FACTORS AFFECTING SUCCESSFUL QUALITY MANAGEMENT: PROGRAMME IMPLEMENTATION IN MANUFACTURING COMPANIES IN KENYA

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for academic credit.

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This project has been presented for examination with my approval as the appointed supervisor.

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ABSTRACT

This study explored the critical factors affecting the successful implementation of quality management programmes (QMPs) in the Kenyan Small and Medium Enterprises (SMEs) engaged in manufacturing activities. Specifically, the study dealt with the following research questions: What are the most influential factors that affect the implementation of QMPs by Kenyan manufacturing industries, what are the managerial implications and strategic impacts of successful implementation of QMPs, and what type of comprehensive framework is required for successful implementation of QMPs in industries.

The paper drew upon an explorative multiple case studies of the major manufacturing institutions in Nairobi that use the quality management programmes as a quality measurement tool, with rich empirical evidence from various data sources. The primary data was collected from a sample size of 369 organisations using semi-structured questionnaires based on the research questions sent electronically. The data was summarized through qualitative and quantitative analysis using regression analysis.

The research results showed that top management rates highly the factors that drive implementation of quality management programmes. This validates the usefulness of the four factors as implementation tools, ones that will allow organizations to improve their competitiveness. Secondly, the author found out that top management rank highly the impact of quality management programmes implementation implying that top management strive to implement quality management programmes to benefit from increased business and improved product quality so as to gain a competitive advantage across the industry. Thirdly, the results show that top leadership highly ranks supplier quality management, quality system improvement and vision and plan statement. This validates the usefulness of the three factors as part of a comprehensive framework for successful implementation of quality management programmes.

The study recommended that firms should be flexible enough when implementing QMP and management should develop a quality culture by changing perception and attitudes towards quality. Secondly, the study recommended that emphasis should be put on the incorporation of all the principles of QMP for successful implementation of QMP and for the success of the organization. The study also recommended that firms should establish their quality management systems according to the requirement of ISO 9000 for effective QMP implementation and for the success of the firm.
ACKNOWLEDGMENTS

Designing and implementing this study of factors affecting successful quality management programme implementation in manufacturing companies in Kenya has been a challenge of complexity since the topic elicits streams of conflicting and diverse opinions. All the same, many people contributed directly and indirectly towards the completion of this thesis report. Some of them deserve special mention here.

First and foremost, I am most grateful to my supervisor, Dr. Paul Katuse who was of great assistance to me at all stages of planning and implementing this study. He constantly assessed my progress, provided timely feedback as well as encouragement. Second, I also express sincere gratitude to my brother Mr. Charles Mwencha, for the criticism, comments and the guidance he gave that shaped my thinking in a most constructive way. I truly feel indebted to him.

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There are other people who contributed directly and indirectly towards the completion of this thesis but could not be mentioned here. They know themselves. I am grateful for all their contributions and I sincerely thank them all for the part they played.
DEDICATION

TO MY FAMILY,
They have always been a source of motivation in everything I do.
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Problem

In the complex world of manufacturing, the basic problems troubling many companies are failure to do the right things at the right time, at the right place, with the right means of production, and with the appropriate design and aesthetics. For example, some of these problems are: not making the right things at the right time, having poor product quality or having poor processes, all of which jeopardize customer satisfaction (Simon and Sohal, 1995).

In order for firms to achieve strategic objectives expressed in sustainable competitiveness in their domain market, there is need to perform the following tasks: formulation of effective and appropriate business and functional policies and strategies; design of effective and efficient operational functions; application of appropriate technology; and the implementation of relatively efficient and effective production systems. A review of the literature reveals that production managers in manufacturing companies have seen QMP strategies as a cure for the previously mentioned ills. There has been a steady increase in QMP implementation among manufacturers, governments and customers both in developed countries and less developed countries (Salaheldin, 2003).

Observations made based on research shows that decision makers and production managers in the Kenyan manufacturing firms think that the implementation of QMP strategy would create competition and efficiency, which would in turn lead to a better quality of life for customers at lower costs. QMP implementation would also help to increase Kenya’s share in the domestic market by replacing the demand for imported goods, as well as increasing Kenya’s competitiveness and share in the export market. QMP strategy is therefore perceived to be critical and hence needs to be implemented by the Kenyan manufacturing firms on a large scale. Moreover, if Kenyan manufacturing firms are serious about QMP implementation, they must try to grasp its strategy. The initial appreciation of QMP strategy should come from the government and top management. They should be clear on whether or not they are aiming at continuously satisfying the customers at minimum possible cost by the involvement of all individuals in the process (Golomski, 1994).
Authors such as Martinez (1998) and Thiagaragan (2001) have reported in their studies that concentrating the critical factors affecting the effectiveness of QMP implementation in western manufacturing firms in LDC’s is not an easy task, where there are so many factors driving or resisting the implementation of it.

Firms should endeavour not to put customers’ satisfaction in jeopardy with the increasing sophistication of customers’ preferences. Manufacturing firms should continuously strive for improvement of their value-chain from the economic rationality point of view. This improvement focuses on customer satisfaction, process improvement and a strategic quality framework on continuous basis (Gury and Dadasah, 2002).

Research by Mann and Kehoe (1995) investigated the importance of Quality Critical Organizational Characteristic (QCOC) as a driving force towards the implementation of QMP. The study concluded that there is a strong relationship between QMP implementation and number of employees, management and employees attitudes to change, competent management, and the level of education. Research conducted by Hill (1997) also highlighted organizational learning to be one of the main driving forces for the introduction of QMP, and suggested quality circles to be a useful vehicle for the early stages of the learning journey. Research further indicated that organizations must address the issue of organizational learning in order to progress beyond ISO 9000 certification. Organizational change should also go hand in hand with organizational learning.

Research by Mersha (1997) investigated the important forces that promote or restrain the implementation of QMP strategy by manufacturing firms in Sub-Saharan Africa (SSA). The study concluded that important driving forces are managers who are aware of the quality - productivity – profitability connection, managers who appreciate the benefits of customer orientation, managers and employees who understand the mutual benefits of employee involvement in strategy formulation and implementation, government leaders who recognize the benefits of QMP implementation for economic development, and a realization by both managers and workers of the benefits of accepting positive change. The study also found out that the restraining forces blocking the introduction of QMP are: a strong government involvement in economic activities, scarcity of local capital, lack of competition, lack of competent managers and an inadequate knowledge base.
Chase and Jacobs (1998) indicated that leadership, planning and improvement initiatives play a critical role as driving forces towards the implementation of QMP strategy. Yusof and Aspinwall (2001) indicated that lack of experience in quality management, lack of resources, lack of strategy and overall objective, and resistance to change are the major restraining forces towards QMP implementation in the UK small manufacturing enterprises (SMEs). The study also indicated that a major force for the adoption of QMP by manufacturing firms is the enhancement of business performance and help in production of high quality products in meeting the changing demand and needs of customers. Through their study of the strategic impact and implementation of QMP literature, Leonard and McAdam (2002) found QMP to be a means of achieving strategic targets and a key driver in the implementation of corporate strategy.

A wider review of literature goes on to show that there is still no empirical literature that deals with the driving and restraining forces with respect to implementation of QMP in LDC’s and Kenya in particular. Previous studies in literature have dealt with the topic on a theoretical level such as Sarkar (1991) and Mersha (1997). Therefore, this research attempts to address this issue.

The Kenyan manufacturing members are drawn from small, medium and large enterprises, and are organised into 14 sectors, 12 of which are productive while the other two are the service sector and affiliate associations. The building, construction and mining sector is well-developed with quality engineering, building and architectural design services being readily available. This industry is currently on an upward trend following rehabilitation and reconstruction of roads and bridges under the Kenya Urban Transport Infrastructure Program (KAM, 2011).

The chemicals and allied sector in Kenya is, to a large extent, dominated by a very large importation of chemicals materials. These figures, however, seem to be decreasing, and the value of exported locally manufactured chemicals has been increasing in recent years. In Kenya, chemicals account for approximately six per cent of the annual GDP and are used in homes, provision of services, industries, agriculture, transport, and mining health among others (KAM, 2011).

The energy, electrical and electronics industry in Kenya is still at its infancy stage, although a sizeable number of firms in the assembly, testing, repair and maintenance of electronic goods are operating and rapidly increasing their scope of activities to meet the
growing demands of the industry. Kenya continues to offer enormous potential for the manufacturing and assembly of electronic items due to a well equipped labour force which is able to meet the labour skill requirements for the industry and the relatively large domestic and export market potential of electronics in the region (KAM, 2011).

The Kenyan food-processing sector, including food, beverages and tobacco, remains the largest component of the manufacturing industry. In terms of structure, economic contributions, and performance within the manufacturing sector, this sector is the most important and largest comprising of over 1,200 businesses, encompassing everything from small family organisations to large multinational companies items (KAM, 2011).

The potential for growth in Kenya’s leather and footwear industry is considerable. The government estimates that value addition could more than double the current earnings to Ksh 9 billion. Until recently, however, value addition in the livestock sector has been minimal, and most of Kenya’s exports have been in the form of unprocessed raw hides and skins. The government’s strategy to develop the leather industry springs from its Vision 2030 Programme which promotes industrialisation and value addition in key sectors (KAM, 2011).

The Metal and steel industry over the years has been considered the backbone of the economic activities of any given country. The level of development of any country can be assessed by the per capita steel consumption which is an internationally recognised indicator. Kenya’s metal sector deals with the production of downstream products with the use of steel billets, local and imported steel scrap and hot rolled coils. Kenya makes use of imported sheets, steel scrap, wire rod and wires, coils, steel billets, steel plates and pig iron (KAM, 2011).

The Kenyan motor vehicle assembly and components sub-sector has developed rapidly to match demand for local content requirements. There is local assembly of passenger cars and commercial vehicles. Other products produced locally include brake pads, tubes, tires, radiators, rubber components, springs and filters. A number of firms now fabricate bodies for commercial vehicles (KAM, 2011).

Kenya has an integrated pulp paper mill plant producing paper and paper board from renewable forest products. However, the country imports coated white lined chipboard and
other boards for packaging, newsprint, printed paper and other types of paper (KAM, 2011).

The rapid growth of the Kenyan pharmaceutical and medical equipments sector has presented the need to increase quantity of production, and also increase the export ratio for quality products. Kenya is currently the largest producer of pharmaceutical products in the Common Market for Eastern and Southern Africa (COMESA) region, supplying about 50 per cent of the region’s market. The country’s pharmaceutical and consumer health market is estimated to be worth an estimated $160 million each year (KAM, 2011).

The plastics and rubber industry in Kenya is well-developed and produces goods made of polyvinyl chloride (PVC), polyethylene, polystyrene, and polypropylene. All materials are imported in the form of granules. Available statistics indicate that there are 173 registered industrial establishments producing various plastics and rubber products in the country out of which 134 are in the plastics industry and are involved in the production of various plastics articles such as PVC pipes and fittings, packaging bags, plastics shoes, crates, bottles, floor tiles, household wares and containers (KAM, 2011).

