EFFECTS OF TOTAL QUALITY MANAGEMENT AND SUPPLY CHAIN MANAGEMENT ON ORGANIZATIONAL PERFORMANCE
A CASE STUDY OF BIDCO OIL REFINARY (K) LTD
THIKA, KENYA

PRESENTED

BY

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A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF BUSINESS AND MANAGEMENT FOR PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE AWARD OF A DEGREE OF SUPPLY AND PROCUREMENT OF KAMPALA INTERNATIONAL UNIVERSITY

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APPROVAL

This is to satisfy that my approval has been given for this report to be submitted to the school of business and management as a requirement for the partial fulfillment for the award of degree in supply and procurement management.

Supervisor;

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Date: 3/10/2011

DEDICATION

To my beloved parents and family, Hajji Abdullahi, Anab, Amina Heybe and to all my friends.

ACKNOWLEDGEMENTS

I thank Allah the almighty for giving me all the necessary strengths, knowledge, wisdom financial and moral ability to complete my research report.

I wish sincerely to express my heartily felt gratitude to everyone who assisted me in completion of this research report. My primarily obligation is to Kampala International University Management and to my Supervisor Mr. Henry Ochieno Barasa for his useful comments and suggestions on the original manuscript of this report.

I would like to thanks also the management of Bidco Oil Refinery Limited for giving me a chance of two month period of undertaking field attachment with them.

Sincerely thanks goes to all the Lecturers of Business and Management for providing me with congenial atmosphere of knowledge gaining that enabled me to complete this report.

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It would be impossible to mention all the names of people who helped me in preparing this research report. I therefore take this chance to extend my appreciation to all whom in one way or another have contributed to the successful completion of this research report.

LIST OF ABBREVIATIONS

FMEA	Failure Mode Erriors Analysis
TQM	Total Quality Management
SCM	Supply Chain Management
QA	Quality Assurance
QC	Quality Control
CRM	Customer Relationship Management

DEFINITION OF TERMS

Total Quality Management is the wide organizational management of quality management consists of planning, organizing, directing, control and assurance.

Supply chain management emphasizes the importance of relationship within each distribution channel to enhance long-term performance.

Quality assurance As defined by BSEN: ISO 8402,(1995) all those planned and systematic activities implemented within the quality systems and demonstrated as needed to provide a adequate confidence that an entity will fulfill requirements for quality

Quality control as defined by bill Haskins (2008) CIMA is all those activities that are used to fulfill requirement for quality which is concerned with defect detection and correction and determining where, how, and at what intervals inspection should take place.

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ABSTRACT

This research report is about "Total Quality Management on organizational performance", a Case Study of Bidco Oil Refinery in Thika, Kenya.

The research was conducted in two (2) month during the practical training. Much effort was put on studying procedures and technicalities involving the understanding ability in relating the variable and the procedures of Total Quality Management (TQM).

Chapter one, describes an overview of Total Quality Management and background of Bidco Company, the statement of the problem, research objectives, research questions, Scope of the study, significant of the study, the conceptual frame work which describes the relationship between the two variables and maps of the place.

Chapter two has an overview of the related literature review on the TQM on organizational performance. It expresses the features of effective TQM systems, Quality control, objectives of TQM, Quality Assurance limitations of TQM.

Chapter three contains and express the methodology used to collect data. The study used qualitative and quantitative design to gather information. The data were collected through the use of interview, questionnaires, observation and focus group discussion.

Chapter four gives an overview on how collected data or findings were analyzed and presented. The information collected from the respondents through questionnaires and interview guide questions were used in order to answer the objectives of the study.

Chapter five contains the summary of the findings, conclusions, recommendation. Various findings have been obtained from chapter four where clear and satisfactory conclusion and recommendation have been made on the basis of the research objective stipulated in chapter one.

I hope this report will not only serve as an academic assignment but also as an instrument to enlighten various control on organization's Quality management within and outside of Bidco Oil Refinery Limited. I therefore expect the report be a good guide towards Total Quality Management on how and where to devote more effort so as to achieve Bidco Oil Refinery Limited goals of quality end products.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In nowadays the core ideas of total quality management set forth by W. Edwards Deming. Joseph Juran and Kaoru Ishikwa has gained significant acceptance and has become something of social movement. It is recognized as a comprehensive management paradigm for enhancing organizational performance and competitiveness. Kanji regarded quality management as the 'the second industrial revolution' (1990:4)

TQM is the wide organizational management of quality management consists of planning. organizing, directing, control and assurance. TQM is called total because it consists of two qualities: quality of return to satisfy the needs of the shareholders or quality of products. Quality is delighting the customer by fully meeting their needs and expectations. These may include performance, appearance, availability, delivery, reliability, maintainability, cost effectiveness and price. It is therefore imperative organization knows what these needs and expectations are in addition having identified them, the organization must understand them and measure its own ability to meet them.

Quality starts with market research- to establish the true requirement for the product or service and the true needs of the customers. However, for an organization to be really effective quality must span all functions, all people all departments and all activities and be a cómmon language for improvement. The cooperation of everyone at every interface is necessary to achieve a total quality organization. In the same way the Japanese achieve this with companywide quality control.

TQM is an approach that seeks to improve quality and performance which will meet or exceed customer's expectations. This can be achieved by integrating all quality related function throughout the company. TQM looks at the overall quality measures used by the company

including managing quality design and development, quality control and maintenance, quality improvement, quality assurance. TQM takes into account all quality measures taken at all levels.

Traditionally TQM has been considered as functional/ operational level strategy, where most of the research and theory building in TQM is related to micro-level of organization like organizational structure. Accordingly there is needed to look at quality management from the supply chain view point to define a framework for its implementation to improve performance.

Despite of all importance attached to TQM, but in the current buyer's market with global hard competition, enterprises cannot respond rapidly to the customer's expectation through TQM mechanism. Thereupon, a kind of new operation mechanism i.e. supply chain management need to be integrated whereby organization rely on their supplier more and more heavily because, the products quality and manufacturing process of supplier has great effect on quality of final product of core enterprise. It means a company ability to deliver quality products and services is often tied up to the dynamics of its suppliers one faulty part, one late shipments, can send rippling effect through the production system and can even bring operation to a grinding halt thus there is need to work hand in hand with its suppliers to refine products and delivery schedules

The group of firms that provides all the various process required to make finished products is called the supply chain. The chain begins with provider of raw materials and ends with the company that produces the finished product that is delivered to the final customer. Through process called supply chain management. Company now integrates all of the facilities, function, and activities involved in production of goods and services going from supplier to customer.

Bidco Company limited is a good example. In particular Bidco Kenya which had been practicing TQM in their process and systems in cost efficient way in identifying and eliminating waste through continuous improvement in pursuit of perfection which they had introduced 2002 to attain quality product. Vimal B. Shah said is about change and the change begins with how we lead " we believe in having team leaders who mentor and build their teams that can drive us

towards our vision "TO GRAB, GROW, SUSTAIN NUMBER ONE MARKET SHARE IN THE AFRICAN MARKETS."

It gives them various tools to carry out the improvement programs, projects or workshops which they term them as (4k) *(KUPANGA, KUSAFISHA, KUDUMISHA, KUFUNDISHA)* ensuring them and encouraging small-group activities, workers management relations, productivity improvement, total quality control, suggestion systems, ensuring that there are zero defects on products quick change circles from one process to another. Quality function deployment (QFD) and ensuring everything is done on time. (WWW.BIDCO.COM).

1.2 THE CHOICE OF BIDCO OIL REFINERY

The researcher choice Bidco oil refinery Thika, Kenya branch for a number of reasons amongst them which; Bidco entered the edible oil and fats in business in 1991 when Kenya was going through a difficult time. But within a short span, Bidco has asserted itself into a leading position as East and central Africa largest and most advanced edible oil fats and hygiene products manufacturer; it has also seen itself as an African company deeply rooted in the soil of East Africa acting regionally but thinking globally. The thika factory is the largest plant in East and Central Africa it has installed the state of the art refinery plant from Desmet, Belgium, which has effective control that keep all emissions and effluents on the lowest possible limits, while their productions systems ensures that they have zero wastage which has built a competitive advantage and achieved cost leadership.

1.3 STATEMENT OF PROBLEM

Despite the company implementing the total quality management system to improve on its productivity, it has continued to make fewer sales of their products and hence low sales revenue (Bidco financial and budget report (2005-06).

1.4 PURPOSE OF THE STUDY

To investigate the relationship between total quality management and the supply chain of an organizations of Bidco company limited.

1.4.1 RESEARCH OBJECTIVES

- Application of total quality management and supply chain management at Bidco Company limited
- Setting quality standards strategies in Bidco Company limited
- Improving the benefits of total quality management at Bidco Company limited
- Providing solutions to the challenges of total quality management and supply chain management
- Improving the relationship of total quality management and supply chain management towards the cross-function key performances

1.5 RESEARCH QUESTIONS

- How is total quality management applied at Bidco Company limited?
- How are quality standard strategies set in Bidco Company limited?
- How do they work together to support the cross –function key performances indicators to assure total quality?
- What are the benefits of total quality management in the supply chain at Bidco Company limited?
- What are the challenges encountered in applying total quality management and supply chain management at Bidco?

1.6 SCOPE OF THE STUDY

Under the scope the researcher would consider the geographical and content scope.

1.6.1 GEOGRAPHICAL SCOPE

The researcher carried out the research at Bidco company limited Kenya branch in Thika, 42 km away from the capital city Nairobi to Garissa district of North eastern province. Started over 35

years ago, Bidco has asserted its position as the East and Central Africa's leading most advanced edible oil and hygiene products manufacturers and marketers. The Company is the brainchild of Bhimji Depar Shah the grand patriarch of Bidco after whom the company is named. The name BIDCO is simply derived from his initials B.D. to which Co has been added making the word BIDCO. (WWW.BIDCO.COM).

1.6.2 CONTENT SCOPE

Based on the interest of the researcher, the researcher collected the data determining the relationship between total quality management and supply chain of an organization.

