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"Understanding and applying Total Quality Management for Quality Improvement in Kigali Institute of Science, Technology and Management (KIST), in Rwanda"

By

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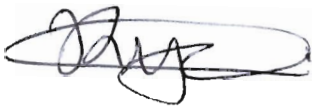
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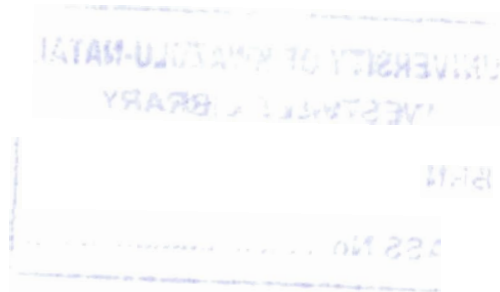
Declaration

I hereby declare that this dissertation is my own work and in case where other people's work has been used it has been accordingly acknowledged. This dissertation has not been previously submitted for any degree in any university.

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September 2005



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Abstract

Total Quality management (TQM) is a different way to organize the efforts of people. The objective is to harmonize their efforts in such a way that not only do people approach their assigned tasks with enthusiasm, but they also participate in the improvement of how the work gets done. Quality management introduces a significant change in the relationship between those who manage and those who actually do the work. TQM has had a significant influence on contemporary management practices. It is in this regard therefore, that the purpose of this research was to examine the feasibility of TQM implementation in Kigali Institute of Science, Technology and Management (KIST) to improve the quality of education. The main objectives of this study included:

- Determining whether TQM can be effectively implemented for quality improvement in KIST.
- Finding out any limitations to the implementation of TQM for quality improvement in KIST.
- Establishing any benefits of TQM in KIST.

Both qualitative and quantitative methods of research were used to carry out this research and the literature reviewed on TQM was a major guide in the analysis process.

The results revealed that with major improvements in areas of staff commitment, encouraging teamwork and participation of all staff coupled with staff education and development, TQM implementation in KIST could be realised. Various limitations of the implementation of this system in KIST include: lack of resources in terms of finance, insufficient academic facilities, shortage of academic staff, to mention but a few. The benefits of this system include: helping the institution to focus on the needs of its customers, achieving top quality performance, better communication methods and achieving commitment of all the staff. Due to the limitation of the short time frame allocated to this research, the study could not go in detail consequently recommendations for further research were made.

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List of Abbreviations

- BPR: Business Process Re-engineering
- E.I: Employee Involvement
- GTZ: German Agency for Technical Co-operation
- HEFC: Higher Education Funding Council
- HEI: Higher Education Institutions
- HEO: Higher Education Organisations
- HEQC: Higher Education Quality Council
- ISO: International Organisation for Standardization
- KIST: Kigali Institute of Science, Technology and Management
- NCHE: National Council of Higher Education
- P-C-D-A: Plan Check Do Action model
- QA: Quality Assurance
- QCOC: Quality Critical Organisational characteristic
- TQI: Total Quality Improvement
- TQM: Total Quality Management
- UNDP: United Nations Development programme

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

Higher education establishments are being encouraged to increase efficiency and effectiveness to combat ignorance and illiteracy and to provide human resources useful for the socio-economic development of Rwanda through the education system (Internet1). However, in Rwanda the application of Total Quality Management (TQM) principles and techniques in service organisations has remained a challenging task. Initially, the appreciation of the TQM strategy must come from the government and top management. They must be clear whether or not they are aiming at continuously providing quality education by involving all individuals in the process. TQM strategy helps to create competition and efficiency, which leads to a better quality of the education offered to students.

The service sector plays an important role in the economy and covers a very wide range of organisations including higher institutions of learning. Service quality can improve the competitiveness of an organisation, and an organisation can gain a competitive advantage and differentiate itself from others, by improving service quality. The study investigates the success in implementing TQM in Kigali Institute of Science, Technology and Management (KIST) to improve the quality of education.

1.2 Research background

1.2.1 Brief history of the organisation

KIST is the first public technological institute of higher learning in Rwanda. It came into existence as a United Nations Development programme (UNDP) project on November 1st, 1997 with a clear mandate to produce technical, scientific, administrative and managerial expertise of high calibre. KIST opened with major degree programmes being offered in engineering and management. Compulsory courses included English or French language and remedial basic sciences. The Institute was officially inaugurated in April 1998, and four years after its inception, it was legally enacted by Law No. 48/2001 of 26/12/2001.

The Vision

Committed to advancing Rwanda's development by graduating highly skilled people for the country's economy and providing technical and technological assistance and services to all sections of the community, KIST aspires to become a centre of excellence in science, technology, and management education comparable in standard to the very best in the world.

The Mission

KIST's mission as laid down in its Statute is:

- To equip students with advanced skills with a view to increasing capacity for National development;
- To promote research based on the disciplines offered at KIST;
- To disseminate the results of research through teaching, seminars, conferences, public lecturers, publications and other appropriate means;
- To provide consultancy services to Government, industry, the private sector and the community at large;
- To engage in income generating activities with a view to creating awareness in lucrative investment;
- To collaborate with other academic, professional, technical and research Institutions in and outside Rwanda for educational and technological development;
- To develop and promote close collaboration with the private sector and the Community so as to enrich relevance to KIST's programs;
- To make provisions for the advancement, transmission and preservation of Knowledge and sustain intellectual life in Rwanda;
- To contribute to the cultural, civic and moral training its members and to participate actively in the economic and socio-cultural development of the country (KIST, 2002).

KIST is thus committed to promoting and maintaining competitive quality education for its national, regional, and international recognition through delivery of quality programmes and services, provision of appropriate infrastructure and excellent facilities, and recruiting highly qualified professionals as well as developing the capabilities of all staff. High levels of achievement by all students and staff are the Institute's major goals

(guide to good institutional practices, 20004, P.11).The current five –year strategic plan (2003-2008) is meant to guide its developments in the short and medium term has thirty two objectives all endorsed by the Government of Rwanda to increase the human resource capacity in the country (Internet 2).

1.2.1.1 Rationale for establishing the institute

The establishment of KIST was part of Rwanda Government's mission to build a strong post-genocide human resource base that was so desperately needed. Its establishment was made possible by the combined efforts of the Government of Rwanda as the main stakeholder, UNDP (Rwanda) as the executor of the project, and the German Agency for Technical Co-operation (GTZ) as the implementing agency. The initial funding for starting the Institute came from a UNDP core funding and a UNDP Trust Fund obtained from the contributions by the Governments of Japan and the Netherlands. This financial boost enabled KIST to initiate operations smoothly, taking only two months for the first class of 209 students to begin their studies and those who were successful later graduated in July 27, 2002 (Internet 2).

It is now eleven years since the war and genocide of 1994. During this reconstruction period, the country has slowly but surely continued to rebuild all sectors of its national economy, including its human resource base. KIST's establishment as an institute of science, technology, and management has been part of this ongoing rebuilding effort (Internet 2).

The onus to rekindle the scientific and technical resource base and managerial skills in Rwanda therefore is so far largely on KIST. After only two years of existence, the Institute progressively endeavored to build an indigenous scientific and technical human resource base, capable in the near future, of propelling the country forward in her efforts to develop all sectors of the economy.

Organisational and Management Structure

The organisational structure of KIST is illustrated below. The KIST Council is the highest decision making body. The Senate, chaired by the Rector, is responsible for all academic matters and reports to Council. The Faculty Boards, the Committee of Deans, and other academic related committees such as the Admission Board, Examination Board, etc.

report directly to Senate. The Management Committee handles all matters related to the running of the institution and is chaired by the Rector.

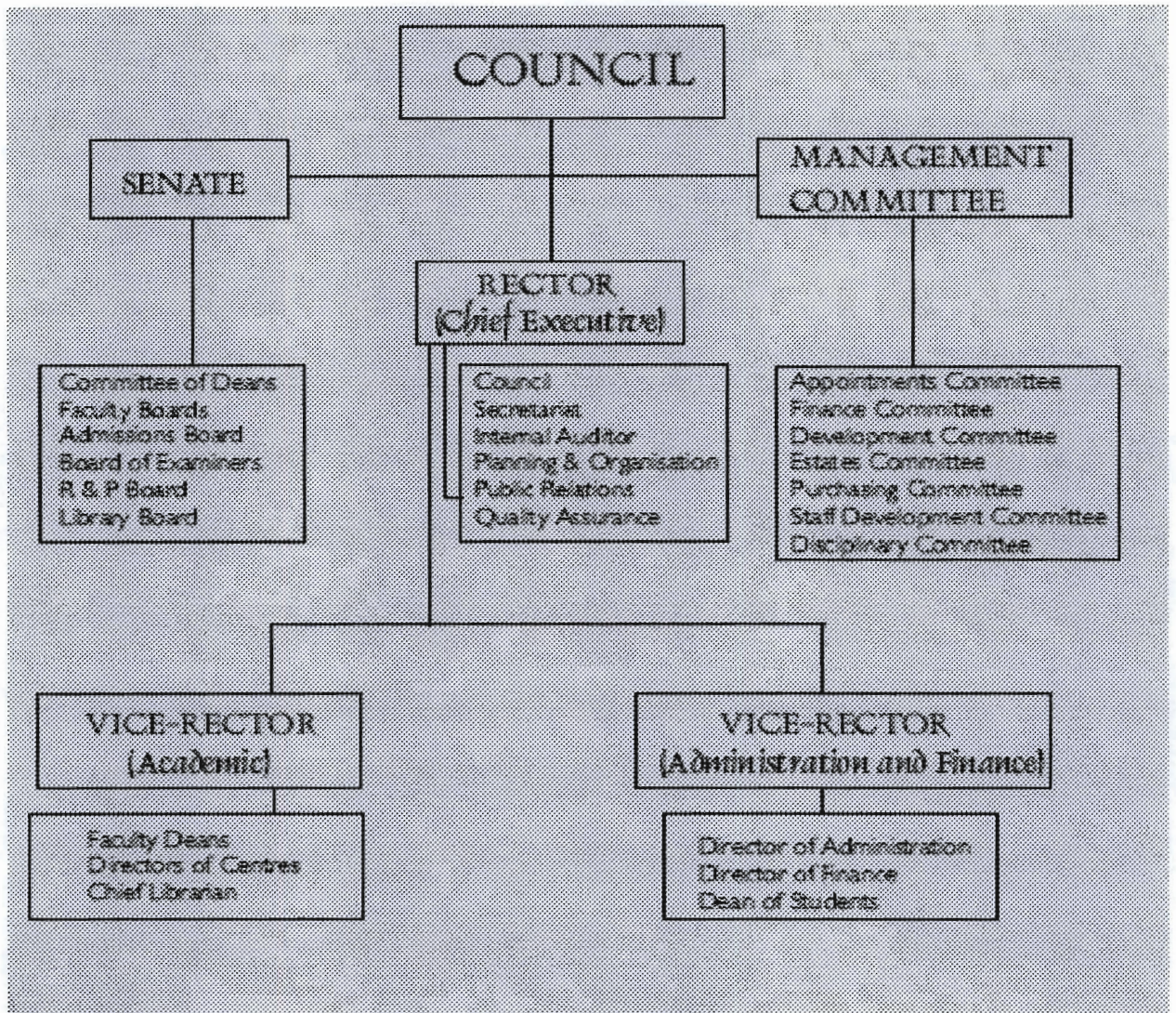


Figure 1.1 KIST organisational and management structure

Source: KIST 2002 Annual Report p.5

KIST has 520 employees categorised as: administrative staff (64), academic staff (185), Technical staff (30) and support staff (241). It has three faculties, the Faculties of Management, Technology and Science; one school, the School of Language Studies (SOLAS); three centres, the centres for Continuing Education (CCE), Computer, Innovations and Technology Transfer (ITT); and two directorates, the directorates of Research and Publications and of Quality Assurance (KIST Annual Report, 2002: 4).

However, although KIST has a Quality Assurance department, it has nothing to do with Total Quality Management as clearly indicated in the next chapters.

Since KIST's establishment, it has carried out a number of training programs evidenced by the number of students enrolled for diploma and degree programs which grew from 1287 in 2001 to 2345 in 2002 and 3303 in 2003. Many have graduated and inevitably others are still students. Although KIST has been trying to improve its staff through organising various trainings, it still faces a problem of qualified staff and hence ends up using expatriates. For instance 25% of KIST's members of staff are expatriates (KIST Annual Report 2002: 4). This has a possibility of affecting the quality of education provided by KIST since most lecturers are not qualified.

Academic Staff Strength

Most Faculties are facing a critical shortage of staff needed to meet the challenges of a fast growing enrolment. For instance, the Faculty of Management is facing a critical shortage of staff. The Faculty embarked on a program to recruit tutorial assistants from amongst the graduating classes. These are expected to take up teaching positions immediately upon completion of their Masters and Doctorate studies. However, in the interim, the faculty continues to solicit the services of part-time staff to fill the gaps arising from the growing part-time student enrolment and diversification of academic programs. It is in this regard therefore, that this study looks into how KIST's Quality of education can be improved given its problems such as those mentioned above.

1.2.2 Brief Review of Total Quality Management

According to Saunders *et al.* (2003) knowledge does not exist in a vacuum, and one's work only has value in relation to other people's. Therefore, there is a need to establish what research has been published in the chosen area of study.

Pycraft *et al* (2001:732) defines Total Quality Management (TQM) as 'an effective system for integrating the quality development, quality maintenance and quality improvement efforts of the various groups in an organisation so as to enable production and service at the most economical levels which allow full customer satisfaction'. The word "total" in TQM means that everyone in the organisation must be involved in the

continuous improvement effort, the word "quality" shows a concern for customer satisfaction, and the word "management" refers to the people and processes needed to achieve the quality.

TQM is not a program; it is a systematic, integrated, and organisational way-of-life directed at the continuous improvement of an organisation. It is not a management fad; it is a proven management style used successfully for decades in organisations around the world. TQM is not an end in itself; it is a means to an organisational end. TQM must not be the primary focus of an organisation; it should merely be the means to achieve organisational goals. TQM differs from other management styles in that it is more concerned with quality during production than it is with the quality of the result of production. Other management styles have different concerns as it will be shown in the next chapter.

Hill (1997) highlighted organisational learning (i.e. exposing organisational members to new ideas, expanding their knowledge, altering their behaviour, and internalising new insights) as one of the main driving forces for the introduction of TQM, and suggested quality circles as a useful vehicle for the early stages of the learning journey.

Research by Mann & Kehoe (1995) investigated the importance of quality critical organisational characteristic (QCOC) as a driving force towards the implementation of TQM. Moreover, they concluded that there is a strong relationship between TQM implementation and number of employees, management and employees' attitudes to change, competent management, and level of education. According to Juran & Gryna (1993), one of the means to empower employees is through training since it gives them the skills to conduct tasks in the way TQM suggests.

1.2.2.1 Review of Total Quality Management in the higher institutions of learning.

For many years TQM has been used in different areas and professionals in education have learned from those in industry with regard to quality management concepts. For instance, Emphasis on quality improvement has been one of the most characteristic features of higher education policy in Nordic and other European countries during the 1990s (Johnson *et al.*, 1999).

In Sweden, the universities' work with quality management has been evaluated for several years. In January 2001, the National Agency of Higher Education in Sweden introduced a new comprehensive system for quality assessment. The Swedish assessment system stresses that the assessment should have as a corner-stone the specific prerequisites for each university and subject for example, business administration and their development strategy (Wiklund *et al.*, 2003).