The textile and apparel industry has made a sizeable contribution to income generation in rural areas by providing a market for cotton. The cotton sub-sector has significant linkages with not only the textile processing and manufacturing industry but also with manufacturers of soaps and detergents, animal feeds, chemicals, fats and oils. These direct linkages with the textile processing and manufacturing firms are particularly important for the exploitation of new market opportunities presented by AGOA, European Union and other markets where Kenya can export the cotton products (KAM, 2011).

The timber, wood and furniture sector in Kenya is not well developed to its full potential and there are prospects to expand the use of modern technology for increased furniture production. Most companies in this sector belong either to the small and informal sector (KAM, 2011).

1.2 Statement of the Problem

Adoption of quality management programmes has been discussed and investigated for a few decades across the globe (Kaynak, 2003). Implementation of the quality management programmes in the manufacturing sector has been studied by numerous authors in both developed and less developed countries (LDCs). Some of the widely cited surveys on
implementation of QMP programmes include Chaudhry et al. (2000), study by Murthy and Shrivastav (2000), study by Robinson (2001), study by Khond and Dabade (2004), and study by Antony et al. (2004). The investigations have identified some driving forces that promote the implementation of QMP strategy by manufacturing firms. On the other hand, the investigations also identified some roadblocks that prohibit the implementation of QMP by manufacturing firms.

Although a number of studies have been done on the implementation of quality management in manufacturing firms as indicated above, none has been done within the context of manufacturing firms in Kenya. There was therefore need for a study to be carried out on factors that affect successful quality management programme implementation by manufacturing firms in Kenya.

1.3 Purpose of the Study

The purpose of this study was to identifying the critical factors affecting the broad implementation of QMP in the Kenyan manufacturing industry.

1.4 Research Questions

1.4.1 What are the most influential factors that affect the implementation of QMP by Kenyan manufacturing industries?

1.4.2 What are the managerial implications and strategic impacts of successful implementation of QMP?

1.4.3 What type of comprehensive framework is required for successful implementation of QMP in industries?

1.5 Importance of the Study

1.5.1 Manufacturers

The study will help manufacturing organizations' leadership to be more informed on how to implement the quality management programmes which will subsequently lead to the improvement of quality levels. The study will also help various stakeholders of the organization to gain a better understanding of the dynamics of the quality management programmes in the complex manufacturing sector whilst focusing on the core objectives of the organization.
1.5.2 Researchers

The study will aid researchers on the quality management programmes with rich yet simple and practical concepts needed to understand and guide a complex implementation process. Ultimately, this will result in the identification of strategies that would ensure high quality levels in manufacturing institutions.

1.5.3 Academicians

This study is of importance to academicians who hope to gain academically by way of knowledge and experience from conducting the research. This knowledge gained can be applied in various ways through lecturing and publishing papers and books.

1.6 Scope of the Study

The focus of this study was restricted to Nairobi, Kenya. The researcher studied the factors affecting successful quality management programme implementation for SMEs engaged in manufacturing activities and located in the core industrialized areas of Nairobi County. The respondents in this study were selected from CEO’s or Quality managers. The results were inferred to represent the Kenyan manufacturing industry generally.

1.7 Definition of Terms

1.7.1 Quality Management Programmes

It is generally described as a collective, interlinked system of quality management practices that is associated with organizational performance (Cua, 2001)

1.7.2 Strategic Business Performance

The final result of running a manufacturing firm, which can reveal the effects of doing business, show the competitive capability of the firm in the marketplace and its financial health, and predict its future success or failure (Naumann, 1995).

1.7.3 Benchmarking

This is a continuous, systematic process for evaluating the products, services and work processes for organizations that are recognised as representing the best practices for the purpose of organization improvement (Spendolini, 1992).
1.7.4 Customer Satisfaction

It is the degree to which a firm’s customers continually perceive that their needs are being met by the firm’s products and services (Anderson, 1994).

1.8 Chapter Summary

Over the years, quality management is an area that has proven to be an up-hill task for many organizations. This chapter is aimed at defining quality management; identifying various QMP processes and other significant issues that arise when implementing these programmes, including factors that promote or inhibit implementation. The research questions will form the basis of this thesis with the overall aim of contributing to the strategic options for managing implementation of QMP in manufacturing firms in Kenya. Chapter two is a detailed analysis of the various literatures as guided by the three research questions. Chapter three explains the research design and methodology used for the study. Chapter 4 presents the results of the research while chapter 5 is a summary of findings one each of the research questions and conclusion and recommendations of the researcher.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter presents the development of a QMP implementation model for Kenyan manufacturing firms. The development of this model will be based on the QMP literature review and the general characteristics of Kenyan manufacturing firms. This model will provide users with a number of practices, drawn mainly from the firms' experiences in general and their failures and problems in particular.

2.2 Influential Factors that Affect the Implementation of QMP

2.2.1 Top-Management Commitment

A QMP program will only succeed when top management is fully committed beyond public announcements (Whaltes, 1994). Ellram (1991) suggested that top management commitment to quality acts as an enabler to QMP implementation while lack of commitment acts as a barrier to implementation. Brigham (1993) suggested that lack of proper leadership acts as a barrier both to manufacturing and service industry when it comes to QMP implementation. Kanji (1996) emphasized that lack of leadership from top management will act as a major obstacle towards successful QMP implementation. Van der Wiele (2002) found that the long term sustainability of quality management is affected by management related factors; lack of experience and training, hesitation in initiating improvement programmes and resistance to change.

Top managers should demonstrate their commitment to quality through their actions rather than words. Top management commitment can have a positive impact on employees own commitment to QMP and might lead to a culture change on the people involved. Top management should view quality to be more important than cost and meeting product schedules so as to improve employees' awareness to quality. Top managers can establish a firm that continually views quality as a primary goal so as to express their commitment to QMP implementation. Organizations need to build a culture which embodies quality to avoid any quality improvement efforts being short lived (Dale, 1999).

2.2.2 Employee Involvement in Operations and Strategic Decision

Employee involvement in making operations and strategic decisions is a well researched area. It describes how employees can meet their objectives therefore making a big
contribution to the organizations goals. It refers to the degree to which employees share knowledge, information, rewards and power throughout the organization (McMahon, 1995).

Hung (2005) and Moffett (2003) found out that employee involvement is a critical factor towards the successful implementation of quality management programmes. Corporate leaders have started to realise that employee knowledge is a crucial resource for competitive advantage and they are encouraging employees to share this knowledge (Choi, 2000). According to Lawler (1992), creation of a high involvement organization will involve choices about organizational design which creates a world where individuals know more, do more and contribute more. Employees’ tacit knowledge has been greatly appreciated through successful quality improvement which may not only depend on how work is organized, and the skill the worker possesses, but on the willingness of the employee to convert tacit knowledge of the work process into continuous process involvement and innovation (O’Brien, 1995).

Employee involvement aims at sharing of information, knowledge, rewards and authority (Steinecke, 1993). It plays an essential role in ensuring an organization survives and it is also the right way to gather knowledge from various levels of management. Hall (2001) suggested that knowledge creates knowledge when it is shared. Employee training is a good method of mitigating any problem especially where employee involvement and commitment is emphasized. According to Binney (2001), business and knowledge management applications focus on providing an environment in which knowledge workers of various disciplines can come together and create new knowledge. Employees will be able to co-ordinate diverse sets of activities and solve organizational wide complex problems by agreeing on common presumptions and analytical frameworks (Bhatt, 2000).

Employee involvement is viewed as one of the most effective problem solving and process improvement principles of quality management making it a focal point of other management fields as well (Silos, 1999). Quality professionals find themselves in a unique position to assist quality management implementation due to the fact that both fields share a common perspective (Wilson, 1999). Since employees must share the native of knowledge creation and sharing, employee involvement has become very important for successful quality management implementation (Choi, 2000).
2.2.3 Benchmarking

Karlof (1993) defines benchmarking to be the systematic or ongoing process of searching for industry wide best practices that lead to superior performance. This involves the emulation of the ways things are done best, both within and outside the firm, industry or sector and measuring the performance of the organization with that of the leading organization. Benchmarking will ascertain how leading organizations achieve superior performance levels and uses the information obtained as a basis for the organizations targets, strategies and implementation.

Benchmarking has become a popular management tool and has played an important role in implementing quality management in order to gain competitive advantage (Choi, 2000). According to O’Dell (1996), quite a number of large firms have adopted benchmarking as a significant and systematic technique for measuring the company’s performance towards its strategic goals. Management of quality work effectively has become a necessity for functional area heads and department managers making it easy to apply the useful knowledge around the organization once it has benchmarked best practices (Davis, 1996).

Day and Wendler (1998) suggest that benchmarking can be used as a quality strategy to capture, share and manage organizational quality correctly. This offers a practical implication for a wider view of quality management benchmarking.

Benchmarking is one of the widely used tools found to be effective for the development and improvement of quality management. It has not been restricted to only process improvement or reuse but extends further beyond and promotes both the growth and acceptance of a learning culture throughout the organization. Benchmarking has been used by organizations to provide insights into such areas as customer satisfaction, costs, distribution and relationships, service quality, profits and margins, overall productivity, time to market in relation to other competitors and relationship management (Choi, 2000).

2.2.4 Employee Training

Quite a number of studies have highlighted on the importance of employee training to quality management implementation success (Moffett, 2003). Sallah and Goh (2002) suggests that companies must begin with quality training for them to become a truly quality based organization. This has been occasioned by demand for high quality from customers, low costs and faster cycle times. Firms must therefore improve their overall
organizational performance to meet these challenges due to rapid advances in technology and improved processes. Despite the advances, an organization’s workforce remains the most important competitive advantage to any firm. Organizations should continuously train and develop the skills of its employees so as to remain competent. Through training and development, organizations will be able to improve performance which is a strategic goal for achieving the bottom line. This has lead to a number of organizations becoming learning organizations. This is because insufficient training to support knowledge management principles may lead to the failure in effective work behaviours. Learning organizations will always view training as a strategic investment rather than a budgeted cost (Mondy, 2002).

Those agents concerned with preserving intellectual capital will recognize the importance of training capabilities for their organizations (Carneiro, 2001). The role of human resource management in developing a learning organization includes; establishment of appropriate networks, engaging in double-loop learning and assisting employees in creating and using knowledge. Greco (1999) suggests that for successful quality management implementation, it should be pillared on education to help employees recognize the value of knowledge and therefore encourage sharing. A well developed quality management system can be used to sustain profitability only when employees possess the learning capability to use knowledge creatively (Hwang, 2003).

It has been observed that one of the most recent popular tools for training in quality management is a corporate university. These are educational establishments run by companies to provide total education to their workforce. It has been found that approximately 40 percent of Fortune 500 companies have implemented corporate university programmes (Sunoo, 1998). This has lead to more corporate universities being established all over the globe to support organizational learning efforts. Timely and appropriate employee training therefore plays a critical role as a key success factor for quality management implementation.