1.7 SIGNIFICANCE OF THE STUDY

The study will add to a body of available literature on total quality management systems and supply chain management

The study will assist managers to understand the importance of integrating supply chain management to total quality management in the organization process in enhancing organization productivity

The study intends to benefits the manufacturing industries to know how to effectively and efficiently implement total quality management from their supply chain to attain acceptable quality product

The study will also encourage organizations whether in service oriented and manufacturing industries who have over the years neglected TQM in their supply chain for optimizations of their process to attain zero defects

The study also contributes towards the attainment of the degree program and its partial fulfillment of my undergraduate program

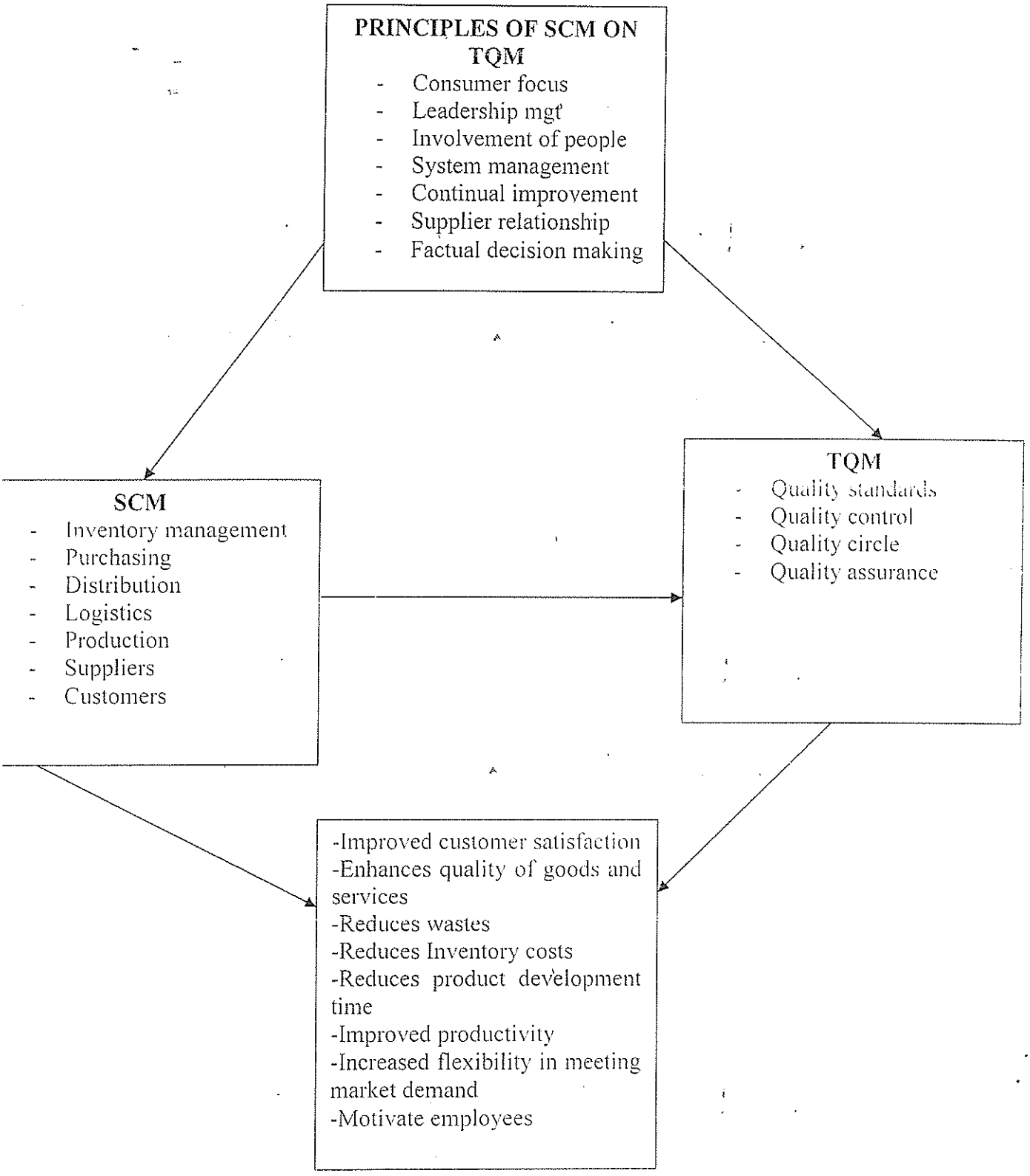
1.8 CONCEPTUAL FRAMEWORK

Conceptual framework is the link between independent and dependent variables in research project

TQM is philosophy about quality that involves everyone in the organization. It follows the success of TQM depends on a genuine commitment to quality by every organizational member and its supply chain through principle of SC quality management on TQM.

In the current buyer's market with global hard competition, enterprises cannot respond rapidly to the customers' demand through traditional operation mechanism. Therefore there is need to integrate from the supply chain since the product quality and manufacturing process of suppliers has great effect on quality of final product of core enterprise. It means that the emphasis of research and practice of TQM has transferred from enterprise focus to supply chain focus. Not only the high quality of product and service but also the high level of quality control of the whole supply chain system ensures the competition advance. The essence of competition advantages are not pursuing product quality and process quality simply, but the performance of the whole supply chain system. Therefore, the establishment of quality management system of supply chain based on the management ideas of ISO9000 will promote the involvement of all the members and facilitate the implementation of quality control of the whole supply chain system

CONCEPTUAL FRAME WORK



Source: research 2010

1.9 Map representation and photos

Source: www.googlemaps.com

CHAPTER TWO
LITERATURE REVIEW

2.0 INTRODUCTION

In this chapter the researcher extracted the necessary literature in line with total quality management and supply chain of an organization.

2.1 OVERVIEW OF TQM AND SUPPLY CHAIN

2.1.1 TQM is management approach that originated in the 1950's and has steadily become more popular since the early 1980's. It is a description of the culture attitude or organization that strives to provide customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations with process being done right the first time and defect and waste eradicated from operations.

TQM is about leadership, planning and improvement and it is defined as managing the entire organization so that it excels on all dimensions of product and services that are important to the customer (Chase and Aquilano 1995).

TQM is essentially a management philosophy, and it has become preferred approach for improving quality productivity in organization. Various terminologies have been used to describe the general concept of TQM; Total quality control, total quality leadership. Total quality improvement program. continuous quality improvement and total quality services (Lemieux 1996).

Look at another angle as defined by the international organizations for standards (ISO) it is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfactions and benefit to all members of the organization and to society (ISO 8402:1994).

TQM has not been independent of its environment. As its incentive pay positive effect on customer and quality performance (Sim and Killough 1998), According to Ittner and Larcker (1995) demonstrated that product focused TQM is linked to timely problem solving information and flexible revisions to reward systems. (Chendel, 2003) It is associate system including of timely, flexible, externally focused information; close interaction between advanced technologies and strategies and non-financial performance.

It is therefore important to develop the theory of quality management (QM) that can be empirically validated. It is necessary to empirically to investigate linkages among TQM element and identity the elements critical to improving a firm operation performance. To this end, Ahire et al; (1986) present a comprehensive set of TQM implantations and outcome. Thus, TQM gives everyone in the organization responsibility for quality at every stage of production, from the initial design stages after sales services. If a problem is detected during any stage of the production process, it is solved by that person, before it affects subsequent production stages. Therefore, problems are eliminated before they impact on the final customers.

Specifically their instrument included ten TQM implementation; management commitment, customer focus supplier quality management, design quality management benchmarking, statistical process control (SPC) usage, internal quality information usage, employee empowerment, employee involvement and employee training, along with the product quality TQM outcome construct.

Supply chain is a sequence of interdependence tasks linking the flow of goods from the original source of raw materials through to the final customer' Michael porter uses the term value chain to stress that each activity in the supply chain can be evaluated in terms of how it adds value and incurs costs.

Supply chain management (SCM) is an approach to coordinating the functions and processes associated with the order fulfillment cycle, with the objective of delivering what the final customer wants at the time and place the customer desires it, in a manner that minimizes total costs for the organizations linked together in the chain. A supply chain ca include a number of

functional areas within a firm-such as production, distribution and marketing, the supply chain also typically includes other firm-such as suppliers, transportation carriers, warehouses, retailers as well as the end customers themselves (Chopra and Meindl, 2001). From a process viewpoint, SCM can coordinate order management; production and inventory management material management; distribution and transportation; and product design.

Total quality management has an impact on supply chain. In the private sector, issues of cost, quality, delivery and flexibility in the supply chain can determine a company's competitiveness in the market, in the public sector, the need for more effective and efficient performance place the onus on the supply chain management to add value and reduce waste (Jim Downey 2008)

To operate at optimal efficiency, a company's supply chain needs to be integrated. This means that

Each link in the chain is driven by information received from others.

Value is created when all the links in the chain are integrated to produce an efficient flow of goods from end to end.

Supply chain operations within an organization should be constantly reviewed to identify where improvements can be made or deficiencies eliminated. One method to help do this is to perform a series of benchmarking tests on their supply chain processes.

2.1.2 Supply chain management emphasizes the importance of relationship within each distribution channel to enhance long-term performance. Long-term relationship with suppliers, customer intermediaries allow more streamlined end to end operation to develop. This creates value through greater flexibility.

In the simplest terms, supply chain management (SCM) lets an organization get the right goods and services to the place they're needed at the right time, in the proper quantity and at an acceptable cost. Efficiently managing this process involves overseeing relationships with suppliers and customers, controlling inventory, forecasting demand and getting constant feedback on what's happening at every link in the chain.

The supply chain involves several elements:

• **Location**. It's important to know where production facilities, stocking points and sourcing points are located; these determine the paths along which goods will flow.

• **Production**. An organization must decide what products to create at which plants, which suppliers will service those plants, which plants will supply specific distribution centers, and, sometimes, how goods will get to the final customer. These decisions have a big impact on revenue, costs and customer service.

• **Inventory**. Each link in the supply chain has to keep a certain inventory of raw materials, parts, subassemblies and other goods on hand as a buffer against uncertainties and unpredictability. Shutting down an assembly plant because an expected part shipment didn't arrive is expensive. But inventory costs money too, so it's important to manage deployment strategies, determine efficient order quantities and reorder points, and set safety stock levels.

• **Transportation**. How do materials, parts and products get from one link in the supply chain to the next? Choosing the best way to transport goods often involves trading off the shipping cost against the indirect cost of inventory. For example, shipping by air is generally fast and reliable. Shipping by sea or rail will likely be cheaper, especially for bulky goods and large quantities, but slower and less reliable. So if you ship by sea or rail, you have to plan further in advance and keep larger inventories than you do if you ship by air.

Managing the Chain

Once you've determined all of the elements in the supply chain, how do you manage the chain? There are three main paths in the process:

• **Product flow**:- includes the movement of goods from a supplier to a customer, as well as customer returns.

• **Information flow**:- involves transmitting orders and updating the status of delivery.

• **Financial flow**:- consists of credit terms, payments and payment schedules, plus consignment and title ownership.

Juggling these elements involves record-keeping, tracking and analysis by many departments. Supply chain software, especially large, integrated packages, combines many different technologies to give a single view of supply chain data that can be shared with others.

SCM applications fall into two main categories: planning applications and execution applications. Planning applications determine the best way to route materials and the quantities

of goods needed at specific points. When such applications work well, they make possible the "just-in-time" delivery of goods. Execution applications track financial data, the physical status and flow of goods, and ordering and delivery of materials.

2.1.3 Key feature of flexible supply chain

Customer relationship management (CRM) - enables companies to engage in closer customer relationship. This helps them to identify and satisfy the customer needs. They are also better able to forecast trends and improve the customer's experience of the company's product and services.

