sig	.045	.041	000	.001	044	009	.002	.029	.003		
FLEXIBILITY 11	*r*	434"	.424"	.396"	537"	.401"	433"	583"	577"	.618"	.837"	1
	Ska.	.001	002	004	000	004	.001	000	.000	000	.000	
*. Correlation is significant at the 0.05 level (2-tailed).												
**. Correlation is significant at the 0.01 level (2-tailed).												

Source: Author. 2012

Flexibility and doing things right, were factors in the operations effectiveness that were found to have significant correlation with all factors in total quality. Doing things cheaply was also found to have significant correlation with total quality factors of supplier partnership, performance measurement, and employee empowerment. Performance measurement posted the highest correlation to factors making up operations effectiveness with a correlation coefficient of .537 to flexibility and .491 to

doing things cheaply while supplier partnership correlated to doing things right at .491. The only factor showing no significant correlation with TQ factors at p<.01 is doing things on time, which registered lower significant relationship with the other factors making up operations effectiveness. However, it correlates at p<.05 with three factors of total quality. The significant correlations between operations effectiveness factors and total quality factors, however, confirm that there is a relationship between total quality and operations effectiveness.

4.3.5 Factors making up Total Quality against Competitive Advantage

Comparing total quality and competitive advantage, the following correlation coefficients were registered as shown in Table 4.14. The factors compared strongly to each other. Some were significant at level p<.OI.

Table 4 14: Correlation between toial quality and competitive advantage

Correlations

VARIABLE	R + Sig	1	2	3	4	5	6	7	8	9	10
LEADERSHIP 1	*r*	1									
	Sig.										
CUSTOMER FOCUS 2	*r*	.430"	1								
	Sig.	.002									
SUPPLIER PARTNERSHIP 3	*r*	.440"	.461"	1							
	Sig.	.001	.001								
PERFORMANCE MEASUREMENT 4	r	.416"	.490"	523"	1						
	Sig.	.002	.000	.000							
CONTINUOUS IMPROVEMENT 5	*r*	.331'	.260	.399"	.610"	1					
	Sig	.018	066	004	000						
6 EMPLOYEE EMPOWERMENT	r	.296'	.309'	428"	444"	.531"	1				
	Sig.	.035	.027	.002	001	.000					
EMPLOYEE SATISFACTION 7	*r*	.597"	.510"	.337'	.520"	.201	.348'	1			
	Sig.	.000	000	.015	.000	.158	.012				
CUSTOMER SATISFACTION 8	*r*	.299"	.348'	.130	.500"	.138	.280'	.595"	1		
	Sig.	.033	012	.362	.000	.333	.047	.000			
WASTE REDUCTION 9	*r*	.283'	.338'	.264	.487"	.375"	.336'	.500"	.680"	1	
	Sig.	045	.015	.061	.000	.007	.016	000	000		
INCREASE IN REVENUE 10	*r*	.300'	341"	.267	.469"	.168	.263	.667"	•757"	.483"	1
	Sig.	.033	.014	058	.001	.238	.062	.000	.000	.000	

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

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

Source: Author. 2012

Factors making up competitive advantage correlated strongly with factors making up total quality. The factor with the strongest correlation was employee satisfaction which related with other factors at p< 05, p<.01, and pc.OOl, except with continuous improvement factor with an r of .201. The factor that followed employee

satisfaction was reduction in waste then increase in revenue. The TQ factor that registered highest correlation was leadership at .597 followed by performance measurement at .52 then customer focus at .51 all against employee satisfaction indicating that there is a strong relationship between employee satisfaction and major factors making total quality.

4.3.6 Factors making up Operations Effectiveness against Competitive Advantage

The correlation coefficients registered when factors making up operations effectiveness against competitive advantage are presented on Table 4.15.

Table 4.15: Correlation between operations effectiveness and competitive advantage

Correlations										
VARIABLE	R + Sig	1	2	3	4	5	6	7	8	9
DOING THINGS FAST 1	*R*	1								
	Sig.									
DOING THINGS ON TIME 2	*R*	.632	1							
	Sig.	.000								
DOING THINGS RIGHT 3	*R*	.605	,842|	1						
	Sig.	000	.000							
DOING THINGS CHEAPLY 4	*R*	.417	.307	.407	1					
	Sig	.002	.029	.003						
FLEXIBILITY 5	*R*	.583	.577	.618"	.837"	1				
	Sig.	000	.000	.000	.000					
EMPLOYEE SATISFACTION 6	*R*	.370	.486	.436	.209	.478	1			
	Sig.	.008	.000	.001	.142	.000				
CUSTOMER SATISFACTION 7	*R*	.335	.365	.443	.194	.363	.595	1		
	Sig.	.016	.009	.001	.172	009	000			
WASTE REDUCTION 8	*R*	.375	.314	352	.121	.304	.500	680|	1	
	Sig	.007	.025	.011	.396	.030	.000	.000		
INCREASE IN REVENUE 9	*R*	.460'	.369	.455	.263	.381	.667	.757	.483	1
	Sig.	.001	.008	.001	.062 J	.006	.000	.000	.000	
* Correlation is significant at the 0.05 level (2-tailed).										
**. Correlation is significant at the 0.01 level (2-tailed).										

Source: Author, 2012

Doing things on time, doing things fast and flexibility exhibited significant correlation with competitive advantage factors of employee satisfaction, customer satisfaction, waste reduction, and increase in revenue. Highest correlation was doing things on time against employee satisfaction at r=.486 at p<.01 followed by doing things fast against increase in revenue at .46.

4.3.7 Total Quality, Operations Effectiveness and Competitive Advantage Factors

To Find out whether the main variables, total quality, operations effectiveness, and competitive advantage showed significant relationships, correlation analysis was carried out. The results are presented on Table 4.16. All variables were found to be correlated at $p<.001$ showing a positive significant relationship between total quality, operations effectiveness and competitive advantage. The factor with highest correlation was total quality against competitive advantage at .645 while operations effectiveness was correlated to competitive advantage at .621 showing that both total quality and operations effectiveness have significant positive relationship to competitive advantage

Table 4.16: Correlation between TO, OE and CA

Correlations				
VARIABLE	R + Sig	TOTAL QUALITY	OPERATIONS EFFECTIVENESS	COMPETITIVE ADVANTAGE
TOTAL QUALITY	Pearson Correlation	1		
	Sig. (2-tailed)			
OPERATIONS EFFECTIVENESS	Pearson Correlation	569"	1	
	Sig (2-tailed)	.000		
COMPETITIVE ADVANTAGE	Pearson Correlation	16451	.621"	1
	Sig. (2-tailed)	.000	.000	.
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Author, 2012

4.4 Chapter Summary

In this chapter, the results of the analysis of data focusing on the attributes and the correlation of factors have been presented. The descriptive statistics have presented the range and demographics of the respondents. The data correlation has shown the kind of relationship existing between various variables and factors, both within variables and across variables.

It is shown that the data was good for analysis. Further, it is shown that the correlations between the various factors will assist in getting to analyze the regression models designed for testing of the various hypotheses stated in the study. These are done in the following chapter.

CHAPTER FIVE: ANALYSIS OF HYPOTHESES AND DISCUSSIONS OF FINDINGS

5.1 Introduction

In this chapter, further analysis of the data is carried out and all the stated hypotheses in the study are subjected to the various tests available to the researcher. The chapter starts with the presentation of total quality implementation in the sector to find out the level of implementation of total quality in the horticultural sector in Kenya. There follows systematic regressions and correlations of data on each hypothesis to enable the acceptance or otherwise of the stated specific hypothesis.

5.2 Total Quality Implementation

This research focused on the effect of total quality on organization's capability to acquire competitive advantage. The section below highlights some of the captured results of analysis associated with total quality implementation against competitive advantage and operations effectiveness. The section starts with total quality implementation level in the sector and then looks at the individual variables such as leadership, customer focus and the sector scores. Finally, the total quality implementation level in the sector against competitive advantage as well as operations effectiveness is analyzed.

5.2.1 Total Quality Implementation Index

Total quality implementation index (TQII) was calculated from the adaptation of the Malcolm Baldridge National Quality Award Criteria for Performance Excellence (MBNQA-Criteria). The resultant equation worked out as follows:

TQII= *{NZX\}* x {MBNQA-Criteria,} = take the sum of all scores from *X\ to* X_N *against highest total score for each TQ principle for all respondents, Multiply by MBNQA-Criteria score, divide the sum by 550 (total possible score) and multiply by 100*

i.e. *XI ** *+ X2*2* + A3*3 + X_4**4+X5*5 multiply MBNQA weighting*

$$= AXA\frac{Wl * 1 + X2*2 + X3*3 + X4*4 + X5*5}{N*5} \ *\{MBNQA\text{-}Criteriascore\}$$

Where:
X =Notatall
X_2 =Little extent

X3 = Moderate extent
Xi =Great extent
X_5 =Verv great extent

And MBNQA- Criteria, has:

MBNQA-Criteriai: Leadership including formal strategic plan @ 120 marks

MBNQA-Criteria?: Customer focus including formal QMS @ 85 marks

MBNQA-Criterias: Supplier partnership @ 85 marks

MBNQA-Criteria»: Performance measurement including CSI @ 90 marks

MBNQA-Criteriaj: Continuous improvement @ 85 marks

V1BNQA-**Criteria6:** Employee empowerment @ 85 marks

It was expected that a company fully implementing total quality would register a score of 100 percent in all the main variables. This would indicate the level of commitment and understanding of the philosophy of total quality and the importance the company places in the need to implement effective quality management system.

5.2.2 Total Quality Implementation in the Sector

The level of total quality implementation by companies working in the horticultural sector in Kenya is presented in Table 5.1. The scores were graded according to the following criteria:- 70 and below- not implementing; 71 to 80-learning to implement; 81 to 90-partially implementing and 91 and above-mostlv implementing. The mean score was 2.51 out of the four groups meaning a level of above learning to implement with median and mode at 3, which is partially implementing total quality.

Table 5.1: Total quality implementation level

LEVEL OF TQ IMPLEMENTATION	Frequency	Percent	Statistics
Not Implementing	12	23.5	N=51
Learning to Implement	11	21.6	Mean=2.51
Partially Implementing	18	35.3	Median=3.00
Mostly Implementing	10	19.6	Mode=3
Total	51	100.0	Std. Devi =1.065

Source: Author, 2012

Out of the 51 companies studied, 12 were found not to be implementing at all total quality as a concept of management. 11 were found to be in the learning stages of implementing total quality, while 18 were found to be partially implementing total quality. Only 10 (ten) out of the 51 respondents were found to be said to be mostly implementing total quality. These are companies that registered an average score of 90 and above in the total quality implementation index (TQII). None of the companies scored 100, which would have placed it as totally or fully implementing total quality as a concept of management. F.ighty percent of the companies were found to be partially implementing (35 percent), learning to implement (22 percent) or not implementing total quality (23 percent) at all. Of those not implementing total quality at all, 42 percent claim to have a quality certification from a reputable institution. On the various fundamental principles of total quality, the sector registered mixed scores as shown in Table 5.2.

Table 5.2: TQ principles implementation index

Factor	Score out of 100
Leadership	76
Customer Focus	79
Supplier Partnership	80
Performance Measurement	78
Continuous Improvement	80
Empowerment	79

Source: Author, 2012

All the parameters registered poor scores with the best being supplier partnership and continuous improvement at 80, which in the grading index is learning to implement. The poorest score was registered by the most important component of total quality, leadership. This was at 76, while another important aspect of total quality, performance measurement, registered a score of 78. The sector mean score TQII is at 78.7 with a standard deviation of 1.5 while mode and median are at 79. This is the level of learning to implement total quality. We therefore reject the hypothesis, $H|_a$: *Level of implementing TQ in Kenya's horticultural industry is high* and accept the alternative hypothesis that level of implementing TQ in Kenya's horticultural companies is not high.

5.3 Hypotheses on Total Quality . Operations Effectiveness and Competitive Advantage

Multiple regression was used to test the various hypotheses in the study. The analyses allow finding out how well the equation line developed in the research methodology fits with the observed data, or goodness of fit. The tables and the meanings of each result against the research hypothesis are presented in this section. Each hypothesis is given enough interpretation to allow making conclusions that will feed to the research recommendations. Presented in this section are the many statistics necessary to inform a rigorous hypothesis test. These include the sum of squares, the residual sum of squares, residual errors, and the F-ratio, or how much the model has improved the prediction of the outcome compared to the level of inaccuracy in the model. Also included are i- statistics, which test the hypothesis that the value of *b* is 0 and, therefore, if it is significant, we gain confidence in the hypothesis that the Z>-value is significantly different from 0, and that the predictor variable contributes significantly to the ability to estimate values of the outcome (Field, 2009). Other associated statistics including Durbin-Watson scores are also presented.

5.3.1 Hypothesis Hi_b:-Level of Total Quality and Competitive Advantage

Hypothesis $H)_b$ focused on the kind of relationship existing between total quality implementation level and competitive advantage. It specifically stated that, *"there is a positive relationship between the level of TQ implementation and competitive advantage".* For this hypothesis, correlation analysis was used to test the validity of the statement and as shown in Table 4.18, the correlation coefficient was found to be positive .645. Therefore, the hypothesis, that there is a positive relationship between level of TQ implementation and competitive advantage is not rejected.

5.3.2 Hypothesis H_2:-Total Quality against Operations Effectiveness

Looking at hypothesis H_2: *Implementing TQ leads to operations effectiveness in Kenya's horticultural companies in the international market,* the regression analysis brought out some salient points. The model summary showed that there is a significant predictor level as depicted on the Table 5.3.

Model	R	R Square	Adjusted R Square	Std Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig F Change	Durbin-Watson
1	655[s]	429	.351	.527	.429	5.508	6	44	.000	2.513

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP, LEADERSHIP, PERFORMANCE MEASUREMENT

b Dependent Variable: OPERATIONS EFFECTIVENESS (OE)

Source: Author, 2012

From the results of the regression analysis, the model summary showed that the factors making up total quality have a combined correlation R value of .655, showing that there is a significant relationship between the total quality factors and operations effectiveness. The value of R^2 is .429. meaning that factors making up total quality can explain 42.9 percent of operations effectiveness. The Durbin-Watson value is 2.513, showing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.4.

Table 5 4 ANOVA for TQ factors and Oh.

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.188	6	1.531	5.508	000[a]
	Residual	12.232	44	.278		
	Total	21.420	50			

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS CONTINUOUS IMPROVEMENT. SUPPLIER PARTNERSHIP, LEADERSHIP, PERFORMANCE MEASUREMENT

b Dependent Variable: OPERATIONS EFFECTIVENESS (OE)

Source: Author, 2012

The ANOVA table allows one to see the various sums of errors and the *F*-ratio. The degrees of freedom (df), which the number of entities that are free to vary when estimating some kind of statistical parameter and has a bearing on significance tests such as t-test or F-ratio (Field, 2009) in the model is 44 (51-6-1) as there are six predictors against the size N of 51. The *F*- ratio, which is the ratio of the average variability in the data that a given model can explain to the average variability unexplained by the same model and is used to test the overall fit of the model (Field, 2009), is 5.508 at $p < .001$ show ing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.5.

Table 5.5 Coefficients of TO factors against OE

Coefficients[3]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig	Correlations Zero-order	Correlations Partial	Correlations Part	Collineanty Statistics Tolerance	Collineanty Statistics VIF
1 (Constant)	1.876	582		3.221	.002					
LEADERSHIP	.209	.120	.249	1.732	.090	460	.253	.197	.628	1.592
CUSTOMER FOCUS	-.082	142	-.079	-.578	.566	259	-.087	-066	.688	1.453
SUPPLIER PARTNERSHIP	144	.118	.186	• 1.217	.230	493	.180	.139	.554	1.804
PERFORMANCE MEASUREMENT	231	.115	.319	2007	.051	564	.200	.229	.514	1.947
CONTINUOUS IMPROVEMENT	.127	.090	.207	1 408	.166	.466	.208	.160	.602	1.662
EMPLOYEE EMPOWERMENT	-.076	.112	-.100	-.679	.501	.333	-.102	-.077	.599	1.670

a Dependent Variable: OPERATIONS EFFECTIVENESS (OE)

Source: Author, 2012

From the coefficients, the model can be defined as:

$Y=ao+biX, + b2X_2+...+ bnX_{n+} e$

OE, - uo • bi leadership, . b2customer focus, + bssupplier partnership) + $b_4$performance measurement, + bscontinuous improvement, + b6employee performance,

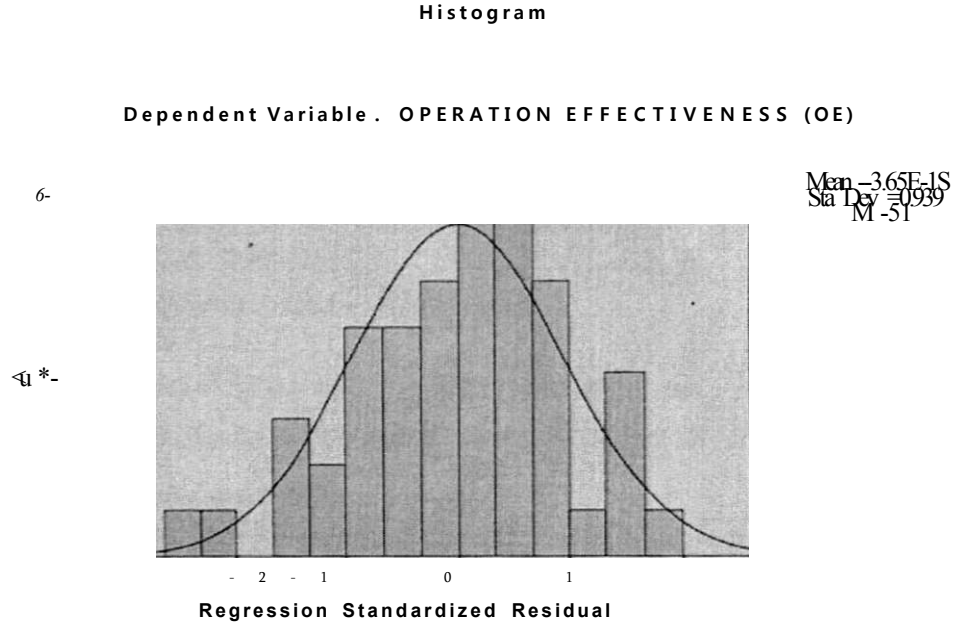
= 1.876+ .2091eadership, + -.082customer focus, + . 144supplier partnership, + .231 performance measurement + .127continuous improvement, + -,076employee performancej

Each unstandardized coefficient value shows the degree each predictor affects the outcome, if the effects of all other predictors are held constant in other words, the change in the outcome associated with a unit change in the predictor (Field, 2009). Variance inflation factor (VIF) all registered a value of below 2 showing collinearity is not present in the data. This is confirmed by the scores registered by the tolerance, which measure multicollinearity and are simply reciprocal of the variance inflation factor and would be of concern if they registered values below 0.1 (Field, 2009). Performance measurement registered the highest effect on operations effectiveness at .231 indicating a unit percentage increase of operations effectiveness (OE) increases performance measurement by .23 followed by leadership at .21. These two factors have almost twice the effect on operations effectiveness compared to supplier partnership at .14 and continuous improvement at .12 respectively. Further, there is a

negative relationship between operations effectiveness and customer focus and employee empowerment. However, the values are extremely small (negative .082 and .076 respectively) giving the probability of an error input rather than value and also the fact that operations effectiveness focuses more on process management than human resource management and external factors such as customer focus. The effect on these two parameters is therefore not expected to be strong on operations effectiveness. Finally, the combined effect on the equation from all the factors is positive. This shows that the overall effect of total quality on operations effectiveness is positive.

On associated standard errors on b-values, the /-statistics, used to test whether a regression coefficient is significantly different from zero (Field, 2009), for this model shows that none of the predictors is contributing significantly to the outcome at $p < .05$, except performance measurement which is just above at .051. However, the *t* values associated with performance measurement and leadership are high at 2 and 1.7 respec. vely, the ones for supplier partnership and continuous improvement are almost the same 1.2 and 1.4 respectively, while customer focus and employee empowerment albv. ^how almost the same values at -.6 and -.7 respectively. The standardized beta coefficients confirm the above analysis, as performance measurement and leadership show high value of .32 and .25 respectively, followed by supplier partnership and continuous improvement. While none of the factors showed significant contribution to the model, it is safe to conclude that the total effect is significant, and that the factors act mutually together to achieve the effect.

*Figure 5.1; Distribution of data. TO against OE_*



Source: Author, 2012

From the histogram Figure 5.1. it is clear that the data is normally distributed as the other tests have shown. Further, the model shows a strong correlation between factors making up total quality and operations effectiveness. It is also noted that the analysis of variance (ANOVA), plus the results from the table of coefficients point to a strong prediction of the outcome, operations effectiveness. When regressed against total quality as a single predictor, the model in Table 5.6 is achieved.

Table 5.6: Summary model of EO and TQ as a single factor

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.569"	.323	.310	10 87746	.323	23.416	1	49	.000	2.287

a Predictors: (Constant), TOTAL QUALITY

b Dependent Variable: OPERATIONS EFFECTIVENESS

Source: Author, 2012

As a single predictor, the relationship between TQ and OE correlate at .569, the F change is at 23.4, Durbin-Watson score at 2.3, while the significance of F change is at $p < .001$. The ANOVA table brings forth the same results in terms of significance

Table 5 ' ANOVA with TO as a single predictor of OK

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig. •
1	Regression	2770.522	1	2770.522	23.416	000[a]
	Residual	5797.635	49	118 319		
	Total	8568.157	50			

a Predictors: (Constant), TOTAL QUALITY

b Dependent Variable: OPERATIONS EFFECTIVENESS

Source: Author, 2012

The degrees of freedom are now 49, as predictor is only one, but the F score is significant at 234. Finally, the beta coefficients are depicted on Table 5.8.

Table 5.8: Beta coefficients for TQ as a predictort of OE

Coefficients'

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	29.953	10.807		2.772	008
	TOTAL QUALITY	.661	.137	.569	4.839	.000

a Dependent Variable: OPERATIONS EFFECTIVENESS

Source: Author, 2012

The standardized beta value stays at .569, the value of correlation coefficient, while *t* statistic shows that TQ is contributing to the outcome at 4.8 with significant level rising to $p < .001$. From the magnitude of the t-statistic and the significant level, it is safe to conclude that TQ contributes to OE. Therefore, the hypothesis, H_2: *Implementing TO leads to operations effectiveness in Kenya's horticultural companies in the international market,* cannot be rejected.

5.3.3 Hypothesis Hj: Competitive Advantage versus Operations Effectiveness

The hypothesis, H3: *Operations effectiveness leads to competitive advantage for Kenya's horticultural companies in the international market* is analysed in the following tables of results. The model is presented in Table 5.9.