2.2.5 Attitude of Employee Towards Quality

The attitude of employees towards quality is considered an important factor in effective implementation of any quality program. The movement of quality program may be obstructed by difficulties in changing the mindset of employees with regard to quality and urgency. Top management should encourage employees in implementation of QMP by
taking up leadership roles and showing a strong commitment during implementation (Rivers and Bae, 1999). Education and training goes a long way in changing employees' attitude towards quality as well as sense of CQI culture. This can be built through the committed efforts of leadership. Leadership needs to make employees feel that quality adds improvement in productivity, reduces costs, improves services, and it should make employees feel directly or indirectly responsible for customer satisfaction (Mosadegh Rad, 2004).

2.3 Managerial Implications and Strategic Impacts of Successful Implementation of QMP

2.3.1 Employee Satisfaction

Successful QMP implementation contributes a lot to employee satisfaction. Employee satisfaction is influenced by forces both within and outside an individual’s own personal characteristics and the immediate working environment (Lam, 1995). Individuals may respond differently to work conditions as some employees may be satisfied while others may not. As some employees find high satisfaction with a particular job, others may find the same conditions to be extremely dissatisfying (Cherrington, 1995).

Factors that surround employee satisfaction include; a new training package, better benefit package to increase employee satisfaction. Those issues affecting employee satisfaction include; job characteristics, pay package, job security, equality, work environment, compensation and reward systems (Spector, 1997).

A job descriptive index developed by Smith (1996) measures employee satisfaction and has been used across a wide variety of demographic groups. This instrument consists of 72 items for measuring 5 theoretical and practical dimensions of employee satisfaction; pay, co-workers, promotion, satisfaction with work itself and supervision.

Studies on employee satisfaction have gone on to show that job attitudes are influenced mostly by qualitative aspects of the job (Cherrington, 1995). Positive satisfaction with pay is generated by good pay policies. Positive satisfaction with supervision is generated by supervisors who are competent, considerate and fair. Employee satisfaction may however be related to other variables not directly associated with the job, such as work, value, sex and age. Employees with a strong work ethics have been seen to report a greater satisfaction compared to those who reject the work ethic. The values and expectations that
employees bring with them to the job will directly influence their job satisfaction. Job satisfaction is also influenced by what has happened to workers outside the job environment. The quality of life away from work influences satisfaction with work just as a person’s satisfaction with life in general is affected by work. A general decline in job satisfaction has been occasioned by the frustrations and difficulties people face in their personal lives.

2.3.2 Product Quality

Product quality plays an important role in marketing manufacturing firms to be successful in the world market. A quality image will improve a firm’s ability to compete and also improve its long term opportunity for success (Pfau, 1998). DuBrin (1995) suggests that business strategy development should place a high priority on product quality which is crucial for business success or failure for today’s quality performance oriented markets. Feigenbaum (1991) stated that product quality has become a major business strategy. Ahire (1996) stated that improvement of product quality be the prime objective of a firms quality management efforts and product quality be used as a primary indicator of the firms quality efforts.

There is a steady increase of firms that are recognising the strategic importance of product quality (Anderson, 1994). Product quality continues to be seen as a strategic asset to improve a firm’s global competitiveness (Steingard, 1993). Anderson (1995) shows that product quality is cited as the highest competitive priority, an important issue of strategy and survival and a means of competitive performance. The Japanese quality revolution opened up the way for the country to become an economic superpower (Juran, 1994).

2.3.3 Customer Satisfaction

Customer satisfaction has of recent times drawn much more attention than ever before. According to Fornell (1992) some countries are making the effort to measure customer satisfaction on a national basis to complement the efforts of individuals firms which continuously monitor customer satisfaction. Customer satisfaction should be a key performance measure for any given firm (Naumann, 1995).

A fundamental determination for business health, economic viability and growth today is the attainment and maintenance of satisfactory levels of customer satisfaction (Feigenbaum, 1991). The Malcolm Baldrige National Quality Award (1999) is a case in
point where customer focused results is considered as the most important. The European Quality Award (1994) considers customer satisfaction as the most important in terms of points assigned. According to Fornell (1996) customer satisfaction is considered as the new type of market based performance measure for firms. Customer satisfaction provides an important measure for a firm past, current and future financial health performance.

Customer satisfaction provides a platform for modern firms and the modern economy to evaluate performance. Marketing scholars and practitioners have over the years appreciated that customer satisfaction is an important and central concept of all business activities. Dean (1994) suggested that customer satisfaction is the most important requirement for long term organizational success. Therefore, a firm can only exist because the firm has customers and a lack of customers means no business.

Customer satisfaction does not remain static but continues to evolve in an upward spiral. The continued diversity of product offerings has conditioned customers to expect better quality products (Naumann, 1995). Customers opinion of any product or service may change very fast whereby change towards a negative direction occurring very quickly more than increased customer satisfaction. A lot of effort must be put in to increase customer satisfaction as only a single failure may cause dissatisfaction.

2.3.4 Strategic Business Performance

Strategic business performance is an outcome of running a manufacturing firm which reveals the effect of doing business, shows how competitive the firm is in the market place and also predicts the firm’s future success or failure. Strategic business performance can be used as an indicator to test the effects of QMP implementation and of a firm’s effort in pursuing employee satisfaction, customer satisfaction and product quality. According to Mann and Kehoe (1994) strategic business performance reflects to those measures the firm’s management board typically addresses. The board concerns itself with measuring a firm’s performance in terms of the major goals such as annual sales, profitability, market share, exports and sales growth.

Naumann and Giel (1995) describe strategic business performance to refer to increase in revenue, market share and profit. According to Lee (1995) there should be a hierarchical structure for overall business performance for a higher level performance which includes market share and profitability. This study identified strategic business performance as sales
growth, annual sales, market share and exports. It is a widely accepted fact that the aim of any firm is to stay in business and make profits in the market place. It is therefore clear that the five indicators of strategic business performance are strongly connected to market and profitability. In China, strategic business performance is emphasized by both top managers and the government.

2.3.5 Internationalization

Organizations need to keep competitive standards of quality when dealing in international business activities. Attainment of competitive standards of quality is more of an evolutionary process of organizational development more than a management strategy. According to Dale (1994), there are four stages of quality progression which include; quality control, inspection, total quality management and quality assurance. The quality control and quality inspection stages give organizations the opportunity to begin quality improvement processes from detection of variation from standards. This stage of quality improvement can be considered to be a basis of conformance to specifications controlled by standard operating procedures (SOPs). According to Alexander (1995), ISO-9000 series provides a guideline to requirements and the appropriate procedures for assessment to enable organizations to be at par with internationally acceptable manufacturing.

Internationalization is also considered to be a gradual process with long term orientation. According to Johanson and Vahlne (1977), internationalization process helps organizations to increase their international involvement on a gradual basis. Internationalization involves the development of knowledge about foreign markets and a commitment to increase resources to such markets.

According to Paul (1975) and Johanson and Vahlne (1977), there is also an increased commitment to resources to foreign markets due to increased knowledge and experience. They also suggested that organizations will initially concentrate on neighbouring countries before entering new markets which are considered to be distant in terms of culture, the economy and geographical proximity.
2.4 Comprehensive Framework Required for Successful Implementation of QMPs in Industries

2.4.1 Vision and Plan Statement

A vision statement is a detailed visualisation of the desired future state of the overall business that serves as the target or main objective for which all goals, strategies and standards will be established. A vision statement should be clear, concise and should also satisfy three fundamental criteria; should address all organizational levels, should be stated in a way that everyone believes in it, and be both growth oriented and aggressive. The vision statement should be clearly communicated to employees to enable them clearly understand the firm's values, purposes and aspirations. An effective vision statement encourages employees to commit to quality improvement and makes the workforce aware of the firm's philosophy. Organizations should try and avoid changing their vision statements once it has been developed and agreed on to avoid employee frustrations. Top managers should also take the lead in selling the vision of the firm to its employees on a continuous and consistent basis (Dale, 1999).

2.4.2 Supplier Quality Management

Firms should obtain sufficient information from their suppliers to judge whether they have the capability to provide products and services that meet all fitness for use requirements. Suppliers should be selected on the basis of their reputation, adequate investigation by the manufacturer on the supplier and other relevant information. Product quality should be regarded an important factor when a firm is selecting a supplier. Firms should involve suppliers in activities related to quality improvement. Such activities may include; supplier quality improvement and supplier training. Supplier training is undertaken by the purchaser to be able to improve services from supplier, quality of products, employees and processes. Supplier quality improvement projects are also undertaken by the purchaser so as to enable suppliers implement quality management methods or just to provide technical assistance. Supplier quality is thus monitored to ensure products and services received from suppliers can meet requirements (Juran, 1993).

2.4.3 Evaluation

Strategy involves the pattern of the decisions and actions that will determine the firm holds in its environment as it intends to achieve its long term goals (Slack, 1995).
Accomplishment of a vision statement will be specified by strategy. There are usually three levels of strategy; corporate, business and department strategies (Meredith, 1999). Firms can seek opportunities to improve their strategies through various decision supporting systems and relevant information essential to strategy evaluation. The effect of implementing QMP will remain unclear as more effective QMP implementation approaches cannot be formulated unless the overall business performance is regularly evaluated. QMP implementation will depend on the evaluation of overall business performance. Analysis of overall business performance has the benefit of providing adequate input for QMP implementation; it identifies areas of improvement and areas which require attention. Overall business performance comprises of product quality, employee satisfaction, strategic business performance and customer satisfaction. Organizations can use information on overall business performance to compare with its competitors, itself and with the best practices across the industry. Firms can identify areas that need action or draw attention through evaluation (Dale, 1999).

2.4.4 Recognition and Reward

Firms should entrench an effective recognition and reward program for its employees. The recognition and reward program should be consistent with the organizations values and objectives. Those employees who do not contribute to the realization of the overall organizational objective should not be recognized or rewarded. Firms should continuously review and update the individual or team objectives. To ensure that recognition and reward is conducted fairly, firms need to ensure the criteria is objective and measurable. The recognition and reward program should also be made to look meaningful and fitting the organizational culture. The program should be approved by the workers congress and then be strictly implemented. When all this is observed, the program will effectively stimulate employee commitment, creativity and enthusiasm. It is also possible to provide recognition and reward at several levels; departmental, team, individual and business unit (Burrill, 1999).

2.4.5 Process Control and Improvement

This is a process capability that measures the extent to which a firm’s production system meets design specification. Wear out of a machine degrades the process capability to a point that it cannot hold the tolerances specified by the engineering design. Firms should therefore study their process capabilities and calculate the process capability index in order
to determine whether a process is stable, seek causes of instability and take actions to eliminate such problems. Every employee should be tasked with the responsibility of cleaning one’s own working area. Firms must also pay attention to reducing the levels of noise, improve the quality of air and determine appropriate temperature range and lighting intensity. Employees should be encouraged to care for the production facilities, should be more productive and less liable to make mistakes. Good housekeeping helps employees notice and correct process problems more quickly. It can also prevent the accumulation of dust on movable parts and lubricating oil causing parts to function erratically or jam (Juram, 1993).