- **Integrated Planning** – incorporates customer demand with production systems to enhance the matching of supply and demand. This helps to reduce wastage and maximize efficiencies at each stage of the supply chain.
- **Adaptive technology and process**-enables real-time, dynamic and adjustments to the supply chain in order to respond better to changes in the requirement

When developing a supply chain strategies an organization needs to consider the entire network in which it operates before deciding on the most appropriate strategy. This means taking a holistic view of the end to end process rather than seeing each supply chain operations as a separate component. This strategy should include:-

- **Inventory management/planning**-inventory management plays a key role in the movement of materials and products throughout the chain.
- **Purchasing**- purchasing is responsible for obtaining materials, components, supplier and services required for use in productions.
- **Distribution/logistics**- distribution moves finished products from production to customers.

2.2 TQM PRINCIPLES

TQM is based on three important principles

A focus on product improvement from customer's viewpoint. The key ideas are product improvement and customer. According to Juran (1988) emphasized the importance of achieving annual improvement in quality and reduction in quality-related costs. Any improvement take an organization to levels of quality performance that have previously not achieved is termed as

"breakthrough", breakthroughs are focused on improving or eliminating chronic losses. All breakthroughs follow a sequence of discovery, organization, diagnosis, corrective action and control. The term customer in this context is associated with "quality chains, which emphasizes the linkage between suppliers and customers (Kenneth Lysons and Brain Farrington 2003)

Quality chains are both internal and external. Thus, internally purchasing is customer of design and supplier production staff within a function or activity are also suppliers and customers like all chains, the quality chains is no longer that its weakest link without strong supplier-customer links both internally and externally, TQM is deemed to be failure. Quality chains are one way to outmode the functional (Garvin D. Sloan management review 1985)

The first step in implementing internai quality chain approach is for each activity to determine answers to the following questions

Internal Customers

1. Who are my internal customers?
2. What are their true requirements?
3. How do I find out what their true requirement?
4. Do I have necessary capability to meet their requirement? (if not what must change to improve the capability)
5. Do I continually meet their requirement?(if not then what prevents this from happening when the capability exists)
6. how do I monitor changes in their requirements

External Customers

An external customer is one who isn't a part of an organization, rather is one who receives service or product from the organization. They are the ones who pay for a service or product and can make or break an organization. They have a choice. If a particular product or service does not please them, they can easily find another company that offers a better product or services.

1. Who are our external customers?
2. What are their true requirements?
3. How can we as the organization satisfy their requirements?
4. How can we retain them in order to a competitive advantage over our competitors?

Internal Suppliers

1. Who are my internal suppliers?
2. What is my true requirement?
3. How do I communicate my requirement?
4. Do my suppliers have capability to measure and meet requirement?
5. How do I inform them in case of changes in the requirement?

External Suppliers

1. Who are my external suppliers?
2. What are my true needs and expectations?
3. How do I communicate my needs and expectations to my suppliers?
4. Do my suppliers have the capability to measure and meet these needs and expectations?
5. How do I inform them of changes in my needs and expectations?
6. As well as being fully aware of customers' needs and expectations, each person must respect the needs and expectations of their suppliers. The ideal situation is an open partnership style relationship, where both parties share and benefit.

The second step based on answers to questions such as the above, is to determine the levels of services that a function such as purchasing will provide.

- Recognition that all personnel at all levels share responsibility for product quality according to Zaire (1991) the Japanese concept of *kaizen* (ongoing improvement) affect everyone in an organization at all levels. It is therefore based on team rather individual performance, some consequence of this principle include:
  - provision of leadership from the top
  - Creation of a quality culture dedicated to continuous improvement.
  - Teamwork that is quality circles
  - Adequate resource allocation
  - Quality training of employees
  - Quality feedback.

- Recognition of the importance of implementing a system to provide information to managers about quality process that enable them to plan, control and evaluate performance.

2.3 KEY ELEMENT OF TQM

2.3.1 EMPLOYEE INVOLVEMENT

TQM involves every employee in quality assurance process. Workers are trained in quality methods and are empowered to stop a work process if they feel that products or services are not meeting quality standards. Managers also encourage employees to speak up when they think of better ways of doing things. This exemplifies a participative management style- the sharing of information at all levels of the organization by directly involving employees in decision making. Thus, companies increase employee's powers in organization and improve the flow of information between employees and managers.

2.3.2 CUSTOMER FOCUS

Focusing on the customer simply means finding out what customers really want and then providing it. This approach requires casting aside assumption about customers and relying instead on accurate research. It also requires developing long-term relationship with customers.

2.3.3 BENCHMARKING

This element of TQM involves comparing your company's process and products against the standards of the best companies or your competitor in the same market and then working to match or exceed those standards. This process entails rating the manufacturing process, product development, distribution and other key functions against those of acknowledged leaders; analyzing how those role models achieve their outstanding results; and then applying that knowledge to make quality improvement.

2.3.4 CONTINOUS IMPROVEMENT

It requires an ongoing effort to reduce defects, cut costs, slash production and deliver times, and offer customers innovative products. Improvement are often small, incremental changes that add up to greater competitiveness over the long run. Because responsibility for such improvement often falls on employees, it becomes management's job to provide employees incentive that will motivate them to want to improve.

2.4 Supply chain quality management based on the TQM principles

2.4.1 Customer focus

Customer focus is the core principle and idea of TQM because quality effort comes of customer's needs and ends with customer's acceptance. In supply chain circumstance, customer includes not only the end user but also many in-between users, such as suppliers, manufacturers, sellers. However, more than half of the quality problems in supply chain are resulted by specifications because of the inadequate communications between the members of supply chain. In many cases, the procurement specifications released by buyers are equivocal while suppliers dare not to argue against buyers on the specifications in the bidding process. Juran, J.M. (1974).

Therefore, the core enterprise must pay attention to the needs and expectation of end users, and all the members of supply chain must pay attention to the needs and expectation of their backward users. The needs and expectation of end users should be deployed layer upon layer in the whole supply chain system. The end users will satisfy if all the member of supply chain can satisfy the needs of their backward users.

Moreover, the operation efficiency of supply chain system can be improved through the satisfaction level of the end users. In supply chain quality management, some traditional tools of TQM are also effective. For example, we can use Quality Function Deployment (QFD) to identify the distinct and potential needs and preferences of users, use Fishbone Chart to investigate the factors affecting the satisfaction level of users and then use Pareto Chart to find out the key factors.

2.4.2 Leadership

The effectiveness of quality management depends on the effective leadership because quality effort can get actual effect only with the recognition and support of the leadership. In supply chain circumstance, the core enterprise play as the leadership since it establishes the development strategy and operation targets of supply chain affect the actual efficiency and effectiveness of the quality effort of all the other members.

Therefore, the core enterprise must act as leadership to consider adequately the needs and expectation of the other members, establish a clear, realizable and coincident holistic target, and then lead and inspire the other members to strive jointly for the target. At the same time, the core enterprise should foster more leaders of TQM in each layer of supply chain and make them take their responsibility zealously.

2.4.3 Involvement of people

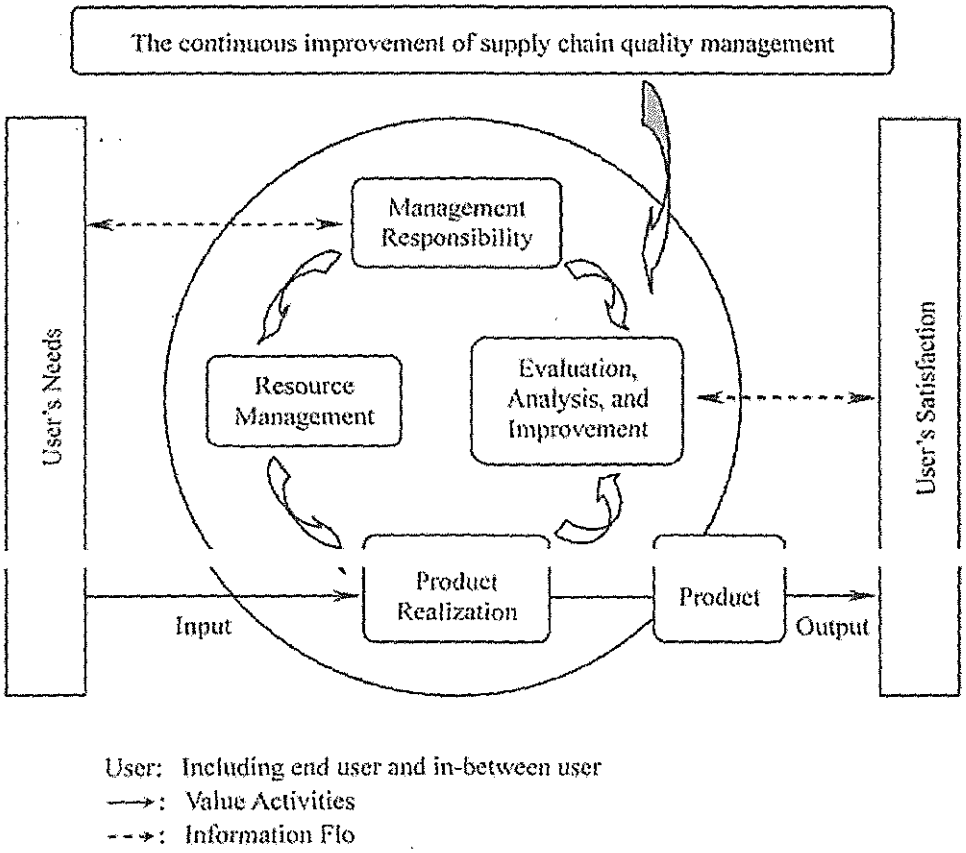
The exertion of enthusiasm and creativity of all the employees is the precondition of the actual effect of quality management. In supply chain circumstance, an up-and-coming excelsior work atmosphere should be established to inspire the enthusiasm and creativity of the employees of all the members. Each employee should understand his/her role and responsibility in the supply chain system, solve the problems forwardly as mastership, and learn the principles, skills and technologies of TQM and ISO9000.Furthermore, we can make all the employees participate into supply chain quality management and strive for the satisfaction of users jointly through the establishment of Quality control (QC) teams that cross function or even enterprise.

2.4.4 Process management

The focus of modern quality view is the process quality management but not the product itself of traditional quality view. It is the requirement of the quality management system of ISO9004:2000 view. In each step of supply chain, there are many correlative processes, such as procurement, logistics, production, inventory, selling, and service. These processes have their own independent objectives and programs. There are usually conflicts among the objectives and programs.

Therefore, the processes and their mutual effects should be identified and managed to ensure the harmonious operation of supply chain. Then, all the processes, especially the key processes, can realize high quality, i.e. small variation, small waste, and more increment, through the continuous improvement and total quality control in all the nodes of supply chain system, as shown in the Figure 1

Figure 1: Supply chain quality management system based on the principle of process management



Source: Guanshu Chang, international business research vol. 2 no. 2

2.4.5 System management

The application of system approach in quality management is to view the quality management system as a big and holistic system, identify and manage the sub-systems respectively. Then, the coordinated effect and mutual promotion among the sub-systems will make the whole effect greater than the sum of the improvement of each sub-system and improve the validity and efficiency of the realization of final targets. Mohamed. Z, Parry L.E, and Wharton, R. (2008).