According to Ranson *et al.*, (1986) the ideological environment cultivated by successive conservative governments in the UK since the late 1970s was one of emphasis within the entire education system, on cost effectiveness, performance assessment and the establishment (or rather measurement) of quality/standards. The higher education sector in the UK is facing unprecedented and increasing levels of market accountability precipitated by the legislative processes of subsequent administrations. As regards quality, HEOs have in the last four years been simply trying to come to terms with dealing with the interests of the Higher Education Funding Council (HEFC) and the Higher Education Quality Council (HEQC) at the expense of quality enhancement (Lewis, 1993:30-4).

Many researchers have argued that despite still having many supporters and much use outside higher education, TQM has had a remarkably small impact on colleges and universities (Koch, 2003). However, a review of the literature reveals that managers in different organisations have seen proper implementation of TQM strategy as a cure of the quality problems (Juran, 1988). Meeting customer requirements is what every organisation strives to achieve in the current world. This therefore serves as an incentive for organisations to focus on quality since it is what a customer wants. Once the organisation acquires a poor reputation of quality, it takes a very long time to change it. However, the management of the competitive weapon such as quality, can be learned like any other skill, and used to turn round a poor reputation in time (Oakland, 2003).

1.3 Motivation for the research

While numerous institutions of higher education have sponsored "quality" initiatives, nearly all of these have focused on non-academic activities. Thus, higher education TQM has concentrated on processes such as registration, physical plant, bill paying, and purchasing (Koch, 2003). This research looks into the improvement of the quality of

education through implementation of TQM with main emphasis on academic activities in KIST.

1.4 Value of the study

KIST is conscious of the emerging competition in the higher institutions of learning in Rwanda. The study aims at identifying whether the application of TQM would improve the quality of education offered by KIST and make the institute more competitive.

1.5 Statement of the problem

With increase in the number of students, total costs have risen and with limited state funding, there is fierce competition for money among various social services. Much more attention therefore has to be paid to the quality of performance and TQM in higher educational institutions. Higher education is one major service sector that has been slow in transition into quality management. Universities and colleges have generally had a superficial awareness of TQM (Internet 16). It is in this regard therefore, that the study looks at bringing TQM awareness to KIST as an institution of higher learning. This calls for an assessment of feasibility of TQM implementation for improving the quality of education in KIST to improve the areas of competitiveness.

1.6 Research objectives

- To determine whether TQM can be effectively implemented for quality improvement in KIST.
- To determine any limitations in the implementation of TQM for quality improvement in KIST
- To establish any benefits of TQM in KIST.

1.7 The structure of the study

The research comprises of six chapters. The chapters are laid out to give a clear view of understanding the research topic and related theoretical material, analysis of the collected data and possible ways of implementing TQM for quality improvement in KIST.

1.7.1 Chapter One: Introduction

This chapter presents the research problem, statement of the problem and the value of the study. It also includes research background and a review of other higher institution of learning which adopted TQM for quality improvement. Also a brief review of literature on TQM is covered to shed more light on the research topic.

1.7.2 Chapter Two: Literature Review

Chapter two gives the theoretical background of TQM towards improvement of Quality as revealed by different authors. Literature review is essential because it helps to demonstrate awareness of the current state of knowledge on the subject.

1.7.3 Chapter Three: The overview of quality in Kigali Institute of Science, Technology and Management

Chapter three includes how KIST is currently pursuing its strategies towards achieving better quality of education; this was undertaken by looking at the overall institutional management especially in the area of maintaining the quality of education.

1.7.4 Chapter Four: Research Methodology

The research methodology presents an account of how the research was carried out. It describes sampling, data collection, analysis and processing. Data was collected using questionnaires, observation as well as secondary data. It also includes: the validity, reliability, and ethical considerations plus the limitations of the study.

1.7.5 Chapter Five: Research Results and Discussion

This chapter comprises of the presentation of research results, analysis and discussion of the data collected using various instruments. The results were generated after processing data using various techniques like SPSS as mentioned in the research methodology. In addition, recommendations to the institution were made accordingly after data analysis and discussion in this section.

1.7.5 Chapter Six: Recommendations and Conclusion

Chapter five comprises of recommendations for further research as well as drawing the conclusion from the research findings with emphasis on the implementation of TQM for quality improvement in KIST.

1.8 Summary

In recent years there has been a culture change in education. Businesses are becoming more like schools in that they recognize the need for continuous learning and continuous education among their workers, and schools are becoming more like businesses with the emphasis on the need to clarify, monitor and evaluate processes and the shift from the emphasis on inputs to the emphasis on outputs. Thus the concept of TQM is a vital ingredient of educational success within the context of the turbulent changes taking place within further education.

Currently, in higher education throughout the world there is much concern with the issue of quality. During the last few years, universities in general have experienced an increasing competition in terms of student recruitment and financial appropriations. KIST is conscious that it is one of the six higher education institutions in Rwanda under the Ministry of Education, Science, Technology and Science Research and that there are several other private institutions (Internet 2). The increase in the number of universities has created high competition in the higher institutions of learning in Rwanda. In this regard therefore, the study aims at investigating the potential beneficial effects of implementing TQM in KIST.

The study is carried out on a case study basis. Data was both qualitative and quantitative in nature. Both Primary and secondary data was used to ensure better results for the study. Primary data was acquired through both self administered questionnaire and observation. Relevant literature was reviewed to acquire secondary data as applied to study. Data was analyzed using descriptive statistics and statistical soft 'SPSS' which made data editing/coding easy. Findings were properly presented as well as recommendations and conclusions were made.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this chapter is to present the theoretical part of Total Quality Management (TQM) and its components. Organisations are constantly on the alert to gain a competitive edge, using the many tools that have long been touted as a way to beat the competition. Yet, despite the focus on innovative ways of making products and services, there remains one constant: Organisations that produce better quality products and services than their rivals beat the competition (Eckes, 2001).

TQM can be studied from three different approaches: contributions from quality leaders, formal evaluation models and empirical research. Deming (1982, 1986) underlined the use of statistical techniques for quality control, and proposed 14 principles to improve quality in organisations, based on the following ideas: leadership, an improvement philosophy, the right production from the beginning, training for managers and employees, internal communication aimed at the elimination of obstacles for cooperation and the suppression of quantitative objectives. Juran (1986) pointed out the importance of both technical and managerial aspects, and identified the three basic functions of the quality management process: planning, organisation and control, as the stages for quality improvement. Juran and Gryna (1993) also indicated that the aim of the management is to reduce the cost of mistakes, reaching a point where the total costs of quality are minimal

2.2 Key concepts of the study

The key concepts of this study include; quality, customer, supplier and TQM. They are defined as follows:

Quality

According to Burril & Ledolter (1999:129), *quality* is “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.”

A customer

A customer is a person who receives or uses a product. One set of customers comprises external customers. This set consists of people outside the producing organisation who

typically pay for the products they receive. A second set of customers comprises internal customers. These are people within the producing organisation who are supplied with products that they use in performing their job (Vansina, 1990).

A supplier

A supplier is any person who provides any product to a customer. The supplier may be internal or external. An internal supplier is any person or group in the organisation that supplies a product to an internal customer. An external supplier is anyone outside the organisation that supplies products to it (Burrill & Ledolter, 1999:84-85).

Total Quality Management (TQM)

According to Barrie & McQuater (1998), there are many definitions of TQM, and it is clear from the differences that the concept requires a disciplined business approach to be adapted. This is based upon fundamental belief in the need for continuous and company-wide improvement, to understand and meet the requirements of customers, identify and build upon best practice, and be cost effective.

2.3 History of Total Quality Management

TQM was developed in the mid 1940s by Dr. W. Edward Deming who at the time was an advisor in sampling at the Bureau of Census and later became a professor of statistics at the New York University Graduate School of Business Administration (Internet 3). He had little success convincing American businesses to adopt TQM but his management methods did gain success in Japan. After World War II, General MacArthur took 200 scientists and specialists, including Dr. Deming, to Japan to help rebuild the country. While working on the Japanese census, Dr. Deming was invited by the Japanese Union of Scientists and Engineers to give lectures on his statistical quality techniques. One of the attendees was a past professor to many of Japan's CEOs. After attending the lectures, the professor told his CEO students that, if they wanted to turn Japan's economy around in five years, they should attend Dr. Deming's lectures on using statistics to achieve quality at a reduced cost. Many of the CEOs took the professor's advice and attended the lectures. Eventually, many Japanese manufacturing companies adopted Dr. Deming's theories and were able to produce quality products at reduced costs (Internet 3).

While the Japanese business world was concentrating on producing quality products, businesses in the United States were more concerned with producing large quantities of products. Their emphasis on quantity at the expense of quality let the Japanese, with their inexpensive, high quality products; gain a substantial foothold in American markets. In the 1970s and 1980s, many American companies, including Ford, IBM, and Xerox, began adopting Dr Deming's principles of TQM. This gradually led to their regaining some of the markets previously lost to the Japanese. Although Total Quality Management gained its prominence in the private sector, in recent years it has been adopted by some public organisations (Internet 3).

2.4 Key to Quality

The key to improving quality is to improve processes that define, produce and support an organisation's products.

All people participate in the processes. Employees:

- get processes "in control"; and
- work with other employees and managers to identify process problems and eliminate them.

Managers and/or supervisors work on processes and:

- provide training and tool resources;
- measure and review process performance (metrics);
- improve process performance with the help of those who use the process.

According to Deming (quoted in Cornesky *et al.*, 1992:16), fourteen (14) points can help managers achieve quality:

1. Create constancy of purpose toward the improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy: We are in new economic age. Management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move to a single supplier for any one item, and base the contract on a

- long-term relationship of loyalty and trust. Minimize total cost by working with a single supplier.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
 6. Institute training on job.
 7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.
 8. Drive out fear, so that everyone may work effectively for the company.
 9. Break down barriers between departments. People in research, design, sales, and production must work as a team to foresee problems of production and in use that may be encountered with the product or service.
 10. Eliminate slogans, exhortations, and targets for the workforce by asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belongs to the system and thus lies beyond the power of the workforce.
 - 11a. Eliminate work standards (quotas) on the factory floor. Substitute these with leadership.
 - b. Eliminate management by objective. Eliminate management by the numbers and numerical goals. Substitute these with leadership.
 - 12a. Remove barriers that rob the hourly worker of his right to have pride in his work. The responsibility of supervisors must be changed from sheer numbers to quality.
 - b. Remove barriers that rob people in management and in engineering of their right to pride in their work. This means, *inter alia*, abolishing the annual or merit rating and management by objective.
 13. Institute a vigorous program of education and self-improvement.
 14. Put everybody in the company to accomplish the transformation. The transformation is everybody's job.

2.5 The Overview of Total Quality Management

Some major management styles are compared with TQM as follows:

Management-by-Objectives (MBO) emphasizes achieving specified objectives, under the control of individual managers. This approach works against multi-functional process

performance and interferes with teamwork and quality. TQM is not objective-oriented, except for its one goal of achieving continuous quality improvement.

Management-by-Results (MBR) is management by viewing past results as an indication of future results. It has been compared to driving an automobile in a forward direction while looking in the rear view mirror. In today's fast-paced, quick-changing business environment, managers cannot rely on past results as a predictor of future performance. In contrast, TQM is only concerned with current results and ways to improve them.

Management-by-Exception (MBE) is management by identifying specific targets for management attention and action. It produces short-term results by reacting to immediate problems, but there is no analysis of the processes that produced the problems, so long-term benefits are lost. On the other hand, TQM is more concerned with correcting processes that produce problems than it is with responding to individual problems (Internet 3).

TQM is very different from these and other management systems. It recognizes that quality as determined by the service provider might be much different from quality as perceived by the service receiver. If the customer is not satisfied with a service, then the service does not have quality and the processes that produced the service have failed. TQM requires an organisational transformation, a totally new and different way of thinking and behaving. This transformation is not easy to achieve; it is not for the weak or the statistically untrained. At first glance, many TQM techniques may seem simple and based on common sense, but they must be understood and used correctly for TQM to function properly (Internet 2).

The TQM philosophy of management is customer-oriented. All members of a total quality management (control) organisation strive to systematically manage the improvement of the organisation through the ongoing participation of all employees in problem solving efforts across functional and hierarchical boundaries. TQM incorporates the concepts of product quality, process control, quality assurance, and quality improvement. Consequently, it involves the control of all transformation processes of an organisation to better satisfy customer needs in the most economical way. Total quality management is

based on internal or self-control, which is embedded in each unit of the work system (technology and people). Pushing problem solving and decision-making down in the organisation allows people who do the work to both measure and take corrective action in order to deliver a product or service that meets the needs of their customer (Internet 13).

Managers and experts disagree about how to effectively apply TQM to their organisations. Some advise that customer satisfaction is the driving force behind quality improvement; others suggest quality management is achieved by internal productivity or cost improvement programs. In other applications, TQM is considered a means to introduce participative management (Internet 13).

The Japanese in general, concentrate on customer satisfaction with a focus on understanding customer needs and expectations. Until very recently Americans in general have emphasized the "cost of non-conformance", and the importance of employees meeting the agreed upon requirements for each process (Internet 13). Vansina (1990) cautions that such efforts are based on the (faulty) assumption that processes and tasks that lead to the desired quality are already understood. However, he states, control of the production process will not likely help a business increase its market share when the product or service does not meet customer requirements.

2.5.1 Quality Improvement vs Quality Assurance

It is important to avoid equating quality improvement with quality assurance. Quality assurance is a system of activities designed to ensure production that meets pre-established requirements. It gives the customer a guarantee of quality by measuring product conformance with process and performance specifications. Quality improvement refers to all efforts directed to increase effectiveness and efficiency in meeting accepted customer expectations. It is a continuous process to achieve a better understanding of the market; to innovate products and processes; to manage and distribute material and products; and to provide services to customers. The success of quality improvement is based on the understanding of every member of the organisation concerning the needs of their customers (internal and external). Maintenance of that understanding requires continuing dialogue and negotiation with the customer and measurement of one's products and services against the customer expectations (Internet 13).

The quality philosophy with a shift in focus from internal results to customer expectations is another view of the business world. Leaders will not turn quality into a competitive advantage if they behave as if TQM is a simple technique that can be bought and introduced within a traditional management framework. Therefore, KIST installing an elaborate quality assurance system will not lead to employee commitment for total quality. Such efforts are based on the assumption that processes and tasks that lead to the desired quality are already understood. A consequence may be employees feeling pushed into compliance without understanding the criteria or challenging their effectiveness. Importantly, expectations and market demands change as do the technology, materials and/or knowledge utilized.

In light of the above, the impact of the traditional paradigms on current policies, procedures, and systems in organisations is likely strong. Implementing Employee Involvement (E.I.), systems require commitment from top management as well as from all employees (Internet 13). That commitment may often involve a change in attitudes. It will also involve the management of change in the organisation. Guiding the change process requires an understanding of the present organisational cultures, attitudes, structures and systems.

2.5.2 Total Quality Management Principles

TQM is a management philosophy with the aim of achieving continuous improvement and a better overall performance. It requires the change of attitudes of the employees in accepting quality culture, willingness to improve, and continuously improve. Quality advocates have identified several critical principles for successful TQM practices which amongst which are: top management commitment, customer focus, supplier relationship, benchmarking, quality-oriented training, employee focus, zero-defects, process improvement and quality measurement (Saraph *et al*, 1989). Top management acts as the main driver for TQM implementation, creating values, goals and systems to satisfy customer expectations and to improve an organisation's performance (Ahire *et al*, 1996). This involves allocating budget and resources, control through visibility, monitor progress, and planning for change. Also, it cannot be denied that customer expectations have increased and they want and demand tailored or customized services (customer focus).