2.4.6 Product Design

Firms should establish cooperative relationships throughout the product design process through concurrent engineering. Firms should enable representatives from different departments together with suppliers and customers; meet with design staff to brainstorm on the details of product design. Concurrent engineering ensures fewer problems occurring during the process of production and assembly. Firms should focus on simplification of designs making them more producible by focusing on designing for manufacturability. This helps in reducing the total number of parts, that of different parts and that of manufacturing operations (Juran, 1993).

Major practices include; use of modular designs, avoiding unnecessary parts and design for easy manufacturing assembly. Errors and other sources of quality problems during manufacturing are reduced through the process of designing for manufacturability. Designers need to be having additional experience for them to achieve such goals for a greater produceability. They also need to spend time in field service work to expose them to actual conditions of use, problems diagnosing field failures and difficulties encountered in making repairs (Feigenbaum, 1991).

2.4.7 Quality System Improvement

Quality system produces describe the activities of individual functional units that are needed to implement the quality system elements (ISO 10013, 1995). Therefore the responsibility and authority of the different functional departments have been clearly defined by system procedures. All the applicable elements of the quality system standards are covered by quality system procedures. They describe the authorities, responsibility
interrelationships of the personnel who manage, perform, verify or review the work affecting quality, how different activities are to be performed, and the kind of documentation to be used and the controls to be applied. After establishing documentation for the quality system, implementation programmes for the quality system should follow. Firms should conduct quality audits and management reviews in order to understand whether these documents can be implemented effectively. Such kind of assessment can be used to ascertain the suitability of the quality systems to the firm and subsequent conformance to the requirements of the ISO 9000 standard. The results can be used to improve the quality systems. Firms may also prepare and plan for ISO 9000 certification. A firm may be affected to change its operation due to the fact that it operates in a dynamic environment. The firm must therefore keep its quality systems continuously changing and improving (Burrill, 1999).

2.4.8 Education and Training*

The firms' education and training plan should be modelled on the firms' available resources, strategies, employee job requirements, objectives and current employees' skills (Sale, 1999). The firm needs to design good training programs that address technical and behavioural issues, identify its short and long term-training needs, and have an evaluation system in place to check on whether the training and development programs meet its objectives. Enough resources should be allocated to the implementation of the plan or else it will become useless. Education and training takes up a lot of resource in the short term basis but saves money on a long term basis. Firms should view trained employees as an investment that can yield economic returns. Employees should be viewed as assets worthy of receiving education and training throughout their careers. People are the only real source of the firm's competitive advantage (Burrill, 1999).

2.5 Chapter Summary

Over the years, quality management is an area that has proven to be an up-hill task for many organizations. This chapter aimed at identifying appropriate managerial implications and strategic impacts of successful implementation of QMP attributes; identifying various factors that affect implementation of quality management programmes and also identifies comprehensive framework required for successful implementation of quality management programmes in industries. The research questions formed the basis of this thesis with the overall aim of contributing to the strategic options for implementing quality management
programmes in Kenyan organizations. Chapter 3 explains the research design and methodology that was used for the study.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the research methodology that was employed for the study. It includes the research design, population and sample size, data collection methods and procedures as well as data analysis.

3.2 Research Design

Research design is a blueprint for fulfilling research objectives and answering questions (Cooper, 2001). This research was empirical and this characteristic stemmed from its objective, that is, the careful and systematic investigation of driving and restraining forces to the implementation of QMP strategy within manufacturing firms in Kenya. Therefore, this section is devoted to describing a conceptual model framework, i.e. the driving and restraining forces, stating the research questions, and depicting the methods of statistical analysis. The force field analysis was employed as a useful technique for identifying forces to be dealt with before introducing a change and those inhibiting forces which can be reduced with least efforts. The respondents who were CEO’s or Quality managers were presented with the independent variables, both driving and restraining factors and were asked to indicate the degree of emphasis they placed on each of the factors in their organizational strategy by allocating 1-5 points between the factors based on the Likert scale. For the dependent variable – % Rate of QMP Implementation - data was collected by asking the respondents to estimate the rate of implementation by their respective organizations by allocating 100 percentage points.

3.3 Population and Sampling Design

3.3.1 Population

Study population is the total collection of elements about which the researcher wishes to make some inferences about (Cooper, 2001). The respondents in this study were selected from CEO’s or Quality managers working with manufacturing institutions in Nairobi. Thus, the entire population comprised of 560 firms in the manufacturing industry. The survey was limited to SMEs engaged in manufacturing activities and located in the core industrialized areas of Nairobi County. From the Kenyan context, all registered private firms with the number of paid full time employees ranging from 5 - 200 are categorized as
SMEs (Ntsika, 1997). The researcher came up with this list from relevant sources which included the Kenya Association of Manufacturers, the government database, the internet and various directories. Firms that were not located in Nairobi or those whose offerings did not meet the criteria were left out of the list.

3.3.2 Sampling Design

This is the process of selecting some elements from a population to represent the population as a whole (Cooper, 2001).

3.3.2.1 Sampling Frame

Sampling frame is a list of elements in the population from which the sample is actually drawn and excludes all those who are not in the population (Cooper, 2001). For this study, a sampling frame consisting of manufacturing institutions located in Nairobi was identified. Within these firms, one individual - the CEO or Quality manager - was chosen as the object of study. The researcher came up with this list from relevant sources which included the Kenya Association of Manufacturers, the government database, the internet and various directories.

Table 3.1: Sampling Frame

<table>
<thead>
<tr>
<th>MANUFACTURING SECTOR</th>
<th>NUMBER OF FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building, construction and mining</td>
<td>6</td>
</tr>
<tr>
<td>Chemical allied</td>
<td>56</td>
</tr>
<tr>
<td>Energy electrical and electrical</td>
<td>29</td>
</tr>
<tr>
<td>Food and beverages</td>
<td>93</td>
</tr>
<tr>
<td>Leather and footwear</td>
<td>6</td>
</tr>
<tr>
<td>Metal and allied</td>
<td>41</td>
</tr>
<tr>
<td>Motor vehicles and accessories</td>
<td>19</td>
</tr>
<tr>
<td>Paper and board</td>
<td>57</td>
</tr>
<tr>
<td>Pharmaceuticals and medical equipment</td>
<td>20</td>
</tr>
<tr>
<td>Plastic and rubber</td>
<td>50</td>
</tr>
<tr>
<td>Textiles and apparels</td>
<td>26</td>
</tr>
<tr>
<td>Timber, wood and furniture</td>
<td>14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>417</strong></td>
</tr>
</tbody>
</table>

Source: Author, 2012
3.3.2.2 Sampling Technique

Sampling technique is the name or other identification of the specific process by which the entities of the sample have been selected (Cooper, 2001). The researcher chose to apply the simple random technique to come up with the sample size. This is due to the fact that the target population from which the sample size was drawn from was homogenous hence each element in the population had a known and equal probability of selection.

3.3.2.3 Sample Size

The first stage of design was the identification of the manufacturing sector. Based on factors such as time available, budget and necessary degree of precision, the researcher narrowed the study to small and medium manufacturing firms within Nairobi.

From this pool of registered manufacturing firms located in Nairobi County (N=417), a sample of 369 firms was extracted using Yamane’s formula. Standard questionnaires were then assigned to a total of 369 CEO’s or Quality managers in the selected manufacturing firms.

The sample size was generated using Yamane’s (1973) recommended formula which is given by: 

\[ n = \frac{N}{1 + Ne^2} \]

Where, \( n \) is size of sample, \( N \) is population of sample, and \( e^2 \) (\( e = 5\% \) i.e. at 95% confidence level) is probability of error.

At a confidence level of 95% and 0.05 margin of error, the researcher computed a sample population as shown below:
### Table 3.2: Sample Size

<table>
<thead>
<tr>
<th>MANUFACTURING SECTOR</th>
<th>NUMBER OF FIRMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building, construction and mining</td>
<td>5.9 = 6</td>
</tr>
<tr>
<td>Chemical allied</td>
<td>49.1 = 49</td>
</tr>
<tr>
<td>Energy electrical and electrical</td>
<td>27.0 = 27</td>
</tr>
<tr>
<td>Food and beverages</td>
<td>75.4 = 75</td>
</tr>
<tr>
<td>Leather and footwear</td>
<td>5.9 = 6</td>
</tr>
<tr>
<td>Metal and allied</td>
<td>37.1 = 37</td>
</tr>
<tr>
<td>Motor vehicles and accessories</td>
<td>18.1 = 18</td>
</tr>
<tr>
<td>Paper and board</td>
<td>49.8 = 50</td>
</tr>
<tr>
<td>Pharmaceuticals and medical equipment</td>
<td>19.0 = 19</td>
</tr>
<tr>
<td>Plastic and rubber</td>
<td>44.4 = 44</td>
</tr>
<tr>
<td>Textiles and apparels</td>
<td>24.4 = 24</td>
</tr>
<tr>
<td>Timber, wood and furniture</td>
<td>13.5 = 14</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>369</strong></td>
</tr>
</tbody>
</table>

3.4 Data Collection Methods

Data collection involved collecting both primary and secondary data using several procedures and instruments. Primary data was collected using a standardized questionnaire which was both open-ended and closed.

A standardized questionnaire or form ensured comparability of the data, increased speed and accuracy of recording, and facilitated data processing (Malhotra, 2003). For this study, the questionnaire consisted of 3 sections, A, B and C, which consisted of various questions. It was very useful in reaching managers since a majority could not give personal interviews. Permission was sought from the management before administering the questionnaire to the respondents.

There were two parts of the survey instrument:

The first part of the survey instrument consisted of questions dealing with gathering general information from the respondents such as name of the organization the respondent works for, age of the respondent, job title, number of employees working for the organization and the major business of the organization.
The second part consisted of self-assessment checklist developed and used as a model for survey instrument. The survey question was designed by systematically breaking down each category into component parts. This was done to extract the core elements of the model and to simplify the criteria terminology.

All survey questions were tied to specific criteria for quality management programme implementation. The instrument was developed to survey the importance of implementation items in 10 areas. Several steps were taken to ensure that the questionnaire used in this study provided valid measurement of quality management programme implementation. The measurement of each of the 10 items was done directly using a five point Likert scale. Each scale was developed based on a thorough review and understanding of the area.

Data collected was categorised into three:

The first was data used to determine factors that drive implementation of quality management programmes as perceived by top management. It addressed the degree of importance of quality management programme constructs in case organizations.

The second set of data was used to determine perceptions of the comprehensive frameworks required for the successful implementation of quality management programmes as perceived by top management.

The last set of data was used to determine the degree of implementation of quality management programmes and methods in case organizations.

3.5 Research Procedure

The researcher conducted a pre test of the questionnaire to discover any errors in questions, question sequencing, instructions and skip directions. The pilot testing questionnaire document was pre tested by academicians, consultants and a small number of companies, well known to the researcher. The pilot questionnaire was mailed to 25 respondents.

The questionnaire was highly simplified to enable a high response from respondents. The researcher also assured the respondents that any information provided would be confidential. All participants were assured of anonymity such that no personal information concerning them and the organizations they work for would be made public either during or after the completion and release of this study.
3.6 Data Analysis Methods

Before the raw data contained in the questionnaires was subjected to statistical analysis, it was converted into a form suitable for analysis. The questionnaires were analyzed and checked for completeness and interviewing quality and where necessary corrections were made to ensure the data conforms to the required format.