Table 5 9: Summary of model- CA against OE factors _

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	648[a]	420	.355	.568343	.420	6.513	5	45	.000	1.819

a Predictors (Constant), Doing things Cheaply . Doing Things Right, Flexibility, Doing things on Time, Doing Things Fast

b Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

The model summary shows that the factors making up operations effectiveness have a lmmvu correlation ? value of .648 showing that there is a significant relationship between the factors operations effectiveness and competitive advantage. The value of R^2 is .42 meaning that factors making up operations effectiveness can explain 42 percent of competitive advantage. The Durbin-Watson value is 1.8 show ing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.10.

Table 5.10: ANOVA on OE factors against CA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.519	5	2.104	6.513	000[a]
	Residual	14.536	45	.323		
	Total	25.055	50			

a Predictors: (Constant), Doing things Cheaply . Doing Things Right, Flexibility, Doing things on Time, Doing Things Fast

b Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

The degrees of freedom (df) in the model is 45 (51-5-1) as there are five predictors or parameters being estimated against N of 51. The *F*- ratio is 6.5 at $p < .001$, show ing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.11.

Coefficients'

Model	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	1.628	.528		3.085	.003					
Doing Things Right	.061	.099	.075	.617	.540	.247	.092	.070	.872	1 147
Doing Things Fast	.025	.111	.039	.227	.822	.489	.034	.026	.438	2.283
Doingthings on Time	.268	.110	. 371	2.433	.019	.583	341	.276	. 556	1.798
Flexibility		119	301	1926	.060	553	.276	.219	.529	1.890
Doingthings Cheaply	.000	.077	.001	.005	.996	.244	.001	.001	.778	1.286

a Dependent Vanable: COMPETITIVE ADVANTAGE (CA)

Source: Author. 2012

From the coefficients, the model can be defined as:

$Y=ao+b|X, +b:X_2+\ldots+ b_nX_{n+} e$

CA,= b_0 + bidoing things right, + bdoing things fast, + $b_3$doing things on time, + $b_4$flexibilityj + $b_5$doing things cheaply,

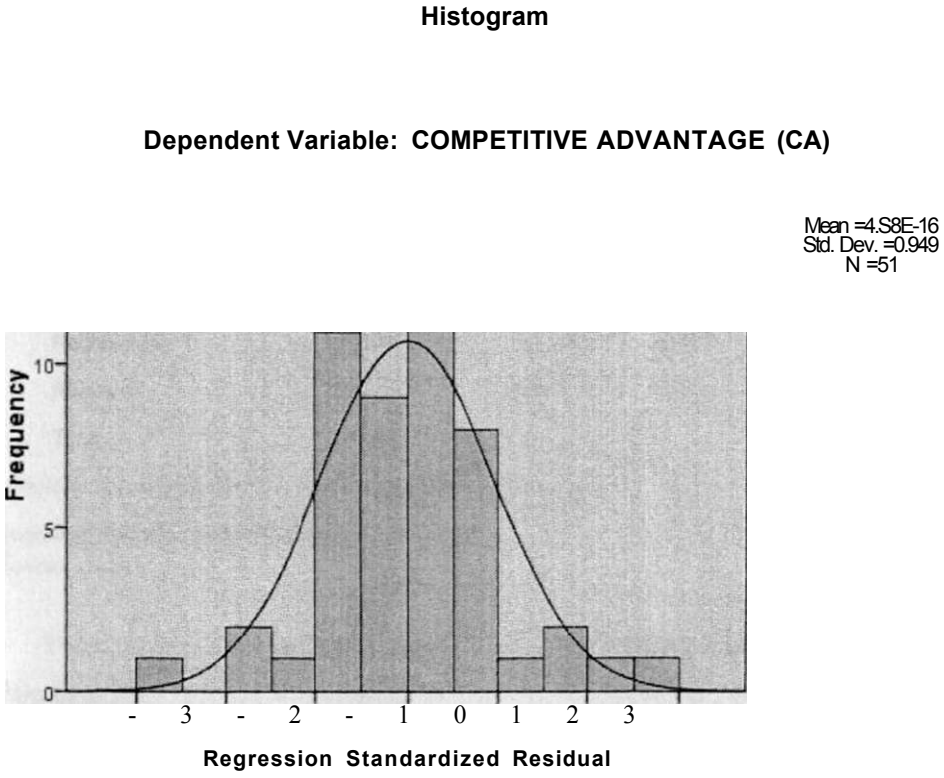
= 1.63+ .06doing things right, + ,03doing things fast, + ,27doing things on timej + .23flexibility, + (0) doing things cheaplyi

Variance inflation factor (V1F) all registered a value of below 2 showing collinearity is not present in the data. The factor with the strongest impact on competitive advantage is doing things on time at .27 indicating a unit increase in competitive advantage (CA) increases doing things on time by .27, at nine times more than on doing things fast and 4.5 times more than doing things right. The other strong factor is flexibility at .23 on unit increase of competitive advantage. Doing things

cheaply has an insignificant effect on the model, registering a standardized beta coefficient of .001 and significant level of .996. The strong effect of doing things on time on competitive advantage can be explained by the sector demand due to the perishable nature of goods on sale. The same can explain the need to be flexible as per customer demands.

On associated standard errors on b-values. the r-statistics for this model shows that doing things on time is contributing significantly to the outcome at $p < .05$ at .019, while flexibility is just above at .06. However, the / values associated with these two factors are high at 2.4 and 1.9 respectively, the one for doing things right is at .62, while doing things fast is at .23. The standardized beta coefficients confirm the above analysis as doing things or, time and flexibility show high value of .37 and .3 respectively, followed by doing things right and doing things fast. While none of the factors shows significant contribution to the model, it is safe to conclude that the total effect is significant, and that the factors, except doing things cheaply, act mutually together to achieve the effect.

Figure 5.2: Distribution of data. OE factors against CA



Source: Author, 2012

From the histogram Figure 5.2. the data is normally distributed as the other tests have shown. Further, the model shows a strong correlation between factors making up operations effectiveness and competitive advantage. It is also noted that the analysis of variance (ANOVA), plus the results from the table of coefficients point to a strong prediction of the outcome, competitive advantage. When regressed against operations effectiveness as a single predictor, the following model in Table 5.12 is achieved.

Table 5.12: CA against OE as a single factor

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.576"	.332	.318	.57702	.332	24.361	1	49	.000	1.645

a Predictors: (Constant), OPERATIONS EFFECTIVENESS

b Dependent Variable: COMPETITIVE ADVANTAGE

Source: Author; 2012

As a single predictor, the relationship between OE and CA correlate at .576, the F change is at 24.4, Durbin-Watson score is at 1.6, while the significance of F change is at $p < .001$. The ANOVA table brings forth almost the same results in terms of significance

Table 5.13: ANOVA with OE as a single predictor

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.111	1	8.111	24.361	OOO[3]
	Residual	16.315	49	.333		
	Total	24.426	50			

a Predictors: (Constant), OPERATIONS EFFECTIVENESS

b Dependent Variable COMPETITIVE ADVANTAGE

Source: Author. 2012

The degrees of freedom are now 49 as predictor is only one, but the F score is significant at 24.4. Finally, the beta coefficients are depicted on Table 5.14.

Table 5 14 Beta coefficients for OEasa predictor to CA

Coefficients'

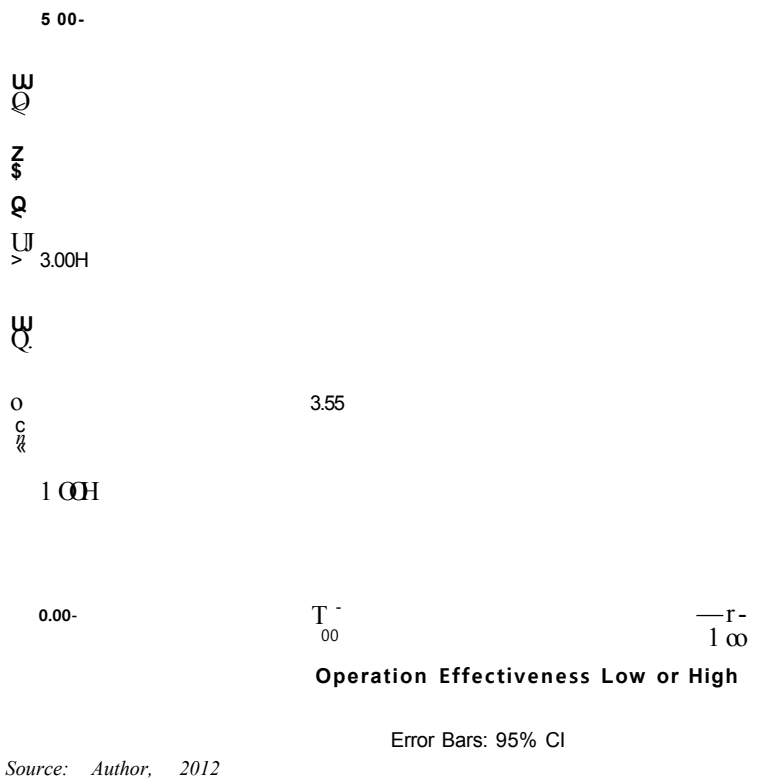
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	**1.971**	**.431**		**4.569**	000
	OPERATIONS EFFECTIVENESS	**.511**	**.104**	**.576**	**4.936**	.000

a Dependent Vanable: COMPETITIVE ADVANTAGE

Source: Author, 2012

The standardized beta value stays at .511, the value of correlation coefficient, while t statistic shows that OE is contributing to the outcome at 4.9 with significant level rising to $p < .001$. From the magnitude of the t-statistic and the significant level, it can be concluded that OE contributes to CA. Further, the mean competitive advantage scores against high or low levels of operations effectiveness brought out the results depicted in Figure 5.3.

Figure 5.3: Operations effectiveness versus competitive advantage



Source: Author, 2012

The difference between those with low operations effectiveness and those with high operations effectiveness against competitive advantage is high at 21 percent. Further, the error bar. reflective of variance, for those who have high operations effectiveness is smaller, hence very close to the average score, and does not overlap the error bar for those with low operations effectiveness show ing that high operations effectiveness guarantees higher competitive advantage against low operations effectiveness. Clearly, operations effectiveness does have an impact on competitive advantage. Therefore, the hypothesis, H3: *Operations effectiveness leads to competitive advantage for Kenya's horticultural companies in the international market* cannot be rejected.

5.3.4 Hypothesis H_4: Competitive Advantage versus Total Quality plus Operations Effectiveness

The hypothesis, H4: *Competitive advantage is a function of TO for Kenya's horticultural companies in the international market with operations effectiveness as an intervening variable* is anah' in 'he following tables of results. The first model is presented in Table 5.15.

Table 5 15: Summary of model- CA against TQ

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	Durbin-Watson
1	738[a]	.545	.483	.509008	.545	8.784	6	44	.000	1.791

a Predictors: (Constant). EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP, LEADERSHIP, PERFORMANCE MEASUREMENT

b Dependent Vanable COMPETITIVE ADVANTAGE (CA)

Table 5.15 shows the results of the regression analysis. The model summary shows that the factors making up total quality have a combined correlation R value of .738 against competitive advantage, indicating that there is a significant relationship between the total quality factors and competitive advantage. The value of R" is .545 meaning that factors making up total quality can explain 54.5 percent of competitive advantage. The Durbin-Watson value is 1.79 showing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.16.

Table 5 16: ANOVA on total quality factors against competitive advantage

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.655	6	2.276	8.784	.000*
	Residual	11.400	44	.259		
	Total	25.055	50			

a Predictors. (Constant), EMPLOYEE EMPOWERMENT. CUSTOMER FOCUS. CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP LEADERSHIP. PERFORMANCE MEASUREMENT

b Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author. 2012

The ANOVA Table 5.16 provides the various sums of errors and the F-ratio. The degrees of freedom (df) in the model is 44 (51-6-1), as there are six predictors against N of 51. The *F*- ratio is 8.78 at p < .001, showing a significant level of predicting the results using the model. The sum of squares for the regression model is quite high at 13.66, indicating that the regression model is a better predictor of the outcome than u.-.utg means. The beta coefficients and other statistics are presented in Table 5.17.

Table 5.17: Coefficients of TQ factors against CA

Coefficients'

	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model	B	Std Error	Beta	t	Sig	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	844	.562		1.502	.140					
LEADERSHIP	.211	.116	.233	1.818	.076	.530	.264	.185	.628	1.592
CUSTOMER FOCUS	161	.137	.144	1.177	.246	.480	.175	.120	.688	1.453
SUPPLIER PARTNERSHIP	055	.114	.066	.484	.631	511	.073	.049	. 554	1.804
PERFORMANCE MEASUREMENT	.376	.111	.481	3.389	.001	.648	.455	.345	.514	1.947
CONTINUOUS IMPROVEMENT	-117	087	-.175	- 1.338	.188	.279	-.198	- .136	602	1.662
EMPLOYEE EMPOWERMENT	109	.108	.133	1.011	317	422	.151	.103	.599	1.670

a Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

From the coefficients, the model can be defined as:

$Y=ao+biXi +tbX2+\ldots+ b_nX_n\hat{}e$

CA,= bo + bi leadership, + b2customer focus, + bjsupplier partnership, + bjperformance measurementj + $b_5$continuous improvement, + bgemployee performance, (given OE)

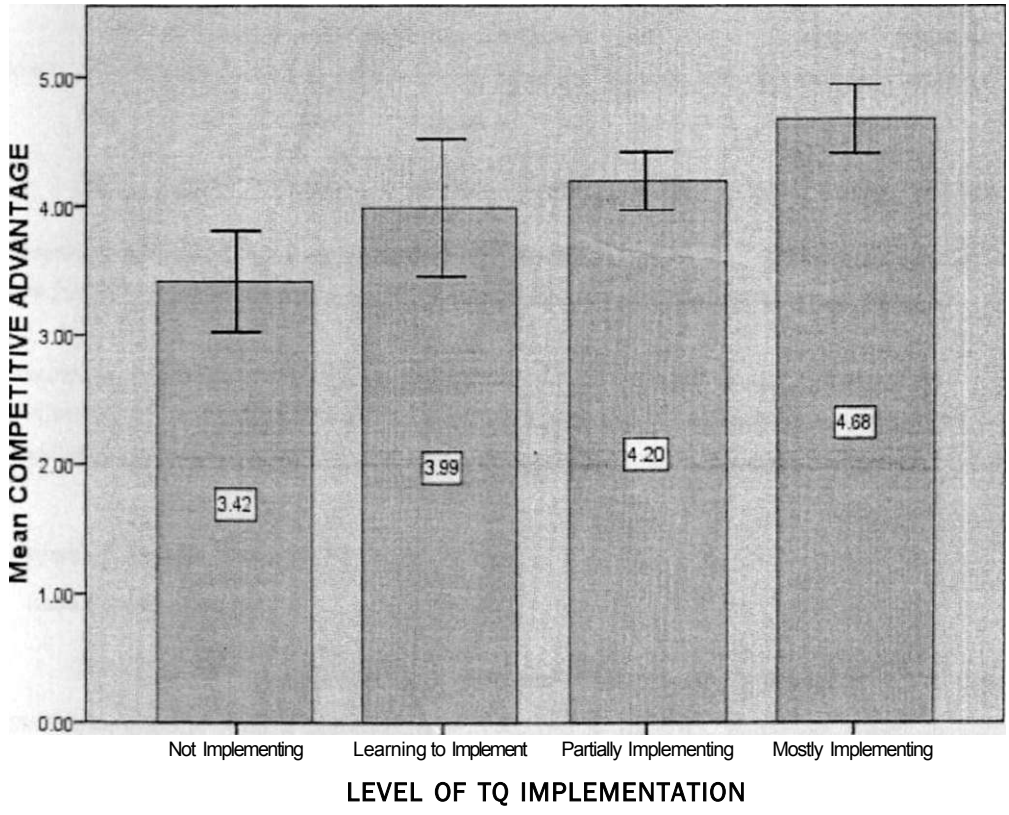
= .844-[1]- .211 leadership, + .161customer focusj + .055supplier partnership, + ,376performance measurement, + -.117continuous improvement, + ,109employee empowerment.

Each beta value shows the degree each predictor affects the outcome if the effects of all other predictors are held constant (Field, 2009). Variance inflation factor (VIF) all registered a value of below 2 showing collinearity is not present in the data. Performance measurement registers the strongest impact on competitive advantage at .376 a unit increase in competitive advantage (CA) increases performance measurement by .38. It is 1.78 times stronger than the next factor, leadership, at .21, which is 1.31 stronger than customer focus at .161. These three factors and employee empowerment show very strong effect on competitive advantage while supplier partnership posts the least positive effect. There is a negative relationship between continuous improvement and competitive advantage at beta value of .117 standardized to .175. This negative relationship could be explained by sector factors of providing virtually the same products over time while the low score on supplier partnership is also sector driven as the partnering on especially the farmers is more driven by requirements of being quality certified, than developing win-win supplier-customer relationships. However, the combined effect on the equation from the other factors is positive. Further, the constant b_0 is at .844 compared to the one registered in operations effectiveness to competitive advantage model at 1.63 with the parameters making up TQ having more effect on CA than those making up OE.

On associated standard errors on b-values, the r-statistics for this model shows that performance measurement is contributing significantly to the outcome at $p < .01$, while leadership is also good in contribution at just above $p < .05$ at .076. The *t* values associated with performance measurement and leadership are high at 3.3 and 1.8 respectively. The ones for customer focus and employee empowerment show almost the same values at 1.18 and 1.01 respectively. The standardized beta coefficients

confirm the above analysis, as performance measurement and leadership show high value of .48 and .23 respectively followed by customer focus and employee empowerment. While performance measurement showed significant contribution to the model followed by leadership, the combined effect of the factors even with continuous improvement registering a negative effect is significant hence the factors act mutually together to achieve significant effect on competitive advantage. On the overall, the effect of total quality on competitive advantage is more clearly presented by looking at the mean score against levels of total quality implementation. Figure 5.4 shows how the companies registered mean competitive advantage against level of total quality implementation.

Figure 5.4: TQ implementation level versus CA



Source: Author. 2012

The progression from not implementing to mostly implementing shows consistency and significance. The error bar, indicative of variance, of partially implementing, is small and not overlapping with mostly implementing total quality. There is, therefore, clear and sustained positive relationship between level of total

quality implementation and competitive advantage. Read together with the correlation coefficients for individual factors and combined factors making up total quality and competitive advantage respectively, hypothesis Hib *that there is a positive relationship between the level of TQ implementation and competitive advantage* cannot be rejected. A hierarchical regression analysis combining total quality and operations effectiveness factors against dependent variable, competitive advantage, brought out the results presented in the following tables. Table 5.18, shows the summary of the model.

Table 5.18: Hierarchical model summary, TO OE against ('A

Model Summary'

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	Durbin-Watson
1	738[a]	.545	.483	.509008	.545	8.784	6	44	000	
2	838[s]	.703	.619	.437062	.158	4.136	5	39	.004	1.721

a Predictors: (Constant), EMPLOYEc EMPOWERMENT, CUSTOMER FOCUS CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP. LEADERSHIP, PERFORMANCE MEASUREMENT

b Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP. LEADERSHIP, PERFORMANCE MEASUREMENT, Doing Things Right, Doing things Cheaply , Doing things on Time. Flexibility. Doing Things Fast

c Dependent Variable: COMPETITIVE ADVANTAGE

Source: Author. 2012

The first model confirms the previous analysis of competitive advantage versus total quality with a correlation of .738 and R^2 of .545. However, when factors making up operations effectiveness are introduced into the equation, model 2 improves to a correlation of .838 and an R~ of .703. This indicates that the combined model can explain 70.3 percent of the outcome, competitive advantage, up from 54.5 percent given by total quality alone, a percentage increase to prediction of 29 percent. The Durbin-Watson score is a comfortable 1.72. The analysis of variance gives more details of the model as shown on Table 5.19.

Table 5.19: A SOvA for hierarchical model

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	13.655	6	2.276	8.784	000[a]
	Residual	11.400	44	.259		
	Total	25.055	50			
2	Regression	17.605	11	1.600	8.378	.000°
	Residual	7.450	39	191		
	Total	25.055	50			

a Predictors: (Constant), EMPLOYEE EMPOWERMENT. CUSTOMER FOCUS, CONTINUOUS IMPROVEMENT, SUPPLIER PARTNERSHIP, LEADERSHIP, PERFORMANCE MEASUREMENT

b Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, CONTINUOUS IMPROVEMENT. SUPPLIER PARTNERSHIP, LEADERSHIP, PERFORMANCE MEASUREMENT, Doing Things Right, Doing things Cheaply , Doing things on Time, Flexibility, Doing Things Fast

c. Dependent Variable COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

While the F-factor drops from 8.8 to 8.4, the drop is insignificant. Further, the regression sum of squares improves from 13.66 to 17.6 when factors making up operations effectiveness are added into the equation. From the model summary, the F change is significant at $p < .01$, indicating that operations effectiveness brings in an important value in predicting competitive advantage. The beta coefficients for the hierarchical regression analysis are presented in Table 5.20

Table 5 20: Beta coefficients for hierarchical regression TQ and OF. on CA

Coefficients[3]

Model		Unstandardized Coefficients B	Std Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	844	.562		1.502	.140
	LEADERSHIP	.211	.116	.233	1.818	.076
	CUSTOMER FOCUS	.161	.137	.144	1.177	.246
	SUPPLIER PARTNERSHIP	.055	.114	.066	484	.631
	PERFORMANCE MEASUREMENT	.376	.111	.481	3.389	.001
	CONTINUOUS IMPROVEMENT	-.117	.087	-.175	-1.338	.188
	EMPLOYEE EMPOWERMENT	.109	.108	.133	1.011	.317
2	(Constant)	.278	.553		.502	.618
	LEADERSHIP	.130	.107	.144	1.218	.231
	CUSTOMER FOCUS	.205	.120	.184	1.707	.096
	SUPPLIER PARTNERSHIP	.011	.101	.013	.110	.913
	PERFORMANCE MEASUREMENT	302	.100	.387	3.035	.004
	CONTINUOUS IMPROVEMENT	-.205	.085	-.308	-2.402	.021
	EMPLOYEE EMPOWERMENT	216	.100	262	2.148	.038
	Doing Things Right	-.035	.080	-.043	-.442	.661
	Doing Things Fast	.170	.097	.263	1.747	.089
	Doing things on Time	.144	.094	.200	1.537	.132
	Flexibility	.098	.100	.129	.984	.331
	Doing things Cheaply	-.122	.065	-.204	-1.880	.068

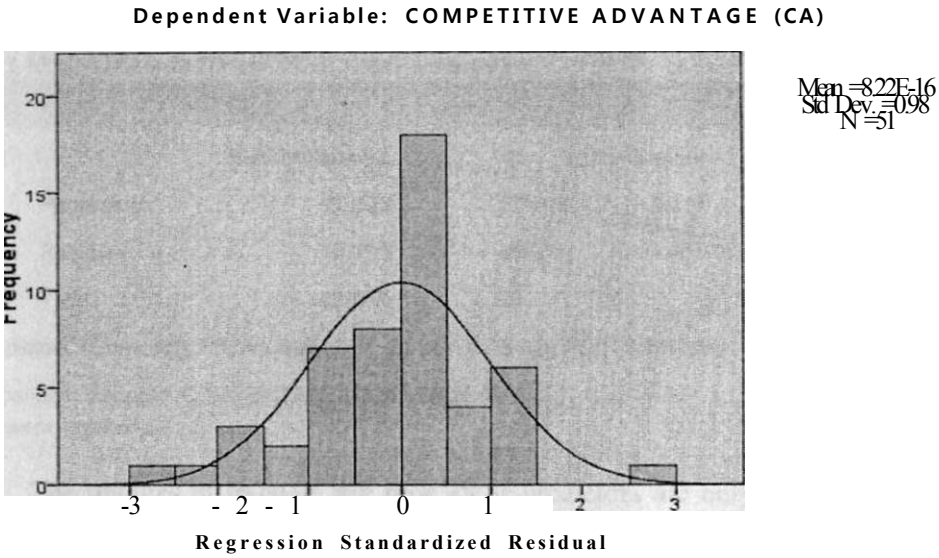
a Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author. 2012

The combining of the two variables reduces the impact of leadership, customer focus, supplier partnership and performance measurement, while increasing the impact of continuous improvement and employee empowerment. On the operations effectiveness, the impact on the outcome by doing things right becomes positive, while doing things cheaply becomes negative. All the other factors register significantly improved impacts on the outcome. Figure 5.5 presents the distribution of the data for the analysis.