2.6 Quality Improvement Concepts

2.6.1 Processes and Systems

Deming (1986) describes organisations as composites of systems designed to meet customer needs. Common systems in organisations are human resources processes such as compensation or financial ones like accounting. In such systems, processes and tasks are linked together and affect one another. For example, status changes for employees will require interdependent tasks on the part of employees in payroll, compensation, benefits, training and the relevant supervisor. The basic assumption of the Total Quality Control approach is that work can be broken down into tasks, which are a series of related steps. A process groups all related tasks done to accomplish an outcome.

People completing a series of related tasks have interdependent roles in the organisation. A group of related processes can be seen as a system. This involves defining the steps and outcomes in the processes and systems by employees' results in a common language and understanding of what their jobs should be and how they fit into the larger picture. With the application of the scientific approach using flow charts, work-flow diagrams, deployment charts, pareto charts and Cause and Effect Diagrams people can see their interdependence and that the quality of what comes out is in measure determined by the quality that goes into a process (Internet 13).

2.6.2 Customers and Suppliers

Customers and suppliers are both inside (internal) and outside (external) the organisation. People inside and outside organisations that provide input to the steps in a process are "suppliers" and those who use products or service are "customers". Thus, employees in one phase of a work process are customers of the employees who produced the goods or services used by them in their work processes. For instance, the marketing research employees are customers of statisticians and computer information systems employees who are assisting them and maintaining computing capacity for use in analyzing data. Employees within the organisation receive work passed through their systems from other employees, the "internal" suppliers. Therefore, each employee is a customer of preceding employees; and each has customers, the people to who receive the results of his or her work. Likewise, the people outside the organisation who sell materials, information or services to be used by employees are "external" suppliers. A company's external

customers purchase a product or service and contribute to profits. They must ultimately be satisfied if the business is to survive (Internet 13).

2.6.3 Quality

A popular slogan of the quality movement is "quality begins with the customer." The premise being if customers are the people who receive our work then only they can tell us what they want and how they want it. The quality that comes out of a process is affected by the quality of what goes in and what happens at every step along the way. It follows that quality must be built into every step, process, and system to produce quality in the outcome. To do this, there should be collaboration with internal and external suppliers and communication with internal and external customers to determine their needs. Attainment of quality in products and services at competitive prices requires an emphasis on doing the right things (products and services that reflect target features based on the needs of intended customers) and doing the right things right (using efficient processes) (Internet 13).

2.6.4 Benchmarking

Benchmarking is the comparison of the processes and systems of a given business function across companies. It can be applied to any area of an organisation. It is a way for managers and employees to compare their functional performance to that of other companies, particularly those that excel, and identifying why they may differ. Benchmarking can be defined as: "Measuring performance against that of best-in-class companies and analyzing how (methods) the best achieve their performance level, and using the information as the basis for evaluating your own targets, strategy, and applications. Involvement and improvement are not limited to employees" (Internet 13). In some cases, customers and suppliers are involved in-group problem solving. For instance, at Ford, vendors and dealers contribute ideas.

2.6.5 Teams and Teamwork

When TQM is successful employees at every level participate in decisions affecting their work. The most common vehicle for employee participation is a team. Teams range in scope and responsibility from problem-solving groups to self-managed work teams that schedule work, assign jobs, hire members, and set the standards and volume of output. A

participative work culture is encouraged when quality becomes everybody's responsibility (Internet 13).

2.6.6 Customer Satisfaction: What do customers want?

The philosophy that TQM is customer-oriented and its goal is to satisfy the customer seems straightforward. However, the expectations and needs of the customer may not be clearly expressed or well defined and may be difficult to measure. Measurement of attitudes as well as systems is required if the ultimate appreciation of quality lies with the customer's subjective comparison as suggested by Deming and other experts (Internet 13). Customer issue can be distinguished on the following three basic classes of customer wants:

- What customers say they want: Customer demands are frequently translated into specifications without exploring their meaning in regard to how the product or service will be used. Neglecting to explore how the customer intends to use the product or service can lead to poor or improper design.
- The customer's expected quality consists of expectations the customer does not verbalize because they assume them to be evident: such as the product must be safe. Extensive interviews may not even elicit these expectations. Yet, customers will be dissatisfied if the product or service does not meet these assumed expectations. Even so, if the expectations are built into the product, customers will hardly notice. These expectations are so pervasive that the customer takes them for granted.
- Exciting quality consists of attributes of the product or service contributed by the supplier. The customer may not expect them as characteristics, but they recognize them as improvements and like them. For example, a car with an electrical system that shuts off the headlights when the ignition is turned off, even when the driver forgets has such an attribute. A customer will appreciate that safeguard many times over and appreciate the manufacturer's foresight while driving and owning the automobile (Internet 13).

2.6.7 Customer Satisfaction in the Service Sector

Customer satisfaction in the service sector has been given much consideration in the 21st century and the conceptualisation of service quality, its relationship to the satisfaction and

methods of evaluation have been a centre of the education sector over recent years (Soutar & McNeil, 1996; Oldfield & Baron, 2000). Indeed, an integral part of any educational institute's attempt to achieve competitive differentiation, is a commitment to a process of sustained quality improvement (Althiyaman, 1997). Inherent in any such approach is the need to continually monitor internal and external performance so that organisational efforts can be better directed at consistently satisfying customer needs (Taylor & Hill, 1993; Owlia & Aspinwall, 1996), while simultaneously demonstrating the return for quality investments. This requires the support of a systematic approach to measurement (Weller, 1996; Ford & Bach, 1997). Recent years have witnessed the developments of measurement tools and techniques aimed at assessing service quality and customer satisfaction levels within the education sector (O'Neill, 2000).

Another potential difficulty in the measurement of satisfaction is an appreciation of the differences between the nature of work in manufacturing and in the service sector. In the service sector, customer's overall appreciation of quality depends on both product quality and the quality of the service process. The service process is the wholeness of the transactions between the service agent and the customer resulting in the selection, delivery, and/or consumption of the product. Previous research has shown that customer satisfaction in the service sector is related to:

- The subjective comparison between customers' expectations before they received the service and their actual experience with the service; and
- Quality evaluations both of the service process and service outcome.

The level at which regular service is delivered and the level at which exceptions or problems is handled (Internet 13).

It is important to monitor and evaluate employee behaviour as well as the attributes of the technical outcomes. For example, in the restaurant business, the quality of the treatment of customers by waiters and other staff can diminish or enhance the quality and presentation of the food. Developing standards and systems to enable and support employees in the front line deal in a satisfactory way when their customers will be essential (i.e., training, equipment, such as telephones and computer terminals, floor plans and storage). Obviously, neglecting the needs of the employees for respectful treatment, supplies, and resources will reduce the quality of their input and their output. Employees in a total

quality culture will continually improve their systems working with their managers and quality experts (i.e., quality assurance, facilitators, and engineers) in order to excel at meeting the needs of customers both inside and outside the organisation. To do that effectively, workers must go to their customers to gather information using scientific methods. However, the analysis of customer expectations will always require interpretation. Subsequently, these interpretations must be translated into product and service specifications. In the end, the executive staff must make strategic choices about the customer expectations that the organisation is willing and able to meet (Internet 13).

2.7 Total Quality Management Models

TQM is a systematic approach to managing a company. TQM is systematic in the sense that it uses facts through observation, analysis and measurable goals. There are theoretical descriptions of this management concept; however, there is no formal model of it. A formal model can give a very precise description of the concept and is useful in organisations that consider using TQM. Furthermore, it can give organisations that have adopted TQM already more insight into their own situation (Made-Potuijt *et al.*, 1996). However, various TQM gurus come up with different models among which some are mentioned in this section.

Oakland (2003) maintains that the framework indicated by figure 2.1 for TQM refers to the integration of planning the involvement of people in the improvement of process, this being held together by the three Cs - culture, communication and commitment. He also believes that many companies and organisations in the public sector found this simple framework useful and it helped groups of senior managers throughout the world get started with TQM. The key was to integrate the TQM activities, based on the framework, into business or organisation strategy.

Unlike some of the other gurus, Oakland focuses on the total process of achieving a TQM organisation without relying inordinately on either qualitative or quantitative aspects. He recognises that both qualitative and quantitative aspects are necessary. However, he is slightly biased towards softer aspects as the initial drivers of quality (Beckford, 2002).

Total Quality Management Models

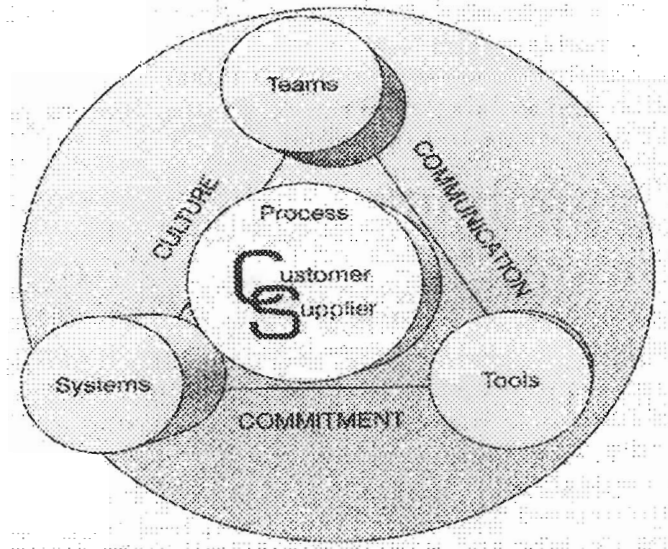


Figure 2.1 Total Quality Management Model

Source: Oakland's Total Quality Management Model 2003: 21

According to Fox (1995:268), TQM should be based on ISO 9000 and organisational structure. He defines an organisation as a chain of supplier/customer relationships, starting with external suppliers and ending with the external customers. TQM should be based on ISO 9000 and organisational structure. This is illustrated in figures 2.2 and 2.3 respectively.

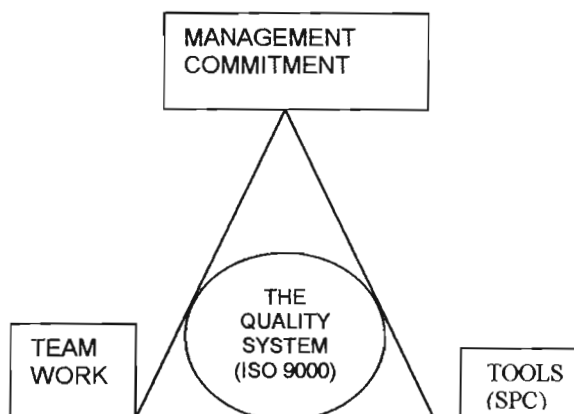


Figure 2.2 The TQM Model

Source: Total Quality Management, DTI booklet quoted in Fox (1995:268).

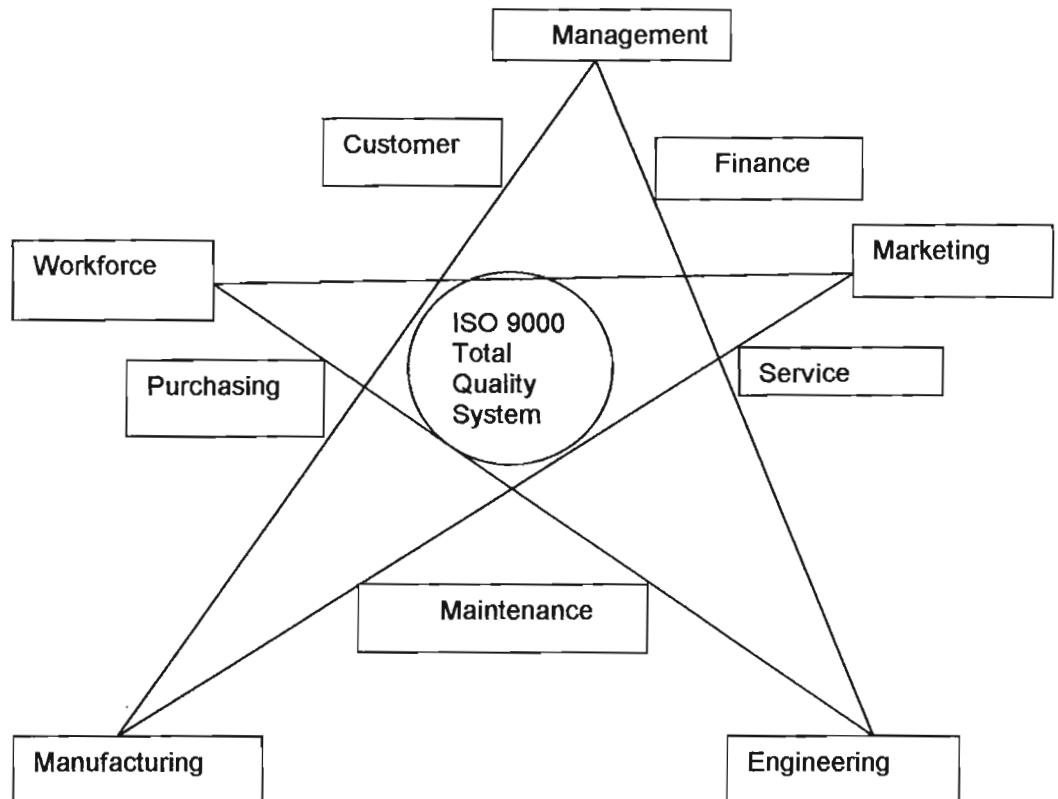


Figure 2.3 ISO 9000 at the centre of the TQM structure

Source: Schuler *et al.*, 1996:103

2.7.1 The ISO 9000

According to (Internet 7), the ISO 9000 series of standards, and their European equivalent (EN 29000), are derived from the British quality management standard (BS 5750) which was built on a military standard, the UK Ministry of Defense's Def Stan 0521. The **ISO 9000** family is primarily concerned with "**quality management**". This means what the organisation does to fulfil:

- The customer's quality requirements; and
- Applicable regulatory requirements, while aiming to
- Enhance customer satisfaction; and
- Achieve continual improvement of its performance in pursuit of these objectives.

The vast majority of ISO standards are highly specific to a particular product, material, or process. However, the standards that have earned the ISO 9000 families a worldwide reputation are known as "generic management system standards". "**Generic**" means that the same standards can be applied:

- To any organisation, large or small, whatever its product;
- including whether its "product" is actually a service;
- in any sector of activity; and whether it is a business enterprise, a public administration, or a government department.

"Generic" also signifies that no matter what the organisation's scope of activity, if it wants to establish a quality management system or an environmental management system, then such a system has a number of essential features for which the relevant standards of the ISO 9000 families provide the requirements.

"Management system" refers to the organisation's structure for managing its processes - or activities - that transform inputs of resources into a product or service which meet the organisation's objectives, such as satisfying the customer's quality requirements, complying with regulations, or meeting environmental objectives (Internet 7).

Why are the Standards so Important?

Registered companies have had dramatic reductions in customer complaints, significant reductions in operating costs and increased demand for their products and services. Other benefits can include better working conditions, increased market share, and increased profits.

ISO 9000 registration is rapidly becoming a must for any company that does business in Europe. Many industrial companies require registration by their own suppliers. There is a growing trend toward universal acceptance of ISO 9000 as an international standard. Many companies require their suppliers to become registered to ISO 9001 and because of this, registered companies find that their market opportunities have increased. In addition, a company's compliance with ISO 9001 ensures that it has a sound quality management system, and that's good business (Internet 8).