In supply chain circumstance, enterprise should confirm the mutual dependence relationship among the processes in supply chain system, break the boundary among supply chain members, construct and integrate the processes in supply chain system. Then, many well operation sub-systems can be constructed to collocate the resources rationally among the sub-systems. Finally, the whole supply chain system, including supply, transport, production, distribution, inventory, etc., can realize the target and policy of quality through the optimal operation mode.

2.4.6 Continual improvement

Continual improvement is one of the focuses of modern quality research and practice. Enterprise must improve the quality of product and service continually and reduce the cost to make customer satisfactory. In supply chain circumstance, the pressure of continual improvement is more and more pressing because the market competition is more and more hard. Not only the core enterprise but also the other members, such as suppliers, sellers, and logistics providers, must improve their product and service respectively so as to construct the continual improvement of products and services all over the supply chain process. Then, the continual, stable and harmonious ability of quality assurance can be established.

Furthermore, the core enterprise and other members must find the ways and practices improving performance in or out of supply chain through benchmarking to make the continual improvement speed fast than the one of rivals.

2.4.7 Factual approach to decision making

The sufficient and adequate data and information is the foundation of making right and effective decisions. Up to now, many enterprises have begun to collect and deal with all kinds of data and information by utilizing many advanced information technology, e.g. Electronic Data Interchange (EDI), Management Resource Planning (MRP), Enterprise Resource Planning (ERP), Intranet/Extranet/Internet, so as to provide foundation for making effective decision. In supply chain circumstance, enterprise should collect data and information of not only itself but also the other members of supply chain to record and analyze the current operation situation of each member.

Therefore, the potential problems in any step of supply chain can be found duly according to the results of data analysis.

Then, the corresponding correct and timely decision can be made to avoid or rectify the problem.

2.4.8 Mutually beneficial supplier relationships

What impact can suppliers have in achieving quality? TQM authorities recommend that organizations work directly with raw material suppliers to ensure that their materials are of the highest quality possible. Noori, H. (2004). Et al, Sashkin, M. & Kiser, K.J. (1993), et al, Stanley, L.L. & Wisner, J.D. (2001).

According to Trent, R.J. (2001), at least 50 percent of TQM organizations collaborate with their suppliers in some way to increase the quality of component parts. Often these organizations send out "quality action teams" to consult with their major suppliers. The objective is to help suppliers use TQM to analyze and improve their work processes Xu, X., Zhang, W. & Ye, C. (2002). Suppliers can contribute to quality in a number of other ways.

Therefore, the organization and its supplier are mutually dependent. Maintaining the mutually beneficial relationships between them can improve the ability of creating value both of them. In supply chain circumstance, the product quality is performed and ensured by all the members of supply chain because the production, sales and service process must be performed by all the members. Therefore, the task of supply chain quality management is not only to establish the product inspection system and comprehensive evaluation system of suppliers, but also to

strengthen the mutual beneficial partner relationships with suppliers. The core enterprise must realize the following activities:

Identify and select the main suppliers, reduce the scale of supply system, and realize small supply base management;

Investigate the requirements of customers and develop new product jointly with suppliers;

Share information, technology, and resource with suppliers;

Admit the improvement and achievement of suppliers;

Take joint improving activities with suppliers;

Ensure the conformity of quality system between core enterprise and the other members, including basic conformity (e.g. program files, technology specification, process interface) and advanced conformity (e.g. quality target, quality policy, and quality culture).

In fact, there is a new trend in the international practices of supply chain management. Namely, more and more large-scale enterprises have pay attention to the management and development of suppliers, e.g. providing capital, technology, human resource, equipment and training for suppliers, sending quality teams to help suppliers improve their processes, and sharing the yields of continual improvement with suppliers. Guangshu Chang (2009)

2.5 The Cost of TQM

Many companies believe that the costs of the introduction of TQM are far greater than the benefits it will produce. However research across a number of industries has costs involved in doing nothing, i.e. the direct and indirect costs of quality problems, are far greater than the costs of implementing TQM.

The American quality expert, Phil Crosby, wrote that many companies chose to pay for the poor quality in what he referred to as the "Price of Nonconformance". The costs are identified in the Prevention, Appraisal, and Failure (PAF) Model.

Prevention costs are associated with the design, implementation and maintenance of the TQM system. They are planned and incurred before actual operation, and can include:

Product Requirements – The setting specifications for incoming materials, processes, finished products/services.

Quality Planning – Creation of plans for quality, reliability, operational, production and inspections.

Quality Assurance – The creation and maintenance of the quality system.

Training – The development, preparation and maintenance of processes.

Appraisal costs are associated with the vendors and customers evaluation of purchased materials and services to ensure they are within specification. They can include:

Verification – Inspection of incoming material against agreed upon specifications.

Quality Audits – Check that the quality system is functioning correctly.

Vendor Evaluation – Assessment and approval of vendors.

Failure costs can be split into those resulting from internal and external failure. Internal failure costs occur when results fail to reach quality standards and are detected before they are shipped to the customer. These can include:

Waste – Unnecessary work or holding stocks as a result of errors, poor organization or communication.

Scrap – Defective product or material that cannot be repaired, used or sold.

Rework – Correction of defective material or errors.

Failure Analysis – This is required to establish the causes of internal product failure.

External failure costs occur when the products or services fail to reach quality standards, but are not detected until after the customer receives the item. These can include:

Repairs – Servicing of returned products or at the customer site.

Warranty Claims – Items are replaced or services re-performed under warranty.

Complaints – All work and costs associated with dealing with customer's complaints.

Returns – Transportation, investigation and handling of returned items

2.6 Factors that have contributed to the development of TQM

Global competition for sales, profit, jobs ad funds in both private and public sector, leading to the concept of world class manufacturing with the emphasis on using manufacturing to gain a competitive edge by improving customer services.

Just in time (JIT) which is having the only required inventory when needed, to improve quality to zero defects; to reduce lead time by reducing set-up time, queue lengths and lot sizes; to revise

the operations and accomplishing at minimum costs that is cheaper to design and build quality into product than attempt to ensure quality by means of inspector alone.

Japanese quality procedures such as KAIZEN (un ending improvement and POKA-YOKE (fool proofing) and quality culture implemented in European manufacturing units such as Toyota and Nissan

Quality philosophies associated with internationally respected experts like Juran, Edward Demning.

2.7 Tools used In TQM

2.7.1 Quality assurance

As defined by BSEN: ISO 8402 (1995) all those planned and systematic activities implemented within the quality systems and demonstrated as needed to provide a adequate confidence that an entity will fulfill requirements for quality. It is concerned with defect prevention. Therefore, it involve following approaches:

- quality system including ISO 9000
- New design control aimed at getting it right first time.
- Design of manufacturing process aimed at eliminating defect at a source
- Supplier appraisal ensuring only suppliers able to met quality requirement are approved.
- Incoming materials control requiring supplier's proof ISO 9000 certification that their processes are under statistical control.

2.7.2 Quality control

Quality control as defined by bill Haskins (2008) CIMA is all those activities that are used to fulfill requirement for quality which is concerned with defect detection and correction and determining where, how, and at what intervals inspection should take place.

2.7.3 Quality Circle

Is a volunteer group composed of workers , usually under the leadership of their supervisor (but they can elect a team leader), who are trained to identify, analyze and solve work-related

problems and present their solutions to management in order to improve the performance of the organization, and motivate and enrich the work of employees. When matured, true quality circles become self-managing, having gained the confidence of management. Quality circles are an alternative to the dehumanizing concept of the Division of Labor, where workers or individuals are treated like robots. They bring back the concept of Craftsmanship, which when operated on an individual basis is uneconomic, but when used in group form (as is the case with Quality Circles), it can be devastatingly powerful and enables the enrichment of the lives of the workers or students and creates harmony and high performance in the workplace.

Quality Circles are not normally paid a share of the cost benefit of any improvements but usually a proportion of the savings made is spent on improvements to the work environment.

They are formal groups. They meet at least once a week on company time and are trained by competent persons (usually designated as facilitators) who may be personnel and industrial relations specialists trained in human factors and the basic skills of problem identification, information gathering and analysis, basic statistics, and solution generation. Montana etal Patrick J. (2008). Quality circles are generally free to select any topic they wish (other than those related to salary and terms and conditions of work, as there are other channels through which these issues are usually

2.7.4 Quality standards

External quality standards, such as the ISO 9000 series, are produced by recognized standard setters. The ISO 9000 series is the best known and is used globally.

2.7.5.1 ISO 9000 Series

The ISO 9000 Series is a set of standards for quality management and quality assurance. They were originally published in 1987 by the International Organization for Standardization (ISO). They were revised in 2000 to place greater emphasis on customer satisfaction and the fulfillment of customer requirements.

ISO 9000 is a *family* of standards for quality management systems. ISO 9000 is maintained by ISO, the International Organization for Standardization and is administered by accreditation and certification bodies. The rules are updated, as the requirements motivate changes over time.

Some of the requirements in ISO 9001:2008 (which is one of the standards in the ISO 9000 family) include

A set of procedures that cover all key processes in the business;

Monitoring processes to ensure they are effectiveness in all functions

Keeping adequate records;

Checking output for defects, with appropriate and corrective action where necessary;

Regularly reviewing individual processes and the quality system itself for effectiveness; and facilitating continual improvement. A company or organization that has been independently audited and certified to be in conformance with ISO 9001 may publicly state that it is "ISO 9001 certified" or "ISO 9001 registered". Certification to an ISO 9001 standard does not guarantee any quality of end products and services; rather, it certifies that formalized business processes are being applied.

The ISO 9000 series are not product standards. They are process based rather than procedurally based – they state what organizations must do to manage the processes that influence quality.

Reported benefits of ISO 9000:2000 implementation:

-Greater customer satisfaction

-Can be used as a marketing tool

-Recognized internationally, and so helpful in export markets

-Help achieve continual improvement

-Can complement TQM.

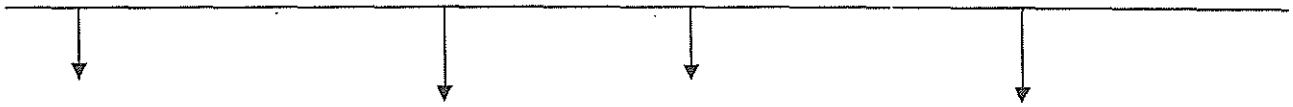
It should be noted that ISO 9000 is a basis for a quality management system and not an absolute guarantee of quality. Third party certification is of the system itself, not the quality.

2.8 TECHNIQUES FOR QUALITY CONTROL AND RELIABILITY

2.8.1 INSPECTION

Although it is non-value adding activity, they are four main inspection activities as mentioned in the figure below

Figure 2: Inspection activities



Receiving	**classification**	**control**	**audit**
Materials or Component received from Outside suppliers are inspected	inspection to separate parts into categories according to specification	periodic sample of work In-progress or end product to detect or correct Deviation	ensuring that proce-dures are being follo-wed to ensure the Reliability of operation
For conformance to specification.			