Figure 5. 5: Distribution of data, TQ and OF. against CA

Histogram



Source: Author, 2012

From the histogram, the data is normally distributed as the other tests have shown. Further, it is seen that the model shows a strong correlation between factors making up operations effectiveness and competitive advantage. It is also noted that the analysis of variance (ANOVA) plus the results from the table of coefficients point to a strong prediction of the outcome, competitive advantage, using- both the total quality and operations effectiveness. When regressed against total quality and operations effectiveness as single predictors, the following model in Table 5.21 is achieved.

Table 5.21: CA against TQ and OE Model

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change	Durbin-Watson
1	716[a]	.512	.492	.504684	.512	25.184	2	48	000	1.876

a Predictors: (Constant), TOTAL QUALITY, OPERATIONS EFFECTIVENESS

b. Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

As single predictors, the relationship between CA and TQ with OE intervening correlate at .716. R^2 at .512, the F change is at 25.2, Durbin-Watson score is at 1.9, while the significance of F change is at $p < .001$. The ANOVA table brings forth almost the same results in terms of significance

Table 5.22: ANOVA with TQ and OE as single predictors

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.829	2	6.414	25.184	000[3]
	Residual	12.226	48	.255		
	Total	25.055	50			

a Predictors: (Constant), TOTAL QUALITY. OPERATIONS EFFECTIVENESS

b Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

The degrees of freedom are now 48 as predictors arc only two, while the F score is significant at $p < .001$. Finally, the beta coefficients for the model are depicted on Table 5.23.

Table 5 23: Beta coefficients for OE as a predictor to CA

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.324	.539		601	.551
OPERATIONS EFFECTIVENESS	.020	.007	.372	3.034	.004
TOTAL QUALITY	.027	.008	.435	3.552	.001

a Dependent Variable: COMPETITIVE ADVANTAGE (CA)

Source: Author, 2012

Total quality has more impact in predicting the outcome of competitive advantage at beta level of .027, against operations cffcctivcncss at .02 and at p=.001 and .004 respectively. To find out what other factors are impacting on competitive advantage, the outcome was regressed against having been quality certified by an

international organization, number of years one has been certified, having a quality department, a formal strategic plan and then combining two factors or all three factors. Having a quality department alone registered an R value of .22 and R^2 of .049, and having a strategic plan alone registered an R value of .152 and R" of .023, being quality certified registered an insignificant R value of .127 and R^2 of 0.016, while number of years one has been certified did not seem to have any impact on the company's ability to accrue competitive advantage, registering an R value of .037 and R: of .001 at significant level of .797. Combining all the factors, being certified, number of years certified, having a quality assurance department and having a formal strategic plan, and regressing against competitive advantage registered an R value of .282 and R^2 of .08 at significant level of .432. However, the combination that was more significant was having a formal strategic plan and having a quality assurance department. The results of the two combined parameters are presented in Table 5.24.

Table 5.24: Having a quality department and strategic plan against CA

Model Summary[6]

					Change Statistics				
Model	R	R Square	Adjus:ed R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	256[3]	.065	.026	.702405	.065	1.644	2	47	.204	1 682

a Predictors: (Constant), Does the Company have a formal strategic plan? Do you have a Quality Assurance Department?

b. Dependent Variable COMPETITIVE ADVANTAGE (CA)

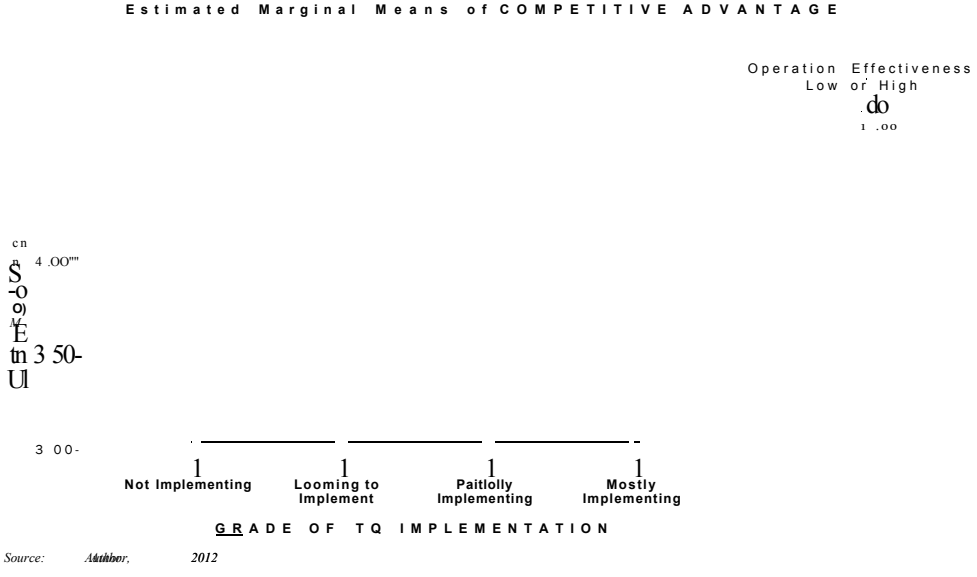
Source: Author, 2012

Regressing having a formal strategic plan together with having a quality assurance department produces an R value of .256 and R2 of .065, though not at a significant level of .204. However, this is much better significance than all the other analysis for the four factors either singly or combined against competitive advantage. This shows that a quality department together with formal planning, will assist the organization in achieving higher levels of competitive advantage. Combining the two,

therefore, improves significantly a company's ability to gain competitive advantage. The results become clearer when univariate analysis of variance is carried out through general linear model to determine the impact of the intervening variable, operations effectiveness, on the total quality as it impacts on competitive advantage. The results for the overall competitive advantage, and the various factors making up competitive advantage are. presented in the interaction graphs below.

The approach was to have operations effectiveness brought into the equation as a dummy variable with a 0 or 1 value depicting low operations effectiveness and high operations effectiveness respectively, against total quality implementation levels of not implementing, learning to implement, starting to implement and mostly implementing, and observing the interactions of the two variables against competitive advantage or factors making up competitive advantage. The interaction between operations effectiveness and total quality on competitive advantage is depicted by Figure 5.6.

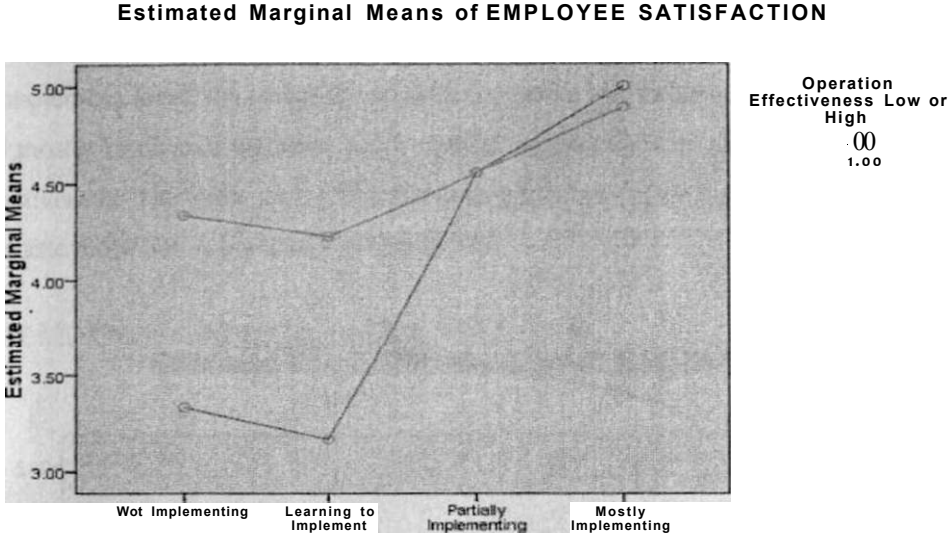
Figure 5.6: Interaction between TO and OE on CA



Source: Author, 2012

Operations effectiveness seems to have more impact in the organizations that are not implementing TQ or learning to implement, and almost having no effect on partially implementing and mostly implementing. This could be explained by the fact that those fully implementing total quality will have an effective operations system. When the same analysis is undertaken focusing on competitive advantage variable employee satisfaction, the interaction is given by Figure 5.7.

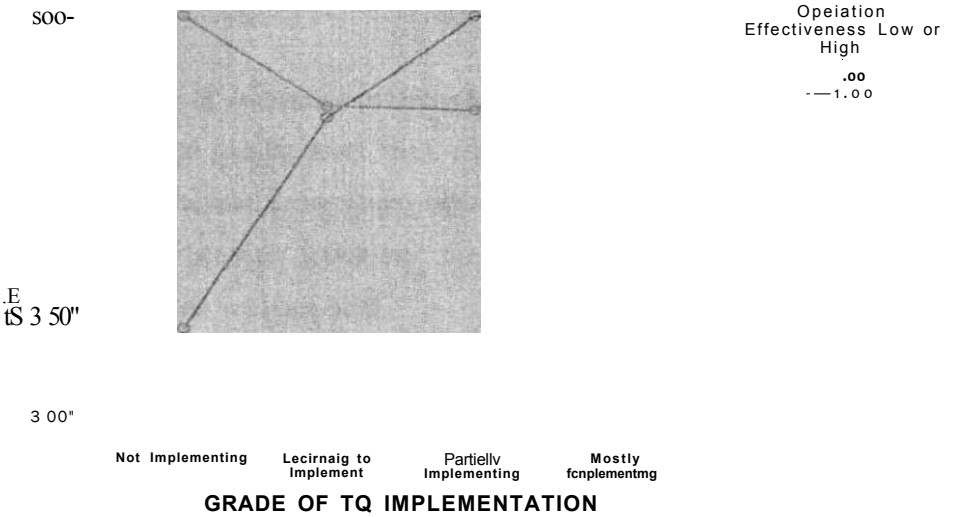
Figure 5 7: Interaction between TQ and OE on employee saisfaction



Source: Author, 2012

The interaction between total quality and operations effectiveness shows marked difference between high operations effectiveness versus low operations effectiveness when looked at from the level of total quality implementation. At low levels of total quality implementation, an organization focusing on operations effectiveness gains some significant competitive advantage. On the competitive advantage factor of customer satisfaction, the result on the interaction is given by Figure 5.8.

Figure 3.8: Interaction between TO and OE on customer saisfaction

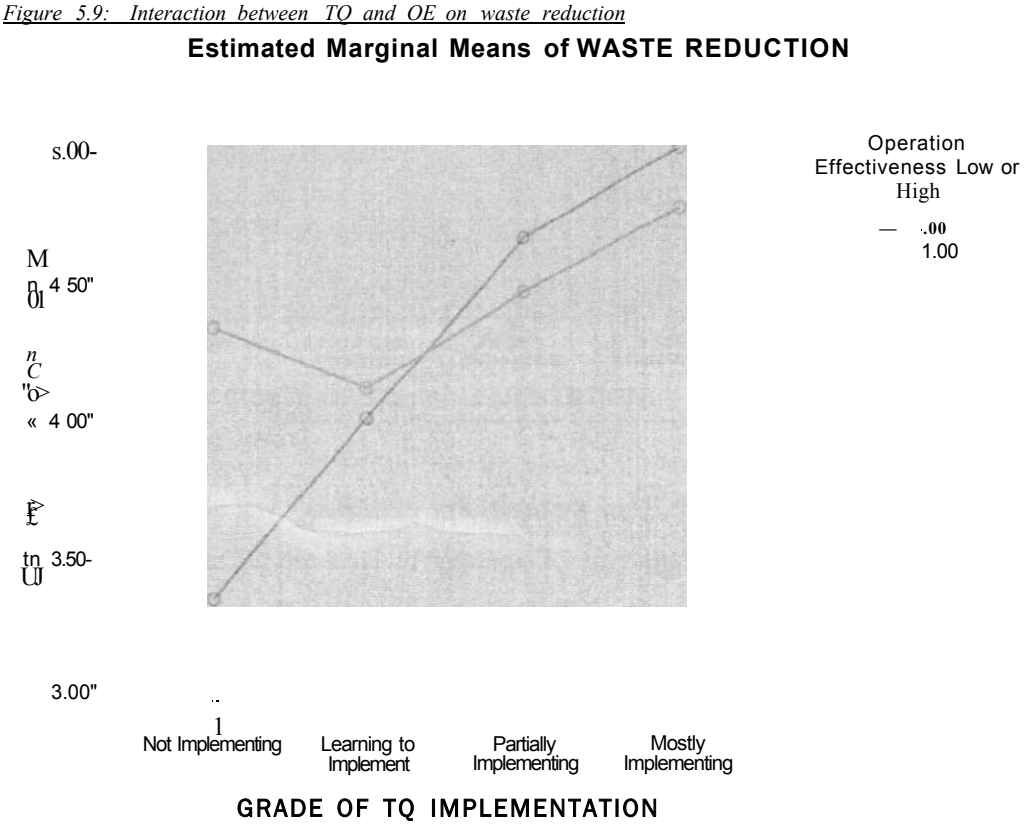


Source: Author, 2012

i

The interaction on customer satisfaction is very significant on the impact operations effectiveness has on companies not implementing total quality. At learning to implement level, the effect is virtually the same, but those partially implementing and mostly implementing seem not to get strong benefit from focusing on operations effectiveness. The interaction effect between operations effectiveness and total quality on waste reduction is presented in Figure 5.9.

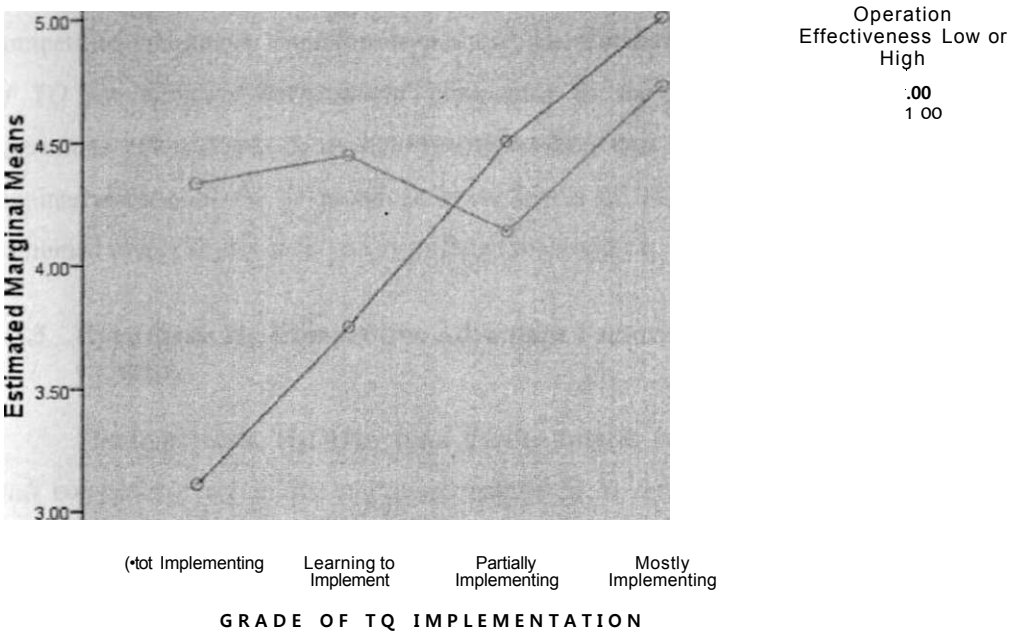
Figure 5.9: Interaction between TQ and OE on waste reduction



Source: Author. 2012

The effect of operations effectiveness on waste reduction is more at the not implementing total quality level than other levels, with the companies with low operations effectiveness doing much better when total quality is implemented. The interaction effect between operations effectiveness and total quality on increase in revenue is presented in Figure 5.10.

Figure 5 10: Interaction between TQ and OE on increase in revenue



Source: Author, 2012

Those with low operations effectiveness progressively have high rates of increase in revenue, as the level of total quality implementation increases. While at the contrast of partially implementing and mostly implementing the lines run parallel to each other, the real contrast is visible at between learning to implement and partially implementing level where the lines cross and focusing on operations effectiveness becomes less of value and brings down competitive advantage. From the magnitude of the t-statistic and the significant level in all the regression analysis that have been carried out:- competitive advantage against total quality factors, hierarchical regression analysis using total quality and operations effectiveness factors against competitive advantage, and using total quality and operations effectiveness as single factors against competitive advantage, it can be concluded that TQ explains CA at a higher level when operations effectiveness is brought into the equation.

The hierarchical regression model gives the best results of the three analysis explaining 70.3 percent of the outcome, competitive advantage, when operations effectiveness is introduced to the equation, up from 54.5 percent given by total quality alone, showing that operations effectiveness is acting as an intervening variable. About 30 percent of the result in competitive advantage is not explained, and external

environmental factors could be playing a role in explaining. Further, the interactions brought out in the various interaction graphs indicate that operations effectiveness intervenes strongly at the lower levels of total quality implementation to bring out competitive advantage. Therefore hypothesis, H4: *Competitive advantage is a function of TQ for Kenya's horticultural companies in the international market, with operations effectiveness as an inter\'ening variable* can only be partially rejected as the intervention of OE is noted at lower levels of TQ implementation while the combined effect shows clear and significant intervention.

5.3.5 Hypothesis H_5: Competitive Advantage Factors versus Total Quality Criteria

The hypothesis, H5: *Most total quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue; customer satisfaction; reduction in waste; and employee satisfaction,* was analysed. The results are presented in the following subsections.

5.3.5.1 Total Quality and Customer Satisfaction

Regressing total quality factors against customer satisfaction as one of the criteria for measuring competitive advantage, brought out the results presented on Table 5.25. From the results of the regression analysis, the model summary showed that the factors making up total quality have a combined correlation R value of .661, showing that there is a significant relationship between the total quality factors and customer satisfaction. The value of R^2 is .436, meaning that factors making up total quality can explain 43.6 percent of customer satisfaction. The Durbin-Watson value is 2, showing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.26.

.'able 5 25 Total quality versus customer satis/action model

Model Summary"

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	661[a]	436	.359	604	.436	5.676	6	44	.000	2.024

a Predictors (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT

b Dependent Variable: Increase in Customer Satisfaction

Source: Author, 2012

Table 5.26: A NOVA on TQ against customer satisfaction

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.441	6	2.074	5.676	000[a]
	Residual	16.073	44	.365		
	Total	28.514	50			

a Predictors (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT

b. Dependent Variable: Increase in Customer Satisfaction

Source: Author, 2012

The ANOVA Table 5.26 provides the various sums "of errors and the F-ratio. The degrees of freedom (df) in the model is 44 (51-6-1) as there are six predictors against N of 51. The *F*- ratio is 5.676 at $p < .001$, showing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.27.

i

Table 5.27: Coefficients of TQ factors against customer satisfaction

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	S;d. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.545	.683		.798	.429					
LEADERSHIP	.083	.139	.080	.599	.552	.361	090	.068	.726	1.377
CUSTOMER FOCUS	.403	.145	346	2.778	.008	.510	.386	.314	.826	1.211
SUPPLIER PARTNERSHIP	.132	.125	.148	1.052	.298	.416	.157	.119	.646	1.547
PERFORMANCE MEASUREMENT	.259	.154	.283	1.681	100	.548	.246	.190	.452	2.211
CONTINUOUS IMPROVEMENT	-085	.103	-.120	- 828	412	.262	-.124	.094	.611	1.636
EMPLOYEE EMPOWERMENT	.114	.127	.130	.895	.375	.354	.134	.101	.611	1.637

a Dependent Variable: Incicase in Customer Satisfaction

Source: Author, 2012

Variance inflation factor (V1F·) all registered a value of below 2.5 showing collinearity is not present in the data.There is a negative relationship between customer satisfaction and continuous improvement. As would be expected, customer focus has the largest impact in predicting customer satisfaction, with a beta value of .403 at $p < .01$. Performance measurement posts a respectable second position at p=.l. The l values associated with customer focus and performance measurement are high at 2.8 and 1.7 respectively. The standardized beta coefficients confirm the above analysis, as customer focus and performance measurement show high value of .35 and .28 respectively, followed by supplier partnership. While customer focus shows significant contribution to the model, and to some extent performance measurement, it is safe to conclude that that the factors act mutually together to achieve the effect. Therefore, hypothesis H51: That total *quality criteria have significant relationships with competitive advantage outcome of customer satisfaction* cannot be rejected.

5.3.5.2 Total Quality and Increase in Revenue

Regressing total quality factors against increase in revenue as one of the criteria for measuring competitive advantage brought out the results presented in Table 5.28. From the results of the regression analysis, the model summary showed that the factors making up total quality have a combined correlation R value of .654, showing that there is a significant relationship between the total quality factors and increase in revenue. The value of R^2 is .427, meaning that factors making up total quality can explain 42.7 percent of increase in revenue. The Durbin-Watson value is 2.143 showing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.29.

Table 5.28 Total quality versus increase in revenue

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	654[3]	.427	.349	.775	.427	5 468	6	44	.000	2.143

a Predictors: (Constant). EMPLOYEE EMPOWERMENT, CUSTOMtn FOCUS. LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE. MEASUREMENT

b Dependent Variable: Increase in Revenue

Source: Author, 2012

Table 5.29 ANOVA on TO against increase in revenue

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	19.711	6	3.285	5.468	,000[a]
	Residual	26.433	44	.601		
	Total	46.144	50			

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT

b Dependent Variable: Increase in Revenue

Source: Author, 2012

The *F*- ratio is 5.468 at $p < .001$, showing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.30.