2.7.2 ISO 9001, ISO 9002, and ISO 9003

ISO 9001 is one of a series of three international standards for quality systems that can be used for external quality assurance purposes. These standards specify quality system requirements for use where a contract between two parties requires the demonstration of a supplier's capability. Quality system requirements are defined for three types of supplier activity. ISO 9001 is a model for quality assurance systems in design, development,

production, installation and servicing. It is appropriate when conformance to specified requirements is to be assured by the supplier during several phases of activity which may include design, development, production, installation and servicing (Internet 9).

ISO 9002 is a model for quality assurance systems in production and installation. It is appropriate when conformance to specified requirements is to be assured by the supplier during production and installation.

ISO 9003 is a model for quality assurance systems in final inspection and test. It is appropriate when conformance to specified requirements is to be assured by the supplier solely at final inspection and test.

When an organisation's quality system has been assessed against ISO 9001, ISO 9002 or ISO 9003 by an accredited independent certification body, then the quality system is registered, and can be used as evidence of quality assurance in tendering for contracts. Quality systems produced in accordance with these quality system requirements are subject to regular third party assessment based on documented, objective evidence of compliance. ISO 9001 quality system requirements are detailed in the standard in the following sections:

- Management responsibility
- Quality system
- Contract review
- Design control
- Document control
- Purchasing
- Purchaser supplied product
- Product identification and traceability
- Process control
- Inspection and testing
- Inspection, measuring and test equipment
- Inspection and test status
- Control of nonconforming product
- Corrective action

- Handling, storage, packaging and delivery
- Quality records
- Internal quality audits
- Training
- Servicing and Statistical techniques.

Within each of these sections, there are generally several sub-sections. For example, the section on Management responsibility has the following sub-sections - Quality policy, Organisation, and Management review. Within the sub-section on Quality policy, the standard states that the supplier's management shall define and document its policy and objectives for quality and its commitment to quality, and that the supplier shall ensure that this policy is understood, implemented and maintained at all levels in the organisation (Internet 9).

2.8 Total Quality Management Implementation

Evans & Dean (2000:198), emphasise that organisational change is needed in implementing Total Quality and constantly thereafter, because customer expectations continuously evolve. There are many suggestions for success in implementing change and quality, and because each organisation and set of managers implementing the change and quality improvement is unique, organisations seeking to make a change have many different options available (Rao *et al.*, 1996).

2.8.1 Planning a Change

Planning a change is an important aspect to enable TQM success in any organisation. It requires the organisation to change from independent to interdependence through improved communications, trust and free exchange of ideas, knowledge, data, and information. This facilitates answering the questions presented in figure 2.4.

Six Questions - Six Graphs For Planning A Change

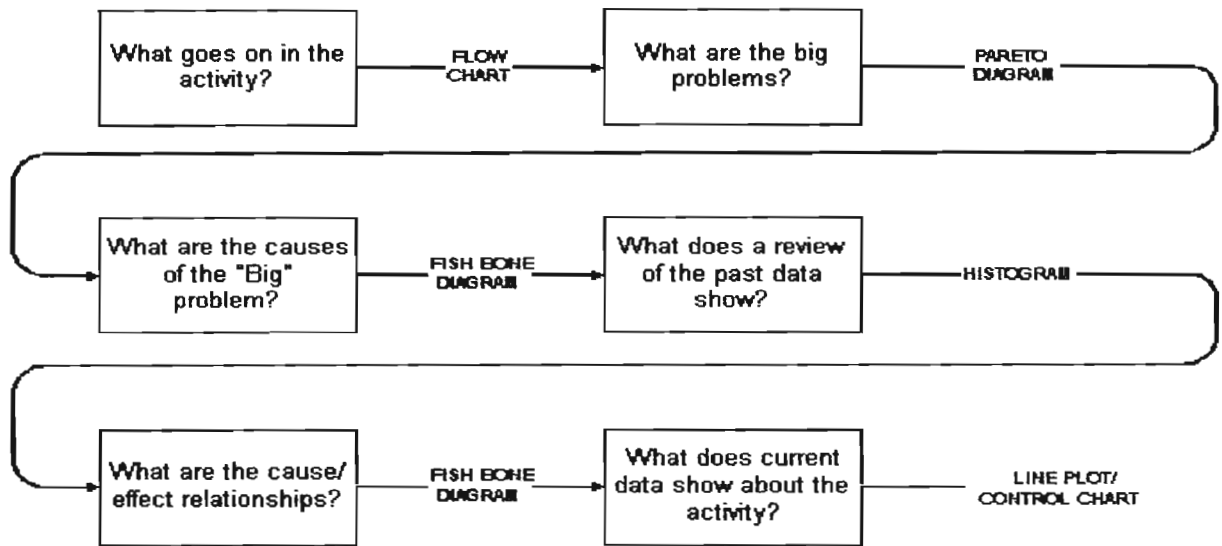


Figure 2.4 Planning a Change

Source: Internet 10

2.8.2 Total Quality Management Implementation Approaches

Traditional management approach: A TQM is overlaid (some say forced) upon the other systems and this approach represents high failure of TQM's. In this approach TQM never becomes an accepted reality by either organisational or human resource management. It is usually seen as competition, or "something to be tolerated." The TQM system consumes valuable resources needed by the other systems and rejection begins to occur (Internet12).

Integrated management approach: This is the least common. A TQM is blended and balanced with existing cultural initiatives in both organisational and human resource management systems. This represents high success rate of TQM's. Whether both organisational management and human resource management systems take on a "quality management commitment" or "join a quality management team" is not important. The principles of quality management are attended to as an important third system that blends, integrates, aligns and maximizes the other systems to beat competition in world class quality performance. This approach can often be divided into two sub-choices, depending upon managerial resources, readiness, acceptance, and competencies (Internet12).

Total Quality is a description of the culture, attitude and organisation of a company that aims to provide, and continue to provide, its customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations, with things being done right first time, and defects and waste eradicated from operations. Many companies have difficulties in implementing TQM. Surveys by consulting firms have found that some companies that have undertaken TQM have achieved either significant or even tangible improvements in quality, productivity, competitiveness or financial return. However, other people are sceptical about TQM. It is important to note that successful companies have a much higher percentage of successful TQM implementation (Internet 13). Some useful messages from results of TQM implementations include:

- if you want to be a first-rate company, don't focus on the second-rate companies who can't handle TQM, look at the world-class companies that have adopted it;
- The most effective way to spend TQM introduction funds is by training top management, people involved in new product development, and people involved with customers.

Important aspects of TQM include customer-driven quality, top management leadership and commitment, continuous improvement, fast response, actions based on facts, employee participation, and a TQM culture (Internet 13).

2.8.3 Customer-driven quality

TQM has a customer-first orientation not internal activities and constraints. Customer satisfaction is seen as the company's highest priority and the company that believes in that will only be successful if customers are satisfied. The TQM Company is sensitive to customer requirements and responds rapidly to them. In the TQM context, 'being sensitive to customer requirements' goes beyond defect and error reduction, and merely meeting specifications or reducing customer complaints. The concept of requirements is expanded to take in not only product and service attributes that meet basic requirements, but also those that enhance and differentiate them for competitive advantage. Each part of the company is involved in Total Quality, operating as a customer to some functions and as a supplier to others. The Engineering Department is a supplier to downstream functions

such as Manufacturing and Field Service, and has to treat these internal customers with the same sensitivity and responsiveness as it would external customers (Internet 13).

2.8.4 Total Quality Management leadership from top management

TQM is a way of life for a company and thus it is introduced and led by top management. Attempts to implement TQM often fail because top management doesn't lead and get committed - instead it delegates and pays lip service. Commitment and personal involvement is required from top management in creating and deploying clear quality values and goals consistent with the objectives of the company, and in creating and deploying well defined systems, methods and performance measures for achieving those goals. These systems and methods guide all quality activities and encourage participation by all employees. The development and use of performance indicators is linked, directly or indirectly, to customer requirements and satisfaction, and to management and employee remuneration (Internet 13).

2.8.5 Continuous improvement

Continuous improvement of all operations and activities is at the heart of TQM. Once it is recognized that customer satisfaction can only be obtained by providing a high-quality product/service, continuous improvement of the quality of the product is seen as the only way to maintain a high level of customer satisfaction. As well as recognizing the link between product quality and customer satisfaction, TQM also recognizes that product/service quality is the result of process quality. As a result, there is a focus on continuous improvement of the company's processes that leads to an improvement in process quality. In turn this will lead to an improvement in product/service quality, and to an increase in customer satisfaction. Improvement cycles are encouraged for all the company's activities such as product development, use, and the way customer relationships are managed. This implies that all activities include measurement and monitoring of cycle time and responsiveness as a basis for seeking opportunities for improvement.

Elimination of waste is a major component of the continuous improvement approach. There is also a strong emphasis on prevention rather than detection, and an emphasis on quality at the design stage. The customer-driven approach helps to prevent errors and achieve defect-free production. When problems do occur within the product development

process, they are generally discovered and resolved before they can get to the next internal customer (Internet 13).

2.8.6 Fast response

To achieve customer satisfaction, the company has to respond rapidly to customer needs. This implies short product and service introduction cycles. These can be achieved with customer-driven and process-oriented product development because the resulting simplicity and efficiency greatly reduce the time involved. Simplicity is gained through concurrent product and process development. Efficiencies are realized from the elimination of non-value-adding effort such as re-design. The result is a dramatic improvement in the elapsed time from product concept to first shipment.

2.8.7 Actions based on facts

The statistical analysis of engineering and manufacturing facts is an important part of TQM. Facts and analysis provide the basis for planning, review and performance tracking, improvement of operations, and comparison of performance with competitors. The TQM approach is based on the use of objective data, and provides a rational rather than an emotional basis for decision making. The statistical approach to process management in both engineering and manufacturing recognizes that most problems are system-related, and are not caused by particular employees. In practice, data is collected and put in the hands of the people who are in the best position to analyze it and then take the appropriate action to reduce costs and prevent non-conformance. Usually these people are not managers but workers in the process. If the right information is not available, then the analysis, whether it be of shop floor data, or engineering test results, can't take place, errors can't be identified, and so errors can't be corrected (Internet 13).

2.8.8 Employee participation

A successful TQM environment requires a committed and well-trained work force that participates fully in quality improvement activities. Such participation is reinforced by reward and recognition systems which emphasize the achievement of quality objectives. On-going education and training of all employees supports the drive for quality. Employees are encouraged to take more responsibility, communicate more effectively, act

creatively, and innovate. As people behave the way they are measured and remunerated, TQM links remuneration to customer satisfaction metrics (Internet 13).

2.8.8.1 Strategy for implementing employee involvement

Organisations that are successful at implementing employee involvement practices use a strategy to get a match between the practices and the organisation culture (i.e., the unique values, beliefs, and behaviours of people in the organisation that explain how individuals and groups work together to get things done). Experts' results suggest the strategy should include how to get employee involvement started in the organisation or improving efforts already have in place include a readiness assessment

It is recommended, to arrange for a "study" to gather baseline data to identify critical needs and issues associated with your organisation's current performance and continual improvement. Such "fact finding" can lead to information that identifies gaps between current performance and that desired by management, employees and customers. Productivity improvement efforts can then be focused on the areas that will yield the maximum results for the organisation.

In addition, information can be used from this assessment to diagnose training needs and provide a baseline against which the management team can measure improvements in both skills and productivity. Failure to identify the current skills, knowledge and management style could lead to providing some training not needed by managers and employees and neglecting to address problems that are not related to training. Top and middle management support is the most important factor to promote a successful implementation of employee involvement programs. Support is demonstrated by:

- Behaviours that encourage and respond to employee input.
- Communication of the goals of employee involvement practices throughout the organisation.

The management team working with the consultants (and in some cases a task force) should be able to clearly state what they need to know and how they plan to use this information in order for the researcher to develop suitable instruments to gather the needed data. The following are important in this aspect:

Readiness assessment to identify the barriers to implementation of employee involvement, the associated practices as well as the present climate or culture. Such information can help decision-makers to make choices about the practices that best fit the ability of the organisation to adapt to them. Typical methods include interviews, questionnaires, focus groups, observation, and examination of records.

Communication of specific goals for employee involvement set by management. Support is demonstrated through such means as policy statements, rewards, sharing work-related information and publicizing efforts and accomplishments in employee newsletters.

Training to enable managers and employees to learn the skills required for employee involvement practices. For example, supervisors and employees may need training in group leadership, providing feedback, and problem-solving in order to work together effectively on improvement efforts in teams.

Evaluation of the program features and effects include formal measurement of target results and monitoring the implementation and support of employee participation in planning, problem solving and decision-making (Internet 13).

If the organisation has the internal support of professionals or can hire those with the expertise to do employee attitude surveys, performance analysis, and statistical analysis, a participative approach to a readiness assessment might be considered. Organisational development consultants and facilitators can provide support to decision-makers starting employee involvement programs by conducting orientation sessions and surveys. This is done to assist the decision-makers in evaluating the readiness of their organisation for employee involvement practices such as "Teams", an approach used frequently. There are advantages to using outside experts to conduct an employee attitude study. Some of the considerations include:

- Individuals trained in organisation dynamics and survey research will likely obtain more in-depth and accurate data because of their skill at interviewing, study design and analysis.

- Employees often feel the data will be treated in a confidential way if an external person gathers, analyzes and reports it. People may be more candid and cooperative in providing information.

An external person may have a clearer perspective of what is occurring in the organisation because they do not have any vested interest in the results. Change efforts must be integrated with the primary systems and processes of the organisation to provide lasting effects. Due to such concerns, it is recommended that an organisation's decision-makers should (Internet 13):

- Conduct an assessment of the organisation's existing attitudes, structures, culture, systems and barriers to the desired change;
- Develop a vision statement for the future;
- Involve management in the design of the employee involvement and strategy to increase ownership;
- Develop a formal policy on the role of employee involvement, and specific goals and objectives;
- Publish the employee involvement., policy, goals and objectives;
- Communicate the above to employees at all organisational levels;
- Implement employee involvement., strategies that will fit the ability of the employees and management to adapt to them;
- Provide facilitators, quality advisors, and other change agents to support the group structures;
- Train employees in problem solving, group skills and other skills needed to identify problems, make decisions and problem-solving.
- Evaluate the employee involvement strategies to determine that the program:
 - methods are working;
 - is implemented as intended;
 - is producing the results as expected.

It is important to make sure that the organisation understands that there will be a fundamental conflict between the traditional organisation structures and systems and those required to support employee participation. Many of today's managers still resist any system they see to be a threat to their authority and their traditional roles. Thus it may be necessary to begin implementation of the quality approach by using the traditional model it has been with less success. Executives of the Conference Board's U.S. Quality Council

stressed that "attitudinal and behavioural changes come hard." Defining and meeting customer requirements continuously demands a culture that incorporates constant change (Internet 13). People resist the demands of continuous change because it creates uncertainty. Faced with previous personal experiences as employees who were rated on their individual achievements (meeting their objectives and quotas), they will be fearful of trusting their personal welfare to groups and the "common good". Therefore, a transitional approach to developing participative attitudes and skills in managers may be necessary to start the organisation toward *total quality management*. It may be best to begin by holding managers accountable for developing employee participation through the use of the list above and using a management by objectives approach to measure their progress until the quality approach takes hold. Thus, creating a transition from the traditional view to the new total quality philosophy by use of something familiar like MBO could be a better approach to change (Internet 13).