From this survey response, the data was analysed using standard descriptive statistics and reliability test to identify critical factors for successful implementation of quality management programme. Standard descriptive statistics were used to summarize the responses for individual variables prior to performing regression analysis.

The researcher used descriptive statistics to measure the perceived degree to which certain factors drive the implementation of quality management programmes. It reduced a large number of variables into smaller significant components. It also measured the importance of the comprehensive framework required for successful implementation of quality management programmes. E-views software was used in conducting the regression analysis using the ordinary least squares method.

T-test was conducted on all variables to identify statistically significant variables that affect the implementation of quality management programmes.

F-test was carried out on every regression equation to test the usefulness of the model advanced. This test was also done to test for reliability of the models used.

The multiple linear regression model was as follows:

\[ Y = \alpha_1 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 - \beta_6 X_6 - \beta_7 X_7 - \beta_8 X_8 - \beta_9 X_9 - \beta_{10} X_{10} + \varepsilon_i \]

Whereby,

- \( Y \) = (%) Rate of Quality Management Programme Implementation
- \( \alpha_1 \) = Constant
- \( \beta_1, \beta_2, \beta_3, \beta_4... \beta_{10} \) all represent the coefficients of the internal and external determinants of QMP measurement.
- \( X_1 \) = Top Management Commitment
- \( X_2 \) = Employee involvement in operations and strategic decision
- \( X_3 \) = Benchmarking
- \( X_4 \) = Employee Training
- \( \varepsilon_i \) = Error
3.7 Chapter Summary

This chapter concentrates on the methodology used to conduct the research. It describes how the research was carried out, including the sample population studied, the data collection procedure and the techniques that were used to carry out the research. In addition, the chapter also spelled out the data analysis process and ethical issues that were of concern during the research and how the researcher addressed them. The next chapter presents the findings of the research.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter comprises data collection details as captured using the research questionnaire and other sources of secondary data as well as the analysis of those findings. It has been summarized and presented in the form of tables, charts and narratives.

4.2 Descriptive Data Analysis

4.2.1 Data Collected and Response Rates

This research targeted 369 respondents who are managers in manufacturing firms in Nairobi, Kenya. Out of these, 133 were able to participate in the study by returning the correctly completed questionnaire, which constitutes a 36% response rate, which was considered adequate for analysis. The rest of the respondents either did not bother to return the completed questionnaire or when they did, it was poorly filled or arrived too late. The table below shows a summary of companies that responded in each of the 12 manufacturing sub-sectors.

Table 4.1: Response Rate across the Twelve Manufacturing Sub-sectors

<table>
<thead>
<tr>
<th>NO.</th>
<th>SUB-SECTOR</th>
<th>Number of Companies</th>
<th>Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Building, Construction and Mining</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>2.</td>
<td>Chemical allied</td>
<td>25</td>
<td>18.8</td>
</tr>
<tr>
<td>3.</td>
<td>Energy Electrical and Electrical</td>
<td>10</td>
<td>7.5</td>
</tr>
<tr>
<td>4.</td>
<td>Food and Beverages</td>
<td>30</td>
<td>22.6</td>
</tr>
<tr>
<td>5.</td>
<td>Leather and Footwear</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>6.</td>
<td>Metal and allied</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>7.</td>
<td>Motor Vehicle and accessories</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Paper and board</td>
<td>18</td>
<td>13.5</td>
</tr>
<tr>
<td>9.</td>
<td>Pharmaceuticals and medical equipments</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>10.</td>
<td>Plastic and Rubber</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>11.</td>
<td>Textile and apparels</td>
<td>6</td>
<td>4.5</td>
</tr>
<tr>
<td>12.</td>
<td>Timber, Wood and Furniture</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>133</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
4.2.2 Age of Respondents

The respondents were at least 18 years old with the majority of the respondents coming from the age group of 29-39 years at 41.48%. This was followed by those in the age group of 18-28 years at 28.98%, then those in the age group of 40-50 years at 18.18%.

Table 4.2: Table showing the age of the respondents

<table>
<thead>
<tr>
<th>Respondents Age</th>
<th>No. of Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 – 28 Years</td>
<td>39</td>
<td>28.98</td>
</tr>
<tr>
<td>29 – 39 Years</td>
<td>55</td>
<td>41.48</td>
</tr>
<tr>
<td>40 – 50 Years</td>
<td>24</td>
<td>18.18</td>
</tr>
<tr>
<td>Above 50 Years</td>
<td>15</td>
<td>11.36</td>
</tr>
</tbody>
</table>

4.2.3 Employment Size

Data derived from Table 4.3 shows that most of the organizations in the manufacturing sector that responded have an employee size of 101-150 which represents a 30% rate of employment. Organizations with employee size of 0-50 represents 21% of employment rate with 28 manufacturing firms. Employment size of 151-200 accounts for 18% with a total of 15 firms, 201-250 representing 11% with 15 firms and 51-100 representing 11% with 14 firms. The lowest employment size is >250 which accounts for only 9% with 12 firms.

Table 4.3: Response rate of employment size across the twelve manufacturing subsectors

<table>
<thead>
<tr>
<th>Employment Size</th>
<th>Number of Firms</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>51-100</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>101-150</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>151-200</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>201-250</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>&gt;250</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>133</td>
<td>100</td>
</tr>
</tbody>
</table>
4.2.4 Sector

It can be observed from figure 4.1 that Food and Beverages sub-sector had the highest response rate of 23% with 30 of the 133 correctly answered questionnaire being returned for analysis. This was closely followed by the Chemical and allied sub-sector with a response rate of 19%, with 25 of the 133 correctly answered questionnaires. It was followed by Paper and Board, Plastic and Rubber, Metal and Allied, Energy Electrical and Electrical with percentages of 13%, 9%, 9%, 7% respectively. Others included Pharmaceuticals and Medical Equipments, Textile and Apparels, Timber Wood and Furniture, Motor Vehicle and Accessories, Building Construction and Mining and lastly Leather and Footwear with percentages of 6%, 4%, 3.8%, 3%, 1.5%, 0.8% respectively.

Figure 4.1: Pie-chart representing the twelve sub-sectors according to response rates in percentage form

4.2.5 Drivers of QMP Implementation

Figure 4.2 below is a summation of the degree of emphasis that the 133 respondents in the manufacturing sector reported using with regards to the 4 factors that drive implementation of quality management programmes. Top Management Commitment to Quality had the largest degree of summation followed by Employee Involvement in Operation, Employee Training, and finally Use of Benchmarks.
Figure 4.2: Summation of degree of emphasis placed on the respective factors that drive implementation of quality management programmes

4.2.6 Comprehensive Framework for Successful Implementation of QMP

Figure 4.3 below is a summation of the degree of emphasis the 133 respondents in the manufacturing sector placed with regards to importance of the comprehensive framework required for successful implementation of quality management programmes in industries. Vision and Plan statement had the largest summation followed by Process Control and Improvement, Product Design, Quality Systems Improvement, Supplier Quality Management, and finally Recognition and Reward.
4.2.7 Strategic and Managerial Impact of Successful Implementation of QMP

It can be observed from table 4.4 that Employee Satisfaction had the highest approval with 86 respondents. Customer Satisfaction, Product Quality, and Strategic Business Performance followed in that order with 82, 74 and 70 respectively. It indicates that managers regard QMP implementation to play a big role in the realisation of strategic and managerial objectives.

Table 4.4: Strategic and Managerial Impact of Successful Implementation of QMP

<table>
<thead>
<tr>
<th>Factor</th>
<th>Yes</th>
<th>No</th>
<th>Abstain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Satisfaction</td>
<td>86</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Product Quality</td>
<td>74</td>
<td>15</td>
<td>44</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>82</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>Strategic Business Performance</td>
<td>70</td>
<td>25</td>
<td>38</td>
</tr>
</tbody>
</table>

4.2.8 Factors Driving QMP Implementation

It can be observed from table 4.5 that Top Management Commitment to Quality had the highest score of 4.38345865. It indicates that managers regard top management commitment to quality as a pushing force towards the implementation of QMP strategy. It was followed by Employee Involvement in Operations, Employee Training and Use of Benchmarks with means scores of 4.082706767, 3.992481203 and 3.78947368 respectively. All the mean scores were rated by top management between “strongly disagree” and “strongly agree” so the manufacturing firms should pay attention for further improvement of these dimensions. Use of benchmarks (SD=0.76922463) had the greatest variations of QMP implementation.

Table 4.5: Descriptive Analysis for Factors Driving QMP Implementation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Interpretation</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Top Management Commitment to Quality</td>
<td>4.38345865</td>
<td>0.65968087</td>
<td>0.43517886</td>
</tr>
<tr>
<td>P2</td>
<td>Employee Involvement in Operations</td>
<td>4.082706767</td>
<td>0.674706589</td>
<td>0.455228982</td>
</tr>
<tr>
<td>P3</td>
<td>Use of Benchmarks</td>
<td>3.78947368</td>
<td>0.76922463</td>
<td>0.59170654</td>
</tr>
<tr>
<td>P4</td>
<td>Employee Training</td>
<td>3.992481203</td>
<td>0.753740577</td>
<td>0.568124858</td>
</tr>
</tbody>
</table>
4.2.9 Comprehensive Framework for Successful QMP Implementation

It can be observed from table 4.6 that Vision and Plan Statement had the highest score of 4.5112782. It indicates that managers regard Vision and Plan Statement as a pushing force towards the implementation of QMP strategy. It was followed by Process Control and Improvement, Product Design, Quality Systems Improvement, Supplier Quality Management and Recognition and Reward with means scores of 4.270676692, 4.22556391, 4.218045113, 4.082706767 and 3.77443609 respectively. All the mean scores were rated by top management between “strongly disagree” and “strongly agree” so the manufacturing firms should pay attention for further improvement of these dimensions. Recognition and Reward (SD=0.77443609) had the greatest variations of QMP implementation.

Table 4.6: Descriptive Analysis for Framework for QMP Implementation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Interpretation</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Vision and Plan Statement</td>
<td>4.5112782</td>
<td>0.61071917</td>
<td>0.3729779</td>
</tr>
<tr>
<td>P2</td>
<td>Supplier Quality Management</td>
<td>4.082706767</td>
<td>0.68584291</td>
<td>0.470380497</td>
</tr>
<tr>
<td>P3</td>
<td>Process Control and Improvement</td>
<td>4.270676692</td>
<td>0.664327178</td>
<td>0.441330599</td>
</tr>
<tr>
<td>P4</td>
<td>Product Design</td>
<td>4.22556391</td>
<td>0.681092498</td>
<td>0.46388699</td>
</tr>
<tr>
<td>P5</td>
<td>Quality System Improvement</td>
<td>4.218045113</td>
<td>0.742011454</td>
<td>0.550580998</td>
</tr>
<tr>
<td>P6</td>
<td>Recognition and Reward</td>
<td>3.77443609</td>
<td>0.774758431</td>
<td>0.600250627</td>
</tr>
</tbody>
</table>

4.3 Regression Analysis

4.3.1 Regression Analysis for Factors that Drive QMP Implementation

4.3.1.1 Regression Analysis 1

The output table 4.7 below is for Y versus X1, X2, X3, and X4

The equation derived from regression 1 is as follows:

\[ Y = -24.09336 + 9.942349 X1 + 4.618108 X2 + 5.186448 X3 + 3.974685 X4 \]
4.3.1.2 Hypothesis

In order to ascertain the statistical significance of the model as well as the usefulness of each of the independent variables (X1-4), the researcher performed an F-test using the following hypothesis:

\[ H_0: \beta_1 = 0, \beta_2 = 0, \beta_3 = 0, \beta_4 = 0 \]

\[ H_1: \beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0 \]

Whereby, \( H_0 \) - the null hypothesis - implies the model is not useful and \( H_1 \) - the alternate hypothesis - implies that the model is useful.