Tabic 5 30 Coefficients of TQ factors against increase in revenue

Coefficients'

Model	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	Std Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	-.515	875		- 588	.560					
LEADERSHIP	078	.178	.059	438	.663	. 348	.066	.050	.726	1.377
CUSTOMER FOCUS	412	.186	.278	2.212	.032	.451	.316	.252	.826	1.211
SUPPLIER PARTNERSHIP	.165	.161	146	1.026	.311	442	153	.117	.646	1.547
PERFORMANCE MEASUREMENT	.277	.198	.237	1 400	.169	.546	.206	.160	.452	2.211
CONTINUOUS IMPROVEMENT	-.051	.13?	-057	-.389	.699	.336	-.058	-.044	.611	1.636
EMPLOYEE EMPOWERMENT	263	.163	235	1.613	.114	.453	236	.184	.611	1.637

a Dependent Variable Increase in Revenue •

Source: Author, 2012

Variance inflation factors (VIF) all registered a value of below 2.5, showing collinearity is not present in the data.There is a negative relationship between increase in revenue and continuous improvement while the constant value is negative. Customer focus registers the highest beta score of .412 at p=.03. Performance measurement, employee satisfaction and supplier partnership all show relatively strong contribution with *t* values of between 1 and 1.6. The standardized beta coefficients confirm the above analysis, as customer focus and performance measurement show high values of .28 and .24 respectively, followed by employee empowerment.

While none of the factors showed significant contribution to the model, it is safe to conclude that the total effect is significant, and that the factors act mutually together with customer focus and employee empowerment having the strongest impact to achieve the overall effect. Therefore, hypothesis H_{52}: *That total quality criteria have significant relationships with competitive advantage outcome of increase in revenue* cannot be rejected.

5.3.5.3 Total Quality and Employee Satisfaction

Regressing total quality factors against employee satisfaction as one of the criteria for measuring competitive advantage brought out the results presented on Table 5.31. From the results of the regression analysis, the model summary shows that the factors making up total quality have a combined correlation R value of .682, showing that there is a significant relationship between the total quality factors and competitive advantage factor of employee satisfaction. The value of R^2 is .465, meaning that factors making up total quality can explain 46.5 percent of employee satisfaction. The Durbin-Watson value is 1.685 showing that the data is good for the analysis. The analysis of variance (ANuVA) also provides more insight on the relationship as shown in Table 5.32.

Table 5 31: Total quality versus employee satisfaction

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.682"	.465	.392	.620	.465	6.362	6	44	.000	1.685

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, LEADERSHIP. SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT
b Dependent Variable: Employee Satisfaction

Source: Author, 2012

Table 5.32: ANOVA on TO against employee satisfaction

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.691	6	2.449	6.362	.000[a]
	Residual	16.934	44	.385		
	Total	31.625	50			

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS. LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT
b Dependent Variable: Employee Satisfaction

Source: Author, 2012

»

The *F*- ratio is 6.362 at p < .001, showing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.33.

Table 5.33: Coefficients of TQ factors against employee satisfaction

Coefficients[3]

Model	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	Std Error	Beta	t	Sig.	Zero order	Partial	Part	Tolerance	VIF
1 (Constant)	305	.701		.436	.665					
LEADERSHIP	.346	.143	.314	2.428	.019	.514	344	268	.726	1.377
CUSTOMER FOCUS	.299	.149	.243	2.005	.051	.417	.289	221	.826	1.211
SUPPLIER PARTNERSHIP	.262	.129	.280	2.038	.048	.489	.294	.225	.646	1.547
PERFORMANCE MEASUREMENT	.128	.158	.133	811	422	.511	.121	.089	452	2.211
CONTINUOUS IMPROVEMENT	-.120	.105	-.161	-1.143	.259	.224	-.170	.126	.611	1.636
EMPLOYEE EMPOWERMENT	090	.131	097	.691	493	.336	.104	.076	.611	1.637

a Dependent Variable: Employee Satisfaction

Source: Author, 2012

Variance inflation factor (VIF) all registered a value of below 2.5, showing collinearity is not present in the data.There is a negative relationship between employee satisfaction and continuous improvement. However, the combined effect on the equation from the other factors is positive. On associated standard errors on b-values, the /-statistics for this model shows that most of the predictors are contributing significantly to the outcome, though only leadership is at p < .05. The standardized beta coefficients confirm the above analysis, as leadership shows high value of .31, followed by supplier partnership. It is safe to conclude that the total effect is significant, and that the factors act mutually together with leadership, customer focus and supplier partnership in having the strongest impact to achieve the overall effect. Therefore, hypothesis H53: *That total quality criteria have significant relationships with competitive advantage outcome of employee satisfaction* cannot be rejected.

5.3.5.4 Total Quality and Waste Reduction

Regressing total quality factors against waste reduction as one of the criteria for measuring competitive advantage brought out the results presented on Table 5.34. From the results of the regression analysis, the model summary showed that the factors making up total quality have a combined correlation R value of .63, showing that there is a significant relationship between the total quality factors and operations effectiveness. The value of R" is .397, meaning that factors making up total quality can explain 42.9 percent of operations effectiveness. The Durbin-Watson value is 2.109 showing that the data is good for the analysis. The analysis of variance (ANOVA) also provides more insight on the relationship as shown in Table 5.35.

Table 5.34: Total quality versus waste reduction

Model Summary"

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	630[a]	.397	.315	.639	.397	4 823	6	44	001	2.109

a Predictors: (Constant), EMPLOYEE EMPOWERMENT. CUSTOMER FOCUS, LEADERSHIP, SUPPLIER PARTNERSHIP, CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT

b Dependent Variable. Waste Reduction

Source: Author, 2012

Table 5.35: ANOVA on TQ against waste reduction

ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.816	6	1.969	4 823	001[3]
	Residual	17.966	44	.408		
	Total	29.782	50			

a Predictors: (Constant), EMPLOYEE EMPOWERMENT, CUSTOMER FOCUS, LEADERSHIP, SUPPLIER PARTNERSHIP. CONTINUOUS IMPROVEMENT, PERFORMANCE MEASUREMENT

b Dependent Variable: Waste Reduction

Source: Author, 2012

The *F*- ratio is 4.823 at $p < .001$, showing a significant level of predicting the results using the model. The beta coefficients and other statistics are presented in Table 5.36.

Table 5. 36: Coefficients of TQ factors against waste reduction

Coefficients'

Model	Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.952	.722		1.319	.194					
LEADERSHIP	.033	.147	.031	226	.822	.326	034	.027	.726	1.377
CUSTOMER FOCUS	.073	.154	.061	.473	638	.274	071	.055	.826	1.211
SUPPLIER PARTNERSHIP	.214	.132	'235	1.612	.114	.489	.236	.189	.646	1.547
PERFORMANCE MEASUREMENT	.370	.163	.395	2.270	.028	.560	324	.266	.452	2.211
CONTINUOUS IMPROVEMENT	-.136	.108	-.187	- 1.251	218	.241	-.185	.146	.611	1.636
EMPLOYEE EMPOWERMENT	173	.134	.193	1.290	.204	410	.191	.151	.611	1.637

a Dependent Variable: Waste Redjction

Source: Author, 2012

Variance inflation factors (VIF) all registered a value of below 2.5, showing collinearity is not present in the data.There is a negative relationship between continuous improvement and waste reduction. However, the combined effect on the equation from the other factors is positive. On associated standard errors on b-values, the /-statistics for this model shows that performance measurement is contributing significantly to the outcome at $p < .05$. The *t* values associated with performance measurement, supplier partnership, and employee empowerment are high at 2.2, 1.6 and 1.3 respectively. The standardized beta coefficients confirm the above analysis, as performance measurement, supplier partnership and employee empowerment show high value of .4, .24 and .19 respectively. While only performance measurement shows significant contribution to the model, it is safe to conclude that the total effect is significant, and that the factors act mutually together to achieve the effect. Therefore, hypothesis H54: *That total quality criteria have significant relationships with competitive advantage outcome of waste reduction* cannot be rejected. The summarized effects of the individual parameters of total quality against parameters of competitive advantage are presented in Table 5.37.

t

Table 5 37. Summary ofJQ variables against CA outcomes

VARIABLE	CUSTOMER SATISFACTION		INCREASE IN REVENUE		EMPLOYEE SATISFACTION		W ASTF, REDUCTION	
BETA <T SIG	B	Sig.	B	Sig.	B	Sig-	B	Sig.
LEADERSHIP	.083	.552	.078	.663	.346	.019	.033	.822
CUSTOMER FOCUS	.403	.008	.412	.032	.299	.051	.073	638
PERFORMANCE MEASUREMENT	.259	.100	.277	.169	.128	.422	370	028
SUPPLIER PARTNERSHIP	.132	.298	.165	.311	262	048	.214	.114
EMPLOYEE EMPOWERMENT	.114	.375	.263	.114	.090	.493	.173	204
CONTINUOUS IMPROVEMENT	-.085	.412	-.051	.0*3	- 120	.259	-.136	.218
R= ;	,661[A]		654[A]		682[A]		,630[A]	

Source: Author, 2012

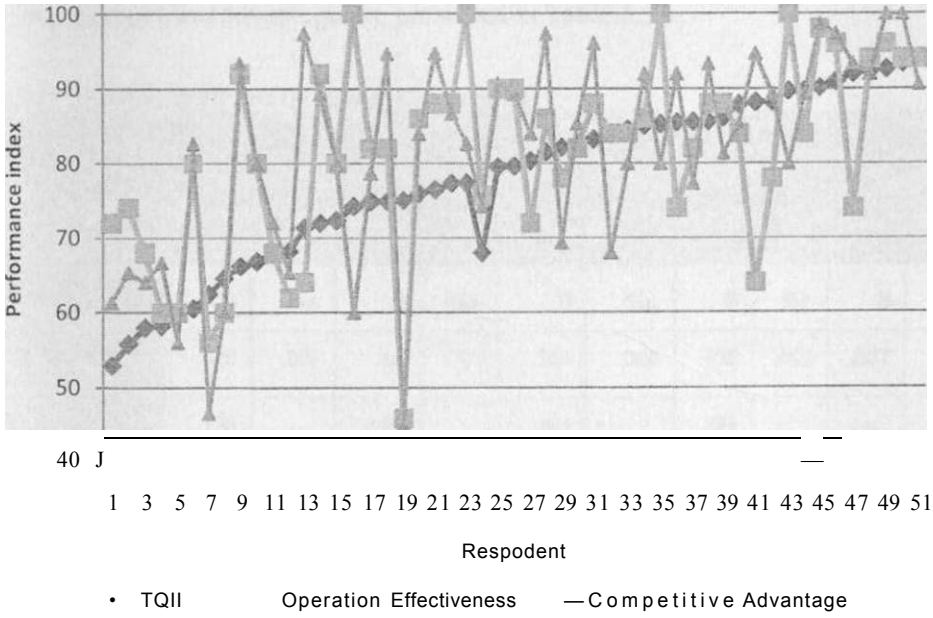
All combined factors have registered R levels of over .6. Customer focus shows a significant impact on all parameters except in waste reduction. Performance measurement has significant impact on both customer satisfaction and waste reduction, while leadership has significant impact on employee satisfaction. Supplier partnership has significant impact on waste reduction.

Of the six total quality criteria in the study, four have significant relationships with the four competitive advantage outcomes of increase in revenue; customer satisfaction; reduction in waste; and employee satisfaction. Therefore, hypothesis H_s; *Most quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue; customer satisfaction; reduction in waste; and employee satisfaction* cannot be rejected.

5.3.6 Total quality , Operations Effectiveness and Competitive Advantage

To visualize the way the three main variables relate to each other, the scores of total quality implementation index achieved were compared against weighted scores for operations effectiveness and competitive advantage. The scores were arranged from the least scoring company in TQII to the highest, and the respective operations effectiveness plus competitive advantage scores. The results are presented in Figure 5.11.

Figure 5.11: Total quality, operations effectiveness and competitive advantage contrast



Source: Author, 2012

The lowest performing company registered a TQII score of 53, that is, not implementing total quality at all, while the highest registered a score of 94. The average score for TQII for all the firms was at 78. On the other hand, the lowest score on operations effectiveness was at 46 and the highest was at 100 with the average score being 82 and 67 percent of the firms scoring 80 and above. Doing things fast scored at 77, doing things on time at 87. doing things right at 86, doing things cheaply at 74 and flexibility at 80. The lowest score on competitive advantage was at 45 for the same firm that had registered a score for operations effectiveness of 46 and the highest was at 100 with the average for all firms being 82 with 57 percent of the firms scoring 80 and above. Employee satisfaction scored at 86, customer satisfaction at 89,

and waste reduction at 85 and increase in revenue at 83. The TQII score seems to run right in the middle of the data of both operations effectiveness and competitive advantage. If these data are viewed as a scatter, then TQII seems to project line of best fit. showing that as TQII increases, both OE and CA increase.

Operations effectiveness is more like part of the TQ, and so can be viewed as having the impact on CA by way of implementing TQ. The three variables viewed together summarize and confirm by visual observation, the hypotheses that have been tested in this research. The summarized regression values of total quality and operations effectiveness against individual variables of competitive advantage as well as overall competitive advantage are presented in Table 5.38.

Table 5 38: Summary ofTQ and OE against CA outcomes

VARIABLE	Customer Satisfaction		Increase in Revenue		Employee Satisfaction		Waste Reduction		Competitive Advantage	
BETA & SIG	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
TOTAL QUALITY	.525	.007	.64	.003	.761	.000	.738	.000	687	000
R?	.138		.163		.311		.227		.335	
OPERATIONS EFFECTIVENESS	.474	.000	.589	.000	.517	.000	.456	.004	.511	.000
|=		.202	.247		.257		.155		.332	

Source: Author, 2012

Total quality has a stronger impact on non-financial variables of employee satisfaction and waste reduction than increase in revenue. This confirms the research by Demirbag et al (2006) that TQM has a moderate positive impact on financial performance and significant impact on non-financial performance. On its part, operations effectiveness has a significant impact on financial performance and waste reduction. This could be explained on the focus to efficiency in the process that operations management entails. Further, how long a company has had a QMS certification was regressed against total quality implementation index, and the model is presented on Table 5.39

*Table 5.39: **Years** of certification against TQJ1*

Model Summary"

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig F Change	
1	239[a]	.057	.038	11.050	.057	2.973	1	49	.091	1.673

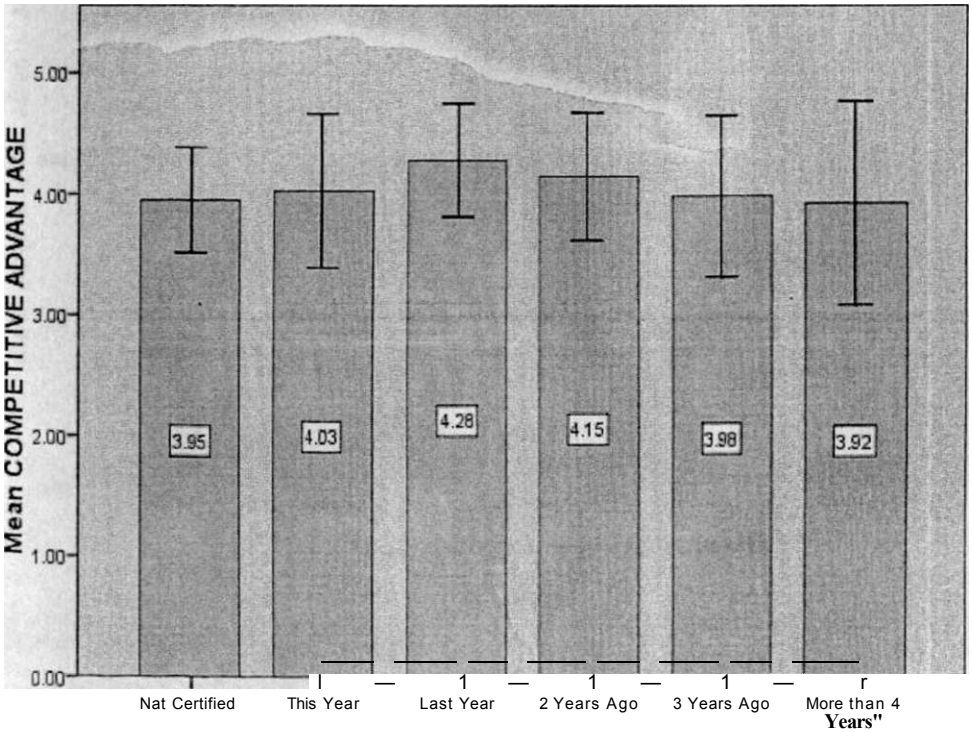
a Predictors: (Constant), When company was QMS certified

b Dependent Variable: TOTAL QUALITY IMPLEMENTATION INDEX

Source: Author, 2012

While the model does not show extremely significant level of impact on TQII against years of certification, the correlation coefficient R is at .239, while R^2 is at .038 and significant level at p=.091. Combining the above regression results with profile graph of the years certified against competitive advantage as shown in Figure 5.12 improves the understanding of the situation.

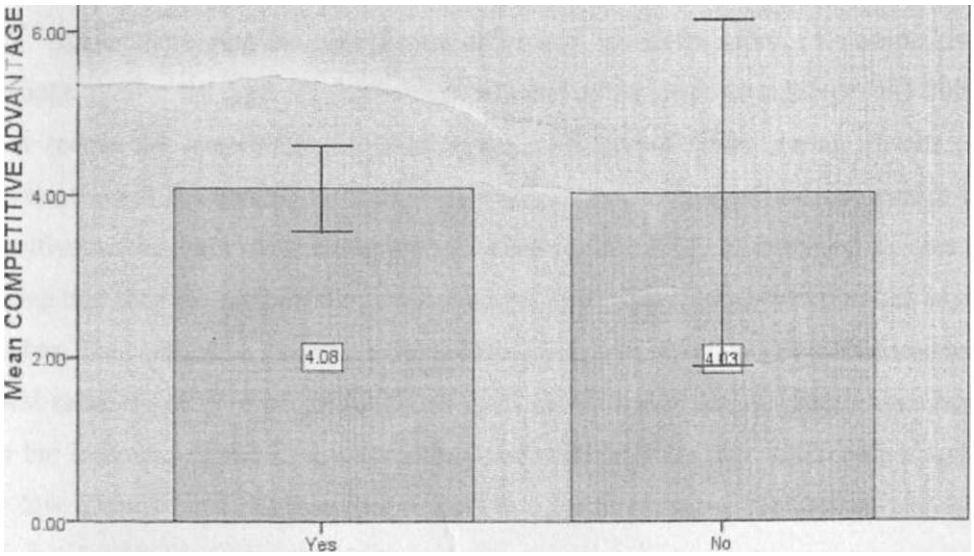
Figure 5.12: Years certified against competitive advantage



Source: Author, 2012

It was expected that having a quality certification leads to organizations to focus on actually implementing the I Q concept (Kanji, 1998; Tang and Kam, 1999; Lisiecka, 1999; Najmi and Kehoe, 2000), and the more years one is certified, the more likely they will implement TQ. To that end, the model is able to explain only 3.8 percent of the outcome, which is level of total quality implementation. Viewed against the fact that being certified did not bring forth competitive advantage in any significant way, the number of years one has been certified also did not show any significant impact on competitive advantage. Further, whether re-certified as shown in Figure 5.13 increased the average mean of competitive advantage by a mere 1 percent though error bar for those not re-certified are much wider than for those re-certified.

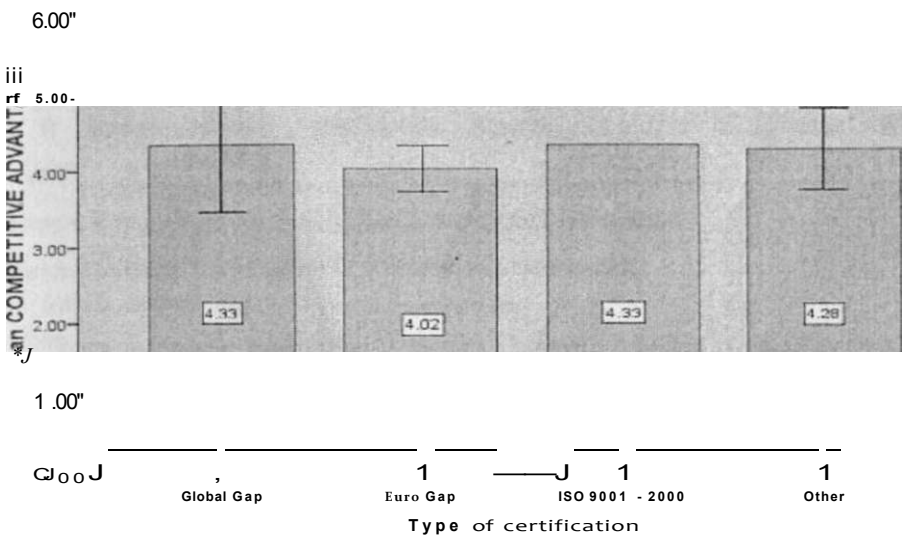
Figure 5 13: Re-certified against competitive advantage



Source: Author, 2012

Re-certification does not seem to add any significant value to the organization as far as competitive advantage is concerned. To explore further, the researcher focused on the type of certification, hypothesizing that it could determine the level of competitive advantage expected to accrue to the certified organization. The analysis done to compare the type of quality management system certification and the mean score of competitive advantage, is presented in Figure 5.14.

Figure 5.N Type of certification against competitive advantage



Source: Author. 2012

Again there was no significant difference in mean score of competitive advantage against the type of certification, whether global gap, euro gap or ISO 9000 and it seems the hypothesis is not acceptable. Looking at the earlier results of analysis, though the change in competitive advantage for re-certified companies is insignificant, the error bar, reflective of variance, for those re-certified is small, showing that they arc close to the group average, while those not re-certified has large error bar. This compares closely to those certified one year ago, which registered the highest mean score of 4.28. while those certified for more than 4 years have large error bar indicating some have very strong competitive advantage while others have very low. Being certified, therefore, seems to help in boosting the system and the likely hood of having a quality assurance department, thereby enabling the company to enjoy the benefits expected from implementing total quality. Regressing having a quality assurance department against TQ1I brings out the results presented on Table 5.40.