Table 2.1 Employee Involvement Practices

Practice	Definition
Suggestion System	Program that elicits individual employee suggestions on improving work or the work environment.
Survey Feedback	Use of employee attitude surveys, as part of a larger problem-solving process in which survey data are used to encourage, structure, and measure the effectiveness of employee participation.
Quality Circle	Group of employees that meet voluntarily in a structured environment to identify and suggest work-related improvements. The group's only power is to suggest changes.
Quality of Work-Life Committee	Committee of employees representing the union and management usually prohibited from addressing contractual issues. It usually focuses on issues to improve organisational performance and employee work-life.
Job Redesign	Redesign of work to increase employee performance for example, job enlargement to increase use of employee skills, broaden the variety of work performed and provide the individual with greater autonomy.
Self-Managing Team	Group of employees given responsibility for a product or service and empowered to make decisions about assignment tasks and work methods. The team also may be responsible for its own support services and perform certain personnel functions.
Employee Participation Group	Group of employees, such as a team or work council that does not fall within the definition of quality circle or a self-managing team.

Source: United States General Accounting Office. Employee Involvement: Issues for Agencies to Consider in Designing and Implementing Programs. GAO/GGD 88-82, May, 1988.

2.8.9 A Total Quality Management culture

An open, cooperative culture has to be created by management for TQM to be a success. Employees have to be made to feel that they are responsible for customer satisfaction.

They are not going to feel this if they are excluded from the development of visions, strategies, and plans thus it is important they participate in these activities. They are unlikely to behave in a responsible way if they see management behaving irresponsibly - saying one thing and doing the opposite.

2.8.10 Product development in a Total Quality Management environment

Product development in a TQM environment is very different to product development in a non-TQM environment. Without a TQM approach, product development is usually carried on in a conflict atmosphere where each department acts independently. Management that focuses on supervising individuals and fire-fighting is necessary and rewarded. Product development in a TQM environment is customer-driven and focused on quality. Teams are process-oriented, and interact with their internal customers to deliver the required results. Management's focus is on controlling the overall process, and rewarding teamwork (Internet 4).

2.9 Benefits from Total Quality Management

According to Fox (1995:268) the benefits of TQM help companies to:

- Focus clearly on the needs of their markets;
- Achieve a top-quality performance in all areas, not just in product or service quality;
- Operate the simple procedures necessary for the achievement of a quality performance;
- Critically and continually examine all processes to remove non-productive activities and waste;
- See the improvements required and develop measures of performance;
- Understand fully and in detail its competition, and develop an effective competitive strategy;
- Develop the team approach to problem-solving;
- Develop good procedures for communication and acknowledgement of good work;
- Continually review the processes to develop the strategy of never-ending improvement.

2.10 Barriers to quality

According to Beckford (2002), some of the barriers which prevent the achievement of quality have been grouped into under four main headings:

- Systems and procedures;
- Culture;
- Organisation design;
- Management perspectives.

Systems and procedures

Many organisations, in particular those which are medium to large in size and long established, operate through a more or less bureaucratic processes. That is to say, they are organized through a hierarchical system of offices. In the absence of standardised approach, the customer might easily be confused and the organisation itself would spiral out of control.

However, problems can arise with such systems. First, the systems and procedures can become fixed-that is, they become “frozen” into the organisation such that pressure for change and adaptation meets with high resistance. This is a barrier to the achievement of quality. It can be recognized when members of staff use expressions such as “we have always done it like that.” A particular problem arises from the use of procedures in service organisations. Procedures can help to ensure standardization and repeatability; however, they can miss the customer. It is important to note that every service is unique and hence requires a unique procedure. It is often neither practical nor reasonable in service transaction to attempt to create a procedure which covers every conceivable circumstance.

The second problem, the perception of what is important, is probably as great a barrier to quality, particularly in the context of a style quality programme. Such a programme relies heavily on an exhortative, evangelical approach. In some cases, managers and staff focus on achieving those aspects of performance which are explicitly measured. The system and procedures of the organisation, especially those involving performance measurements, tend to determine which characteristics of the organisation receive most attention. It is sufficient to say that systems and procedures must be re-designed to support the achievement of quality, with particular attention paid to the selection of performance criteria. If quality is a desired characteristic of the outputs of the organisation, it will

somehow, and to some degree have to be measured and must take account of the expectations of customers – whether internal or external.

Culture

The development of a quality culture is a critical area of the achievement of quality. Cited by Cluttererbuck & Crainer (1990:196) in Beckford (2002), suggests that culture describes the ‘artefacts, values and underlying assumptions’ that govern behaviour within the organisation. It is the ‘values’ and ‘beliefs’ that are the key to cultural drivers, although these may be expressed in a variety of ways. They often emerge from the measurement systems and procedures which are seen to communicate to staff and workers what senior management consider important about performance. Eventually, such aspects become culturally – that is, they become a part of the value system of the organisation.

A question that links with some of the points already made about measurement systems and about politics is: do the employees of the organisation care about work, and in particular about the quality of product or service? If they do not, for whatever reason, then quality will be probably not being achieved. Such attitudes are often driven by management through the priorities that they set and the results through which they manage the organisation. For example, if those who are rewarded well by the organisation are those who produce most, regardless of quality, then productivity (output) will be the focus of everyone’s attention.

He further maintains that achievement of quality, particularly in the *Kaizen* (continuous improvement) sense, depends upon an appropriate level of innovation. Creativity (the origination and implementation of new ideas or innovation) is often suppressed in organisations in pursuit of the status quo. Lack of creativity in the organisation is not assign that people are not creative, since creativity is inherent in all of us. More frequently it is a sign that their creativity is stifled within the organisation and thus has become expressed outside the workforce. Large or successful organisations often emit satisfaction. They have an air of complacency and contentment with the way things are, which can be almost tangible. Such a situation imposes an immense barrier to quality since there is no apparent compulsion or impetus for change. Frequently such satisfaction is present in organisations which have a short term focus – perhaps a lack of foresight. They assume

that if everything is all right at present, then everything will surely continue to be all right. Disasters and near – disasters frequently overtake such organisations.

In prevailing turbulent business environment, an assumption of continuity is highly dangerous. While the organisation is pursuing quality, with its implication of continuous improvement, standardisation and regularity, it is equally vital to be alert to the potential for discontinuous change, especially since strategic advantage may rest in discontinuities.

Another barrier to be explored under culture is that of accountability. Achievement of quality requires that errors be acknowledged, that sources of error be tracked down and rectified, and that both curative and preventive actions be taken by those involved. In many organisations, this process is inhibited by a subculture which adopts a panel attitude. The realization of error is followed by the process of detection, prosecution – sometimes persecution and punishment. This may in turn lead to a situation where Deming (1982:107) says ‘fear grips everyone’ and in such a situation, errors may be suppressed hidden. Where this is not possible, there will be a tendency to avoid punishment by blaming others and by refusal to accept responsibility.

This barrier can be overcome by recognising that errors are normally opportunity for learning, the basis for modifying a process, system, skill or behaviour to inhibit or prevent further occurrences. However, in most organisations, and in many circumstances, the cause of the error can be traced to some failure in the design or execution of a process, in the training of employee or in the equipment provided for the completion of the task. These aspects should be the first focus of attention and in a quality organisation, will inhibit the use of disciplinary action. However, in most cases, managers prefer to find someone to blame, perhaps because it is easier to do that than to accept responsibility for failure. From this point it is clear that this approach leads to a blame culture.

Organisation design

When discussing the organisation design, it is not simply the organisation structure (the classic pyramidal hierarchical or, more recently, the very flat organisation chart) which is to be considered. It must also incorporate the interactions between units, the information and the management systems and their total interrelatedness. As Beer (1985) cited in

Beckford (2002) that the organisation chart may be seen as 'frozen out of history', revealing whom to blame when things go wrong but not showing how the organisation actually works. A number of barriers to achievement of quality can be found in this area.

The most frequent error is institutionalized conflict. This means that the organisation has been designed in such a way that conflict between quality and some other characteristics such as productivity, is inherent. Such a conflict is often commonly found where the quality control or quality assurance manager reports to the production manager. The manager is, in effect, redundant since no value is added to the operation of the organisation by his or her presence. This situation replicated in many organisations, presents a major barrier to quality. A structure must be created in which the quality the quality function is independent of the production function.

The design of the information system is another barrier to quality. This does not simply mean the computerised management and executive information system, but the whole of the information generating and processing activity of the organisation, both formal and informal. These activities must generate the right information, in the right format, at the right and deliver it to the right decision maker(s) if it is to be of benefit.

The next barrier to quality is one of role understanding and articulation of within the organisation, particularly among the staff in the control and development functions: general management, strategic planning, marketing, accounting, and so on. There is a tendency among many such staff to delve down into the operations of the organisation, perhaps taking direct control when errors occur or the unexpected happens. While doing so they may be neglecting their own roles within the organisation. The operational managers must be allowed the freedom and given the support to solve their own problems.

Beckford believes that an organisation design in many cases may be a misnomer as frequently organisations have not been designed but have grown and undergone metamorphoses almost of its own accord, i.e., organisational design is emergent and not formal. Many features of an established organisation, whether they be structural such as the set up of departments or units, organisational, that is, activities and procedures or

cultural and attitudinal, have not been not intentionally and deliberately created. Often they just grow. They develop, perhaps to support some long-forgotten or superseded purpose of the organisation, and are simply never stopped. Cases are common where procedures have become institutionalized and carried on for years. A similar process occurs with what are known as cow paths in Business Process Re-Engineering (BPR). These are the routes through an organisation which develop naturally without the purposeful intervention of the staff. A procedure in use may never have been the subject of deliberate design, it may have simply developed and its users become accustomed to it, complete with all its unique peculiarities and foibles. Such processes are often inefficient; sometimes ineffective, everybody complains about them, but they are seen as nobody's responsibility. These cow paths and inappropriate processes may well present barriers to the achievement of quality, since they are an 'unconscious' part of the organisation and their quality inhibiting properties may not be recognized.

Management perspectives

According to Beckford (2002:32), management perspectives refer not simply to the attitude to quality, but to the whole management ethos of the organisation as it impacts on quality. In order for an appropriate attitude to be developed to quality, it must be recognised as an issue, that is, the lack of quality in product or service must be acknowledged. Frequently, companies adopt an ostrich-like attitude to quality, finding it easier to blame poor performance on a host of other reasons. Rarely is quality of product or service considered as a potentially primary issue at the outset. It is essential that quality be treated as a potential part of the problem and be considered as a possible cause of the problem. Even where a company is performing well, a positive attitude to quality needs to be developed and maintained. A product which is considered 'good enough' probably isn't so in today's competitive market. There is no room for complacency.

A further barrier to achievement of quality is a focus on short-term results only, that is, the result in a particular shift, day, week, quarter, or even year. Often, salary or wage packages and performance bonuses are related directly to current period performance. Therefore, current acceptable performance parameters are used as a reason (or excuse) for not addressing the issue of quality. It is often, though not necessary, the case that a focus on quality, or any other change programme, will lead to a short-term decline in

performance (particularly of productivity) while staff and management adjust to changes. It may be related to a complete change of emphasis, where achieving quality of output needs to override, perhaps for the first time, the achieving of quantity of output. The change required in management attitudes is fundamental, away from pure productivity to productivity with quality. After all, output which is rejected, either internally or by the customer, cannot really be considered output at all, that is, it is a waste. Thus a major barrier to quality may be built into a reward system of the organisation. This barrier can be overcome only by changing that system; it cannot be overcome by through exhortations, evangelism, penal action or statistical measurement. Effective change may mean negotiating fresh terms with a variety of stakeholders in the enterprise, from the workforce and their bonus system to the shareholders or providers of equity and loan capital, whose short-term interest may be affected and will need to be addressed.

Although it is portrayed for the sake of simplicity as a step change, in practice, the quality gap widened on a progressive basis with a very small increase in output. The greater the throughput, the greater the reject rate, every increase in running speed generating an ever-reducing increase in acceptable output. Contemporary thinking suggests that a public approach to problem solving is more effective, that is, one which deals with systems as wholes, which recognizes the interrelationships and interdependencies between parts of the system and which acknowledges that fixing one part of the system will not necessarily improve the whole. Such an approach broadens the attack on a problem by widening the scope of inquiry to study also those factors which influence it – its inputs – as well as considering the consequences of any changes – the effect of outputs.

Costs of quality

This means the direct and invisible costs unnecessarily incurred by any organisation which does not have an effective quality system in place. Direct costs in this context means those costs arising as a result of non-achievement of quality and visibly attributable to that fact. Invisible costs in this context those costs arising in the organisation as a result of not achieving quality but not visibly attributable to that fact – those where the relationship between non-quality and the cost may not have been discerned by the organisation. Any production system for a product or service which is not designed to achieve the quality standard ‘first time, every time’ will incur rework and rectification

costs. However, in an era of quality, with lean production systems and just in time delivery, these costs need to be uncovered, and an attention paid to their reduction and eradication.

2.11 Total Quality Management in the Higher Institutions of Learning

According to Unal (2002) the TQM concept applied to higher education embraces all fields and levels of education and has an effect on the following:

- physical facilities such as buildings, sport , complexes, and open field;
- academic infrastructure such as laboratories, library, documentation, communication and information infrastructure;
- curricula;
- examination and evaluation systems;
- supplying academic and administrative personnel and their improvement systems;
- research and publication;
- Institutional development plans (strategic planning).

HIGHER EDUCATION SYSTEM

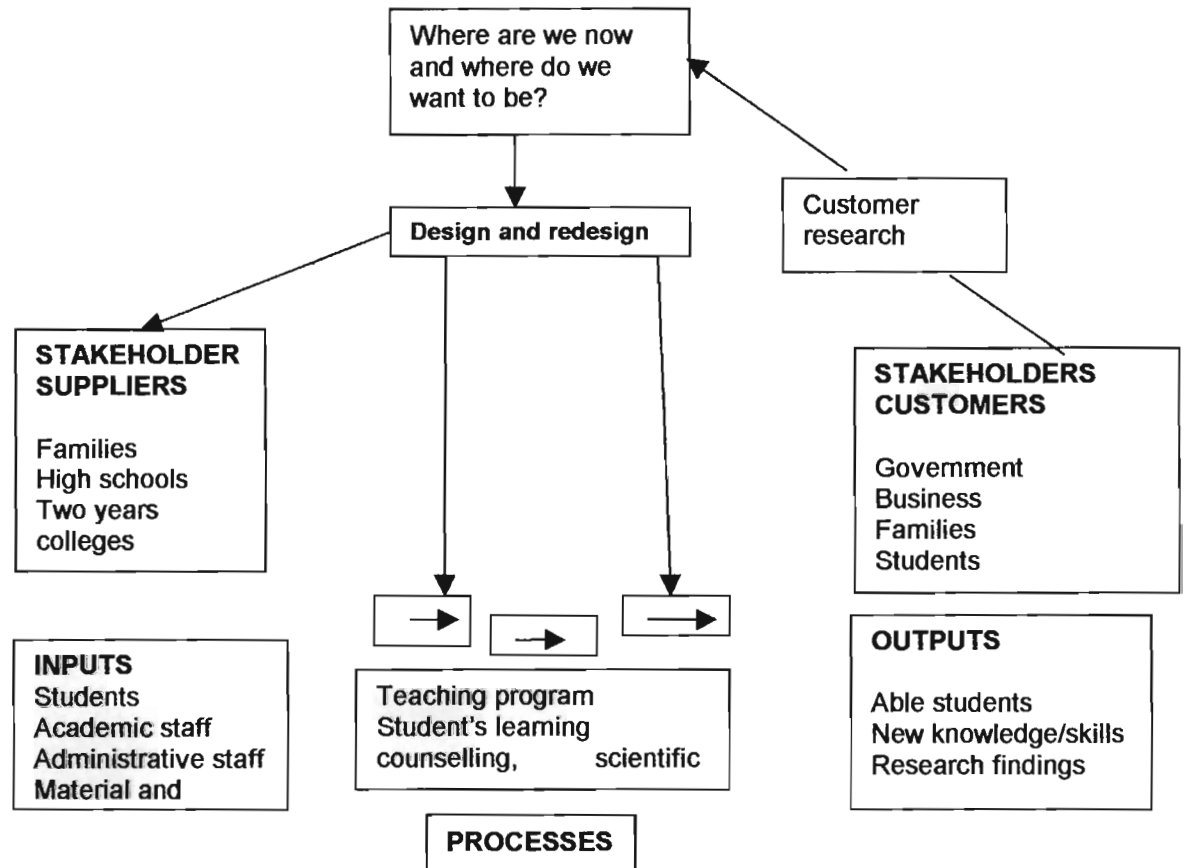


Figure 2.5 Higher education systems

Source: Unal (2002)

2.11.1 Six quality concepts for education based on quality management principles

Leadership

Leaders establish unity of purpose and direction of education. They should create and maintain the internal environment in which people can become fully involved in achieving the school's objectives. Many activities do not require sustained attention and support of the senior leader. Quality is not one of these activities, however, this does not imply a "top down" management style. Quality systems are management style neutral. In many schools, the leadership is delegated to principles, teacher, and staff. Senior leaders in a school system needs to set directions and within an accepted value system. They need to ensure that strategies, systems, and methods are used to build knowledge, skills, and attitudes consistent with educational goals and objectives. Senior leaders encourage

participation in quality improvement at all levels and serve as role models for quality of life:

- Senior leaders provide systematic and documented best practice.
- Senior leaders provide systematic assessment and review of processes.
- Senior leaders provide systematic improvement of school processes.
- Senior leaders are responsible for maintaining the value of assets.