According to the \( H_0 \), if a coefficient (\( \beta_i \)) = 0, then the distribution of the response variable (Y) does not directly depend on the input variable \( X_i \), which can therefore be "dropped" from the model. Consequently, it is useful to test the hypotheses:

\[ H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0 \quad \text{Versus} \quad H_1: \beta_j \neq 0 \text{ for at least one } j \]

4.3.1.3 F-Test

At 95% confidence interval, \( F_{k,n-k-1,a} = F_{4,128,0.05} = 5.63 \).

Since the F-stat = 101.1615 > \( F_{4,128,0.05} = 5.19 \), we reject the null hypothesis and accept the alternative hypothesis. Therefore there is evidence that the response is related to at least one of the input variables. This implies that the model is statistically significant thereby implying that it is useful.

4.3.1.4 T-Test

To establish the statistical significance of each of the independent variables (X1-4) at 95% degree of confidence, the researcher conducted a T-test whereby the statistically significant indicators are those where the T-stat > \( T_{k,n-k-1,a/2} = T_{4,128,0.025} = 1.960 \).

According to the T-test, at 95% degree of confidence, \( (9.60532)X_1, (4.20374)X_2, (5.783299)X_3 \) and \( (4.469077)X_4 > T_{k,n-k-1,a/2} = T_{4,128,0.025} = 1.960 \), implying that the statistically significant variables in the manufacturing sub-sector are Top Management
Commitment to Quality (X1), Employee involvement in operations (X2), Use of Benchmarks (X3), and Employee Training (X4).

**Table 4.7: Regression Analysis 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>24.09436</td>
<td>4.910137</td>
<td>-4.907064</td>
<td>0.0000</td>
</tr>
<tr>
<td>X1</td>
<td>9.942349</td>
<td>1.035086</td>
<td>9.605332</td>
<td>0.0000</td>
</tr>
<tr>
<td>X2</td>
<td>4.618108</td>
<td>1.098569</td>
<td>4.203747</td>
<td>0.0000</td>
</tr>
<tr>
<td>X3</td>
<td>5.186448</td>
<td>0.896797</td>
<td>5.783299</td>
<td>0.0000</td>
</tr>
<tr>
<td>X4</td>
<td>3.974685</td>
<td>0.889375</td>
<td>4.469077</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.759690</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean dependent variable</strong></td>
<td><strong>73.86466</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.752181</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>6.861293</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-442.3148</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.629043</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S.D. dependent variable</strong></td>
<td><strong>13.78283</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sum squared resid</strong></td>
<td><strong>6025.899</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F-statistic</strong></td>
<td><strong>101.1615</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prob(F-statistic)</strong></td>
<td><strong>0.000000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.3.1.5 Scatter graphs**

The scatter plots of the statistically significant variables i.e. Top Management Commitment to Quality (X1), Employee involvement in operations (X2), Use of Benchmarks (X3), and Employee Training (X4) are shown below. The scatter graphs show there is a strong positive relationship between (X) and (Y).
4.3.2 Regression Analysis for Successful QMP Implementation

4.3.2.1 Regression Analysis 2

The output table 4.8 below is for Y versus X5, X6, X7, X8, X9, and X10

The equation derived from regression 2 is as follows:

\[ Y = -37.63825 + 7.893205 X_5 + 5.850658 X_6 + 2.863589 X_7 + 3.883786 X_8 + 5.098365 X_9 + 0.493361 X_{10} \]

4.3.2.2 Hypothesis

The statistical significance of the model as well as the usefulness of each of the independent variables (X5-10) was ascertained by conducting an F-test & T-test using the following hypothesis:

\[ H_0: \beta_5=0, \beta_6=0, \beta_7=0, \beta_8=0, \beta_9=0, \beta_{10}=0 \]

\[ H_1: \beta_5 \neq 0, \beta_6 \neq 0, \beta_7 \neq 0, \beta_8 \neq 0, \beta_9 \neq 0, \beta_{10} \neq 0 \]

Whereby, \( H_0 \) - the null hypothesis - implies the model is not useful and \( H_1 \) - the alternate hypothesis – implies that the model is not useful.
According to the \( H_0 \), if a coefficient \((\beta_i) = 0\), then the distribution of the response variable \((Y)\) does not directly depend on the input variable \(X_i\), which can therefore be “dropped” from the model. Consequently, it is useful to test the hypotheses:

\[
H_0: \beta_5=\beta_6=\beta_7=\beta_8=\beta_9=\beta_{10}=0 \quad \text{versus} \quad H_1: \beta_j \neq 0 \text{ for at least one } j
\]

4.3.2.3 F-Test:

At 95% confidence interval, \(F_{k, n-k-1, \alpha} = F_{6, 126, 0.05} = 3.67\).

Since the \(F\)-stat = 39.95216 > \(F_{8, 3, 0.05} = 3.67\), we reject the null hypothesis and accept the alternative hypothesis. This implies that the model is statistically significant thereby implying that it is useful.

4.3.2.4 T-Test

To establish the statistical significance of each of the independent variables (\(X_5-10\)) at 95% degree of confidence, the researcher conducted a T-test whereby the statistically significant indicators are those whereby the \(T\)-stat > \(T_{k, n-k-1, \alpha/2} = T_{6, 126, 0.025} = 1.960\)

According to the T-test, at 95% degree of confidence, \((6.239637)X_5, (4.726003)X_6, (2.299218)X_7, (3.001799)X_8\) and \((4.340859)X_9 > T_{k, n-k-1, \alpha/2} = T_{6, 126, 0.025} = 1.960\), implying that the statistically significant variables in the manufacturing sub-sector are Vision and Plan Statement (\(X_5\)), Supplier Quality Management (\(X_6\)), Process Control and Improvement (\(X_7\)), Product Design (\(X_8\)) and Quality System Improvement (\(X_9\)).

According to the T-test, at 95% degree of confidence, \((0.415181)X_{10} < T_{k, n-k-1, \alpha/2} = T_{6, 126, 0.025} = 1.960\), implying that Recognition and Reward is the statistically insignificant variable in the manufacturing sub-sector.
Table 4.8: Regression Analysis 2

Dependent Variable: Y
Method: Pooled Least Squares
Date: 03/14/12 Time: 22:15
Sample: 1 133
Included observations: 133
Total panel (balanced) observations 133

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-37.63825</td>
<td>7.402062</td>
<td>-5.084832</td>
<td>0.0000</td>
</tr>
<tr>
<td>X5</td>
<td>7.893205</td>
<td>1.265010</td>
<td>6.239637</td>
<td>0.0000</td>
</tr>
<tr>
<td>X6</td>
<td>5.850658</td>
<td>1.237972</td>
<td>4.726003</td>
<td>0.0000</td>
</tr>
<tr>
<td>X7</td>
<td>2.863589</td>
<td>1.245462</td>
<td>2.299218</td>
<td>0.0231</td>
</tr>
<tr>
<td>X8</td>
<td>3.883786</td>
<td>1.293819</td>
<td>3.001799</td>
<td>0.0032</td>
</tr>
<tr>
<td>X9</td>
<td>5.098365</td>
<td>1.174506</td>
<td>4.340859</td>
<td>0.0000</td>
</tr>
<tr>
<td>X10</td>
<td>0.493361</td>
<td>1.188303</td>
<td>0.415181</td>
<td>0.6787</td>
</tr>
</tbody>
</table>

R-squared 0.655468 Mean dependent var 73.86466
Adjusted R-squared 0.639061 S.D. dependent var 13.78283
S.E. of regression 8.280474 Sum squared resid 8639.347
Log likelihood -466.2721 F-statistic 39.95216
Durbin-Watson stat 1.887219 Prob(F-statistic) 0.000000

4.3.2.5 Scatter graphs

The scatter plots of the statistically significant variables i.e. Vision and Plan Statement (X5), Supplier Quality Management (X6), Process Control and Improvement (X7), Product Design (X8) and Quality System Improvement (X9) are shown below. The scatter graphs show that there is a strong positive relationship between (X) and (Y)
4.3.3 Combined Regression Analysis

4.3.3.1 Combined Regression

The output table 4.9 below is for Y versus X1, X2, X3, X4, X5, X6, X7, X8, X9 & X10.

The equation derived from combined regression is as follows:

\[ Y = -46.79671 + 6.769933 X_1 + 3.822904 X_2 + 3.199374 X_3 + 2.899480 X_4 + 4.518513 X_5 + 2.805859 X_6 + 0.811791 X_7 + 0.703287 X_8 + 2.359439 X_9 + 0.913283 X_{10} \]

4.3.3.2 Hypothesis

The statistical significance of the model as well as the usefulness of each of the independent variables (X_1 to X_{10}) was ascertained by conducting an F-test & T-test using the following hypothesis:

\[ H_0: \beta_1 = 0, \beta_2 = 0, \beta_3 = 0, \beta_4 = 0, \beta_5 = 0, \beta_6 = 0, \beta_7 = 0, \beta_8 = 0, \beta_9 = 0, \beta_{10} = 0 \]
\[ H_1: \beta_1 \neq 0, \beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0, \beta_5 \neq 0, \beta_6 \neq 0, \beta_7 \neq 0, \beta_8 \neq 0, \beta_9 \neq 0, \beta_{10} \neq 0 \]

Whereby, \( H_0 \) - the null hypothesis - implies the model is not useful and \( H_1 \) - the alternate hypothesis - implies that the model is not useful.
According to the $H_0$, if a coefficient ($\beta_i = 0$), then the distribution of the response variable ($Y$) does not directly depend on the input variable $X_i$, which can therefore be "dropped" from the model. Consequently, it is useful to test the hypotheses:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = 0 \quad \text{Versus} \quad H_1: \beta_j \neq 0 \text{ for at least one } j$$

### 4.3.3.3 F-Test:

At 95% confidence interval, $F_{k, n-k-1, a} = F_{10, 122, 0.05} = 2.54$.

Since the F-stat = 63.97615 > $F_{8, 3, 0.05} = 2.54$, we reject the null hypothesis and accept the alternative hypothesis. This implies that the model is statistically significant thereby implying that it is useful.