Table 5 40- TQIl and having a quality assurance department

Model **Summary"**

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	469[a]	.220	.203	10.122	.220	13.502	1	48	.001	1 822

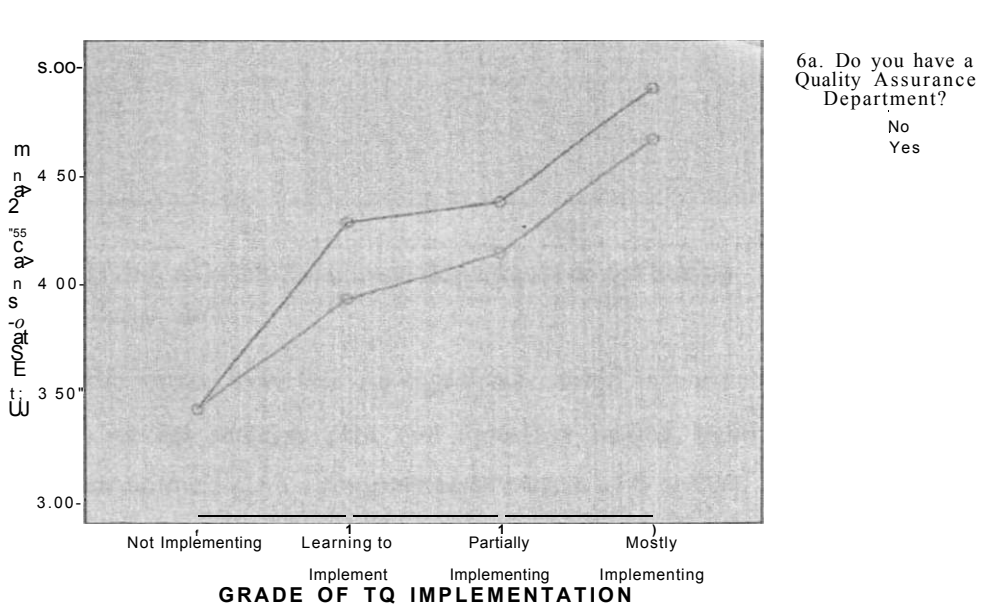
a Predictors (Constant), Do you have a Quality Assurance Department?

b Dependent Variable TOTAL QUALITY IMPLEMENTATION INDEX

Source: Author, 2012

There is some positive correlation between having a quality assurance department and total quality implementation though not in a significant manner. The R^2 is at .22 indicating that having a quality assurance department can explain a moderate 22 percent of the total quality implementation. The quality assurance department, therefore, helps in improving the level of TQ implementation in the company. This is confirmed by the contrast graph Figure 5.15.

Figure 5.15: Interaction between TQ and QAD on CA

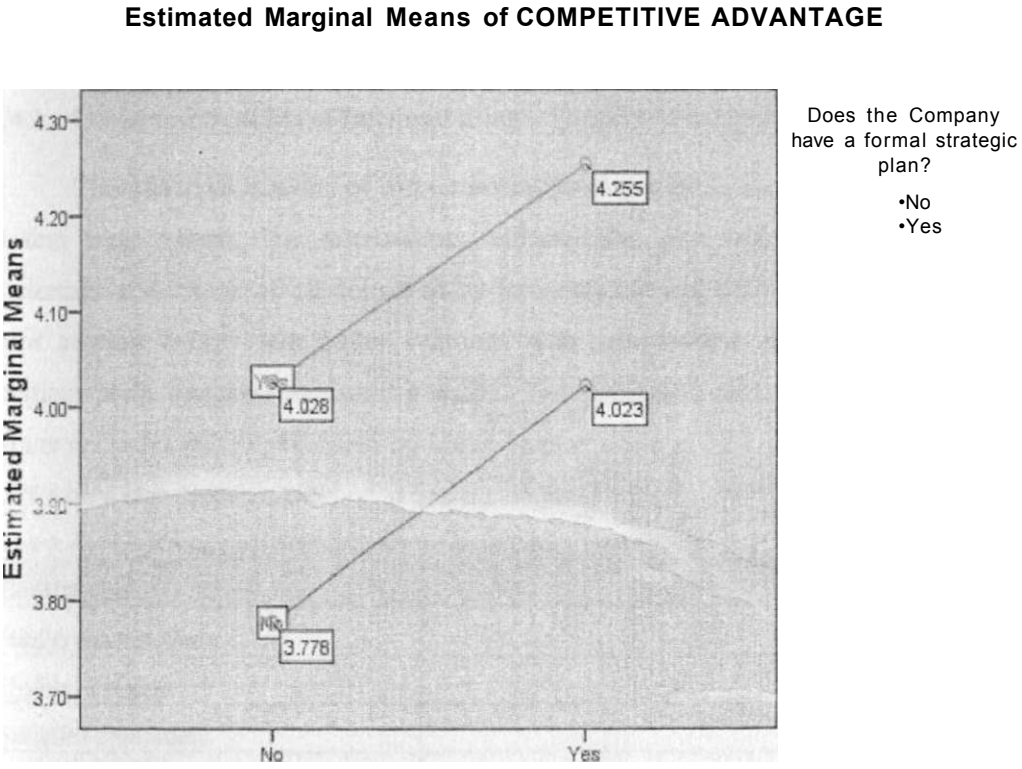


Source: Author, 2012

From Figure 4.20, it is clear that the more an organization is implementing total quality together with having a quality assurance department, the more competitive advantage is accrued. However, even those not having a quality assurance department seem to do much better as total quality principles get entrenched in the

organization. The common factor, therefore, is level of total quality implementation. Earlier, it was noted that there was no significant difference between companies having formal strategic plans and those not having formal strategic plans on the level of competitive advantage that is achieved. Contrasting having strategic plan and quality assurance department brings forth the interaction on Figure 5.16.

Figure 5.16: Interaction between strategic plan and QAD on CA



Source: Author, 2012

While earlier there was no significant change in competitive advantage on companies having strategic plan and those not having while having a quality assurance department gave a competitive advantage of 6 percent, combining the two activities seem to have a positive impact on the company's ability to improve its competitiveness. The interaction shows that those who have both formal strategic plan and quality assurance department have better estimated marginal means of competitive advantage over those who do not have. Further, the mean advantage improves from 3.778 to 4.255, an improvement of about 13 percent. This kind of improvement is quite significant and shows that firms that incorporate quality planning in strategic planning improve their chances of achieving better competitive advantage by more than 100 percent.

5.4 Benefits and Challenges of Implementing a Quality' Management System

The respondents were asked to list out on importance basis the benefits they have seen when they implemented quality management systems. They were also asked to state the main challenges, again on an importance level basis that they think are the main causes of not effectively implementing quality management system. This section presents the findings of the received data.

5.4.1 Observed Benefits of Implementing a Quality Management System

The observed benefits of implementing total quality or a quality management system were varied. The respondents indicated the best benefit to be satisfied customers at 8.54 out of 10, followed by fewer rejects and interceptions at 8.4. The third scoring benefit was better relations with stakeholders at 8.27, with better relations with suppliers registering 8.265. The parameter that scored poorly was higher revenues at 7.39, followed by higher market share at 7.47. The mean score was 3.0"' with a standard deviation of .4 and a median of 8.2

Table 5.4!: Bene/.: • <if implementing quality management system (QMS)

Benefit	Score
Higher market share	7.47
Higher revenues	7.39
Satisfied customers	8.54
Better relations with our suppliers	8.27
More motivated employees	7.96
Fewer rejects and interceptions	8.40
Better relations with stakeholders	8.27
Higher employee productivity	8.21
Better relations among employees	8.11

Source: Author, 2012

5.4.2 Challenges to Implementing a Quality Management System

Implementation of the quality management system in the horticultural industry in Kenya faced many challenges. These are shown on Table 5.42. The biggest challenge to quality management implementation is high financial costs at a score of 7.81 out of 10. This is almost two points higher than the second scoring challenge of too much time needed at 5.96, with number three being lots of data gathering and

analysis at 5.94. Lack of qualified personnel is cited as an important challenge at 5.36. Resistance from both middle managers and the workers score the least at 4.04 and 4.26 respectively. The mean score for the challenges was 5.3 with a standard deviation of 1.1 and a median of five.

Table 5.42: Challenges to QMS implementation

Challenges	Score
High financial costs	7.81
Lack of qualified personnel	5.36
Treating certification as an end	5.83
Lack of management commitment	4.35
Lone time needed to see results	4.71
Resistance from middle managers	4.04
Resistance from shop floor workers	4.26
Low availability of consultants	4.67
Too much time needed	5.96
Lots of data gathering and analysis	5.94

Source: Author, 2012

5.5 Discussion of Results

The research focused on testing five major hypotheses conceptualized in the research framework. The purpose of the research was to establish whether there were significant relationships between implementation of total quality and competitive advantage in the various firms in the horticultural industry in Kenya, and the role operations effectiveness plays in the relationships. Further, the research aimed at establishing the level of TQ implementation -in the sector. In this section, each hypothesis is presented on its own and the major findings discussed.

5.5.1 Level ofTotal Quality Implementation in the Horticultural Sector

The first objective of the research aimed at finding out the level of total quality implementation in Kenya's horticultural industry and whether it is high or low. Further, the first objective aimed at establishing the kind of relationship existing between total quality and competitive advantage. The study utilized the uniquely developed total quality implementation index (TQ1I), which adapted the Malcolm Baldrige National Quality Award criteria for performance excellence to find out the level of total quality implementation in Kenya's horticultural industry. Further, quality was defined as the totality of features and characteristics of a product or service that bears on its ability to satisfy given needs (ASQ, 2008) while total quality was defined as as a set of principles, approaches, methods and techniques of management that ensures continuous improvement in the quality of all aspects of an organization's process, product and or service, in order to satisfy customers.

The research therefore, looked at total quality as a set of activities that can be summarized in six principles namely leadership; customer focus and satisfaction; employee empowerment; performance measurement; supplier partnership; and continuous improvement, which are all geared towards satisfying customers. At a benchmark score of 100 plus as fully implementing total quality in an organization, the implementation level of total quality in the horticultural industry in Kenya was found to be low at an average of 78. This was categorized as learning to implement total quality. The level of quality implementation was found to be in agreement with what Lee and Kelce (2004) found in their study of China's SMEs, where implementation of TQ was found to be low. The leadership principle was found to be the poorest performer contradicting Jooste (2004) on aspects of inspiring and

influencing people to do extraordinary things while agreeing with Ngware et al (2006) that failure to implement TQ in Kenya's secondary schools is due to lack of leadership, showing that the same disease is afflicting the horticultural sector in Kenya. On customer focus, the sector was found to be doing slightly better than leadership, but still not to the standard envisaged of a total quality organization. The view that the customer is the reason for an organization's existence (Ohmae, 2005) seems not to be internalized by the horticultural sector players. Further, the understanding that customer satisfaction is achieved through customer surveys and process coordination (Evans & Lindsay, 2011) is not a widely held position by the players as only 21.6 percent of the companies carried out annual customer satisfaction surveys.

The other important aspect of total quality, namely performance measurement, scored poorly among the sector players. According to Baldrige Criteria for Performance Excellence, an organization implementing quality management must use measurement to drive company's strategy formulation and analysis of performance. This seems to be lost to the companies operating in the horticultural sector in Kenya as performance measurement scored a poor 78 or learning to implement total quality. None of the total quality factors registered an average score of above 80, showing that the sector cannot be said to be implementing total quality. The two factors with a score of an 80, supplier partnership and continuous improvement, showed the sector demand on working with farmers rather than the understanding of the philosophical underpinning of supplier partnership and the need to change, that characterize the horticultural sector due to its volatile nature. The two factors did not register significant positive correlation to competitive advantage with continuous improvement posting a negative relationship.

The hypothesis Hi that total quality implementation in the horticultural industry in Kenya is high was, therefore, rejected and the alternate hypothesis, that total quality implementation in the horticultural industry in Kenya is not high, accepted. The challenges facing the sector in implementing total quality gives more insight in the above state of affairs. The major challenge that the respondents cited was high financial costs. This agrees with Al-Dabal (2001), who stated that TQ is considerably wider and far more expensive than other quality management systems

such as ISO 9000. This means thai trying to implement TQ in organizations that are having problems with relatively lower quality management systems such as Global Gap. then it is expected the level of implementation, will be low. Further, the second most important challenge facing the horticulture sector is treating certification as an end. This was validated by the level of TQ implementation in the sector against the number of quality certified organizations, and shows a lack of understanding of the philosophy behind total quality or any quality management system, for that matter.

Discussions with respondents also brought out issues that needed to be addressed. One respondent bitterly complained of "bad customers who always complain and never compliment". This is a lack of understanding of the customer, and the score confirmed that the sector does not employ the scientific practice of understanding customers through capturing customer satisfaction index. Other members were bitter with industry sector regulator. IICDA. Their comments were that HCDA was more keen on revenue collection than providing information and support ' industry players especially on customer management. Bearing in mind target customc . arc in Europe and other developed countries, then HCDA would be play ing a more crucial rule of market data depository and dissemination for knowledge management and enhanced customer service to and by the sector.

The other industry players were not left out for censure. There was a sense of frustration with the lobby institutions FPEAK and Kenya Flower Council by players and even by some officials of these organizations. The argument was that the institutions have become more of employers where workers go to enjoy the benefits of employment, than provider of services to the members. On the kind of relationship existing between total quality and competitive advantage, the study results showed that progressing from not implementing to mostly implementing there was a clcar and sustained positive relationship between level of total quality implementation and competitive advantage. Further, the standard errors came close to the average mean competitive advantage the higher one went on the level of total quality implementation. Therefore hypothesis Hit, that there is a positive relationship between the level of TQ implementation and competitive advantage could not be rejected, showing that total quality implementation would assist the firms in acquiring competitive advantage.

5.5.2 Implementing Total Quality leads to Operations Effectiveness

The second objective of the research was to find out whether total quality had an impact on operations effectiveness, and specifically, a positive impact. Correlation techniques were used to detect the kind of relationship existing between the two variables, and multiple regressions to establish the nature and extent of the relationship. From the results, it was established that the correlation between total quality and operations effectiveness was .569 at $p<.001$, imply ing that there was a moderately strong, positive and very significant relationship between the variables.

Further, from the results of the regression analysis, the model summary showed that the factors making up total quality have a combined correlation R value of .655, showing that there is a significant relationship between the total quality factors and operations effectiveness. The value of R^2 was .429, meaning that factors making up total quality can explain 42.9 percent of operations effectiveness, while the F- ratio was 5.508 at $p < .001$, showing a significant level of predicting the results using the model.

%

As a result the hypothesis H2 that implementing TQ leads to operations effectiveness in Kenya's horticultural firms in the international market could not be rejected. It can be concluded that operations effectiveness heavily relies on total quality. The finding confirms Slack et al (1995) conceptualization that operations effectiveness is achieved through doing things right, doing things fast and being flexible.

5.5.3 Operations Effectiveness is related to Competitive Advantage

The third objective of the research was to find out whether operations effectiveness is related to competitive advantage and the kind of relationship. Correlation techniques were used to detect the kind of relationship existing between the two variables, and multiple regressions to establish the nature and extent of the relationship. From the results, it was established that the correlation between operations effectiveness and competitive advantage was .621 at $p<.001$, implying that there was a moderately strong, positive and very significant relationship between the variables. Further, from the results of the regression analysis, the model summary showed that the factors making up operations effectiveness have a combined

correlation R value of .648, showing that there is a significant relationship between the factors making up operations effectiveness and competitive advantage. The value of R" was .42. meaning that factors making up operations effectiveness can explain 42 percent of competitive advantage, while the F- ratio was 6.5 at p < .001, show ing a significant level of predicting the results using the model.

As a result, the hypothesis Fh, that operations effectiveness leads to competitive advantage for Kenya's horticultural companies in the international market could not be rejected. It can be concluded that competitive advantage is impacted by operations effectiveness. The finding confirms Porter (1998) position that operations effectiveness can lead to competitive advantage.

5.5.4 Total Quality, Operations Effectiveness and Competitive Advantage

The fourth objective of the research was to find out whether both total quality and operations effectiveness are related to competitive advantage in an organization and the kind of relation that exists. Further, the research wanted to find out whether operation effectiveness acted as an intervening variable to total quality as a source of competitive advantage. Correlation techniques were used to detect the kind of relationship existing between the three variables, and multiple plus hierarchical regressions to establish the nature and extent of the relationship. Contrasts were constructed to establish the path the relationship between operations effectiveness and total quality took as both increased against competitive advantage.

From the results, it was established that the correlation between total quality and operations effectiveness was .569, total quality and competitive advantage at .645 and operations effectiveness and competitive advantage at .621, all at p<.001, implying that there was a moderately strong, positive and very significant relationship between the variables. Further, from the results of the regression analysis, the model summary showed that factors making up total quality have a combined correlation R value of .738 against competitive advantage, indicating that there is a strong, positive and very significant relationship between the total quality factors and competitive advantage. The value of R~ was found to be .545, meaning that factors making up total quality can explain 54.5 percent of competitive advantage, while the F- ratio was 8.78 at p < .001, showing a significant level of predicting the results using the model.

Further, hierarchical regression analysis combining total quality and operations effectiveness factors against dependent variable, competitive advantage, confirmed the previous analysis of competitive advantage versus total quality, with a correlation of .738 and R^2 of .545. However, when factors making up operations effectiveness are introduced into the equation, the regression model improved to a correlation of .838 and an R^2 of .703. This indicates that the combined model can explain 70.3 percent of the outcome, competitive advantage, up from 54.5 percent, given by total quality management alone.

When viewed against the interaction results, the picture clarified. It was observed that operations effectiveness has a powerful impact on organizations registering low total quality implementation index, with those not implementing total quality at all having very strong competitive advantage when operations effectiveness is high, and low competitive advantage when operations effectiveness is low. In all the four parameters making up competitive advantage, this situation was replicated. The next level, but in a reducing value, went to companies learning to implement total quality but with high operations effectiveness. The paths crossed at between the companies learning and companies partially implementing total quality. At this juncture, the value of operations effectiveness versus competitive advantage while total quality is present, diminishes. This is replicated on the various parameters making up competitive advantage.

As a result, the hypothesis FI_4, that competitive advantage is a function of TQ for Kenya's horticultural companies in the international market, with operations effectiveness acting as an intervening variable, could not be rejected. It was partially true that, indeed, competitive advantage is a function of both operations effectiveness and total quality. But operations effectiveness cannot be described as constantly intervening variable to total quality. Its effect is reducing as total quality increases. While it can be concluded that competitive advantage heavily relies on both total quality and operations effectiveness, it cannot be concludcd that operations effectiveness acts as an intervening variable. Operations effectiveness can be seen as a variable or subset, of total quality. It is more like a foundation for the implementation of total quality, or an alternative way for searching for competitive advantage for organizations that are not implementing total quality.

This contradicts Porter (1998) who viewed total quality as only capable of bringing forth operations effectiveness. It becomes clear that operations effectiveness is indeed part of total quality especially at the initial stages of TQ implementation and as an organization becomes adept at implementing TQ, focusing on operations effectiveness diminishes the competiveness of the organization hence it would be better to assimilate OE into TQ.

5.5.5 Total Quality Criteria and Competitive Advantage Outcomes

The fifth objective of the research was to find out the impact that the variables making up the TQ paradigm have on specific outcomes making up competitive advantage. Correlation techniques were used to detect the kind of relationship existing between the variables, and multiple regressions to establish the nature and extent of the relationship. The variables making up TQ were analyzed individually against the specific outcomes making up competitive advantage namely increase in revenue; customer satisfaction; reduction in waste; increased employee satisfaction. From the results, it was established that the correlations between total quality factors and individual competitive advantage outcomes of customer satisfaction; increase in revenue; employee satisfaction; reduction in waste; was .661, .654, .682, .630 respectively at pc.OOl, implying that there was a moderately strong, positive and very significant relationship between the variables.

All combined factors, therefore, registered R levels of over .6. Using the beta coefficients as base of analysis, customer focus showed a significant impact on all parameters except in waste reduction, having significant impact on customer satisfaction, increase in revenue, and employee satisfaction. Performance measurement had significant impact on both customer satisfaction and waste reduction, while leadership had significant impact on employee satisfaction. Supplier partnership had significant impact on waste reduction.

Of the six total quality criteria in the study, four had significant impacts on the four competitive advantage outcomes of increase in revenue; customer satisfaction; reduction in waste; and employee satisfaction. This agreed with Rahman (2001) whose study of SMEs in Australia found that most quality criteria had significant relationships with business outcomes measured in terms of revenue, profitability and

number of customers. It also related well with Agus and Sagir (2001) research on Malaysian companies, which found that TQ acted as an intervening variable between competitive advantage and financial performance. Further, the research by NIST (2008), Mucai (2008), BSI (2005), and Kagura (2004) which indicated that TQ brings forth customer satisfaction, increased revenue, reduction in waste, and better employee satisfaction was validated. As a result, the hypothesis H_5, that most quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue; customer satisfaction; reduction in waste; and employee satisfaction, could not be rejected, confirming that competitive advantage depends on total quality.

5.6 Chapter Summary

In this chapter, the results of further analysis of data have been presented. The regression analysis combining simple, multiple and hierarchical regression has brought out the kind of models the research framework was designed to capture. The hypotheses have been tested. Except for hypothesis one and partially hypothesis four, all others have not been rejected.

To bring a deeper understanding of the results coming from the research, interactions between variables have been analyzed. The individual parameters making up the major variables of total quality and competitive advantage have also been regressed to find the effects they have collectively and individually. The benefits and challenges to quality management system implementation have also been presented. This information is used to discuss the findings and inform the summary, conclusions and recommendations there in that are presented in the next chapter.

CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

Presented in this chapter are the conclusions and recommendations that inform from the findings of the research. From the discussions, the conclusions that can be made from the available evidence are inferred. From these conclusions, the recommendations the scholar has come up with are presented. The chapter starts with summary of findings to highlight the major issues that were found against the research objectives. These issues produce the major conclusions that can be derived from these findings against other research findings. Finally, a presentation is made of the main recommendations the scholar is able to make including the implications the study has on theory, policy and practices and the future direction envisaged after this research study.

6.2 Summary of Findings

The main purpose of the research was to establish whether there are significant relationships between implementation of total quality and competitive advantage in the various firms in the Kenyan horticultural industry, and the role operations effectiveness plays in the relationships. The research also aimed to find out why the expected benefits of implementing TQ were not being experienced by Kenyan companies against what the studies in the developed countries have found, by. investigating whether recognized TQ practices were being employed, the extent of their employment and which parameters making up TQ were having the most impact on competitive advantage. The specific objectives of the study were to determine whether implementation of total quality in Kenya's horticultural industry is high and that there is a positive relationship between degree of TQ implementation and competitive advantage.

The other objectives were to determine whether TQ has an impact on operations effectiveness; operations effectiveness produces competitive advantage; both TQ and operations effectiveness produces competitive advantage in an organization; and that variables in the TQ paradigm have the same impact or different impacts on specific outcomes that make up competitive advantage. To achieve these objectives, the conceptual framework put together the three main variables, namely,

total quality, operations effectiveness and competitive advantage. This conceptual framework was designed to test the following hypotheses: Hi_a: level of implementing TQ in Kenya's horticultural industry is high; Hit,: there is a positive relationship between the level of TQ implementation and competitive advantage; Hi: implementing TQ leads to operations effectiveness in Kenya's horticultural companies in the international market; H3: operations effectiveness leads to competitive advantage for Kenya's horticultural companies in the international market; H_4: competitive advantage is a function of TQ for Kenya's horticultural companies in the international market with operations effectiveness acting as an intervening variable and H5: most quality criteria have significant relationships with competitive advantage outcomes measured in terms of increase in revenue; customer satisfaction; reduction in waste; and increased employee satisfaction. In this section, the summary of findings related to each of the main variables is presented. The results indicated that there were strong or moderately strong relationships between most of the main variables, factors making up the variables, and factors across the variables. The findings for each of the variables are presented under the following sub-headings.

6.2.1 Total Quality

While the majority of the companies under this study indicated they are QMS certified at 70 percent with 26 percent having been certified for more than three years, total quality implementation was found to be extremely low at only 20 percent mostly implementing. The total quality implementation index for the sector was found to be at level 78, which is equivalent to starting to learn total quality, just above not implementing total quality management at all.