Understanding stakeholders

Public schools depend on public confidence and therefore should understand current and future community needs, meet student learning requirements, and exceed the community's expectations. The question is, "Who are the customers of the school?" is important and difficult to answer as a general question. Some schools have spent precious time trying to anticipate all the customers and all their needs. Time can be spent more effectively by using the following guidelines. Students, while not customers in the usual sense, are the primary beneficiaries of an education. The secondary beneficiaries (stakeholders) are parents, the marketplace, and society in general. The School Board is the elected representative of secondary beneficiaries.

Relationships between schools and their customer, both primary beneficiaries and stakeholders, are time and event specific. For example, when the teacher is giving a lesson, the students are the customers. When the student gives the teacher a completed test or homework, the teacher is the customer. The customer should be identified for each transaction. Fortunately, this relationship is almost always obvious. While there are many stakeholders of a school, the relationships with them become more manageable when stakeholders' common needs are understood. Surveys, when properly administered and analyzed, can identify common needs. A study of six Florida school districts found common stakeholders' needs are for the following:

- safe and clean schools with someone in charge;
- communication with the school that can be understood and responded to with the confidence that the reply will be understood;
- treatment that is courteous, respectful, and well informed; and
- Competent staff engaged in appropriate activities.

Surveys of primary customers and stakeholders should be based on actual activities for which someone is responsible. Survey item requesting opinions on the "intellectual climate of the campus" yields less useful information than items asking for experience with "school buses running on time". The difference between these two kinds of items is that accountability for climate is difficult to assign while school bus routes have been specifically assigned. The specific nature of the latter example facilitates corrective action to improve processes.

Factual approach to decision making

Effective decisions and actions are based on the analysis of data and information. The selection of appropriate data in schools needs to be guided by considerations of the breadth and depth of the data collected. Quality-related data should include student and stakeholder needs, process control limits, performance measures, and changed values. Good data are reliable, consistent, standardized, timely, current, accurate, and available. How reliable, consistent, etc., the data are is determined by the quality requirements found in the school's quality manual.

Quality system management is based on measurement of student performance, stakeholder satisfaction, employee data, the learning process, support services, and, for each set of data collected, records of comparisons, benchmarks, and how the data are used for exhalations. Measures refer to numerical information that quantifies input, results, and performance dimensions of processes, programs, activities, and services and of the overall educational organisation, such as:

- Characteristics of school can be measured.
- Measurements have predictable or random variability, as do characteristics.
- All variability can be reduced toward a target within limits.
- Waste occurs when variability exceeds target limits.
- Reduction of variability stabilizes school processes and reduces waste.

Involvement of people

People at all levels are the essence of education and their full involvement enables their abilities to be used for the organisation's benefit. Employees are critical to success in schools. Teachers, staff, and administrators are the assets that produce and maintain the intellectual capital from which a high level of quality education is produced. The quality

system assures stakeholders' confidence in continued high quality education. In order to have an effective and efficient quality system employees align processes to achieve school goals. Employees achieve effective alignments when the value change conforms to purpose, varies within established limits, and satisfies all documented requirements. Employees achieve efficient alignment when their knowledge, skill, and attitude are focused by measurable objectives, reliable methods, and objective evidence. The following dictums prevail:

- Employees closest to a school process are most likely to understand it.
- Employees who study a school process systematically can improve it.
- Employees who improve processes reduce waste.
- Employees in school are motivated by reducing waste.
- Employees in schools do not fail - systems fail and are corrected.

Evidence that a school supports employees can be found in a human resources plan that is derived from the school's quality goals. The plan includes such support items as career development, employee-related data, employee involvement in quality improvement, and actions to increase employees' authority, responsibility, and innovation. Employee-related data includes records of participation in orientation for new employees, training in quality concepts and methods, school system evaluations, and in-service programs for new technology.

Process approach

Learning is achieved more efficiently when related resources and activities are managed as a process. A process changes the value of whatever enters a school. Ignorance becomes knowledge and disobedience becomes conformity. The quality system is designed to control and improve the value by understand the process that make the change in value. Simply stated:

- All work in a school is composed of processes;
- Actions within school processes often interact with each other;
- Processes within a school interact with each other;
- Results of a school are the results of a process.

Continual improvement

Continual improvement in processes and results should be a permanent objective of schools. School improvement is a continuing goal of schools. Improvement, when carried out in a quality system, is subjected to two criteria. First, the results continue to rise and the costs continue to fall. Second, from Deming, processes must be stable before they are improved. Taken together, these criteria require data on results, cost, process stability and process capability.

These criteria are significant barriers to schools in which results are unsupported by objective evidence of: results based on comparisons and benchmarking; costs of time, money, sustained attention, and unreliable measurements; process stability established in terms of special and common cause variation; and process capability measured by conformance to requirements. An estimate of time required to meet these criteria, for some schools, is in terms of years. The following need consideration:

- Schools need not wait until all the technical requirements of a quality system are met before making obvious improvements and collecting best practice data. Corrective and preventive action systems can be developed, a system of internal quality audits, and performance feedback methods can result in improved stakeholder satisfaction while the quality system is being developed: Process improvement criteria in schools are set to satisfy requirements.
- Actions, which fail to meet requirements, can be prevented.
- Confidence in school increases as requirements are met.
- Corrective actions on root causes restore user confidence.
- Prevention and corrective action on root causes reduce waste.
- Characteristics of a school system can be identified for study.

2.11.2 The seven management concepts needed to provide the linkages necessary to improve education

According to Johnson *et al.* (1999), the seven key factors have evolved from experience with and knowledge about success and failure in improving an educational institution's organisational effectiveness via top management. Getting top management to take on a continuing obligation to support an improvement over an extended time require reasonable assurance of success and continuing good news in progress reports. These seven factors are as follows:

- Top management's obligation to improve organisational effectiveness;
- Identification of critical processes for improvement;
- Selection of scaleable processes;
- Measuring processes before beginning the improvement;
- Proportioning time appropriately among design, development, and implementation;
- Periodic measures taken during the improvement cycle and reporting results;
- Reporting improvements in terms meaningful to process stakeholders.

Further still, literature has shown that having good reputation for quality is more important to the educational institutions. Brand image is very important as it focuses on "what people think of when they think of your institution" rather than "what people think of your institution" (Krishnan, 1996). Reynolds & Gutman (1984) refer to thinking of brand image as a network of linkages between all the cognitive and emotional elements evoked by the name of the institution. Some of these elements may be related to the physical aspects of the institution (its buildings and environment); other elements may be related to organisations and people at the institution (sports teams, professors, students, administration, clubs, etc.); still other elements may relate to feelings associated with any of these elements or with special events.

2.12 Total Quality Management Implementation and Total Quality Improvement in Institutions of Learning

According to Cornesky *et al.* (1992:95), the following five conditions for implementing TQM and Total Quality Improvement (TQI) should be established sequentially, rather than at random:

- Education and commitment of administration.
- Education and commitment of faculty and staff.
- Establish trust.
- Establish pride in professional work.
- Change the institutional culture.

2.12.1 Education and Commitment of Administration

All quality leaders make the point that before lasting change to-word quality can be realised, management must:

- Be trained in quality processes and systems
- Make sure that they will support the commitment toward quality.

However if administrators are not educated about the principles of TQM and TQI, obviously how can they be expected to make total commitment? Therefore, a correct start is crucial for the implementation of TQM and TQI, and the correct start is the education and commitment of the administration. Then, similar training must be provided to middle managers. After all managers have undergone educational experience, the president should consider the following:

Make it known that TQM and TQI are not being tested as concepts, but that the commitment to proceed with them is genuine. In fact, the president must constantly “walk the talk” on TQM/TQI, and let it be known that the only question is how to best implement quality through out the institution. According to Peters and Austin (1985) in Cornesky *et al* (1992:99), attention to quality is can become the organisation’s mind set only if all of its managers – indeed, all of its people –live it. They stress that living it means paying attention to quality 100% of the time and not allowing lapses now and then.

Replace or reassign managers who disagree with the movement, even though they might represent 25% to 33% of the management team. This will become obvious that the movement for TQM and TQI is real and senior executives who don’t support it with words and actions will be replaced. This also sends signal that management is responsible not only for identifying problems in processes and systems but for maintaining and improving quality as well.

Appoint a senior manager of quality who reports directly to the president. This person must have extensive experience as both a faculty member and an administrator in an educational institution. In addition, the person needs to be completely familiar with principals and processes of TQM and TQI. Her or his job description should include the following duties:

- ❖ Develop and teach quality awareness programs for all personnel;

- ❖ Constantly survey employees as to task, process, and system problems requiring improvement;
- ❖ Educate total quality councils appointed by the president, as well as the community advisory council, and all members of the government board;
- ❖ Promote the customer / supplier concept throughout the institution;
- ❖ Meet with external “customers” to understand their perceptions of the institution;
- ❖ Encourage the integration of process and system designs with emphasis on error free processes;
- ❖ Ensure adequate allocation of resources to properly meet process and system requirements;
- ❖ Establish detection methods that point out process and system errors, rather than product or people defects;
- ❖ Coordinate the development of the institution’s long term strategy toward TQM and TQI;
- ❖ Publish a newsletter that communicates TQI successes;
- ❖ Post graphs and charts showing TQM trends for various departments /units.

Appoint a TQM community advisory council. Appointing a TQM community advisory council is important because many members can be considered as *suppliers* (such as high school educators), whereas others can be considered *customers* (such as employers of the graduates), and still others as *consumers* (such as the parents of students or even the students themselves). Too often the members of this group have difficulty working together since they all will admit they want quality but have no background in TQM or TQI. By bringing the external groups with their special perspectives together, the group not only act as a barometer of public opinion about the institution, but also provides valuable information as how better to market the institution’s efforts toward TQM and TQI. Imagine the reaction of a college / university vice presidents, deans, chairs, and faculty who are informed that industries either do not employ or reluctantly employ their graduates because:

- Graduates don’t meet the specifications for entry;
- Graduates who are employed have marginal qualifications to succeed;

- Graduates who are employed require remedial training to bring them to speed;
- Graduates who are employed either quit or are fired within four years;
- It costs more to employ their graduates than those from other institutions.

When confronted with such information, educators initially respond emotionally, as though their personal credentials are challenged, and in denial resist adopting quality changes. After the appropriate education in TQM and TQI, however, these problems are looked upon and examined from a process and system approach, rather than a personal or emotional approach. Then, and only then, can progress be made toward a solution.

Further examination of these typical cases reveals that in both there should have been an increase in the supplier's awareness of the importance of quality to the customer. Here are examples of several possible outcomes of the community advisory council after receiving training in TQM and TQI:

- Customers can have regular meetings with suppliers to foster an understanding of each other's needs and requirements.
- The suppliers, on the other hand, are constantly informed as to how they are performing in meeting those needs.

The process by which these groups learn to evaluate the problems listed in the above "supplier/ customer" system takes a long time. It is an ongoing, educational process for all members of the council. Overcoming the emotional response to the failure of systems is hard. However, the need for extensive training for all administrators, objective examination of systems and work habits, and finally, a dedication to the advancement of the institution's mission, not its bureaucracy is emphasized.

Appoint a TQM council for each department / unit/ division. The council for an academic area should consist of department chairs and the dean. Councils should be expected to hold regular meetings that are devoted entirely to TQM, and should be required to report monthly to the vice president of quality on their achievements. Quality meetings should be as important as budget meetings, and curricular meetings and evaluation meetings. TQI councils should be expected to:

- Focus the unit's quality processes toward desired objectives that are consistent with the institution's mission and long-range goals;
- Ensure that TQM and TQI education is adequate and ongoing;

- Do continual reviews and benchmarking, and display quality improvement trends in the form of graphs and charts;
- Via the nominal group process, constantly prioritize and update tasks, processes and systems that add to the cost of quality;
- Encourage employee participation in quality circles;
- Recognise quality improvements internally and externally;
- Identify and correct tasks, processes, and systems that detract from a total quality education and / or experience.

Encouraging members of the institution’s governing board to participate in TQM and TQI seminars. This usually requires in depth session of at least one year. This is necessary, as most members of governing boards come from the traditional settings of business and education which are, by nature, bureaucratic. Consequently, they are usually, but not always, highly conservative and tend to avoid experimentation, as experimentation means mistakes. Mistakes, of course, occur in all institutions, and the usual reaction in highly bureaucratic institutions is to place blame on subordinates rather than examine the system. The latter actively would reveal the source of the problem. When governing board become convinced of the efficacy of the TQM and TQI movement, it serves not only as an ardent supporter but an advocate with the community and the legislature about the sincere efforts.

Insist that management write a quality philosophy guidebook for all employees. Later, they will use the guidebook as they develop TQM processes and systems for their department/unit. This should be coordinated by the vice president for quality as a “work – in progress.” It gives employees a text they can refer to and revise, and gives them the important sense of participation in the process rather than being subject to a process.

Establish a TQI Centre with its own staff who report to the vice president of quality. This is a strategic move, as it makes obvious to the internal and external community that quality is important. The TQI centre can:

- act as the educational arm for administrators, faculty, and staff;
- coordinate continuing education activities for external agencies requesting training on quality improvement techniques , such as statistical process control;

- act as a broker between the institution and the community it serves;
- act as a conduit for quality research activities, for not only the institution (faculty, administrators and staff), but also the community the institution serves;
- help faculty develop quality teaching strategies; and
- educate the institution's suppliers and independent contractors.