### 4.3.3.4 T-Test

To establish the statistical significance of each of the independent variables ($X_1-10$) at 95% degree of confidence, the researcher conducted a T-test whereby the statistically significant indicators are those whereby the T-stat > $T_{10, n-k-1, 0.025} = 1.960$

According to the T-test, at 95% degree of confidence, ($6.774372)X_1, (4.083050)X_2, (3.880734)X_3, (3.790983)X_4, (4.869633)X_5, (3.086999)X_6$ and ($2.748170)X_9 > T_{10, 122, 0.025} = 1.960$, implying that the statistically significant variables in the manufacturing sub-sector are Top Management Commitment to Quality ($X_1$), Employee involvement in operations ($X_2$), Use of Benchmarks ($X_3$), Employee Training ($X_4$) Vision and Plan Statement ($X_5$), Supplier Quality Management ($X_6$), and Quality System Improvement ($X_9$).

According to the T-test, at 95% degree of confidence, ($0.915280)X_7, (0.740230)X_8$ and ($1.098130)X_{10} < T_{10, n-k-1, 0.025} = 1.960$, implying that Recognition and Reward is the statistically insignificant variable in the manufacturing sub-sector.
### Table 4.9: Regression output 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-46.79671</td>
<td>5.196101</td>
<td>-9.006121</td>
<td>0.0000</td>
</tr>
<tr>
<td>X1</td>
<td>6.769933</td>
<td>0.999345</td>
<td>6.774372</td>
<td>0.0000</td>
</tr>
<tr>
<td>X2</td>
<td>3.822904</td>
<td>0.936286</td>
<td>4.083050</td>
<td>0.0001</td>
</tr>
<tr>
<td>X3</td>
<td>3.199374</td>
<td>0.824425</td>
<td>3.880734</td>
<td>0.0002</td>
</tr>
<tr>
<td>X4</td>
<td>2.899480</td>
<td>0.764836</td>
<td>3.790983</td>
<td>0.0002</td>
</tr>
<tr>
<td>X5</td>
<td>4.518513</td>
<td>0.927896</td>
<td>4.869633</td>
<td>0.0000</td>
</tr>
<tr>
<td>X6</td>
<td>2.805859</td>
<td>0.908928</td>
<td>3.086999</td>
<td>0.0025</td>
</tr>
<tr>
<td>X7</td>
<td>0.811791</td>
<td>0.886932</td>
<td>0.915280</td>
<td>0.3619</td>
</tr>
<tr>
<td>X8</td>
<td>0.703287</td>
<td>0.950092</td>
<td>0.740230</td>
<td>0.4606</td>
</tr>
<tr>
<td>X9</td>
<td>2.359439</td>
<td>0.858549</td>
<td>2.748170</td>
<td>0.0069</td>
</tr>
<tr>
<td>X10</td>
<td>0.913283</td>
<td>0.831671</td>
<td>1.098130</td>
<td>0.2743</td>
</tr>
</tbody>
</table>

- **R-squared**: 0.839845  
- Mean dependent variable: 73.86466
- **Adjusted R-squared**: 0.826717  
- S.D. dependent variable: 13.78283
- **S.E. of regression**: 5.737409  
- Sum squared resid: 4015.980
- **Log likelihood**: -415.3300  
- F-statistic: 63.97615
- **Durbin-Watson stat**: 1.870660  
- Prob(F-statistic): 0.000000

### 4.3.3.5 Scatter graphs

The scatter plots of the statistically significant variables i.e. Top Management Commitment to Quality (X1), Employee involvement in operations (X2), Use of Benchmarks (X3), Employee Training (X4), Vision and Plan Statement (X5), Supplier Quality Management (X6) and Quality System Improvement (X9) are shown below. The scatter graphs show that there is a strong positive relationship between (X) and (Y)
4.4 Chapter Summary

This chapter provides an analysis of the response rate that was achieved based on the sample selected and across the 12 sub-sectors of the manufacturing industry. It also highlighted the importance placed by the top managers on the factors that affect the implementation of QMP and which set of framework is preferred by the managers. The next chapter presents the findings and conclusion of the study.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The overall aim of this chapter is to synthesize the findings of the previous chapters. It does this first by way of a summary and discussion of the main findings of the study with respect to each study objective. Conclusions based on the findings, recommendations and limitations of the study as well as suggestions for further study are also covered in this chapter. Every attempt was made to represent the facts with completeness and clarity.

5.2 Summary

The general purpose of this study was to identify the critical factors affecting the broad implementation of quality management programmes in the Kenyan manufacturing industry. The research questions that guided the study were: i) What are the influential factors that affect the implementation of QMP by Kenyan manufacturing industries? ii) What are the managerial implications and strategic impacts of successful implementation of QMP? and iii) What type of comprehensive framework is required for successful implementation of QMP in manufacturing industries?

The paper drew upon an explorative multiple case studies of the major manufacturing institutions in Nairobi that use the quality management programmes as a quality measurement tool, with rich empirical evidence from various data sources. The primary data was collected from a sample size of 369 using semi-structured questionnaires based on the research questions sent electronically. The data was summarized through qualitative and quantitative analysis using regression analysis.

In this respect, analysis of the aggregate sectoral data from all manufacturing sub sectors indicates that approximately 82.6717% of variations in the market share for the combined sectors are well explained by the independent variables. T-test X1, X2, X4, X5, X6 and X9 are the most significant predictors based upon p-value, meaning that the regression equation is statistically significant. Process Control and Improvement (X7), Product Design (X8) and Recognition and reward (X10) were found to be the least important variables for the comprehensive framework required for successful implementation of quality management programmes.
Respondents were asked to identify the degrees of importance of each motivating factor that might promote the implementation of QMP strategy in their firms. Interestingly, the result showed that top management commitment to quality was the most important driving force that promotes QMP implementation in the Kenyan Manufacturing sector. It is followed by Vision and Plan Statement (X5), Employee involvement in operations (X2), Use of Benchmarks (X3), Employee Training (X4), Supplier Quality Management (X6) and Quality System Improvement (X9). Process Control and Improvement (X7), Product Design (X8) and Recognition and Reward (X10) were the three factors that were found to be less significant in the implementation of QMP strategy in manufacturing firms.

It is interesting to note that there is a relationship between manufacturing type and the implementation of TQM strategy, where the findings indicated that 54.9% of respondents involved in QMP implementation have been received from firms engaged in Paper and Board, Chemicals and Allied, and Food and Beverage. This may be interpreted in light of the fact that these sectors are exposed to severe competition on quality against the large-scale domestic and international firms. Therefore, they are more willing to implement QMP in order to improve quality which is essential for their sustainability and viability in the increasingly stiff domestic and international competition.

The findings indicate that manufacturing firms have got ISO certification. The majority of ISO certified companies pointed out that adopting the ISO certification means implementing QMP. Unfortunately they have had this wrong assumption of QMP implementation. ISO certification should be regarded as a first step towards QMP. Although adopting ISO certification will ensure that a company's products meet customer specifications, having a quality assurance system may not be sufficient if there is no continuous improvement strategy which represents the core of implementing quality management programme.

The study also indicates that most manufacturing firms involved in QMP implementation have a larger number of employees (about 68% of them have more than 100 employees). This finding is consistent with Mann and Kehoe (1995) and Salaheldin (2003), who found in their study about factors affecting the implementation and success of QMP that companies with a large number of employees are more likely to have implemented QMP strategy.
5.3 Discussions

5.3.1 Influential Factors that Affect the Implementation of QMP by Kenyan Manufacturing Industries

The results of regression analysis in table 4.8 shows that top management commitment to quality, employee involvement in operations, use of benchmarks and employee training are regarded as driving forces that promote the implementation of QMP programmes in manufacturing firms in Kenya. According to Mann and Kehoe (1995), top management commitment to quality plays a major role towards the introduction of QMP strategy in manufacturing firms. There will be need and an opportunity for the introduction of QMP strategies so as to improve the whole operations performance. All of this will be realised when top management engages in implementing new innovative management tools.

According to Deming (1986), top management has the sole responsibility of instituting ongoing programmes such as training and education through which employees will embrace a continuous process of learning for the purpose of self actualization, that of work and intellectual growth. Top-management has the objective of ensuring the improvement of performance of both machine and employees. This will lead to the improvement of quality, increased output and as a result an improvement in pride of workmanship of employees. Management should also ensure the improvement of systems so as to make it possible for everyone to do a better job with greater satisfaction on a continuous basis. According to DuBrin (1995), top management is at liberty to choose a technology strategy.

Organizational choice of an appropriate strategy will greatly influence the success of any firm. Leadership will always involve having a vision of what the organization can become. Lack of effective leadership will lead to a difficulty in profit sustainability and high productivity. This will in turn interfere with the competitiveness of the firm. According to Lauand Anderson (1998), a positive managerial action and attitude towards quality usually leads to an increase in employee commitment to both QMP program and the firms' strategy. Top management has an objective of analyzing problems facing the organization, review of organizational vision and mission, and to effectively communicate the strategy needed to achieve organizational goals and objectives to employees for effective implementation. According to Randell and Mannas (1999), top management leadership which exhibits a strong, positive and open minded control will give rise to long term and sustainable business success. From the research, results illuminated the critical importance
of organizational leadership and the positive impact of creating an organizational form and
the institution of organizational practices to bolster the goal of organizational survival.
Research by DuBrin (1995) also supports a widely accepted view that leaders affect
organizational strategic business performance.

Research conducted by Hill (1996, 1997) focused on organizational learning which
includes exposing organizational members to new ideas, expanding their knowledge,
altering their behaviour, and internalizing new insights. This is regarded as one of the main
driving forces for the introduction of QMP especially through the effective use of quality
circles during the early stages of learning. Organizations have been encouraged to
effectively address the thorny issue of organizational learning so as to progress beyond
ISO 9000 certification. Organizational change should also go hand in hand with
organizational learning in order to achieve desired results. Organizations should employ
the use of team force to best harness the ideas and talents of all employees so as to solve
various problems that may be encountered. According to Rao and Raghunathan (1994),
team force places its focus on the reduction of activities that add cost but no value to the
end product not restricting to a particular area of business activity.

5.3.2 Managerial Implications and Strategic Impacts of Successful Implementation
of QMP

Organizations should continuously seek for ways of improving their employees’
satisfaction, commitment and motivation by carrying out regular evaluation. Employee
satisfaction data will enable top management to easily identify employees who are not
satisfied so as to take recourse and in turn improve QMP implementation. According to
Cherrington (1995), employee satisfaction studies have largely determined that job
attitudes are influenced mostly by the quantitative aspect of the job. Good pay policies
have resulted in positive satisfaction with pay. Another positive feeling of satisfaction may
be brought about by supervisors who are fair, considerate and highly competent. However,
employee satisfaction with a job may also be tied to other factors not directly related to the
job such as age, sex and work values. Those employees who possess a strong work ethic
also report greater satisfaction compared to those who reject the work ethic. Job
satisfaction may also be influenced by what has happened to employees off the job. Just as
much as work influences a person’s satisfaction with life in general so does the quality of
life away from work influence satisfaction with work. A decline in employee job
satisfaction can also be attributed to the frustrations and difficulties that people face in their personal lives.