The six principles of total quality utilized in this study namely leadership, customer focus, supplier partnership, performance measurement, continuous improvement and employee performance registered mixed results in the implementation index. There was significant correlation between the factors making up the total quality paradigm, indicating that they impact on each other and so as implementation of one is accomplished, then the other gets affected. Leadership is supposed to drive the quality initiative (Evans & Lindsay, 2011). It registered the worst performance at a score of 76, followed by performance measurement at 78 and then customer focus at 79. In leadership context, most firms (59 percent) did not have

formal strategic plans, while measuring customer satisfaction was not being undertaken by the majority (78.4 percent) of the companies. However, a contradiction was found to exist in the sense that the same leadership ensured that the majority of the companies (73 percent) are quality certified. It is clear that the objective of investing so much money and resources to be certified was for the fulfillment of customer requirements that the companies be certified than to implement an effective quality management system. The conclusion is that the top management of these firms is not aware of the philosophical foundations of quality management or the quality management system they are certified for and the value an organization can accrue if implemented properly. They are therefore unable to effectively implement total quality or the quality management system they claim to be using, focusing more on having the certificate.

Supplier partnership plus continuous improvement registered reasonable scores both at 80. This can be explained by the volatile nature of horticultural produce and the requirement to work closely with farmers, while continuously responding to demanding customers. However, the two variables, supplier partnership and continuous improvement, did not contribute significantly to competitive advantage with continuous improvement registering a negative impact. Indeed, the supplier partnership can be related to the quality certification process in the horticulture sector where certifications such as Euro Gap and Global Gap focus on good agricultural practices (GAP) which has more to do with farming than management. To that end, the companies need to be encouraged to encompass the concept of total quality if they are to really benefit from the huge investments they are putting into certification. Further, the company that was ISO 9000 certified, did not show significant difference on competitive advantage, against those certified by other bodies. The encouragement to embrace total quality, therefore, requires to be much stronger and focused on top management.

6.2.2 Operations effectiveness

Operations effectiveness was found to have better scores than total quality implementation index with 67 pcrcent of the finns scoring 80 and above. The best scoring factor was doing things on time incorporating such factors as delivering products to customers on time and paying suppliers on time followed closely by doing

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things right. This shows the sector is keen to ensure things are done right and shipments to customers are done as per the orders. Again, due to the perishable nature of horticulture, this situation should be expected. Flexibility, registered a middle score of 80, which was above both doing things fast and doing things cheaply. The sector, therefore, was found to be somehow flexible and able to provide services and products on time. However, the factor, doing things cheaply posted a poor score, indicating that most companies were not good in cost management.

6.2.3 Competitive advantage

Competitive advantage registered an average score of 82, same as operations effectiveness. Fifty seven percent of the firms scored 80 and above. In terms of factors making up competitive advantage, customer satisfaction scored best at 89 followed by employee satisfaction at 86. Though customer satisfaction index survey process was not employed by 78 percent of the firms that were interviewed, the position by respondents was that the customer satisfaction looked at from the perspective of increased volumes oi experts. had improved.

This, however, cannot be taken as a strong measure when viewed from the perspective of a growing sector and the fact that year 2009 registered a slowed growth, indicating that the sector could be losing its competitive advantage against other countries in the international market. The staff productivity, on the other hand, is declining while the industry players seem to prefer employment of casual or contract workers rather than permanent workers. This could explain the average score posted by waste reduction. Increase in revenue is posted as below average of the other factors, and this is related to increase in turnover and declining staff productivity.

6.3 Conclusion

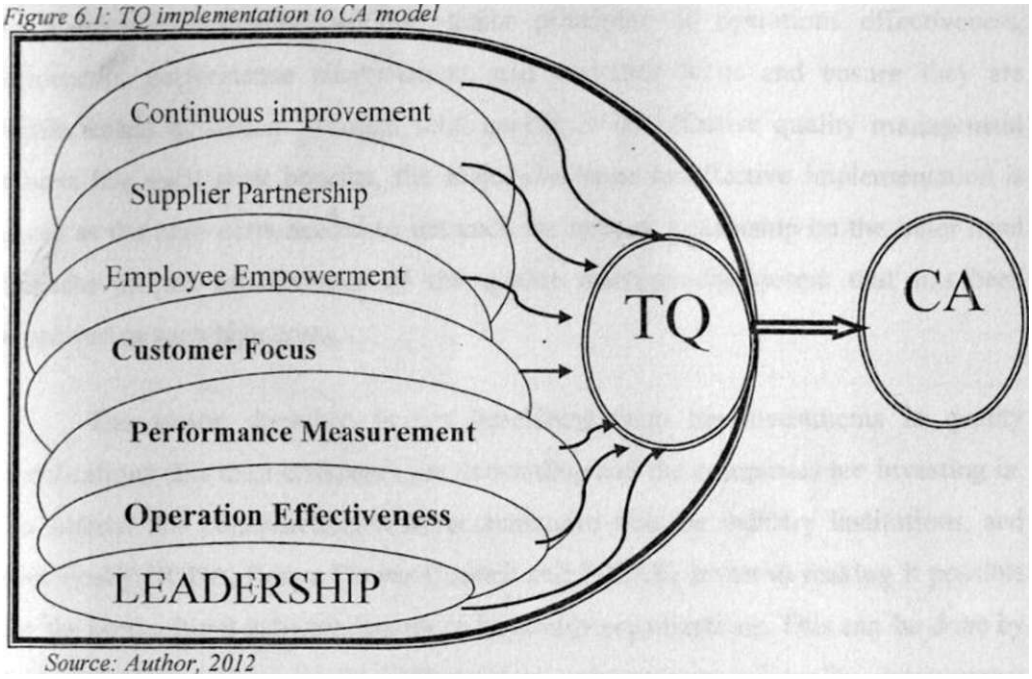
This thesis has established the extent and nature of the relationship between total quality, operations effectiveness and competitive advantage in Kenya's horticultural industry. The inclusion of operations effectiveness as an intervening variable to the conceptual framework brought in another aspect that enhanced the understanding of the relationship between total quality and competitive advantage. This enabled the researcher to identify crucial knowledge gaps that needed to be filled. From the study, the researcher was able to conclude that total quality

implementation in the horticultural industry in Kenya is low. This state of affairs was explained by poor leadership and lack of understanding of the philosophical approach to total quality. However, the research findings pointed to a strong relationship between operations effectiveness and total quality, a strong relationship between total quality and competitive advantage and a strong relationship between operations effectiveness and competitive advantage. The relationship between total quality and competitive advantage was strengthened by operations effectiveness. The total quality principles of leadership, performance measurement, and customer focus had the strongest impact on competitive advantage outcomes.

Further, though Besterfield et al, (2003) have listed total quality principles as leadership, performance measurement, customer focus, continuous improvement, supplier partnership, and employee empowerment which formed the conceptual framework variables, the concept of operations effectiveness in the sense of looking at operations or process management has been left out. Process management is therefore an important component in total quality and should be included as a fundamental principle of total quality.

Further, the TQ principles have varied impact on competitive advantage. To that end, the emphasis should be incremental implementation of the seven principles with leadership playing a pivotal role by starting off with focus on operations effectiveness, followed by performance measurement, then customer focus. These four principles therefore act as a foundation on which the other principles, tools and techniques of total quality management can ride for effective competitive advantage. From the analysis, there is no doubt that total quality brings forth competitive advantage if properly implemented confirming Beer (2003) assertion that total quality can have a dramatic impact on the performance and culture of an organization. Incorporating the concept of operations effectiveness as a principle component of total quality brings forth the implementation framework depicted by Figure 6.1.

Figure 6.1: TQ implementation to CA model



Source: Author, 2012

On level of importance, operations effectiveness is implemented first followed by performance measurement then customer focus. These three TQ principles have significant impact on competitive advantage. The other principles, though important in the total quality paradigm, have less impact and can be implemented partially, then fully, as the company becomes more adept to total quality practices.

The other conclusion that can be inferred from the findings is that performance measurement has not been entrenched in the management practices in horticultural sector in Kenya, hence implementing total quality has been affected. This has the effect of dramatically reducing the competitive edge of the players in the sector. Further, the major institutions acting in the sector namely HCDA, Kenya Flower Council and FPEAK, are not playing effective roles in assisting the organizations become quality oriented and acquire competitive advantage over rival countries.

6.4 Recommendations

The study has shown that companies effectively implementing total quality acquire distinctive competitive advantage. Further, the principles making up total quality have strong correlation between them, meaning that none of the factors can be optimally executed in the absence of the other. It is, therefore, recommended that companies intending to acquire competitive advantage through the use of total quality

to appreciate especially the four major principles of operations effectiveness, leadership, performance measurement, and customer focus and ensure they are implemented in tandem. Though total quality or an effective quality management system has such great benefits, the major challenge to effective implementation is given as the high costs needed to entrench the system. Leadership on the other hand impedes on the effectiveness of the quality management system that has been employed at such high costs.

The sector, therefore, is not benefitting from the investments in quality certifications that most customers are demanding and the companies are investing in. To address this contradiction, it is recommended that the industry institutions, and specifically HCDA, Kenya Flower Council and FPEAK, invest in making it possible for the horticultural industry players to be quality organizations. This can be done by first instituting training in the philosophical underpinnings of quality management systems and the benefits there on. The institutions should then focus on driving down costs of certification. finally, they should ensure that quality teaching goes beyond Euro Gap or Global Gap or good agricultural practices and move to total quality management. Further, the findings of this research have some implications on theory, policy, and practice.

6.5 Implications of the Study on Theory, Policy and Practice

This study has brought out some important findings that would have an impact on theory, policy and practices. Some of these implications are presented in this section.

6.5.1 Theory

Total quality management seems assured of a place on the table of powerful management theories. However, the convergence of the various theories of management are seen to continue occurring. Of importance is the relationship of operations management, total quality and strategic management. The results indicate that operations management focused on bringing forth operations effectiveness is a strong component for consideration in the journey to implementing total quality and the achievement of competitive advantage. On its part, total quality is a very strong system for sustained competitive advantage.

To that end, total quality should be incorporated in any strategic planning approach to management. However, during the SWOT analysis, the level of total quality implementation in the organization will determine the focus the organization should take. If the SWOT indicates that the level of total quality implementation is low, then the organization should embrace the search for operations effectiveness first focusing on process management and effectiveness. If the level of total quality implementation is high, then the focus should be on fine tuning the various parameters of TQ that are not well implemented to enhance the level of competitive advantage. These alternative theoretical approaches will depend on the guidance from the leadership of the organization.

6.5.2 Policy

It is clear that total quality has powerful implications on competitive advantage. Companies implementing partially to fully the concepts of total quality have shown a consistent and sustained growth in competitive advantage over rivals. The results of this study have policy implications at the macro and micro levels categories ol tiic Kenyan cconomy and horticulture sector respectively. At the macro level, these results give impetus to the Kenya government's policy of encouraging companies and government institutions to embrace the concept of quality management by way of getting ISO 9001 certified. However, certification in quality management system, does not, in itself, bring forth competitive advantage. Further, those certified did not exhibit significant difference in levels of total quality implementation. This contradiction needs to be managed to ensure the very heavy investment in certification adds value to organizations.

The area of value in the research part of competitive advantage versus quality certification is the competitive score registered by companies that were one year certified. Certification at this point does add value and brings forth a distinct competitive advantage. Thereafter, there is a systematic decline in competitive advantage as years of certification increase. The approach to policy makers is to come up with requirements that put organizations in a newly certified mode all the time. Such a mode is achievable if targets are inbuilt in the performance contract targeting specific parameters making up implementation of total quality. This will ensure sustained quality management implementation all the time.

6.5.3 Practice

The practices that have come out clearly include the need to fully implement the total quality principles and especially the concept of performance measurement, customer focus and effective leadership. These three variables have strong drive to competitive advantage. Having a quality assurance department and focusing on operations management have clear positive impact on organization's competitive advantage. The organizations that implement these principles are assured of sustained competitive advantage.

At low levels of total quality implementation, companies are encouraged to embrace the concept of operations effectiveness ensuring that processes are driven to higher levels of efficiency and effectiveness. This approach will entail some levels of precision and formalization. As the companies improve, then the holistic view of total quality should be brought into the picture and sustained implementation of the same driven into the firm.

6.6 Limitations of tne Study

The HCDA directory of active companies was found to be outdated with many "active" companies already closed, emails not working, telephone contacts no longer existing or companies that have moved with no forwarding address. This impacted negatively on the accuracy of the players in the sector, and hence the population of the study, and also on the number of respondents. It was difficult and costly conducting interviews with companies outside Nairobi as most were in farms in areas that are highly inaccessible through public means. Further, the farming community seemed to be very hostile to research assistants travelling by public means, but very welcoming to those travelling by private motor vehicles. This impacted on the response rate.

There was a very apprehensive approach to what most respondents considered "confidential" information including number of staff. While this was addressed from the research question design stage by putting ranges, historical data was difficult to capture as some respondents out rightly refused to respond to that part, or rejected the whole questionnaire. This state of affairs was very strange as all information requested for is not confidential, while data on variables such as turnover and profit were asked for in the form of grow th ratio. This, in spite of the fact that any serious

manager would know that actual audited financial records for all companies are matters of public information at the Kenya Revenue Authority annual returns. This can be addressed by ensuring the Kenya Revenue Authority records and those of registrar of companies are easily accessible to future researchers.

6.7 Directions for Future Research

This study has opened up very fertile grounds for future research. First, it has expounded on the concept of total quality. Secondly, it has brought to the fore the pitfalls of blindly going for quality certification. A similar study could focus on ISO certification that is being encouraged by the government, and find out whether the exercise is being seen as an end by itself. If this is so, then huge amounts of tax payers' money could be going to waste with no tangible value to the economy. The study was also industry and country specific. A similar study cutting across industries could bring out other underlying factors that were not captured.

r -" , of firms was not studied and that factor could be influencing the way total quality is implement in organizations. A study on ownership could bring out new areas of knowledge. Due to the fears of releasing what was considered confidential material, Lhc study w Henicd very crucial information that could have brought out more longitudinal information and analysis. In future, IICDA could design an annual data capturing instrument that will enable any researcher access the publicly required information such as number of employees, annual turnover, annual profits, major costs, major produce and the quantities shipped. Other areas of study could be a longitudinal study on impact of total quality on organizations over a period of time.

REFERENCES

Agus, A. & Sagir. R. M. (2001). The structural relationships between total quality management, competitive advantage and bottom line financial performance: an empirical study of Malaysian manufacturing companies. *Quality Magazine.* 7, 1018-1024, Carfax Publishing Company.

AI-Dabal, J. K. (2001). *Is total quality enough for competitive advantage? - realities in organizations implementing change initiatives with examples from the United States and developing countries.* Retrieved from http://www.dissertation.com

Ambundo, **P.** A. (2000), *Total quality management: The case of Barclays bank of Kenya,* (Unpublished Master's Thesis). United States International University, Nairobi.

Anderson, E. W., Fornell C., and Mazvancheryl S. K. (2004), Customer Satisfaction and Shareholder Value, *Journal of Marketing,* 68. 172-85.

Ansoff, H. Igor (1988). *Corporate strategy.* Peguin Books.

ASQ (2008). *Quality systems terminology -ANSI / ASQC A3-1978.* Milwaukee: American Society for Quality Control. Retrieved from http://www.asq.org

Baidoun, I. --001). Th<* implementation of TQM philosophy in Palestinian organization: a proposed non-prescriptive generic framework, *The TQM Magazine,* 16(3), 174-185, Emerald Group Publishing Limited.

Basu, R (2004), *Implementing quality: a practical guide to tools and techniques.* London: Thomson Learning.

Bayazit, O (2003). Total quality management (TQM) in Turkish manufacturing organizations. *The TQM magazine* 15 (5), 345-350. Emerald Group Publishing Limited.

Beer, M (2003). Why total quality management programs do not persist: the role of management quality and implication of leading a TQM transformation. *Decision Sciences*, 34 (4), 623-642.

Besterfield, D. H., Besterficld-Michna, C., Besterfield, G. PL, & Bestcrfield-Sarce, M. (2003). *Total quality management. Upper* Saddle River, New Jersey: Prentice-Hall Inc.

BSI (2008) *Case studies.* Retrieved from http://www.bsi.org

CBS (Central Bureau of Statistics) (2004), *Kenya Economic Survey,* Nairobi: Government Printing Press.

CBS (Central Bureau of Statistics) (2010), *Kenya Economic Survey*, Nairobi: Government Printing Press,

i

Chesaina. C. (1999), *The applicability of total quality management at the university of Nairobi.* (Unpublished Master's Thesis), United States International University, Nairobi

Christensen, C.R., Andrews. K.R., Bower, J.L., Hamermesh, G, and Porter, M. E. (1982). *Business policy: text and cases, 5th ed.* Homewood, IL: Irvvi.

Cooper, R. D. & Schindler, S.P. (2006). *Business research methods.* Singapore: McGraw-Hill Edition.

Covey, S. R. (1992). *Principle centered leadership.* Simon & Schuster Ltd, New Edition.

Crosby P. B. (1979). *Quality is free,* New York: McGraw-Hill.

Da Silva, J. G., Tadashi, O., & Kikuo, N., (2005). Looking through and beyond the TQM horizon, *The TQM Magazine,* 17 (1), 67-84, Emerald Group Publishing Limited.

Deming Institute (2008). *The Denting Prize.* Retrieved from http://www.dcming.org

Deming, W. E. (1986). *Out of crisis.* New York: MIT Press.

Deming, W. E. (1993). *The new economics for industry, government, education.* Cambridge, MA: MIT Center for Advanced Engineering Study.

Demirbag, M, Tatoglu, E, Tekinkus. M, Zain, S (2006). An analysis of the relationship between TQM implementation and organizational performance: evidence from Turkish SMEs. *Journal of Manufacturing Technology Management.* 17 (6), 829-847 Emerald Group Publishing Limited

Douglas, T. J. & Judge Jr. W. Q. (2001) Total quality management implementation and competitive advantage: The role of structural control and exploration. *The Academy of Management Journal,* 44 (1), 158-169.

El'QM, (2008). *The EFQMexcellence model.* Retrieved from http://www.efqm.org

Ehigie. B.O, Akphan, R. C, Okhakhume, S. A, (2006). Individual differences in TQM change compliance: A study of service organizations in Nigeria. *The TQM Magazine,* Volume 18 (2), 103-117. Emerald Group Publishing Limited

Ethangata. Simon (2004, March 9). Horticulture industry in real peril, *Daily Nation,* ~ PP 9.

Evans, J. R. & Lindsay, W. M. (2011). *The management and control of quality,* 8lh Edition. South-VVestern, Cengage Learning.

Feigenbaum, A. B. (1991). *Total Quality Control,* 3rd Ed. New York: McGraw-Hill.

Frank B., & Enkawa T. (2008), how economic growth affects customer satisfaction, *Asia Pacific Management Review,* 13(2), 531 -544

Feldt, U.(2001). *Sector study of the horticultural export sector in Kenya.* FKAB Feldt Consulting.

Fellers, G. (1994). *Why things go wrong: Denting philosophy in a dozen ten-minute sessions.* Pelican Publishing Company.

Field, A, (2009). *Discovering statistics using SPSS,* London: Sage Publications Ltd,

Fornell, Claes (2001), "The Science of Satisfaction," *Harvard Business Review,* 79, 120-21.

Glesne, C., & Peshkin, A. (1992). *Becoming qualitative researchers.* Thousand Oaks, CA: Sage.

GlobalGAP (2008). *Global G.A.P. standards.* Retrieved from http://www.globalgap.org

GOK, (2009). *Guidelines for performance contracts.* Prime Minister's Office, Nairobi, Republic of Kenya.

Gomes, D. S. J, Kikuo, N, Tadashi, O (2002). Evaluation of TQM in Japanese l..Jujtrics validation of a self assessment questionnaire. *The TQM Magazine* 14 (5), 3 18-328. Emeraia Uroup Publishing Limited.

Hackman, J. & Wageman, R. 1995. Total quality management: Empirical, conceptual, and practical issues. *Administrative Science Quarterly,* 40, 309-342.

HCDA, (2003). Advert on Shipments of Horticulture to EU. *Daily Nation,* December 17,2003.

Maim, A. (1992), *Closing the quality gap,* Prentice Hall, Engelwood Cliffs.

Hamel, G. and Prahalad, C.K. (1994). *Competing for the future.* Harvard Business School Press

Hino, S. (2005). *Inside the mind of Toyota: management principles for enduring growth.* Productivity Press

Hoang, D.T & Tritos, L (2006). The impact of total quality management on innovation: Findings from a developing country. *International Journal of Quality & Reliability Management* 23 (9), 1092-1117. Emerald Group Publishing Limited

Hoshin Quality (2007). *Principles of Hoshin-Kcmri.* Retrieved from http://www.mcts.com/Hoshin-Kanri.html

Hradesky, J. L. (1995) *Total quality management handbook,* McGraw-Hill.

)

ISO (2008). *ISO 9001-2000, management systems-requirements.* Retrieved from http://www.iso.org

Jomo, K.S. (1994) *Japan and Malaysia development, in the shadow of the rising sun.* Routledge, New York.

Jooste, K (2004). Leadership: A new perspective. *Journal of Nursing Management,* 12,217-223.

Juran Institute (2008). *Institute statement on Joseph M. Juran, February 29h 2008.* Retrieved from http://www.juran.com

Juran, J. M. & Godfrey, A. B. (1998). *Juran's quality handbook.* 5th Edition, McGraw-Hill Professional.

JUSE (2007). *Guide for the Deming application prize,* The Deming Prize Committee. Retrieved from http://ww\v.juse.or.jp/e/deming

JUSE (2008). *History.* Retrieved from http://www.juse.or.jp

Kagura, Joy (2004). *The impact of ISO 9000 implementation among the business organizations in Nairobi.* (Unpublished Master's Thesis), United States International University, Nairobi.

Kanji, G.K. (1998). An innovative approach to make ISO 9000 standards more effective. *The TOM Magazine,* 9(1), 67-78.

Kaplan, R. S. & Norton, D. P. (1996). *The balanced scorecard: translating strategy into action.* Harvard Business School Press.

Kaplan, R. S. & Norton. D. P. (2004). *Strategy maps: converting intangible assets into tangible outcomes.* Harvard Business School Press.

Karauri, R (2010). *The impact of ISO 9000 certification on financial performance of Kenyan companies.* (Unpublished Master's Thesis), United States International University, Nairobi

Karia, N and Asaari, M. H. A. H. (2006). The effects of total quality management practices on employees' work-related attitudes. *The TQM Magazine* 18(1), 30-43. Emerald Group Publishing Limited

KEBS, 2008. *Certification.* Retrieved from http://www.kebs.org

Khan, H. J (2003). Impact of total quality management on productivity. *The TQM magazine*, Vol 15 (6), 374-380. Emerald Group Publishing Limited.