Progress toward TQM and TQI must begin with the top management, since that group controls resource allocation. If top management sets example for the rest of the institution, deans, chairs, and directors will recognise the movement in authentic and not just the latest fad. Managers who feel threatened by TQM empowerment procedures and who do not comply with the TQM guidelines will have to be replaced. This will send a strong signal to the entire institution about the president's commitment to total quality. The faculty and staff will eventually accept the fact that the TQM and TQI movements are not just another method to improve productivity, but a very real commitment toward quality.

Top managers must serve as models for the commitment to quality. Otherwise, deans, and chairs will not fully support TQM, and the faculty and staff will not spend much time on TQI if they feel quality is not a priority. To emphasize the importance of quality, the institution president should:

- Make quality improvement an agenda item at performance evaluation meetings with the vice presidents and deans, and
- Include the establishment and measurement of goals in the institutional mission statement and master plan. Of course, include faculty and staff when establishing the long-range plan and revising the mission statement.

Administrators must realise that by launching an institution toward TQM and TQI there will be distrust from the faculty and staff, who feel threatened by the action. They may look at the action as one designed to increase creativity under the rubric of total quality improvement. But the process of establishing trust must open-ended, with no time commitment established by management. It takes time to establish trust, but when it is established, pride in professional work and improvement in quality results. Eventually, a new institutional culture will be established.

2.12.2 Education and commitment of faculty and staff

Critical to the success of TQM and TQI is the education of not only managers, but faculty and staff as well. Once the faculty and staff understand the principles of TQM and TQI, they will commit to the movement, even only in incremental amounts. The education of faculty and staff should include an understanding of quality philosophies and processes, as well as training on the tools and techniques they will need to implement TQI. After the initial sessions on TQI and TQM principles, it is necessary to separate the groups and tailor the programs for each unit, such as the academic department, accounting department, continuing education unit, police department, building department, etc.

The obvious lesson for educating the employees on TQM and TQI is to inform them that their participation is essential for the processes to work. After they realise the TQI movement is not just another management tool to increase productivity that their contributions are respected and their roles in improving quality are essential, most employees will make a commitment. Otherwise, after they receive training, employees return to the office and all too frequently discover they cannot change systems and processes because they don't have the necessary resources or support to implement what they have learned. This can lead to employee frustration and ensure the failure of TQM and TQI movement. According to Cornesky *et al* (1992:103) for example, the management and employees of a particular institution had undergone extensive training in TQM and TQI and were very excited about the implementation of some procedures. Upon returning to the institution, the president formed a cross-functional group to address one of the top problems contributing to non-quality. The task force members used the Plan Check Do Action model (P-D-C-A) model and, after several months of hard work, made five key suggestions for improving system processes that were causing an enormous amount of waste. The president acknowledged receipt of the report, but neither implemented the suggestions nor gave reasons as to why he did not take the advice of the task force and the task force's morale plummeted. This led to people returning to their old way of doing things. Several months later, the president tried to form a second task force but could not find non-managers to participate. As a result, the "we versus them" attitude returned to this institution, despite initial efforts to adopt a new philosophy.

2.12.3 Establish Trust

Cornesky believes that since one of the main functions of TQM and TQI is to show constant improvement in the quality of service and product delivered, all departments must gather baseline data and take measurements on various operations over time. Gathering data and pointing out defects may threaten employees at first, and the only way to overcome the perceived threat is to establish trust. Note, however, that the management can extend offering of improvement and trust since it controls the processes and systems in which employees work. The establishment of trust has to be dependent on time and results based on long term relationships in establishing quality. When trust exists, faculty and staff feel empowered and they will have greater control of their functions, making their positions more efficient. When this occurs, the working day goes quickly and people feel good about working for the institution. Empowerment and trust also encourage employees to conduct self-directed assessment and constantly improve job performance so work can be done quicker, better, and at a lesser cost.

To establish trust, management must explain in detail why comprehensive measurements have to be taken. Explanations should:

- demonstrate trends in customer satisfaction levels, including their satisfaction with the administration and other departments/units;
- determine if the institution is meeting its mission and quality goals;
- reveal to the state legislators that the institution is improving its efficiency and productivity; and
- Let employees know how well they and their units/ departments are doing.

Also management should inform employees that the measurements will be done by their departments/units and will be relevant to their needs, as well as the needs of their customers. Measurements will be taken from all departments and divisions, beginning with the top management.

Employees must see that the commitment made by management is more than a “club” culture. In addition to the replacing managers who not comply with TQM procedures, those who are retained must actively and enthusiastically participate in the same kinds of self-examination required of employees. Management must be involved in measuring

their own effectiveness and making honest judgements from the data. In some cases this will be job or tenure-threatening to a manager or a group of managers. It is likely that sooner or later the university or college would have to retrench or trim part the administration bureaucracy. If management is truly going to establish trust, it must face the inevitable restructuring of itself in a timely, straight forward manner.

Instead of control, trust is the main item that must be established to make the institution a place where working relationship can flourish and have fun in their work. According to Levering (1988:188) in Cornesky *et al* (1992:105), “trust is a calculated risk with one’s eyes open to the possibilities of failure, but it is extended with the expectation of success.” In the places with poor management–union relationships, one can almost always be sure that lack of trust is the main reason.

When trust exists, faculty and staff will realise that management really respects their opinions. This is also true of middle managers caught between the faculty / staff and the top managers, especially deans and heads of departments. As a result of trust, employees will feel empowered to take corrective actions on poor processes, and will feel free to be authentic and express their true feelings about the tasks, processes, and systems that need attention for the institution to demonstrate constant improvement.

2.12.4 Establish pride in professional work

Educating and empowering faculty, staff, and managers in TQM and TQI procedures, appointing project task forces, and participative goal setting will accomplish much in improving quality of education. Nevertheless, too many times presidents and deans promise the legislatures and the public that the students from the institution are receiving high quality education, when, in fact, they are not. Many our colleges and universities do not have the state-of –the-art equipment that graduates will be expected to use in the work force. As a result, many professors in the sciences are significantly limited in the educational quality they can deliver. Further more, it is the job of the administration to provide the faculty with the supplies, resources, and equipment necessary to offer high quality educational experiences. As Deming (1982:23), states, the management team “must remove the barriers that rob employees of their right to pride in workmanship.” While management seeks funds for obtaining supplies and equipment, it must not penalize

faculty and staff in the benchmarking procedure by comparing them to counterparts at well equipped research universities. Otherwise, the faculty and staff may never be recognised and rewarded for their efforts. State-of-the-art equipment in itself does not improve the quality of the educational experience, but it does remove certain barriers.

Employee trust is one of the outcomes of a no-holds –barred crusade to improve the processes and systems for quality results. Empowered employees begin to improve processes and systems and contribute significantly to improving the quality. When they are rewarded and recognised for their efforts, they have greater pride in their work. A good reward and recognition program is an essential catalyst for involving everyone in TQM and changing the institutional culture. Boedecker (1989, 189-212) in Cornesky *et al* (1992:111) discusses the excellent rewards and recognition program that exists at IMB. He notes the following benefits of the program:

- It emphasizes the importance management ascribes to quality;
- It offers high vision forum to thank achievers;
- It provides employees with goals;
- It boosts morale and fosters friendly competition;
- It can help in participative management efforts.

All employees – faculty, staff and administrators should be recognised formally for their contribution to improving quality. Many corporations have annual award dinner to publicly recognize employees and present awards (checks, certificates, pins, plaques, and paid vacations) to individuals and teams. The colleges and universities are encouraged to the same.

2.12.5 Change the Institution Culture

In the previous sections the necessity to empower employees and students to establish trust, pride in their work, and quality was elaborated and emphasized. Maximum autonomy and self-leadership are necessary in educational institutions to build a culture of excellence. Maximum autonomy that recognizes the unique talents and contributions of each individual, including students, will lead to positive subcultures based on quality. When quality results are recognised and rewarded, all employees (faculty, staff and managers) will have greater pride in work, which will result in additional improvement in

quality and teaming. Deal & Kennedy (1992) in Cornesky *et al* (1992:116) argues for a strong and unique organisational culture as a necessity for survival and success.

Many institutions of higher education have little knowledge about what they can do to improve quality. Tasks are done in much the same way as have always been done. Poor faculty performance in the classroom is often tailored, particularly in unionised settings, because the procedures required to remove lacking individuals are extensive and potentially costly. The proliferation of administrators is often viewed by faculty as management's way shielding an inefficient administration. However, the institution's culture can be changed under two conditions: when the institution is about to close, and when there is a group effort to alter its course. By managing the systems toward TQM, the institution's outdated culture is explicitly managed and change is thus not only possible but also probable.

Until *trust* and *empowerment* are established as routine occurrences, managers, faculty, and staff will not readily move toward TQM and TQI. They will resist change, especially in unionised settings, to protect themselves. It is apparent, therefore, that even if the old institution is educated and trained in TQM and TQI processes and systems, little or no change will occur until the trust and empowerment are generously woven into the institutional cloth. When this occurs, everyone will be highly supportive of each other's efforts for TQM. As a result, pride in one's work increases and the cycle feeds on itself.

Cornesky *et al* (1992) further emphasizes that the basic philosophy of every leader is based on principle of managing the institutional culture, not the people. Managing does not necessarily mean control. If control is the main agenda of an administration, quality will be difficult to achieve because faculty do not and will not relinquish to a cookie-cutter approach their rights to individual innovation. Before a new president decides to change the institutional culture, he or she should try to understand how the present institutional culture was established. When an institution either is started or undergoes a crisis such as retrenchment, there is a formidable discharge of energy from all sectors. Everyone is trying to make the institution a success. Brainstorming, goal-setting, cooperation, and innovation occur throughout the entire institution. However, the action of the president, the vice president and deans establishes the boundaries and provides

important clues as to what the institution will be. Employees who notice what type of behaviours are rewarded and also note who leaves or is replaced for not complying with the yet non-official policies.

Soon after the institutional culture is established, an informal power structure forms to sustain the culture. The actual result is that everybody in the institution begins to believe that it is his or her automatic function to support the new culture. However, when the new administrator attempts to change the institutional culture without concentrating on the systems approach toward TQI establishing trusting and promoting empowerment and pride in one's work, person's effort will most likely fail. In addition fearing change, almost all employees need to be accepted by their group. As a result, many persons will follow those in charge of the informal power structure, since they are the ones who control the retention, promotion, and the tenure processes. If their informal power structure is tightly bonded, they may promote a counterculture that can be so powerful as to cause institutional chaos.

2.13 Summary

Quality being a competitive weapon for the current world, it is critical for organisations to embark on quality strategically in order to remain competitive and win customers. Evidence in the literature indicates that TQM has become a major strategy for most companies whether in developed countries or less developed countries. When one looks at successful companies you find a much higher percentage of successful TQM implementation (Internet 4). Several other universities have followed the industry's strategic work with customer satisfaction and have initiated a work with the dimensions of total quality management (TQM) (Wiklund, 1998).

the enabling statute that established the Institute. The Institute is also required to have administrative staff of appropriate size to enable the institution achieve its goals, and must be so organised as to be enabled to provide the required administrative services.

3.2.3 Institutional Integrity/Transparency

The essence of the standard of integrity/transparency has to do with integrity and honesty in all areas of institutional operations. Integrity / transparency require the institution to subscribe to, advocate, and demonstrate honesty and truthfulness:

- In presentations/accountability to its constituencies and the public financially, academically, etc;
- In its pursuit of truth and dissemination of knowledge;
- In its treatment of and respect for administration, academic and support staff, and students;
- In management of its affairs and in relationship with internal and external agencies.

3.2.4 Institutional Effectiveness

Appropriate to its mission and purposes, the Institute is required to develop and implement a broad based system of education, training, research, evaluation and planning to enable it to assess institutional effectiveness, and use the results of the evaluation exercise for institutional improvement. The Institute is also required to identify institutional outcomes that can be validated by objective evidence.

3.2.5 Academic Programmes

The Institute is required to offer appropriate levels of academic programmes in recognized fields of study that culminate in identified student competencies leading to the diverse institutional awards. The Institute is required to demonstrate that the education and training programmes it offers support the mission and vision for which it was established. The Institute is further required to have clearly defined the processes for establishing and evaluating all of its educational programmes. The purpose of this standard is to invite a detailed look at various courses/programmes of the Institute to ensure quality education is provided and received.

3.2.6 Student Admission, Support and Development

KIST is expected to:

- Recruit and admit students who are appropriately qualified for its programmes;
- Identify the diverse needs of its students and to provide appropriate support services and relevant educational programmes that will address those needs;
- Have the entire student journey/pathway through KIST characterized by a primary concern for student access, progress, and success.

3.2.7 Information and Learning Resources

The Institute is required:

- To have information and learning resources (adequate library, classrooms, laboratories, equipment etc) sufficient in quality, depth, diversity, and currency to support the Institute's activities and programmes.
- To have professionally qualified staff to provide appropriate support to users of information and learning resources, including training in effective application information technology to students' learning and training.

3.2.8 Teaching and Support Staff

KIST is expected to have sufficient numbers of qualified full and part time staff, with appropriate education and training experience, to effectively support its educational programmes and services wherever offered and with whatever means delivered. This standard expects the institution to assess its academic and support staff in terms of their qualifications, selection, and evaluation of professional development activities and personnel policies.

3.2.9 Physical Resources

This standard requires the Institute to have sufficient and appropriate physical resources to effectively support its education and training purposes and goal, and provide a conducive atmosphere for learning. This inevitably requires that the institution reviews the quality of its facilities and the maintenance on a regular basis.

3.2.10 Financial Resources

For this standard the institution is required to have adequate financial resources to achieve, maintain and enhance its education and training programmes. The level of

financial resources provides a measure for sustainability, stability, viability and assurance for continued institutional improvement.

3.3 Quality Design

- In KIST the quality design is the starting point, the planning process in all academic and administrative departments or units of the Institute.
- It is the totality of an institution's or department's planning phase in quality assurance that brings into focus the institution's or department's vision and defines its mission and objectives with regard to quality.
- It involves, among other things, the setting up of feasible, readily understood, and acceptable guidelines in the institution in general and in all departments in particular (i.e. policies, standards, or practices and procedures etc) that govern day-to-day institutional/departmental operations and the monitoring of their implementation.
- It is at the quality design stage that realistic goals and objectives concerning the quality of education to be achieved by each faculty and department or unit are set, the attainment depend on staff numbers and levels of qualifications, student population and entry requirements, number of programmes on offer, modern infrastructure, availability of human, physical, and financial resources, modes of delivery etc.
- Quality design process allocates resources that facilitate the delivery of institutional programmes in their entirety.
- In the context of curriculum reviews, it is the first step for creating new programmes or for reviewing existing ones based on knowledge gained from research etc.
- Key players for developing realistic objectives at the planning stage include:
 - **Providers:** Heads of institutions, Faculty Deans, Heads of Department and lecturers in their key role as developers of the curricula, have to critically assess and determine the level of quality in teaching, learning, and research that can be achieved and/or enhanced with the available human, physical, and financial resources.
 - **Beneficiaries:** It is often claimed that the quality of an institution is determined by how well it serves its own stakeholders. It is important to gauge by means of questionnaires, how the student population, parents,

employers, the community at large etc, as the main beneficiaries, perceive quality education in general, and at KIST in particular.