Source: Trent, R.J. (2001).

2.8.2 QUALITY FUNCTION DEPLOYMENT (QFD)

It is a translation of the Japanese kanji characteristic itinshiksu kitten kai which means how we understand the quality that our customer expects (Lyson and Faringtón 2006)

According to Yoji Akao who originally developed QFD in Japan 1966 when the author combined his work in quality assurance and quality control points out with function deployment used in Value Engineering, is "method to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process.

It ensures that the customer requirement are meet by means of a tool called the house of quality, producers are able to reconcile customer's needs with the design and manufacturing constraints

2.8.2.1 BENEFITS OF QFD

According to Lyons and Farmington (2006) pointed out the following benefits of QFD

The design of product and services is focused on the customer's requirement and driven by objectives of customer needs rather than by technology

It benchmarks the performance of an organization's product against those of competitors.

It reduced the overall length of the design code.

It substantially reduces the number of post-release designs changes by ensuring that effort is put into the planning stage.

It promotes teamwork and break down barriers between marketing, design and production functions.

2.9 FAILURE MODE ERRIORS ANALYSIS (FMEA)

It originated in the USA aerospace industry which; identifies all ways in which failure can occur, estimate the effect and seriousness of the failure and recommend corrective design actions.

As tool embedded within six sigma methodology which is also an approach for improving customer satisfaction by reducing and eliminating product defects can help to identify and eliminate possible concerns in the early of development of product or process. It is also requested by supplier to use FMEA in its advance quality planning ..... pg 295

2.9.1 TYPES OF FMEA

It can take three forms as stated by Ford Motor Co Ltd handbook of FMEA (1992)

2.9.1.1 SYSTEM FMEA- Analyze system and subsystems in the early concept and design stages derived from the customer's wants. It can also includes safety requirements, government regulations and constraints

2.9.1.2 DESIGN FMEA- It also analyzes materials before they are released to production

2.9.1.3 PROCESS FMEA- It analyzes products before they are released to the customer.

2.9.1.4 ADVANTAGES OF FMEA

- Documentation and tracking of actions to reduce failure risk.
- Early identification, verification and elimination of causes of failure
- Improved quality, reliability and safety of products and process.
- Increased customer satisfactions.
- Minimization of late product or process changes and associated cost.

2.9.1.5 DISADVANTAGES OF FMEA

- According to the study undertaken by University of Manchester, institute of science and technology (UMIST), by Dale B.G and shahu (1990) indicated the following disadvantages
- Engineers view as hard slog; however, it should be made of computerized aids to reduce effort of preparation and updating FMEA.
- Time constraints
- Lack of understanding of the importance of FMEA.
- Costly in terms of requiring training in FMEA approaches.

2.10 CONTRIBUTION OF TQM TO ORGANIZATION

•Greatly improved quality of the final product or service

• Cost savings through a reduction in waste – replacing faulty or damaged goods or components can be expensive

• Increased productivity, as staff time is used more effectively

• Greater market share due to better products and services, resulting in competitive advantage.

- More motivated employees

2.11 CHALLENGES ENCOUNTERD IN IMPLEMENTING TQM

- It is time consuming
- It is not a panacea for a failing organization
- TQM is not a 'quick fix' – it can take years to implement and will be a constant process
- It involves costs, namely capital costs and the costs of retraining staff
- Requires high quality change management
- May be met with skepticisms, as the reported benefits are considerable
- Employees may find it difficult to understand initially
- Cultural change may be required

CHAPTER THREE
METHODOLOGY

3.0 INTRODUCTION

Bailey defines research methodology as the philosophy of the research process, which includes the assumption and values that serves as rationale for research and standard or criteria the researcher use for interpreting data and reaching to conclusion. The research methodology mainly looked into details to the research design procedures and techniques and research instrument that were used during the study. The research also briefly transverse through the units that made up the sample, area of study, as well as their characteristics, study population, and sampling techniques and procedures that were adopted for data analysis and limitation that in one way or another affected the study.

3.1 RESEARCH DESIGN

In the research, the study involved the techniques that were employed in the process of data collection. The research used a number of methods to gather the data among them, questionnaire, reviewing the existing documents and interviews. The major source of primary data compilation was questionnaires. The researcher also involved a number of people in the research by interviewing them inform of discussion, these included officers from supply chain department and quality. The researcher visited Bidco oil refinery in Thika and distributed questionnaire. The researcher put more emphasis on quality department and supply chain because it was where data related to total quality management and supply chain would be obtained. The researcher also obtained secondary data from the internet, books, journals and presentations papers in search of literature and other researches done on TQM and supply chain management.

3.2 SAMPLE SIZE AND STUDY POPULATION

The researcher reached substantial number of six (6) respondents from Bidco oil Refinery Company Limited, its supplier and some different customers who were drawn from different groups of the study population. The sample was deemed to be suitable and ideal for this study given the size of Bidco company staff population, its customers and suppliers who are spread across the country which is relatively difficult to reach as the study was exclusively carried out at Bidco Company in Thika.

3.3 SAMPLE SELECTION

The researcher used purposive sampling techniques to choose respondents who were able to give potentially reliable and accurate information that is useful in the research.

3.4 SAMPLING TECHNIQUES

In order to get realistic and more suitable sample, and the researcher to acquire reliable information that could represent the entire population, the study adopted two sampling techniques; simple random and purposive sampling technique.

3.4.1 SAMPLE RANDOM TECHNIQUE

This is technique used by the researcher where by each member of population had an equal chance of being selected. The researcher decided to use this method in order to avoid biasness in the process of selecting the respondents from the group of possible respondents

3.4.2 PURPOSIVE SAMPLING TECHNIQUE

This is a sampling technique that allowed the researcher to use cases that had the required information with respect to the objectives of the study, cases of the subjects were therefore handpicked because they were informative or they possessed the required characteristics.

3.5 DATA COLLECTION METHOD

In this study the researcher use self administered questionnaire, personal interviews, observation and documentary review.

3.5.1 QUESTIONNAIRES

This method will assist the researcher solicit quantitative and qualitative data. The questionnaire will consist of both open ended and closed ended questions. Open ended questions will be incorporated in the study to give the respondent the freedom to respond to questionnaires depending on the way he or she treat the issue being investigated not to limited to the researchers way of understanding the topic of interest.

The questionnaire will be self administered, they will be designed so that to get information regarding demographic factors such as age, sex, and marital status in order to simplify the coding

of statistical data. As a strategy to avoid irrelevance and create support between the researcher and respondent, the questionnaire will be submitted earlier to give the respondent enough time to comprehend and fill them.

3.5.2 INTERVIEWS

The method will be used to collect data from the respondent through physical engagement of the researcher. The respondent will be interviewed to the total quality management and supply chain of an organization. Face to face interviews will be used to assist the researcher obtain data through verbal and no-verbal communication like body language and posture.

3.5.3 DOCUMENTARY REVIEW

This method will involve reaching documents related to TQM and supply chain of Bidco oil refinery. They will also provide valuable information on the relevance of TQM in an organization.

3.5.4 OBSERVATION

The researcher physically visited Bidco oil Refinery Company in Thika several times in the process of gathering facts, and observes what was going on within the organization. This had helped the researcher to verify that facts collected using other methods and also capture some more information that could have been ignored. The researcher had to observe the activities in the supply chain department and quality system. Finally the finding had to be recorded. The data collected through Observation was highly reliable because the researcher had to see what was exactly happening and what was being done on the ground.

3.6 TECHNIQUES FOR DATA ANALYSIS

Data that is obtained from the field is mostly difficult to translate and interpret as it is in raw form however, such data must be cleaned, coded, key punched into computer and analyzed. The researcher used both computer programs such as ms word, ms excel as well as technical method to analyze data collected in this case simple statistics with aid of hand calculator, frequency tables were used in the analysis which helped in understanding the concept and drawing conclusions from the final findings.

3.7 LIMITATION OF THE STUDY

There were issues that in one way or another influenced the researcher. These limitations are divided into two; financial and time limitations.

3.7.1 TIME CONSTRAINT

The researcher encountered time constraint which to a certain extent obstructed the smooth and efficient execution of the study. Since this is based on the fact that the researcher was conducting the research simultaneously with his studies and therefore it was hard to meet expected time schedule.

3.7.2 FINANCIAL CONSTRAINT

The researcher had encountered with financial constraint and to some extent influenced his research process, in the course of conducting the research. It had happened because the researcher is a privately sponsored individual-with limited resource and limited opportunities to fund the process

CHAPTER FOUR
PRESENTATION AND ANALYSIS OF FINDINGS

4.0. Introduction

This chapter presents the findings in relation to the research questions and research objectives established earlier. The chapter presents the findings by considering the research purpose which was to establish the effect of total quality management and supply chain management on organizational performance.

The data collected from the field was processed and analyzed in both techniques, qualitatively and quantitatively. Qualitative approach is used in analyzing by providing more clarification and explanations on quantitative data. Quantitative information is summarized by using tables and percentages to show the response of the respondents. All of these findings of facts were interpreted and presented, through re-examining research objectives.

4.1.0 Demographic characteristic

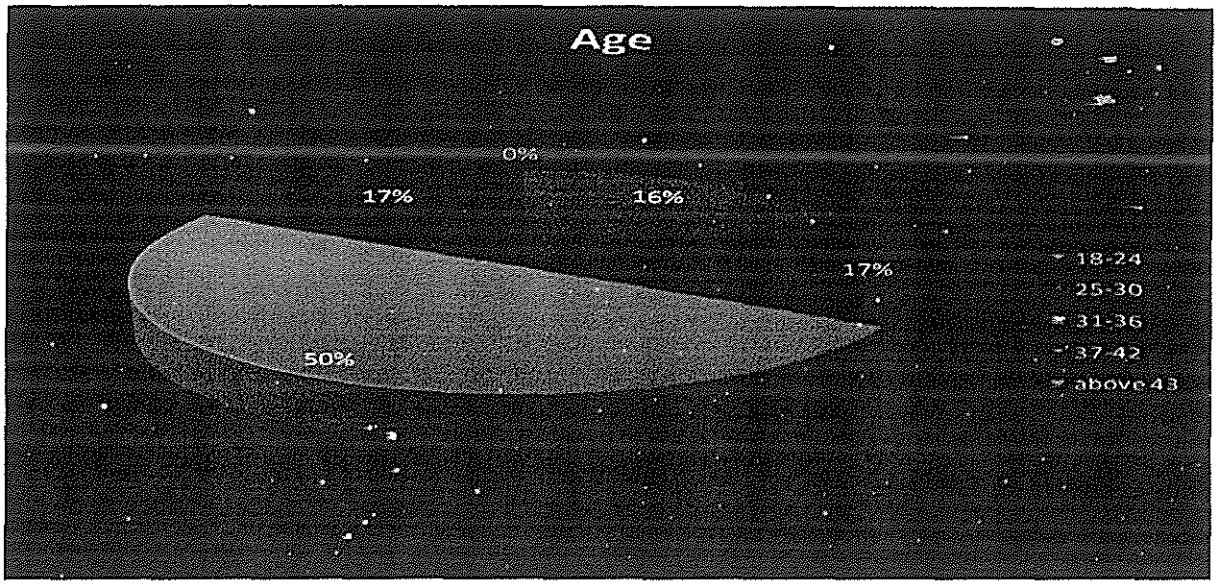
The main purpose of this part is to analyze the background information of the respondents in relation to their age, gender (sex), marital status and level of education. The information is presented by the use of tabulation.