King, G., Kochane, R. O., & Verba, S. (1994). *Designing social inquiry: scientific inference in qualitative research.* Princeton, NJ: Princeton University Press.

kreitner. R & Kinicki A. (2004). *Organizational behavior.* New York McGraw-Hill.

Latzko, W. T. & Saunders, D. M. (1995). *Four days with Deming: a strategy for modern method of management.* Pretence Hall PTR.

Lee C. Y. & Kelce G. A. (2004). TQM in small manufacturers: an exploratory study in China, *International Journal of Quality & Reliability Management.* 21(2), 175-197. Emerald Group Publishing Limited

Lewis W. G., Pun F. K., & Lalla, T.R.M (2006). Exploring soft versus hard factors for TQM implementation in small and medium sized enterprises. *International Journal of Productivity and Performance,* 55 (7), 539-554.

Lisiecka, K. (1999). ISO 9000 standards and tqm strategy - business improvement tools for Polish companies, *Managerial Auditing Journal,* 14 (1/2), 40-43.

Martinez-Lorcnte, A. R., Dewhurst, F and Dale, B. G (1998), Total quality management: origins and evolution of the term, *The TQM Magazine,* 10 (5), 378-386. Emerald Group Publishing Limited

Markides, C.C. & Williamson P.J. (1994). Related diversification, core competencies and corporate performance. *Strategic Management Journal.* (Special Issue), 149-167.

Minot, N. & Ngigi, M. (2003). *Are horticultural exports a replicahle success story? Evidence from Kenya and Cote d'lvoire,* Pretoria, 1-3 December 2003.

Mucai, J. M., (2008). *The application of TQM principles by ISO 9000 certified firms in Nairobi.* (Unpublished Master's Thesis), United States International University, Nairobi.

Myers, R., (1990). *Classical and modern regression with applications,* 2nd edition. Boston MA: Duxbury.

Nachmias, C. & Nachmias, D. (1998). *Research methods in the social sciences,* London, St. Martin's Press.

Najmi, M. and Kehoe, D.F. (2000). An integrated framework for post-iso 9000 quality development". *International Journal of Quality & Reliability Management,* 17 (3), 226-58. Emerald Group Publishing Limited

Ngware, M. W, Wamukuru, D. K, Odebero, S. O (2006). Total quality management in secondary schools in Kenya: extent of practice. *Quality Assurance in Education* 14 (4), 339-362. Emerald Group Publishing Limited.

NIST (2008) *Baldrige Awards and case studies.* Retrieved from http://www.baldrige.nist.gov

Ohmae, K. (1991). *Mind of strategist: the art of Japanese business.* McGraw-Hill.

Olimae, K. (2000). *The invisible continent: four strategic imperatives of the new economy.* Happer-Collins Publishing Inc.

Ohmae, K. (2005). *Next global stage: the challenges and opportunities in our borderless world.* Wharton School Publishing.

Pearce, **J.** A. & Robinson, R. B. (2002). *Strategic management: formulation, implementation and control.* McGraw-Hill Education.

Pickett, L. (2005). *Optimizing human capital: hitman resource and people management in action.* Adelaide Graduate School of Business.

Porter, Les & Tanner, Steve (1998). *Assessing business excellence.* Butterworth-Heinemann, New Edition.

Porter, Michael. E (1985). *Competitive advantage: creating and sustaining superior performance,* New York: Free Press.

Porter, Michael. E. (1986) *Competitive strategy: techniques for analyzing industries and competitors,* New York: Free Press.

Porter, Michael. E. (1987). From competitive advantage to corporate strategy. *Harvard Business Review,* May-June 1987,44-59.

Porter, Michael. E. (1998) *On competition.* Harvard Business Review Publishing.

Procter & Gamble, (1992). *Report to the total quality leadership steering committee and working councils,* Cincinnati, OH.

Rad, A. M. M (2005). A survey of total quality management in Iran: Barriers to successful implementation in health care organizations. *Leadership in Health Services,* 18 (3), 12-34. Emerald Group Publishing Limited.

Rahman, S (2001). Total quality management practices and business outcome: evidence from small and medium enterprises in Western Australia. *Total Quality Management Magazine,* 12 (2), 210-210. Routledge.

Rao. T. V.M. and Tang, C.L. (1996). Strategic quality management, Malcolm Baldrige and European quality awards and ISO 9000 certification. *International Journal of Quality & Reliability Management,* 13 (4), 8-38. Emerald Group Publishing Limited

Riungu, C. (2004, May 30) Kenya has until January to comply with new rules, *Daily Nation,* pp 9.

Rogo, (2007). *Theory of constraint.* Retrieved from http://www.rogo.com/cac/whatisTOC.html

Ross J. E. (1999) *Total Quality Management, Text Cases and Readings,* LLC: CRC Press

Rust, R. T., Moorman, C., and Dickson, P. R. (2002), "Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both?" *Journal of Marketing.* 66 (October), 7-24.

Sanchez, R. and Heene, A. (2004). *The New Strategic Management: Organization, Competition, and Competence,* New York and Chichester: John Wiley & Sons.

Sayle, A.J. (1994) *Meeting ISO 9000 in a TQM world.* AJSL.

Simon. H. A. (1979). Rational decision making in business organizations, *American Economic Review*, 69, 493-513.

Slack, N., Chambers, S., Harland C., Harrison A. (1995). *Operations management.* Pitman Publishing

Starbuck, W. H. (1965). *Organizational growth and development, in J. G March, ed., handbook of organizations.* Chicago, Rand- McNally,

Sun, H. (1999). The patterns of implementing TQM versus iso 9000 at the beginning of the 1990s. *International Journal of Quality & Reliability Management,* 16 (3), 201-14.

Sun, H. (2000). Total quality management, ISO 9000 certification and performance improvement. *International Journal of Quality & Reliability Management,* 17 (2), 168-79. Emerald Group Publishing Limited

Szvvejczewski, M, Lemke, F and Goffin K, (2005). Manufacturer-supplier relationship: an empirical study of German manufacturing companies. *International Journal of Production Management* 25 (9), 875-897.

Tang, S.L. and Kam, C.W. (1999). A survey of ISO 9001 implementation in engineering consultancies in Hong Kong. *International Journal of Quality & Reliability Management,* 16 (6), 562-74. Emerald Group Publishing Limited

Theodorakioglou, Y, Gotzamani, K., and Tsiolvas G. (2006). Supplier management and its relationship to buyers' quality management. *Supply Chain Management: An International Journal,* 11 (2), 148-149.

Thomas, R. M. (2003). *Blending qualitative & quantitative research methods in theses and dissertations.* Corwin Press. Inc.

Toastmasters International, (1994) *Quality centered management series,* Cornerstones of Quality.

Tsiotras, G. and Gotzamani, K. (1996). ISO 9000 as an entry key to TQM: the case of Greek industry. *International Journal of Quality & Reliability Management,* 13 (4), 64-76.

Wagner, W. E. (2007). *Using spss for social statistics and research methods.* Pine Forge Press

Walton, M. (1988). *Denting management methods.* Pedigree Books.

Wheelwright, S.C. (1989). *Competing through manufacturing in Ray Wild (ed), International handbook of production and operations management.* London: Cassell Educational Ltd.

Zhang, Z. (2000). Developing a model of quality management methods and evaluating their effects on business performance. *The TQM Magazine,* II (1), 129-37.

Zink, K. J. (1998) *Total quality management as a holistic management concept,* Springer-Verlag Berlin Heidelberg

APPENDICES

Appendix 6.1: Letter of Introduction

Dear Respondent,

RE: RESEARCH STUDY

I am carrying out research for my Ph. D. thesis at the University of Nairobi on *Total Quality, Operations Effectiveness and Competitive Advantage* focusing on the Horticulture Industry in Kenya. The study's main objective is to contribute to the intellectual field of management in Kenya and the world on sustained competitive advantage. Further, due to the very delicate nature of quality standards, the study will assist in highlighting the shortcomings the requirements have providing an opportunity on how to overcome them. As part of the study, you will be interviewed by way of filling out a comprehensive questionnaire.

Please be as honest as you can. All information gathered in this study will be treated with strict confidence while you or your organization will not be identified or identifiable in the report and analytical work that will follow.

You are not required to put your name on the document, however, should you need to get the results of the study, you are free to indicate your contact. The research is conducted in line with University standards in research, as such, neither your name, nor your business will be passed on to anyone else.

Kindly answer all the questions as per instructions. Should you find you are unable to answer any questions, please call the researcher for clarification. If you wish to drop out of the study, you can do so at any stage. If you would like to find out more on the research, you can contact me or the Ph.D. Coordinator, School of Business, University of Nairobi. P. O Box 30197, 00100 Nairobi. Email dsp@mail.uonbi.ac.ke.

This research heavily depends on your cooperation and support. I thank you in advance and look forward to your positive feedback.

Yours Sincerely

Maina Muchara,
Email: mmuchara@mucmar.com Tel: 0722 812208/ 020 828644/3

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Appendix 6.2: Questionnaire

SECTION A

ORGANIZATION

1. Name of Company:

2. Position/Title of Respondent (Your Position):

3. Main Job Description for the Respondent (Your Job)

4. Current Number of permanent employees:.

Number of casual/contract employees

Low Season

High Season

5. Company Turnover for Last Financial Year

Kenya Shillings

Below Kshs 5M	Shs 5-50 M	Shs 51-100 m	Shs 100-500M	Above Shs 500 M

SECTION B:

QUALITY MANAGEMENT

6. Are you quality certified by an international quality organization?

a) Yes b) No (If NO go to 8)

7 (a) If yes, which body certified you?

Certificate: e.g. ISO 9001-2000; Euro Gap;

(b) When were you certified?

This Year	Last Year	2 Years Ago	3 Years	More than 3*

(c) If more than three years, have you been re-certified?	a) Yes b) No

(d) If yes, When?

8. Do you have a Quality Assurance Department?

a) Yes b) No

If NO, what quality control methods do you use?

e.g.: Supervisor Checks Quality of Product

9. What is the title of the person responsible for your quality control?

10. Leadership

Does the Company have a formal strategic plan?

a) YES b) NO If Yes when was it done?.

11. Indicate your assessment on the following statements trying to reflect as truthfully as you can to the reality: (Title Manager includes directors/owners (executive) and supervisors)___

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	The company always follows a written strategic plan					
2	All managers can state the Vision and Mission of the company at any time					
3	The strategic plan is reviewed in intervals within a year					
4	Managers have developed positive bonds with their juniors					
5	The managers strive to create trust among workers					
6	Managers ensure that workers are trained to take bigger responsibilities					
7	Managers encourage collaboration rather than competition in the organization					
8	Managers show lots of respect to suppliers					
9	Company rewards quality efforts					
10	Managers work to simplify rather than complicate work processes					
11	Managers exhibit fair treatment to all					
12	Managers are very ethical in their actions					

12. Customer Focus and Satisfaction

The company has an established yearly customer satisfaction index

a) YES b) NO

If Yes, when was the FIRST and LAST time it was tested and what were the scores

First Time_____Score_____Last Time_____Score

12 (b). Indicate the position correctly reflected by below statements

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	The company uses recorded customer feedback for improvement					
2	Our customers are happy with our product					
3	Our customers are happy with our services					
4	Senior managers know by name all the major customers-20 percent providing 80 percent of business					
5	Most of our products are designed based on stated customer needs					

13. Supplier Partnership

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	We keep an updated list of all our suppliers: -Farmers, -Cold room providers, -Packing materials + stationery					
2	Most suppliers (above 60 percent) are under agreed long-term contracts					
3	We involve our major suppliers in our strategic planning					
4	We ask our suppliers to rate us on how we treat/ serve them					
5	We are honest and open to our suppliers					

14. Performance Measurement

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	The company has developed data gathering system covering Customers,					
	Products and Services,					
	Production/Operations,					
	Market,					
	Competition,					
	Human Resources,					
	Suppliers,					
	Costs and Finance					
2	The data is analyzed regularly (weekly, monthly and or quarterly intervals)					
3	We have developed performance indicators that best reflect factors that lead to improved -Customer, -Operations and -Financial performance					
4	We base our decisions on factual data					
5	We know what our market share is					
6	We check our production process for deviations from set targets through statistical process control					
7	We have a comprehensive quality assurance system					
8	We are able to trace backwards all our products from market to specific farm/block					

15. Continuous Improvement

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	We invest in discovering new and better ways of doing things					
2	We carry out experiments to find out new ways of doing things			.		
3	Our staff are trained on the concept of searching for improvements					
4	We have information on what our competitors are doing better than ourselves					
5	We have a reward for groups and individuals who come up with ideas that lead to improvement					

16. Employee Empowerment

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	Our workers are highly educated					
2	Most of our workers have lots of experience in their chosen field					
3	Our staff have developed skills that make performance of their work easy					
4	We train our workers on technical as well as well being matters for company and personal improvement					
5	Our workers exhibit a win-win attitude towards company work					
6	We take our workers for tours of other high-performing organizations					
7	Our workers are able to address customers needs and complaints quickly and at low costs					

SECTION C

INTERNAL PROCESSES

17. Provide your views on the following parameters

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	Number of rejects by our customers are few compared to our competitors					
2	Number of shipments that have been intercepted at JKIA or MSA port and stopped from being shipped are few compared to our competitors					
3	We convert most of our raw materials to final products with waste lower than industry level					
4	We are able to provide new products to the market faster than our competitors					
5	We deliver our orders on time as per customer expectations					
6	We are able to provide customers with additional products and services					
7	Employee morale is high					
8	We have complete records on traceability of products					
9	We have been able to reduce prices to our customers based on savings from waste reduction					
9	Supplier payments are done fast with little delays					

SECTION D: COMPETITIVE ADVANTAGE

18. Give your views on the parameters that are listed below.

S/NO	Parameter	Not At All	Little Extent	Moderate Extent	Great Extent	Very Great Extent
1	We provide products of superior quality compared to our competitors					
2	Our process and operations are difficult to be copied					
3	There is a culture of excellence in the organization					
4	Our products are unique and difficult to imitate					
5	We have seen our sales increase in the last three years					
6	Our market share has increased in the last three years					
7	Our customer base has improved in the last three years					
8	Our customers are becoming more and more satisfied with our products and services					

9	There is increased productivity in the company over the last three years					
10	There is improved employee participation in the company			.		
11	Employee are more satisfied than they were three years ago					
12	The company has better team work than before					
13	Working relations have improved over the years					
14	Communication within the company has improved					
15	The profits of the company have improved					

«

SECTION E

HISTORICAL DATA

19. Kindly go through your company's human resource, production, customer and financial records and insert information in the provided spaces. Write N/A for Not Available data and indicate reason: (a) Not Kept (b) Lost (c) Other-Specify

S/NO	PARAMETER/YEAR	2002	2003	2004	2005	2006	2007	2008
1	STAFF RECORDS:							
	Last Payroll Number							
	Number of Permanent Staff							
	Number of Casuals							
	Senior Staff that JOINED the Company							
	Senior Staff that LEFT the Company							
2	PRODUCTS							
	Number of Products being sold e.g. French Beans Whole, Baby Corn, Mixed, etc							
	Number of NEW products introduced							
	Quantity of product exported in tonnes							
3	CUSTOMERS							
	Number of Customers							
	Number of NEW Customers							
	Number of LOST customers							
	Number of recorded customer complaints							
	Value of the complaints in Kenya Shillings							
	Number of compliments from customers							
	Customer Satisfaction Index (From your survey)							
4	QUALITY							
	Number of Intercepted Shipments at port							
	Number of Rejected Shipments							
	Value of Intercepted Shipments							
	Value of Rejected Shipments in Kenya Shillings				.			
	Returns to Farmers: In Kilos							
	In Kenya Shillings							
	Spoilt Product in Production: In Kilos							
	In Kenya Shillings							
5	FINANCIALS							
	TURNOVER GROWTH: Year Turnover divided by Year Zero Turn Over. Year Zero therefore has 1		1					
	PROFIT GROWTH: Year Profit divided by Year 0 Profit. Again Year 0 has 1		1					
	STAFF PRODUCTIVITY: Salaries and Wages plus Benefits (car, house etc) divided by Total Sales							
6	SUPPLIERS							
	Number of Suppliers							
	Value of goods from Supplies							

20. Indicate whether you have seen benefits in the following areas giving the benefit a score out of 10. Also indicate any other benefit you have secured for

Factor	1	2	3	4	5	6	7	8	9	10
Higher market share										
Higher revenues										
Satisfied customers										
Better relations with our suppliers										
More motivated employees										
Fewer rejects and interceptions										
Better relations with stakeholders										
Higher employee productivity										
Better relations among employees										
Others-Specify and score										

21. What are the major problems you have encountered either when getting certified or putting up quality control measures in your company? Give a factor a score according to severity, 10 for high impact, 1 for low impact

Factor	1	2	3	4	5	6	7	8	9	10
High financial costs										
Lack of qualified personnel										
Treating certification as an end										
Lack of management commitment										
Longtime needed to see results										
Resistance from middle managers										
Resistance from shop floor workers										
Lack of finance										
Low availability of consultants										
Too much time needed for trainings, audits etc										
Lots of data gathering and analysis										
Others-Specify and score										

22. In your view, have the benefits of the quality management system/certification outweighed the challenges that you have encountered? (A) YES (B) NO

23. Would you recommend other organizations to employ quality management?
(a) YES (b) NO

OPTIONAL: I would wish to get a copy of the final report: My full address is as below:

»

Appendix 6.3: List and Address of active Horticulture Companies in Kenya

X)	MNE	ADRESS	TOWN	TYPE OF PRODUCE	EMAL ADRESS
1	AAA growers Lid	P.O. Ilox 32201-00600	Nairobi	Vegelables	
2	Afrira Fresh Produce Inveslment	P.O Box 5496440200	Nairobi	Fruits, Vegetables	inlo@alricalreshprud uce.com
3	Agrilresh kerna limited	P.O. Dox 63249 -00619	Nairobi	Frutls & Vegalbles	uifoPJagnlieshkenyaxom
i	Al llaq Trilling Enlerprices ltd	P.O Ilos 87415	Mombasa	Fruits	albaiienler^'jliiiUnail.com
5	Alifac Exporters	P.O Ilox 26201-00100	Nairobi	Vegetables	Alilac.expo@yahoo.com
6	Aloha Kx|Hirters Limited	P.O Box 22200410100	Nairobi	Fruits	
7	Ansa Horticultural Consultants limited	P.O. Box 53579-00200	Nairobi	Fruits and Vegelables	ansa@icfluneclxo.ki:
8	Avenue Fresh Produce	P.O. Box 3865-00506	Nairobi	Vegelables	avniiif@aveiiiie co ke
	Ilano Exim Services	P.O Box 507194)0200	Nairobi	Fresh Mima	
10	Italian Mowers Lid	P.O Box 266	Timau	Hoses	
II	I Mv a Floriculture	P.O Box 76207	Nairobi	Hoses	
12	Hell cargo service Export Limited	P.O. Box 6IH 00618	Iluanka	Vegelables	liiilcargKaswillkeujajJiui
13	Ilenvar Estates Limited	P.O Box 53-00621	Nairobi. Kenya	Beans. Asian vegetables.	luluSbclmke
14	Beverly flowers Ltd	P.O Box 469-00618	Nairobi	Vegetables	belcargo@swillkenya.coin
15	Illooming Oasis Limited	P.O Box 1739-20117	Naivasha	Roses	lex@lex-ea.com
16	Bright uionung star Inlenialioiial (i>. ltd	P.O 958600100	Nairobi	Extra line beans. Snow peas	
17	Butere Eood Gmpujr	P.O Box 61984"1300	Nairobi	Vegetables	
18	U'lilim EnterJrises Liiniled	P.O Box 20244)0100	Mombasa	Macadamia Nuts	celdonOB@yalioo.com
19	Cape Suppliers Limited	P.O. Box 61958-00200	Nairobi	Fiencli beans/Snow peas	
20	Ciron Mowers (K)limiled.	P.O.Box 1801 -20117.	Naivasha	Ruses	
21	Cubit Cargo	P.O. Box 78486	Nairobi	Okra. Kavava, Karelia, Chilli	
22	Celebrations Exporter	P.O. Box 6198-00300	Nairobi	Snow peas/Asian Vegelables	
23	Cellic Invesimenls	P.O. Box 15504-00100	Nairobi	Avocados/Vegetables	
21	Iliakacha Pniducl limited	P.O. BOX 364)0517	Nairobi	Fruil and Vegetables	

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52	CalokaUd	P.O Box 2074	Nairobi	Ilosa Iivbnda	galokafewillkeiiya.com	Hidland.	Tel: 891990	Fax:891969	
53	(Allien Verls & K. Exports	P.O Box 179	kianvaga		gnhlenvcrtsfeyahuuauik		0722432281		
SI	Iirranlinds Agro Producers Lid	P.O. flox 28701-00200	Nairobi	Fruits. Vegetables		Canada, UAE	020 2372741	020827308	
55	Greens Direct Exporters	P.O. Box 78025	\airobi	Chillies, Aubergines, P/Innls,			827079/80	827078	
56	Highland fjnners	P.O Box 61182	Nairobi	Professed Iresli/ French		Belgium	Tel: 8560075	Fax: 8560083	
57	Highland Green Growers Exporters Go Lid	P.O. Box 11166-00100	Nairobi	French Beans	liiglilauilgreuLs:".]andi(u:oJic	Paris	0722919405.		
58	Iloiiielresli Iloiliriillure Export Lid	P.O. Box 1280640100	Nairobi	Frui ls/Vegetables	horndttshS-Jswiltkejiyxcom	Europe/Aaa/ME	020-821074	020-821071	Stephen M. kariiiki/Palnria M. Vacliaiua
51	Homegrown (Kenya) limited	P.O. Box 10222 00100	Nairobi	Fruits vegetables and Bowers	admin@f-h.bii	UK/Swillerland	020387:1800	0203874838	
60	Horizon Fresh Produce Ltd.	P.O. 1)0x419	Nairobi	Fruits J Vegetables		Holland	820903		John Uiege/Franns Mtiiigua
61	Iloriion kcnva Express Ud	P.O. Box 419	Village market.	F/beans/S.snaps		UK	0733-750393	312071	
62	Imunl Farmlresh Lid	P. Box 680564X1200	Nairobi	Mange loul, sugars naps.	imwilifarmtnKh@yahm rmn	Heathrow Ilk	020-5:10950.		
63	Inlergrccn Kcnva Ud	P.O Box 433594)0100	Nairobi	Hoses	cxporlfeiiilergreenkeiiva.coni	.Netherlands,	254-2-827245		
61	Interveg Exports Lid	P.O. Hox5I698	Nairobi	French heans/S/snaps/S peas		Euro|ie	551952	551951	
65	Isniva Flowers Lid	P.O Box 16164)0606	Nairobi	Roses	inlo(».Lsiu)-anisi5ixuui	Netherlands	0722823963		
66	Ivory Petals Exports	P.O Box 4401	Thika	Extra line beans, sugar snaps		Nelherl anils	254 20 823220	25120 823221	
67	Jade Fresh	P.O Box 98(184)020(1	Nairobi	Extra line beans. Mange loul.	uilu(«]aile-lrESlui]ui	Netherlands	726758227		
68	Juslel I rnils	P.O Box 513614*1200	Nairobi	Sugar snap, Fine lieans		IIJC	254-2-827382		
69	Kalka Flowers Linulcd	P.O Box 182934)0500	Nairobi	Roses	illfekalkalluwers.com	Holland	020-2135780	020-2135785	
70	kandia Fresh Produce Suppliers Lid	P.O. Box 428064)0100	Nairobi	F/lieans, P/fruils, S/peas		London. Gennany,	821356	821357	Lucy Mundia/Wiliam Kaiya
71	karcu Hoses Lid.	P.O Box 68010	Nairobi	Fluwers	kamiL'ikareniuse.s.1 ihii	Germany	884429	570266	Mrs. R. Kotut
72	Kenya Culling! Ud	P.11 Box 27774	Nairobi	Ruses		EH	60-30280/1/8	60-30279	
73	Kenya Horticultural Exporters (1977) Ltd.	P.O. Box 11097-00-100	Nairobi	P/fruils. b/com, asian veges,	khelliklilliimyaxiiiu		650300/2	>13857	
74	Kenya Fresh Produce Exporters	P.O. Box 168154)0620	Nairobi		inlo@kenyafreslixo.ke		051-211698/9	051-2212807	
75	Kenya Highlands Exporters	P.O Box 3474	Nakuru	P/Innls, b/coru, Asian		Loudon	20650300-1	20 650303	
76	Kreative Roses Limited	P.O. Box 868-00502	Nairobi	Fniils/Vegelables	basC'tkurdcsmsesauiM	Holland	892075	892071	II.P.A SMIT
77	Kvome Fresh Co. Ud	P.O. Box 113854)0400 Nairobi	Nairobi			Middle East.	020 821099	020223562	
78	Lachar Traders	P.O. Box 22-20107	Njoro	Vegetables	lacharlradcrswvalioo.nini	Netherlands	020 76315%	02076315%	