Organizations can better understand their product quality status by analysing their product quality and comparing it with that of their competitors. This will help in identifying problem areas and therefore help in determining a solution to improving the quality of the products. According to Pfau (1989), a good quality image once obtained, will improve firms competitiveness as well as long term opportunity for success. Therefore, measurement of product quality should be continuously conducted so that immediate actions can be taken. According to DuBrin (1995), business strategy development which is a critical hinge for business success or failure in today’s quality performance, must place high priority on product quality for today’s oriented markets. This is because product quality has become a major business strategy. According to Ahire (1996), the primary objective of a firm’s quality efforts should be to improve product quality and in doing so, product quality to be used as a primary indicator of the firm’s quality efforts. As a result, firms have increasingly realised the strategic importance of product quality (Andersc 1994). Firms have increasingly viewed product quality as a strategic asset to improve the firm’s global competitiveness (Steingard and Fitzgibbons, 1993).

Organizations can improve QMP implementation efforts through customer satisfaction information efforts through customer satisfaction information which is a new medium for performance evaluation. Customer satisfaction can also be used in seeking opportunities for improving product and service quality and also to study the time dimension of implementation. According to Feigenbaum (1991), the fundamental determinant of business health, growth and economic viability is the attainment and maintenance of satisfactory levels of customer satisfaction. The Malcom Baldrige National Quality Award (1999) considered customer focused results as the most important factor, while the European Quality Award (1994), returned a high score for customer satisfaction. Customer satisfaction is therefore considered the new type of market based performance measurement by many organizations as it provides an important measure of the firm’s past, current and future financial health.
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5.3.3 Comprehensive Framework Required for Successful Implementation of QMP in Industries

The result of regression analysis in Table 4.8 clearly shows that vision and plan statement, supplier quality management, process control and improvement, and quality system improvement make up a comprehensive framework that promote the implementation of QMP programmes in manufacturing firms in Kenya. Employees will be encouraged to work hard at improving quality through a good vision statement. According to Bart and Baetz (1998), those firms with a vision statement exhibited a significant difference from those firms without a vision statement in terms of financial measures. Vision statements have also been seen to influence organizational members' behaviours and lead to an improved resource allocation. Product quality may be improved by good quality policies from management. Firms should also maintain a constant quest for increasing quality levels through targeted quality goals. According to Locke and Latham (1990), the goal setting theory predicts that motivation is greatest when people focus their attention on achieving clear, specific and challenging goals. Effective implementation of a quality improvement plan will contribute to improvement of product quality.

Kenyan manufacturing firms are constantly faced with the challenge of purchasing materials and parts of required quality. Purchasing departments should therefore focus mainly on acquiring quality products instead of focusing on cost minimization as their major objective. This will result in firms manufacturing quality products. Firms that focus on obtaining the lowest price for technically acceptable components will only realize low quality products. Firms should also strive to pursue long-term relationships with suppliers so as to benefit from improved quality and process performance and continuous cost reductions. Suppliers can be made to contribute to quality performance through their input on the firms' product design teams and also selection of suppliers based on product quality rather than price. Improving supplier quality management will ultimately lead to the improvement of the firms' product quality.

Process control is usually aimed at making the process stable through managing and reducing variations. A reduction in process variation leads to increased output uniformity, a continuous reduction of rework and mistakes and that of machine time and materials. Firms usually compute the ability of the process to hold product tolerance through the quantification of process capability. If production requirements can be ensured through
process capability then various processing parts or components can be ensured automatically. Mechanization and machination play a very important role in product quality; hence good maintenance of equipment can contribute to product quality. Quality tools have over the years contributed significantly to quality improvement as effective means of analysis and control. Process improvement can be realised by eliminating special causes of variation and also by reducing common causes of variations. All this can only be realised through effective implementation of statistical process control.

Employee should be better helped to understand what to do in their work through documenting quality systems. Implementation of ISO 9000 brings with it benefits such as reduced wastages, an increase in customer satisfaction, improved employee morale, a more efficient and responsive organization, a better position in the market place and bigger profits. Other benefits of ISO 9000 adoption include; improvement in efficiency of operations, improvement in utilization of time and materials, clear definition of responsibilities and authorities, improvement in accountability of individuals, departments, and systems, improvement of quality of information and communication, a formalized system with consistent quality, a punctual delivery, and a framework which ensures for future quality improvement, fewer rejections, less repeated works and warranty costs.

5.4 Conclusions

The study came up with the following conclusions:

5.4.1 Influential Factors that Affect the Implementation of QMP by Manufacturing Industries

The author's results found that top management rates highly the factors that drive implementation of quality management programmes. These factors include; use of benchmarks, employee training, employee involvement in operations and top management commitment to quality. This validates the usefulness of the four factors as implementation tools. one that will allow organizations to improve their competitiveness.

5.4.2 Managerial Implications and Strategic Impact of Successful Implementation of QMP

The author found out that top management rank highly the impact of quality management programmes implementation on factors like employee satisfaction, improved product quality, customer satisfaction and a realization of strategic business performance. This
shows that top management strive to implement quality management programmes to benefit from increased business and improved product quality so as to gain a competitive advantage across the industry.

5.4.3 Comprehensive Framework Required for Successful Implementation of QMP in Industries

The results show that top leadership highly ranks supplier quality management, quality system improvement and vision and plan statement. This validates the usefulness of the three factors as part of a comprehensive framework for successful implementation of quality management programmes. Process control and improvement, product design and recognition and reward do not have a positive impact on successful implementation of quality management programmes.

5.5 Recommendations

Based on the findings of the study, the researcher came up with the following recommendations:

5.5.1 Recommendation for Improvement

5.5.1.1 Influential Factors that Affect the Implementation of QMP by Manufacturing Industries

The study recommends that emphasis should be put on the incorporation of all the principles of QMP for successful implementation of QMP and for the success of the organization. The role of leadership, employee participation, use of benchmarks and employee training are apparent for the success of the firm in terms of market share, productivity, profitability and overall business performance.

5.5.1.2 Managerial Implications and Strategic Impacts of Successful Implementation of QMP

The study recommends that firms should be flexible enough when implementing QMP and management should develop a quality culture by changing perception and attitudes towards quality. Organization inflexibility and inertia has provided an environment that weakened and erodes the foundation of QMP. Manufacturing firms should also endeavor to implement QMP programs as this will lead to increased product quality, increased employee performance and reliability and durability of the firms products.
5.5.1.3 Comprehensive Framework Required for Successful Implementation of QMP in Industries

The study recommends that firms should establish their quality management systems according to the requirements of ISO 9000 for effective QMP implementation and for the success of the firm. Flexibility of the organizational culture will determine the success or failure of implementing QMP. Resistance to change, lack of commitment, cascading the program to the bottom of the pyramid are some of the challenges faced in QMP implementation.

5.5.2 Recommendation for Further Research

Several channels of future research can be pursued to better understand the critical driving and resisting forces affecting QMP implementation, as illustrated below:

This survey is significantly dated and developing a deeper understanding of the driving and inhibiting forces to QMP implementation in practice today remains a task that requires further attention from researchers, whatever their motivations. In so doing it also hopes to encourage researchers to go deeply with such forces by conducting case studies.

Multi-faceted and more sophisticated empirical research needs to be undertaken in order to evaluate the relative strength of the driving and restraining forces in different LDCs.

Further research needs to be conducted with regard to exploring the driving and inhibiting forces to TQM implementation in other types of operations, such as transportation, construction and communication.
REFERENCES


Luleå University of Technology, Luleå.


APPENDICES

Appendix 1: Cover Letter

Reasons for this study
I am currently working on my thesis in partial fulfillment of Masters Degree in Business Administration at United States International University. This questionnaire involves collecting valuable information that will evaluate the factors that affect successful implementation of quality management programmes in manufacturing firms.

My academic supervisor for this research is Prof. Katuse, who is a lecturer in School of Business at United States International University, Nairobi.

Everlyne Mwencha
School of Business
United States International University
E mail address: evemwencha@gmail.com

Your involvement in this research study
This study is based solely on voluntary basis. This questionnaire should take about 30 minutes to complete.

When you have completed this e-mailed questionnaire please send it back to me electronically.

Issues of confidentiality
Any information that you provide will be confidential to the researchers. All participants will be anonymous such that no personal information concerning you or your company will be made public either during, or after the completion and release of this study. During this study, no-one else apart from Prof. Katuse and myself, will have access to any participants answered questionnaires. The questionnaires will be destroyed once the study has been completed.
Appendix 2: Questionnaire

SECTION A: GENERAL INFORMATION

1. What is the name of your organization?

2. Age of respondent

18-28 Years ( )

29-39 Years ( )

40-50 Years ( )

50 Years and Above ( )

3. What is your position?

4. What is the number of employees in your organization?

0-50 ( )

151-200 ( )

51-100 ( )

201-250 ( )

101-150 ( )

>250 ( )

5. What is the major business of your organization?

Building, Construction and Mining Sector ( )

Chemicals and Allied Sector ( )

Electrical and Electronics Sector ( )
Food-Processing Sector ( )
Leather and Footwear Sector ( )
Metal and Steel Sector ( )
Motor Vehicle Assembly and Components Sub-Sector ( )
Paper and Paper-board Sector ( )
Pharmaceutical and Medical Equipments Sector ( )
Plastic and Rubber Sector ( )
Textile and Apparel Sector ( )
Timber, Wood and Furniture Sector ( )

6. Is your company ISO certified?
YES ( ) NO ( )

7. If yes, which accreditation did you obtain?

8. Does your company apply quality management programmes?
YES ( ) NO ( )

8. If yes, proceed to Section B

9. If no explain why?

.................................
SECTION B: QUALITY MANAGEMENT PROGRAMME IMPLEMENTATION

Considering your organisation's experience, please use the following scale to indicate your level of agreement (1 being Strongly Disagree while 5 being Strongly Agree) with each of the identified issues associated with your assessment of the service quality.

1. Please select how applicable each of these statements is in describing the factors that drive implementation of quality management programmes.

   | 1 | 2 | 3 | 4 | 5 |
---|---|---|---|---|---|
Top Management Commitment to Quality |  |  |  |  |  |
Employee Involvement in Operations |  |  |  |  |  |
Use of Benchmarks |  |  |  |  |  |
Employee Training |  |  |  |  |  |

2. Please select how applicable each of these statements is in describing the importance of the comprehensive framework required for successful implementation of quality management programmes in industries

   | 1 | 2 | 3 | 4 | 5 |
---|---|---|---|---|---|
Vision and Plan Statement |  |  |  |  |  |
Supplier Quality Management |  |  |  |  |  |
3. Please select how applicable each of these statements is in describing the Managerial Implications and Strategic Impacts of successful implementation of quality management programmes in industries.

Employee Satisfaction  Yes ( )  No ( )
Product Quality  Yes ( )  No ( )
Customer Satisfaction  Yes ( )  No ( )
Strategic Business Performance  Yes ( )  No ( )

SECTION C: SERVICE QUALITY INFORMATION

1. What in your opinion is the (%) rate of implementation of QMP in this organization?

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