Table 1: shows the age of the respondent

Age (years)	18 – 24	25 – 30	31 – 36	37 – 42	Above 43	**Total**
Frequency	1	1	3	1	-	6
Percentage (%)	16.6667	16.6667	50	16.6667	-	100

Source: Primary Data

Figure 3: Pie chart showing age of respondents



According to the table above, the data reveals that the majority of the population aged between 31 years to 36 years, who makes the total population of 50% of all respondents. Other age groups individually comprises of 16.6667% who in total makes a total population of 50% with the exception of the group aged beyond 43 years for which no respondent was found.

Table 2: shows the gender of the respondent

Gender	Male	Female	Total
Frequency	4	2	6
Percentage (%)	66.6667	33.3333	100

Source: Primary data

Figure 4: shows the gender of the respondent

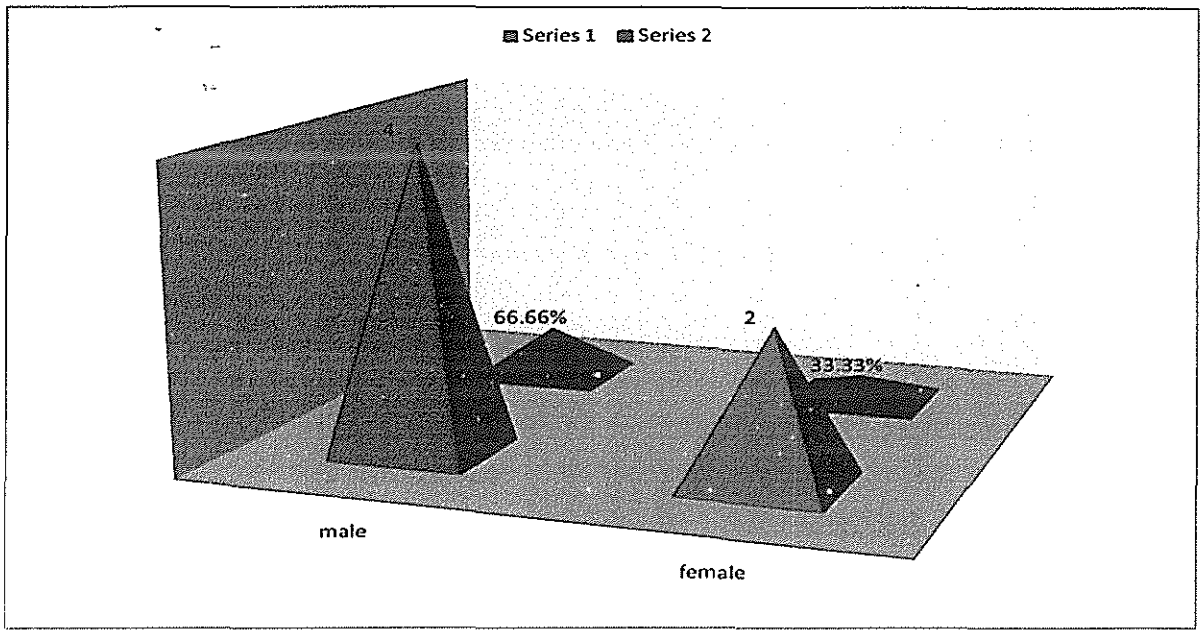


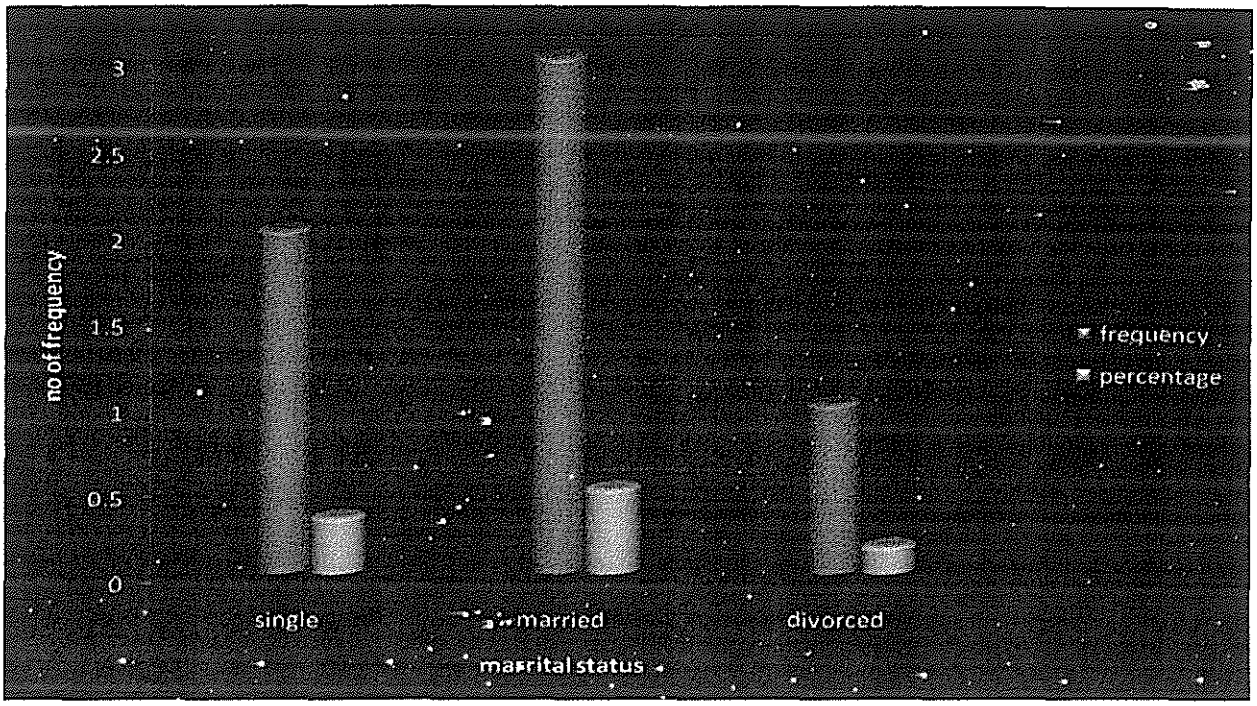
Table 4.2 shows the gender ratio of the respondents. The table reveals that in the population of 6 workers who were randomly selected to answer the questionnaires 4 of them were male and 2 of them were female. This means that on this basis 66.6667% of the population who responded on the questionnaires were male while 33.3333% of the population were female.

Table 3: shows the marital status of the respondents

Marital status	Single	Married	Divorced	Total
Frequency	2	3	1	6
Percentage (%)	33.333	50	16.667	100

Source: primary data

Figure 5: Shows the marital status of the respondents



The table above reveals the marital status of the respondents of the questionnaires. Out of total population of six people, two (2) were single, three (3) were married and one (1) was divorced. In term of percentage this population may be represented by 33.333%, 50% and 16.667% respectively.

Table 4: shows the level of education of the respondents

Education Level	Diploma	Professional course	Bachelor in supply & procurement field	Total
Frequency	4	1	1	6
Percentage	66.67%	16.67%	16.67%	100%

Source: Primary data

While respondents reporting on the question which wanted to identify whether proper total quality management is implemented in the organization, two respondents who make a total population of 33.33% accepted and they further explains both total quality management and supply chain management is practiced in the organization. They enumerate a number of process, policies and procedures to follow which reflect the concept of total quality management. These process, policies and procedures include plan of organization, separation of duties, rotation and vacation and physical quality control.

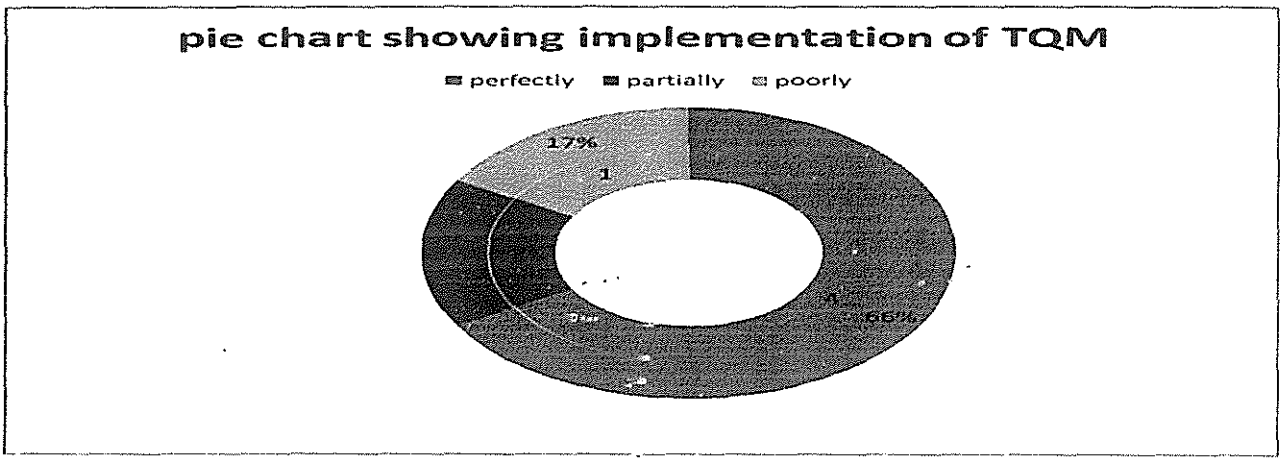
At the same time four respondents who make a total population of 66.67% were not sure whether total quality management is implemented in the organization. Since the majority of the population were not sure about implementation total quality management this may be evidence that there is a possibility of poor implementation of the quality policies, processes and procedures which aims at attaining strong and sound total quality improvement. This may be a result of lack of education and qualification on their areas of employee specialization.

Table 5: Shows implementation Principles and Processes of TQM

Implantation Level	Perfectly implemented	Partially implemented	Poorly implemented	Total
Frequency	4	1	1	6
Percentage	66.67%	16.67%	16.67%	100%

Source: Primary data

Figure 8: Pie chart showing implementing of TQM



Source: primary data

A preliminary step in TQM implementation is to assess the organization's current reality. Relevant preconditions have to do with the organization's history, its current needs, precipitating events leading to TQM, and the existing employee quality of working life. If the current reality does not include important preconditions, TQM implementation should be delayed until the organization is in a state in which TQM is likely to succeed.