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135	Van Oen Berg k Ud	P.O Box 1129	Naivaslu	Rases	jolianferoseskenya.com	Netherlands	0721868312	Fax:050-50438	
136	Yegpro |K| Lid	P.o Box 32931-00600	Nairobi	Vegetables			822831/2/4/	823236	Ilharal Il. Patel/l'mang k. Paid
137	Vcrl liimlnl	P.O. DM 10132-00100	tyeri				020 821307	020 2064230	
138	Wandi IJil	P.O Box 19294-00501	Nairobi	Ruses, Hyperion	uibKi'iuandilai m.i um	Switzerland,	0724 407889		
139	Wiildlire Rowers	P.O box 379	Naivasha	Hypericum		Japan,	0722-201669		
110	William (k) lid	P.O. Box 49125	Nairobi	F/beans, mange lout, sugar	operalions<seagaxu.ke	South Alnca	822017	20822155	
141	Wamu Investments Lid	P.O. Box 26026	Nairobi	French Beans. Snow |ieas.	iiiloSwanMi-invKUmeiUsjMm	Uk	823441		
142	Wmia Flowers Lid	P.O Box IISOt-OOIIK)	Nairobi	Roses	info®%imaflowa'sxi)ui	Holland	0734 367236,		
143	Woiideniuls kaiya Ijimled	P.O Box 49925-001 IK)	Nairobi	Macadamia/Casbew Nuts	wondeniulskHiya^') ihw.com	USA/Australia	041-2318932	041-2318933	
114	Zi'iia Hoses Lid	P.O Box 53164,	Nairobi.	Hoses	salesffiienaroses.co.ke	Holland	6741010,	6741005,	
145	Zolin Howere	P.O Box 23860-00100	Nairolii	Vegetables		Ilk	020-3595740		
I i b	Zimple Fresh Importers	P.OBox'WIO-OOItJO	Nairobi	Vegetables		Holland	020 825175	020825107	

Source: HCDA, June 2010

Appendix 6.4: **Mean and** Pearson **Correlation** of **Main** Variables

Correlations																		
VARIABLE	M	SE	R & SIG. (N=51)	1	2	3	4	5	6	7	8	9	10	11 .	12	13	14	15
LEADERSHIP	3.9412	.83455	Pearson Correlation	1														
	4.3186	.54101	Sig. (2-tailed)															
CUSTOMER FOCUS	3 8889	.92055	Pearson Correlation	.430"	1													
	4.0824	.78910	Sig. (2-tailed)	.002														
SUPPLIER PARTNERSHIP	3.9804	.98489	Pearson Correlation	440"	.461"	1												
	4.0392	.79902	Sig. (2-tailed)	001	.001													
PERFORMANCE MEASUREMENT	38627	1 09580	Pearson Correlation	416"	490"	.523"	1											
	4.3725	1.05756	Sig. (2-tailed)	.002	000	.000												
CONTINUOUS IMPROVEMENT	4.3137	.86580	Pearson Correlation	.331'	260	.399"	610"	1										
	3.7255	1.18454	Sig. (2-tailed)	.018	.066	004	000											
EMPLOYEE EMPOWERMENT	3.9902	.87459	Pearson Correlation	.296	.309'	.428"	444"	531"	1									
	4 2810	.80380	Sig. (2-tailed)	.035	.027	.002	.001	.000										
DOING THINGS FAST	4.4706	83314	Pearson Correlation	.215	.354'	315'	.370"	401"	149	1								
	4.2549	91309	Sig. (2-tailed)	.129	.011	.024	.008	.004	.297									
DOING THINGS ON TIME	4 1471	.93431	Pearson Correlation	297'	.339'	.235	.288'	.157	.260	.632"	1							
	3.9412	.83455	Sig. (2-tailed)	.034	.015	097	040	.271	.065	.000	·							
DOING THINGS RIGHT	43186	.54101	Pearson Correlation	.362"	.482"	.413"	.491"	.338'	.289'	.605"	•842"	1						
	3.8889	.92055	Sig. (2-tailed)	.009	.000	.003	.000	.015	.040	.000	000							

DOING THINGS CHEAPLY	4 0824	.78910	Pearson Correlation	.282'	.287"	.479"	440"	.283'	360"	.417"	307'	407"	1					
	3 9804	.98489	Sig. (2-tailed)	.045	041	.000	001	044	.009	.002	029	.003						
FLEXIBILITY	4 0392	.79902	Pearson Correlation	.434"	424"	.396"	.537"	.401"	433"	583"	.577"	618"	.837"	1				
	3.8627	1.09580	Sig (2-tailed)	.001	002	.004	000	.004	.001	000	000	.000	000					
EMPLOYEE SATISFACTION	4.3725	1 05756	Pearson Correlation	.597"	.510"	.337'	.520"	.201	.348'	.370"	486"	436"	209	478"	1			
	4.3137	.86580	Sig. (2-tailed)	.000	.000	.015	000	.158	.012	.008	.000	.001	.142	.000				
CUSTOMER SATISFACTION	3.7255	1.18454	Pearson Correlation	.299'	348'	.130	.500"	.138	280'	.335'	.365"	443"	194	363"	595"	1		
	3.9902	.87459	Sig (2-tailed)	.033	.012	.362	.000	.333	.047	.016	009	.001	172	.009	.000			
WASTE REDUCTION	4.2810	80380	Pearson Correlation	.283'	338	.264	487"	.375"	336'	.375"	.314'	352'	.121	304'	500"	680"	1	
	4 4706	.83314	Sig. (2-tailed)	.045	.015	.061	.000	.007	016	.007	025	.011	396	.030	.000	000		
INCREASE IN REVENUE	4 2549	.91309	Pearson Correlation	.300'	.341'	.267	469"	168	.263	460"	.369"	.455"	.263	.381"	667"	.757"	.483"	1
			Sig. (2-tailed)	.033	.014	.058	001	.238	.062	001	.008	.001	062	.006	000	.000	000	
** Correlation is significant at the 0 01 level (2-tailed).																		
*. Correlation is significant at the 0 05 level (2-tailed).																		

Appendix 6.5: Interpretation of Correlation Coefficient

In the correlation, if the value of R is 0.99, then the relationship is almost perfect. If value of R is between 0.90 and 0.98, the relationship is very strong. If value of R is between 0.70 and 0.89, the relationship is strong. If value of R is between 0.50 and 0.69, the relationship is moderately strong. If value of R is between 0.3 and 0.49, the relationship is moderately weak (Field, 2009).

Appendix 6.6: Testing Statistical Significance

If F-test and P-value are less than 0.01, or 0.001 then it means that the parameters are statistically significant and we cannot reject the hypothesis at 99 percent, and 99.9 percent confidence level (Field, 2009).

Appendix 6.7: FulMist of Item-total Statistics

Item-Total Statistics				
Factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The company always follows a written strategic plan	317.35	1901.113	.632	.963
All managers can state the Vision and Mission of the company at any time	316.90	1930.970	.432	.964
The strategic plan is reviewed in intervals within a year .	317.53	1926.814	.436 •	.964
Managers have developed positive bonds with their juniors	316.41	1937.967	.600	.964
The managers strive to create trust among workers	316.47	1942.814	.365	.964
Managers ensure that workers are trained to take bigger responsibilities	316.35	1936.233	.531	.964
Managers encourage collaboration rather than competition in the organization	316.33	1933.667	.536	.964
Managers show lots of respect to suppliers	316.10	1961.330	.289	.964
Company rewards quality efforts	316.31	1973.740	.125	.964
Managers work to simplify rather than complicate work processes	316.22	1962.373	.238 -	.964
Managers exhibit fair treatment to all	316.18	1940.148	.522	.964
Managers are very ethical in their actions	316.24	1950.064	.439	.964
The company has an established yearly customer satisfaction index	320.35	1975.433	.261	.964
The company uses recorded customer feedback for improvement	317.06	1935.376	.405	.964
Our customers are happy with our product	315.92	1958.274	.479	.964
Our customers are happy with our services	316.00	1965.840	.353	.964
Senior managers know by name all the major eustomers-20 percent providing 80 percent of business	316.02	1958.460	.354	.964
Most of our products are designed based on stated customer needs	316.02	1977.900	.073	.965
Customer focus implementation index	316.59	1958.447	.460	.964
We keep an updated list of all our farmers	316.16	1944.095	.454	.964
We keep an updated list of all our cold room providers	316.00	1940.560	.584	.964

Item-Total Statistics				
Factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbaeh's Alpha if Item Deleted
We keep an updated list of all our Packing materials + stationery	315.96	1948.398	.468	.964
Most suppliers (above 60 percent) are under agreed long-term contracts	316.57	1946.690	.380	.964
We involve our major suppliers in our strategic planning	317.51	1909.735	.520	.964
We ask our suppliers to rate lis on how we treat/ serve them	317.69	1900.460	.568	.964
We are honest and open to our suppliers	316.18	1965.948	.179	.964
Company has data gathering system on customers	316.78	1889.733	.820	.963
Company has data gathering system on Products and Services	316.55	1904.653	.761	.963
Company has data gathering system on Production/Operations,	316.53	1909.814	.727	.963
Company has data gathering system on Market	316.47	1915.734	.749	.963
Company has data gathering system on Competition	316.80	1910.881	.670	.963
Company has data gathering system on Human Resources	316.73	1920.683	.634	.963
Company has data gathering system on Suppliers	316.53	1928.694	.597	.963
Company has data gathering system on Costs and Finance	316.45	1934.333	.519	.964
The data is analyzed regularly (weekly, monthly and or quarterly intervals)	316.49	1924.455	.611	.963
We have developed performance indicators that best reflect factors that lead to improved- customer	316.78	1901.693	.666	.963
Operations	316.69	1938.900	.480	.964
Financial performance	316.59	1922.487	.579	.963
We base our decisions on factual data	316.25	1942.874	.496	.964
We know what our market share is	316.84	1922.975	.520	^964
We check our production process for deviations from set targets through statistical process control	316.33	1926.947	.632	.963
We have a comprehensive quality assurance system	316.37	1911.718	.707	.963
We are able to trace backwards all our products from market to specific	316.27	1923.243	.652	.963

Item-Total Statistics				
Factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
farm/block				
We invest in discovering new and better ways of doing things	316.51	1916.535	.637	.963
We carry out experiments to find out new ways of doing things	316.55	1937.413	.488	.964
Our staff are trained on the concept of searching for improvements	316.49	1932.695	.459	.964
We have information on what our competitors arc doing better than ourselves	316.53	1930.014	.526	.964
We have a reward for groups and individuals who come up with ideas that lead to improvement	316.86	1942.201	.410	.964
Our workers are highly educated	316.71	1934.452	.544	.964
Most of our workers have lots of experience in their chosen field	316.31	1945.140	.488	.964
Our staff have developed skills that make performance of their work easy	316.22	1961.573	.263	.964
We train our workers on technical as well as well being matters for company and personal improvement	316.61	1941.283	.478 •	.964
Our workers exhibit a win-win attitude towards company work	316.55	1946.693	.359	.964
We take our workers for tours of other high-performing organizations	317.76	1938.264	.354	.964
Our workers are able to address customers needs and complaints quickly and at low costs	316.25	1951.474	.402	.964
Number of rejects by our customers are few compared to our competitors	316.55	1961.293	1296	.964
Number of shipments that have been intercepted at JK1A/ MSA port are few compared to our competitors	316.67	1965.027	.170	.965
We convert most of our raw materials to final products with waste lower than industry level	316.65	1958.073	.285	.964
We are able to provide new products to the market faster than our competitors	316.71	1937.692	.481	.964
We deliver our orders on time as per customer expectations	316.20	1938.521	.490	.964

Item-Total Statistics				
Factor	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We are able to provide customers with additional products and services	316.25	1935.714	.597	.964
Employee morale is high	316.31	1934.380	.569	.964
We have complete records on traceability of products	316.31	1935.300	.547	.964
We have been able to reduce prices to our customers based on savings from waste reduction	316.84	1940.735	.413	.964
Supplier payments are done fast with little delays	316.33	1936.947	.468	.964
We provide products of superior quality compared to our competitors	316.47	1947.854	.402	.964
Our process and operations are difficult to be copied	317.12	1938.066	.483	.964
There is a culture of excellence in the organization	316.31	1939.460	.559	.964
Our products are unique and difficult to imitate	317.16	1936.695	.390	.964
We have seen our sales increase in the last three years	316.45	1919.773	.726	.963
Our market share has increased in the last three years	316.45	1933.613	.606	.963
Our customer base has improved in the last three years	316.69	1916.940	.590	.963
Our customers are becoming more and more satisfied with our products and services	316.10	1944.050	.551	.964
There is increased productivity in the company over the last three years	316.20	1930.761	.651	.963
There is improved employee participation in the company	316.31	1926.620	.721	.963
Employee are more satisfied than they were three years ago	316.41	1938.927	.522	.964
The company has better team work than before	316.29	1931.332	.674	.963
Working relations have improved over the years	316.25	1933.474	.657	.963
Communication within the company has improved	316.25	1937.234	.662	.963
The profits of the company have improved	316.39	1935.723	.504	.964

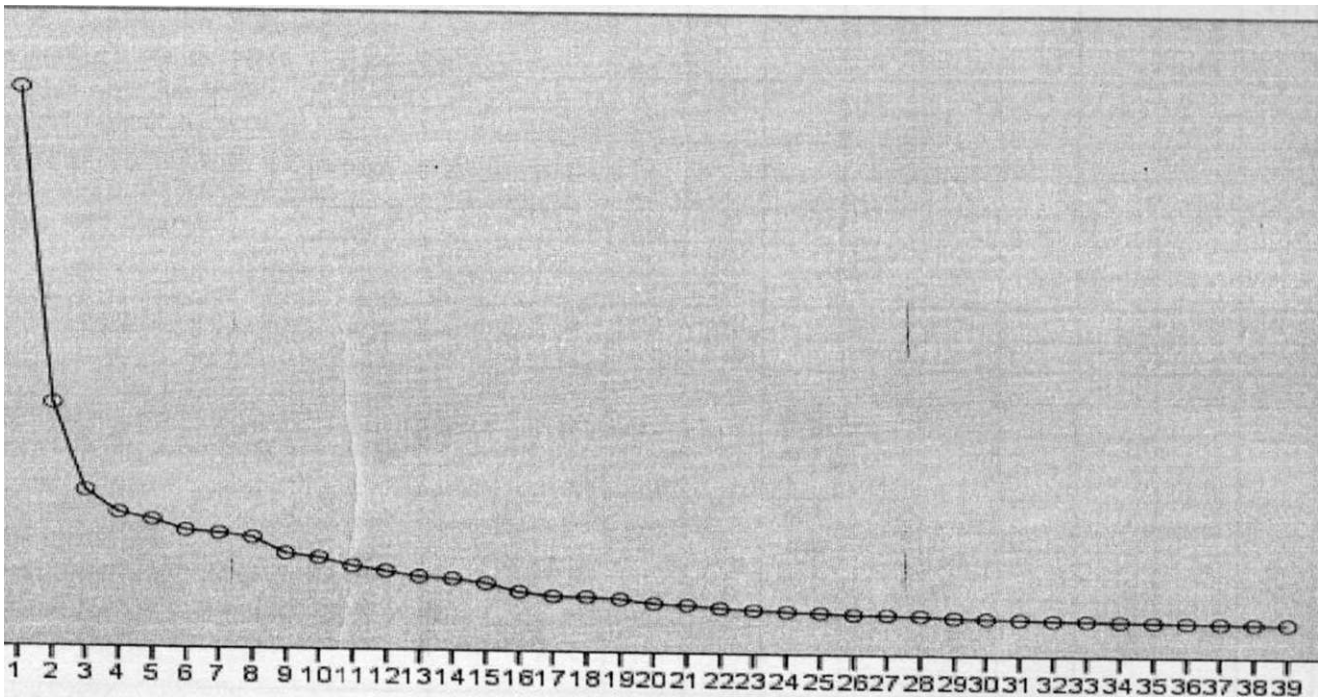
Appendix 6.8: Communalities of Data

Communalities

	Initial	Extraction
The strategic plan is reviewed in intervals within a year	1.000	.746
The managers strive to create trust among workers	1.000	.698
Managers encourage collaboration rather than competition in the organization	1.000	.841
Managers exhibit fair treatment to all	1.000	.899
The company uses recorded customer feed back for improvement	Pi .000	.775
Our customers are happy with our product	1.000	.840
Our customers are happy with our services	1.000	.824
Senior managers know by name all the major customers-20 percent providing 80 percent of business	1.000	.721
We keep an updated list of all our Packing materials + stationery	1.000	.686
Most suppliers (above 60 percent) are under agreed long-term contracts	1.000	.799
We involve our major suppliers in our strategic planning	1.000	.729
Performance indicators on improved operation performance	1.000	.626
We base our decisions on factual data	1.000	.827
We know what our market share is	1.000	.769
We have a comprehensive quality assurance system	1.000	.875
We are able to trace backwards all our products from market to specific farm/block	1.000	.830
We invest in discovering new and better ways of doing things	1.000	.893
We carry out experiments to find out new ways of doing things	1.000	.880
Our staff are trained on the concept of searching for improvements	1.000	.833
We have information on what our competitors are doing better than ourselves	1.000	.833
We have a reward for groups and individuals who come up with ideas that lead to improvement	1.000	.786
Our workers are highly educated	1.000	.757
We train our workers on technical as well as well being matters for company and personal improvement	1.000	.771
Our workers exhibit a win-win attitude towards company work	1.000	.853
Our workers are able to address customers needs and complaints quickly and at low costs	1.000	.742
Doing Things Right	1.000	.648

Communalities		
	Initial	Extraction
Doing Things Fast	1.000	.902
Doing things on Time	1.000	.787
Flexibility	1.000	.721
Doing things Cheaply	1.000	.751
We provide products of superior quality compared to our competitors	1.000	.831
Our process and operations are difficult to be copied	1.000	.818
Our products are unique and difficult to imitate	1.000	.833
Our market share has increased in the last three years	1.000	.846
Our customers are becoming more and more satisfied with our products and services	1.000	.840
There is improved employee participation in the company	1.000	.857
The company has better team work than before	1.000	.789
Working relations have improved over the years	1.000	.836
The profits of the company have improved	1.000	.851
Extraction Method: Principal Component Analysis.		

Appendix 6.9: **Component Scree Plot**



Appendix 6.10: Full list of Factor Analysis

Component Matrix"											
	Component										
Factors	1	2	3	4	5	6	7	8	9	10	11
Our customers are becoming more and more satisfied with our products and services									.567		
Weprovide products of superior quality compared to our competitors									.471		
There is improved employee participation in the company								.728			
Working relations have improved over the years								.644			
The company has better team work than before								.674			
Our products are unique and difficult to imitate										.519	
Our process and operations are difficult to be copied										.322	
Our market share has increased in the last three years	.625										
The profits of the company have improved	.519										
Flexibility		.694									
Doing things on Time		.598									
Doing Things Fast		.598									
Doing things Cheaply		.480									
Doing Things Right		.331									
We have a comprehensive quality assurance system			.402								
We are able to trace backwards all our products from market to specific farm/block			.497							.	
We know what our market share is			.302								
We base our decisions on factual data			.496								
Performance indicators on improved operation performance			.416								
Our workers exhibit a win-win attitude towards company work							.449				
Our workers are able to address customers needs and complaints quickly and at low costs							.377				
Our workers are highly educated							.346				
We train our workers on technical as well as well being matters for company and personal improvement				1			.513				

We invest in discovering new and better ways of doing things				.349							
We have information on what our competitors are doing belter than ourselves				.544							
We have a reward for groups and individuals who come up with ideas that lead to improvement				.598							
We carty out experiments to find out new ways of doing things				.606							
Our staff are trained on the concept of searching for improvements				.648							
The strategic plan is reviewed in intervals within a year						.295					
Managers exhibit fair treatment to all						.361					
Managers encourage collaboration rather than competition in the organization						.364					
The managers strive to create trust among workers						.616					
Our customers are happy with our product											.221
Our customers are happy with our services											.210
The company uses recorded customer feed back for improvement											.380
Senior managers know by name all the major customers-20 percent providing 80 percent of business											.368
We keep an updated list of all our Packing materials + stationery					.436						
We involve our major suppliers in our strategic planning					.533						
Most suppliers (above 60 percent) are under agreed long-term contracts					.427						
Extraction Method: Principal Component Analysis.											
a. 11 components extracted.											

(

Appendix 6.11: Rotated Component Matrix for Major Variables

Rotated Component Matrix'			
Variable	Component		
	1	2	3
DOING THINGS ON TIME	.823		
DOING THINGS RIGHT	.780		
DOING THINGS FAST	.768		
FLEXIBILITY	.735		
DOING THINGS CHEAPLY	.609		
CUSTOMER SATISFACTION		.872	
WASTE REDUCTION		.764	
INCREASE IN REVENUE		.755	
EMPLOYEE SATISFACTION		.619	
CONTINUOUS IMPROVEMENT			853
EMPLOYEE EMPOWERMENT			.692
PERFORMANCE MEASUREMENT			.625
LEADERSHIP			792
CUSTOMER FOCUS			.645
SUPPLIER PARTNERSHIP			.503
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 7 iterations.			