If an organization has a track record of effective responsiveness to the environment, and if it has been able to successfully change the way it operates when needed, TQM will be easier to implement. If an organization has been historically reactive and has no skill at improving its operating systems, there will be both employee skepticism and a lack of skilled change agents. If this condition prevails, a comprehensive program of management and leadership development may be instituted. A management audit is a good assessment tool to identify current levels of organizational functioning and areas in need of change. An organization should be basically healthy before beginning TQM. If it has significant problems such as a very unstable funding base, weak administrative systems, lack of managerial skill, or poor employee morale, TQM would not be appropriate.

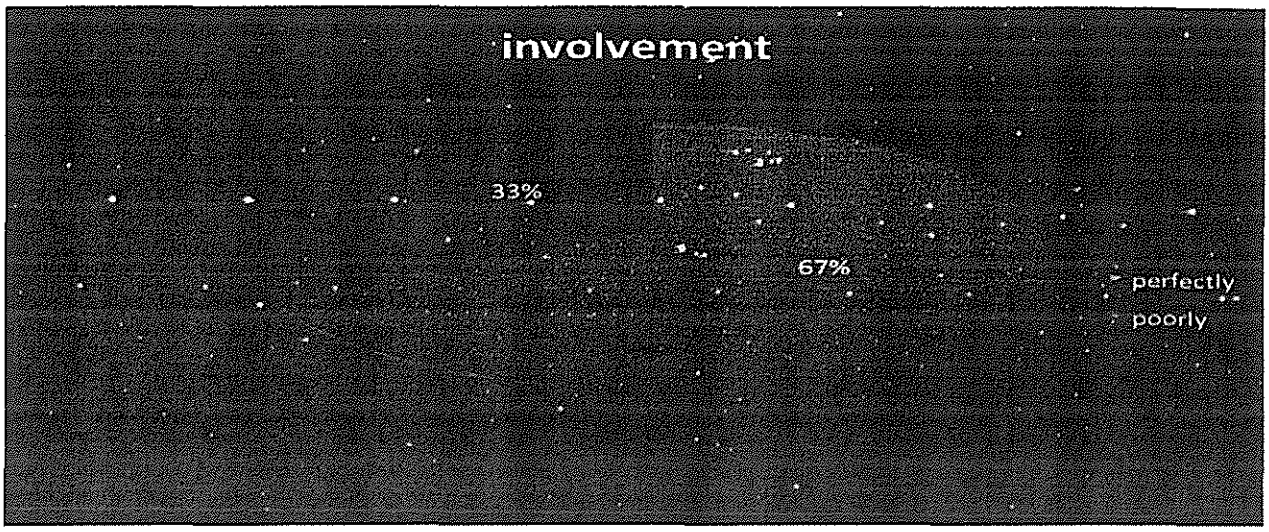
However, a certain level of stress is probably desirable to initiate TQM. People need to feel a need for a change. Kanter (1983) addresses this phenomenon be describing building blocks which are present in effective organizational change. These forces include departures from tradition, a crisis or galvanizing event, strategic decisions, individual "prime movers," and action vehicles. Departures from tradition are activities, usually at lower levels of the organization, which occur when entrepreneurs move outside the normal ways of operating to solve a problem. A crisis, if it is not too disabling, can also help create a sense of urgency which can mobilize people to act. In the case of TQM, this may be a funding cut or threat, or demands from consumers or other stakeholders for improved quality of service. After a crisis, a leader may intervene strategically by articulating a new vision of the future to help the organization deal with it. A plan to implement TQM may be such a strategic decision. Such a leader may then become a prime mover, who takes charge in championing the new idea and showing others how it will help them get where they want to go. Finally, action vehicles are needed and mechanisms or structures to enable the change to occur and become institutionalized.

it will help them get where they want to go. Finally, action vehicles are needed and mechanisms or structures to enable the change to occur and become institutionalized.

Table 6: Involvement of suppliers in implementing of TQM

Level of integration	Perfectly integrated	Poorly integrated	Totals
Frequency	4	2	6
Percentage	66.67%	33.33%	100%

Figure 9: Show involvement of suppliers in the supply chain management



In many industries, firms are looking for ways to cut concept-to-customer development time, to improve quality, and to reduce the cost of new products. One approach shown to be successful in Japanese organizations involves the integration of material suppliers early in the new product development cycle. This involvement may range from simple consultation with suppliers on design, ideas to making suppliers fully responsible for the design of components or systems they will supply. While prior research shows the benefit of using this approach, execution remains a problem. The processes for identifying and integrating suppliers into the new product development (NPD) process in Bidco Oil Refinery Limited are not understood well. This problem is compounded by the fact that design team members often are reluctant to listen to the technology and cost ideas made by suppliers in new product development efforts. The suggest a model of the key activities required for successful supplier integration into NPD projects, based

validated using data from a survey of purchasing executives in global corporations with at least one successful and one unsuccessful supplier integration experience. The results suggest that:-

(1) Increased knowledge of a supplier is more likely to result in greater information sharing and involvement of the supplier in the product development process;

(2) Sharing of technology information results in higher levels of supplier involvement and improved outcomes;

(3) Supplier involvement on teams generally results in a higher achievement of NPD team goals;

(4) In cases when technology uncertainty is present, suppliers and buyers are more likely to share information on NPD teams;

(5) The problems associated with technology uncertainty can be mitigated by greater use of technology sharing and direct supplier participation on new product development teams. A supplier's participation as a true member of a new product development team seems to result in the highest level of benefits, especially in cases when a technology is in its formative stages.

4.8 How is quality assured within the organization?

Quality Assurance (QA) activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. Reviews, preferably by independent third parties, should be performed upon a finalized inventory following the implementation of QC procedures.

The following are the major elements to be considered in the development of a QA system to be implemented in tracking inventory compilation:

- An inventory agency responsible for coordinating QA/QC activities;
- A Quality Assurance plan;
- General Quality Assurance procedures (Tier 1);
- Source category-specific QC procedures (Tier 2);
- Quality Assurance review procedures;

• Reporting, documentation, and archiving procedures.

4.9 Techniques used in controlling quality in Bidco Oil Refinery Limited

Control techniques provide managers with the type and amount of information they need to measure and monitor performance. The information is from various controls must be tailored to a specific management level, department, unit, or operation. To ensure complete and consistent information, organizations often use standardized documents such as financial, status, and project reports. Each area within an organization, however, uses its own specific control techniques, described in the following sections.

Financial controls

After the organization has strategies in place to reach its goals, funds are set aside for the necessary resources and labor. As money is spent, statements are updated to reflect how much was spent, how it was spent, and what it obtained. Managers use these financial statements, such as an income statement or balance sheet, to monitor the progress of programs and plans.

Financial statements provide management with information to monitor financial resources and activities. The **income statement** shows the results of the organization's operations over a period of time, such as revenues, expenses, and profit or loss. The *balance sheet* shows what the organization is worth (assets) at a single point in time, and the extent to which those assets were financed through debt (liabilities) or owner's investment (equity).

Financial audits, or formal investigations, are regularly conducted to ensure that financial management practices follow generally accepted procedures, policies, laws, and ethical guidelines. Audits may be conducted internally or externally. **Financial ratio analysis** examines the relationship between specific figures on the financial statements and helps explain the significance of those figures:

- **Liquidity ratios** measure an organization's ability to generate cash.
- **Profitability ratios** measure an organization's ability to generate profits.
- **Debt ratios** measure an organization's ability to pay its debts.
- **Activity ratios** measure an organization's efficiency in operations and use of assets.

4.10 Working together to support cross-functional key performance indicators to assure Total Quality.

"Teams outperform individuals acting alone or in larger organizational grouping Yet, as we explored the use of teams, it became increasingly clear that the potential impact of single teams, as well as the collective impact of many teams, on the performance of large organizations is woefully underexploited—despite the rapidly growing recognition of the need for what teams have to offer." (Jon R. Katzenbach and Douglas K. Smith, the Wisdom of Teams)

High performance workplace organization

The challenge for companies nowadays is to deliver quickly and flexibly new quality products and services, in order to be able to respond to greater and changing demands from clients. Standardization and specialization characterize traditional work organization; the work is divided into different segments, from preparation to support roles, in which workers specialize in order to maximize productivity. Specialization, control and routine are suitable when a constant demand for standardized products applies. However, for a fast changing demand, this method does not seem to work as well, and may lead to coordination problems and rigidities. Thus, companies started to look for new forms of work organization (Delarue and De Prins, 2004).

Role in organizational change

New forms of work organization are used by companies to implement strategic decisions that are taken in response to a range of business challenges and pressures (EWON, 1998).

A company's attitude to the introduction of teamwork is important in the process of implementing and transforming the work organization into a HPWO. Teamwork is not an answer to all company problems and organizational changes usually require interventions at all levels within an enterprise (Guest, 1995). If a company decides to introduce teamwork, this needs to be integrated into the entire organizational structure of the enterprise and this structure needs to be adapted to the new model; otherwise the effectiveness of teamwork is lost. If certain conditions are upheld, making organizational changes can be expected to have positive impacts, namely improved innovative capacity and operating efficiency, higher quality of output, better mutual relations at the workplace and higher productivity in general.

4.11 The benefits of TQM in the Supply Chain Management

TQM in terms of cost savings include

- elimination of non-confirmation and repetitive work
- elimination of waste costs and reject products
- elimination of repairs and reworks
- reduced warranty and customer support costs
- process efficiency leading to improved profit per product or service
- fiscal discipline through elimination of unnecessary steps and wasteful expenditure

TQM and Organizational Development

Among the major benefits of Total Quality Management is improvement in Organizational Development. TQM heralds a change in the work culture by educating all employees on quality and making quality the concern of everybody, not just the Quality Control department. The focus on quality leads to a proactive work culture aimed at preventing mistakes rather than correcting mistakes.

Total Quality Management's focus on teamwork leads to the formation of cross-departmental teams and cross-functional knowledge sharing. Such interventions lead to many benefits such as:

- Improvement in communication skills of individual employees and overall organizational communication
- Knowledge sharing, resulting in deepening and broadening of knowledge and skill-set of team members, and the making of a Learning Organization
- Flexibility for the organization in deploying personnel, contributing to rightsizing, and ensuring cost competitiveness.

Another benefit of Total Quality Management is that TQM promotes the concept of internal customer/supplier satisfaction. For instance, the HR department considers employees as internal customers and processes their queries or requests within the specified time limit. The lab technician in a hospital processes the clinical tests required by the doctor, an internal customer in a timely and efficient manner, according to the laid down customer satisfaction norms.

4.12 Challenges encountered when accomplishing TQM.

Total Quality Management (TQM) is a management style that implies non-stop process of quality improvement of products, processes and personnel work. This is a bunch of methodologies that drive company to strategic goals achievement through unceasing quality development. It is focused on production of goods and services that possess high-quality from viewpoint of customers. TQM was elaborated on basis of Edward Deming's theory. This philosophy has successfully started many years ago in Japan and USA . TQM has shown phenomenal results and now it is used in many successful enterprises all across the world. It allows obtaining faster, fundamental and more efficient business development, because it stimulates production of much better products for better prices.

There are 5 "sicknesses" or mistakes that should be driven out of organization for successful implementation of TQM. If these "sicknesses" are not eliminated, they can entail failure of TQM and gradually destroy a company. Here are these "sicknesses":

- **Management of only basic line.** Organization that takes care only about basic line of development and manages only numeric results is doomed to failure. Management is a hard work and manager that works only with numbers lightens his/her task. Actually manager should know all process workflow and being involved into the process, understand what can be the source of problems and be an example for subordinates.
- **Evaluating of activity with the help of quantitative rates system**. Evaluating of activity with the help of quantitative rates system. Evaluating that uses system of quantitative rates, reports, annual reviews of attainments, etc. can cause forced quotes, classification and ratings that entail unhealthy competition, break of team collaboration within company. Instead of such systems managers should personally comment employees' work, advice and help to improve it.
- **Stress on receiving of short-term benefits.** If employees have experience of getting fast profits they will try to work in the same way. Management should convince workers that it is better to prefer long-term and stable growth and improvement than quick, short-term profits.
- **Lack of strategy.** If there is no any sequence of realizing goals in a company, employees will feel uncertainty about possibility of constant professional and carrier growth.

Organization should have continuously realizing strategic plan where considerable part should be devoted to questions of quality improvement.

- **Staff turnover.** If high staff turnover within organization is apparent, this indicates serious problems. Eliminating of previous four sicknesses will help to solve this one. Management should assume the proper arrangement to make employee feel as an important part of one consolidated team.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0. Introduction

This chapter presents the discussions and the findings from the previous chapters. It is on the basis of chapter four with reference to research objectives and the aid of literature review where the conclusion and recommendation are made. The objectives of this study were to evaluate the importance of total quality management over organizational performance and its contribution towards quality enhancement, effectiveness and efficiency at Bidco Oil Refinery Limited. The second objective was to identify the factors that might have led to inefficiency and ineffectiveness of total quality management system and lastly was to identify and recommend the corrective measures to be taken to ensure quality control and quality assurance for quality performance.

The analysis, evaluation and interpretation of the data and information found on the field were correctly performed, therefore the conclusion and recommendation given below was precisely derived from the chapter and areas mentioned above.

5.1. Summary

On the basis of analysis from chapter four, findings suggest that Total Quality Management and Supply Chain Management are inseparable functions. The respondents and interviewees were quite aware on the influence of Total Quality Management on the Organizational performance. It was viewed that, Total Quality Management plays important roles in organization quality management. The roles played by Total Quality Management in organization were identified where 83.33% of the total population concurs with the fact and mention roles such as it ensure business of the entity is carried on in an efficient and orderly manner, it ensures business is adhering to the prescribed management policies of Total Quality Management, it safeguard the company's assets and secure as far as completeness and accuracy of end product is concern.

The implementation of Total Quality Management process, policies and procedure seems not to be in place because on this question 66.667% of the total population was not sure if the proper Quality Systems were implemented and only 33.333% acknowledge the implementation of those Quality management process, policies and procedures. More over the respondents of 66.67%

acknowledge that Total Quality Management is efficient and effective measure in minimizing wastes and enhances organizational performance.

5.2 Conclusion

Total Quality Management and Supply Chain Management on organizational performance is used to control Quality, Efficiency and Effectiveness organizations. This was identified on the basis of the responses from the interviewees and respondents of questionnaires.

Furthermore, the researcher identifies the factors which lead to inefficiency and ineffectiveness of Quality control system used. Some of these factors are capacity of Bidco to implement satisfactory Quality control and Quality assurance systems, lack of standardization unit within Bidco and failure to separate the responsibilities related quality management.

On the above basis the researcher recommends the corrective measures, steps and procedures to be adopted to eliminate or minimizing the chances of consequences which are likely to happen as the result of Bidco failing to exercise the most appropriate and satisfactory measures TQM on organizational performance management.

The information obtained through observation of processes and quality documents, questionnaires, interviews and focus group discussion shows control procedures laid down by the management are adhered to a certain extent, however, the company need to improve on its TQM procedures in place.

5.3 Recommendation

On the basis of this research work performed, the researcher recommends the following with the aim of improving the TQM system of Bidco and hence ensures that the quality controls and quality assurance practiced are appropriate and satisfactory.

The organization should increase the ability both funding and human resource trainings when implementing the TQM process, policies and procedure on hand. Bidco has almost all vital quality control policies, the only problem existing is its capacity to act and operate within the set principles. Other issues Bidco Oil Refinery should consider.

Principles of TQM

1 Be Customer focused: Whatever you do for quality improvement, remember that ONLY customers determine the level of quality. Whatever you do to foster quality improvement, training employees, integrating quality into processes management, ONLY customers determine whether your efforts were worthwhile.

2 Ensure Total Employee Involvement: You must remove fear from work place, then empower employee... you provide the proper environment.

3 Process Centered: Fundamental part of TQM is to focus on process thinking.

4 Integrated systems: All employees must know the business mission and vision. An integrated business system may be modeled by MBNQA or ISO 9000

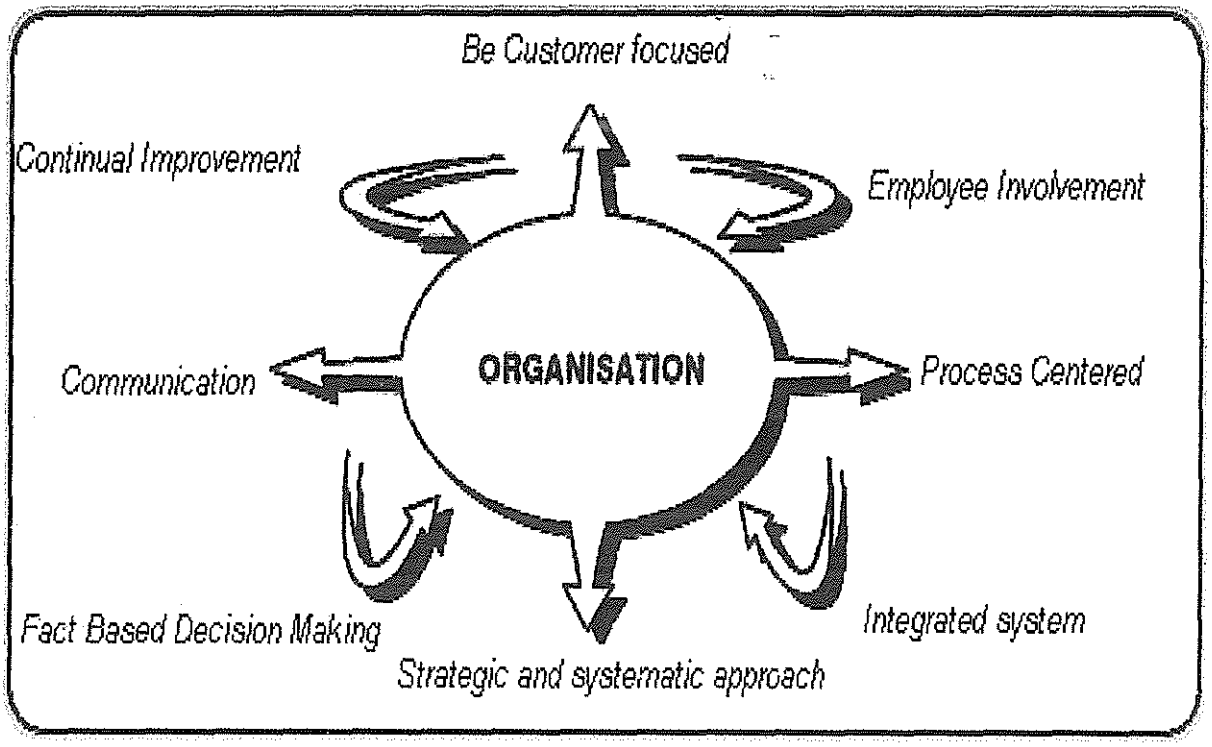
5 Strategic and systematic approach: Strategic plan must integrate quality as core component.

6 Continual Improvement: Using analytical, quality tools, and creative thinking to become more efficient and effective.

7 Fact Based Decision Making: Decision making must be ONLY on data, not personal or situational thinking.

8 Communication: Communication strategy, method and timeliness must be well defined.

Figure 10: Shows importance of customer focus in organizations



Source: Jon R. Katzenbach and Douglas K. Smith, the Wisdom of Teams

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APPENDICES

APPENDIX 1

QUESTIONNAIRE

Dear respondent,

I Mohamed Abdullahi Salat, student of Kampala international university registration number BSP/20024 /82/DF pursuing Bachelor of supplies and procurement management from the school of Business and management.

I am conducting a research study about TOTAL QUALITY MANAGEMENT AND SUPPLY CHAIN OF AN ORGANIZATION: A CASE STUDY OF BIDCO OIL REFINERY THIKA, KENYA.

I request you to fill these questions which will be used for academic purpose and I want to assure you that the information obtained will be treated with confidentiality.

Instructions: Tick or Write in the space provided

SECTION A: BACKGROUND

1. What is your marital status?

Married ☐ Single ☐

2. What is your gender?

Male ☐ Female ☐

3. How old are you? Between

18-24 ☐

25-30 ☐

31-36 ☐

37-42 ☐

Above 43 ☐

4. How long have you worked in BIDCO?

1-5 ☐

6-10 ☐

11-15 ☐

18-Above ☐

5. Highest level of education attained

Below O' Level ☐

"A" Level ☐

Diploma ☐

Degree ☐

SECTION B

6. How is TQM implemented in your organization?

.....

.....

7. Do you involve the supply chain (suppliers) when implementing TQM?

YES ☐ NO ☐

If yes state how you involve them?

.....

.....

8. How is quality assured within the organization?

.....

.....

.....

9. Which techniques do you use in controlling quality and reliability in your organization?

.....

10. How do you work together to support the cross-functional key performance indicators to assure total quality?

.....

.....

11. What are benefits of TQM in the supply chain management to your organization?

.....

.....

.....

12. What are the challenges encountered in accomplishing TQM in your organization?

.....

THANKS FOR THE ASSISSTANCE.

APPENDIX 2

INTERVIEW GUIDE QUESTIONS

1. Which department do you work in this company?
2. What position do you hold in this company?
3. How long have you stayed and worked in the company?
4. How total quality management is implemented in your company?
5. Do you involve the supply chain (suppliers) when implementing TQM?
6. Which techniques do you use in controlling quality and reliability in your company?
7. How quality is assured within the company?
8. Do you think TQM is important to the company?
9. Does TQM used in your system process in the company integrated with the SCM?
10. Does TQM implemented in your system satisfy the need of your customers?
11. How do you compare the TQM in your organization with your competitors?
12. Do you think TQM from the SCM will meet end product quality?
13. What are the benefits of TQM to your company?
14. What are the problems faced in implementing TQM?

THANK YOU FOR YOUR TIME