- ***Climate of the day:*** It is also important to consider the atmosphere in which the Institute operates as crucial to quality design. Quality design decisions often involve weighing risks, cost, and benefits of different programmes and modes of delivery. This calls for, among other things, proper allocation of resources since the way these are allocated may influence the quality of teaching, learning, and research. Where resources are inadequate, for example, it necessitates either to limit the number of programmes/courses or else to reduce the number of students and/or staff.
- ***Budget:*** A proper and adequate budget is essential to protect the quality of services and delivery.
- ***Guidelines:*** The implementation of quality design is made possible by certain guidelines initiated by academic and administration departments. These include policies, standards, protocols and procedures that govern day-to-day operations. It includes the division of responsibilities among providers (lecturers, administration staff, and heads of the various departments alike). The participation of all interested groups in developing the guidelines has also been important for building a broad commitment to the changes that new or revised guidelines require. The totality of participation ensures that the guidelines are feasible, easily understood, and acceptable to all (KIST Quality Assurance Manual, 2004).

3.4 Quality Control

Quality control comprises of processes or mechanisms (structures and systems used) for maintaining agreed standards, not for creating them. For instance:

- Enforcing effective supervision;
- Assessment;
- External examining;
- Monitoring and evaluation of existing practices to ensure:
 - The set standards are met,
 - Guidelines are being followed,

- Progress is being measured, and uncovered flaws in any given programme and related activities are rectified for purposes of improvement (Internet 2).

3.5 Quality/ Performance Indicators

It is not always easy to measure quality in teaching, learning, and research, but quality control requires that programme administrators such as faculty Deans, Heads of Departments and sections, develop and maintain the following practices:

- Certain measurable quality indicators that assist in ensuring that quality education is taking place.
- Consistent accurate data collection and analysis crucial to quality assurance in terms of production and provision of objective, reliable, and relevant information related to core functions of the Institute. It is the corrective measures to the analyzed deficiencies that result into improvement and hence quality.
- Effective supervision. While quality assurance requires the participation of all staff, it is crucial that supervisors in every section of the Institute take full responsibility for ensuring its success (e.g. setting up an effective tutorial system).

3.6 Key Quality Performance Indicators in all departments and units

- **Input indicators:** determine whether a given programme or a course has the required human, physical, and financial resources/facilities and other support systems before it is approved for inclusion on the training, teaching, research, or transferable technology menu.
- **Process indicators:** assess and evaluates how well training or teaching programme activities and facilities are being carried out or maintained, and how well quality assurance procedures are being implemented.
- **Output indicators:** measure results or quality of performance at the programme level, for example, the number of students at entry, percentage drop-outs, percentage failures, percentage of those who finally graduate, engendered statistics, etc.

- **Outcome indicators:** through systematic search for feedback, measure the programmes' short and long term impact on all stakeholders including students, alumni, employers and the general public.
- **Consistency:** one must keep in mind that indicators are characterized by their being sensitive to changes in performance and are easy to calculate and analyze once data is consistently available. It is the resultant analysis that forms the basis for institutional quality enhancement. Quality assurance is a continuous process achievable only in a series of steps, each building on previous successes. Consistency, therefore, is crucial (Internet 2).

3.7 Quality Improvement

According to KIST Quality Assurance Manual (2004), quality improvement is seen as follows:

- Anything that causes a beneficial change in quality performance.
- It involves a continuous search for quality enhancement through regular monitoring and evaluation.
- It is a systematic action-oriented process meant to bring about a positive change in quality performance after flaws or deficiencies in existing standards or procedures have been detected.
- Quality improvement entails more than just meeting set standards; it often requires exceeding them. For it to become effective and make a lasting impact, quality improvement process calls for teamwork in all sections of the Institute.
- Quality improvement system must, therefore, become an integral and essential part of the institution if it is to have a broad and lasting impact.

Basic approaches to QI in all institutional sections or units include, among others:

- Introducing, enforcing or revising [existing] standards or procedures,
- Strengthening / invigorating the monitoring and supervision systems,
- Ensuring that recommendations from annual reports are instrumental to quality improvement,
- Inviting relevant experts to assess and where necessary, to redesign the process (Internet 2).

3.8 Quality Management

Quality Management according to KIST Quality Assurance Manual (2004) refers to a coherent system of management activity that ensures quality policies and procedures are set, implemented, and evaluated across the board. At the core of making quality a top priority in the Institute are the following basic management principles:

❖ ***Demonstration of leadership commitment.*** The success of institutionalizing quality assurance practices depend on the extent of active involvement by top Executives in quality improvement initiatives. Staff and students often consider the commitment to good quality by top leaders as a guiding principle for the way they approach their own work.

❖ ***Strengthening of systems and processes.*** The Institute is made up of a collection of interdependent systems and processes that need to be consistently strengthened for effectiveness and efficiency. Identifying a quality assurance committee at institutional level and persons or teams in each faculty/department or unit to be responsible for all quality-assurance matters is an essential step in the right direction.

❖ ***Basing of decisions on reliable information.*** It is critical that a scientific approach of inquiry in all matters related to quality assurance be maintained through all sections of the Institute. It is through collecting and analyzing accurate, timely, and objective data that management and administration can easily diagnose and find solutions to institutional problems.

❖ ***Improvement of communication and coordination.*** Proper communication and regular information flow throughout the Institute play a major role in establishing a solid quality assurance system. It is important that departments, faculties, and other units at all levels of the Institute work together as a team to improve quality by sharing information freely (For instance, what works and what doesn't work) and by coordinating well their activities. It is also very crucial that executives share information across the board, along faculty/departmental lines and throughout all levels of the administrative hierarchy.

❖ ***Encouraging of staff participation / teamwork.*** It goes without saying that every member of staff is directly responsible for ensuring that quality teaching and training is taking place in his/her department or his/her subject or area of specialization for the benefit of the whole. Top management, Faculty Deans, Heads of Department and all programme/course convenors need to encourage and empower staff as well to regularly analyze their systems and procedures, identify problems in their departments that could

impeach on quality, and recommend possible solutions. Only through collaborative participation is quality assurance guaranteed to become an essential part of institutional culture.

3.9 Policy Framework

This section sets out a pathway along which KIST, as an institution of higher learning, builds a quality assurance culture that enables it to respond to current pressures. Middle and advanced level positions in various occupational fields crucial for national and international development are filled with products of Higher Education Institutions. KIST is expected to produce intellectuals capable of spearheading the socio-economic development of its communities, and it is the expectations of these communities that the products of higher education become of the desired quality, and capable of providing quality services to the public on a continuous basis. Additionally, rapid technological advances have placed education systems under extreme pressure; they have to adapt and incorporate these changes in an effort to produce more creative, effective, and adaptable people. Programmes, courses, and qualifications that certify the legitimacy of the knowledge and skills a HEI product has achieved through study, training, work and life experience are, as a consequence, increasingly being designed to fit this purpose.

3.9.1 Quality Assurance

Within the context of KIST's mission and vision as outlined in the Institute's Strategic Plan (2003-2008) as well as in its Consolidated Plan, quality assurance means the process of ensuring that practices and procedures or actions intended to enhance quality and excellence in the key areas of teaching, learning, research, and knowledge-based service to community are being complied with. The overall objective is to promote and to improve continuously the quality of KIST's core programmes, their mode of delivery, and their support facilities among others.

The heads of departments are responsible for assuring the improvement, maintenance and enhancement of the quality of work across the Department, in particular by:

- Ensuring that systems, policies, practices, and procedures appropriate to the Department are in place and aligned with the Institute's procedures so as to assure the quality of the Department's core programs;

- Appointing a team from members of staff to regularly monitor and review the Department's work so as to ensure and to maintain quality standards in the department;
- Managing the external examiners' response to the internal marking/assessment of examinations;
- Managing the Department's response to internal and external quality audit and review.

3.9.2 Rationale

- Ultimately, the primary responsibility for quality assurance rests with academic institutions themselves in their capacity as direct providers of education.
- The pursuit of the principal of quality in all sections of the institution means maintaining and applying higher education standard practices at all levels both in the sense of specific expectations and requirements that should be complied with, and in the sense of ideals of excellence that should be aimed at.
- KIST believes that developing a culture of quality assurance practices is not only necessary but absolutely essential for its credibility as a centre of excellence, and to meet accreditation and assessment purposes by external agencies.
- Setting up and maintaining high quality standards in KIST are crucial for both national and international recognition. All stakeholders—the public, employers, parents, and students themselves need to have confidence that high standards are set and are achievable. Likewise, all stakeholders wish to know how those standards relate to their needs for skilled staff, for successful careers, and for personal fulfilment.
- In striving for credibility particularly as KIST is a new Institution; it has, among other things, a quality assurance system in place whose goal is to ensure identification of the right members of staff, students who fulfil the Institute's entry requirements, highly qualified faculty, available resources, nationally and internationally comparable programmes etc.
- While relevant national regulatory bodies such as the National Council of Higher Education are responsible for external audits of institutional quality assurance

practices, it has been important that KIST itself establishes internal mechanisms to ensure that the quality assurance system functions as intended.

- KIST is struggling to develop a quality assurance culture through its key academic and administrative units to ensure that the standards and qualifications of its programmes and products are not only nationally, regionally, and internationally acceptable but are also comparable (KIST Quality Assurance Manual, 2004).

3.9.3 Vision and Mission

KIST Quality Assurance Manual (2004) indicates that for its Vision and Mission, KIST is committed to advancing Rwanda's development by graduating highly skilled and highly educated graduates [as it] aspires to become a centre of excellence in science, technology, and management education, comparable in standard to the very best in the world. KIST is thus committed to promoting and maintaining competitive quality education for its national, regional, and international recognition through delivery of quality programmes and services, provision of appropriate infrastructure and excellent facilities, and recruiting highly qualified professionals as well as developing the capabilities of all staff. High levels of achievement by all students and staff, is the Institute's major goal.

3.9.4 Objectives

The Institutional Quality Assurance Objectives are, at a minimum, to:

- Improve the quality of staff, of programmes, and of support services;
- To ensure that stated student outcomes are realized.

3.9.5 Policy Statement

Through QA, KIST attempts to promote and maintain quality education by ensuring that:

- All potential and current staff and students meet the Institute's high standard criteria for recruitment and admission,
- All programmes offered meet international standards for quality higher education,
- A supportive environment with proper infrastructure, resources and facilities conducive to quality teaching, learning and research is created for all the Institute's staff and students and other stakeholders,

- A wholesome, campus-wide awareness of, and participation in, all quality assurance activities, from departments / sections to top management structures is achieved,
- General understanding and commitment by all sections of the Institute to building quality assurance practices in all the units and functions of the Institute are a significant part of institutional culture,
- Institutional development and improvement through self-study and periodic evaluation by qualified peer professionals is encouraged and practiced,
- KIST standards to assess and enhance educational quality and institutional performance are developed at each level and used accordingly,
- Interchange of ideas among public and private institutions through various meetings, seminars, publications and other forms of information dissemination is promoted,
- The institution is protected against any form of encroachment which could jeopardise its educational effectiveness or academic freedom.

3.10 Institutionalising Quality Assurance Activities

KIST's QA activities ensure that:

- All policies, practices and procedures of the Institute, including Quality Assurance Policy, are implemented in the totality of all administrative and academic sections of the Institute.
- A bigger role for Heads of departments/sections and Deans and Directors are exercised more than was hitherto required of them.
- Every student and employee of KIST is aware that Quality assurance is a process that require the following as a minimum:
 - Considerable monitoring and feedback;
 - Widespread consultative discussions;
 - Immense discipline, dedication and commitment;
 - Eagerness by all concerned to have their sections excel;
 - Eagerness by students to be high achievers and highly competitive;
 - Enhancing institutional ability to recruit, motivate, and retain a critical mass of technical and professional staff.

- Attainable sustainable improvements in performance of individual sections of the Institute.
- Strict compliance by all KIST members to existing as well to new good standard practices, and
- Recognition and acceptance by all that quality assurance is born out of a general spirit of service to students in particular, and of identification with the Institute's mission, vision, and objectives in general. The success or failure of the quality assurance system depends entirely on the level of commitment of all its stakeholders, and especially within the Institute itself (KIST Quality Assurance Manual, 2004)

3.11 Quality Assurance Management Strategy for Building a Quality Assurance Culture

KIST Quality management takes into account all the activities and mechanisms through which the quality of the Institute's core programmes is developed and maintained. It is one of the main management systems within the institute. To be able to cover the whole institutional canvass, a system of operation as the structure below is a way of mainstreaming quality assurance practices, is infused and seen to be working in all functional levels of the Institute. This has been the key strategy for effective quality management and control in KIST.

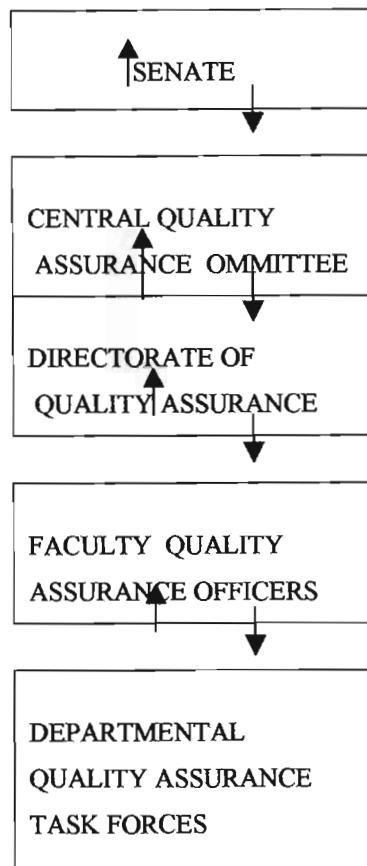


Figure 3.1 Quality Assurance Management Structure
 Source: *KIST Quality Assurance Manual (2004:14)*.

3.12 Challenges faced by KIST in the struggle to quality improvement

Although KIST has been trying to improve its staff through organising various trainings, it still faces a problem of lack of qualified staff and hence ends up using expatriates. As mentioned earlier 25% of KIST's staff are expatriates (KIST Annual Report 2002: 4). However, it is important to note that expatriates are expensive to maintain. KIST uses the government's funds and on this note, this is exacerbated by the poor state of the Rwandan economy which was a result of the war and genocide of 1994. This problem also leads to staff suffering from lack of motivation because of the limited resources.

The problem of lack of academic staff was also worsened by the 1994 war and genocide which claimed lives of over one million people and caused about two million to flee the country where "1/7th of whom were in the productive labour force" (Rwandan Public Service Report, 1997:3-9).

Training being yet another challenge, most of the KIST academic staff is pursuing postgraduate training in different countries. This leaves the institute with much doubt whether the staff will return to work for the Institution after completion of their studies. This further leads to unsolved problem of lack of staff and hence affecting the quality of education delivered to Rwandans.

During this period of the war, people from different English and French speaking countries returned to Rwanda after a long time in exile due to the poor leadership that had characterised the Rwandan government for over 30 years. Therefore, all the education institutions in Rwanda are obliged to adapt a bilingual policy in order to teach in both languages for effective communication. The bilingual policy encounters barriers even today. In addition, some of lecturers are getting older, and when they are asked to undergo further training in a second language, they show resistance because they feel uneasy about new working practices. Further still, for those who want training, scarce resources become obstacles as opposed to students who consider learning a second language as an additional burden.

3.13 Summary

This chapter demonstrates that quality Assurance has been the management approach employed by KIST to improve its quality of education. However, as KIST is forced into a more commercial competitive environment, the vulnerability increases as students perceive their role more as clients rather than students and actual misrepresentations or defects in the delivery of services/education. Further still, the public has become more aware of their rights to litigate for breach of contract or for the tort of negligence. It is in this regard that KIST has no option but to improve its quality of education in order to remain competitive.

KIST sees Quality assurance as an answer to quality problems. Hence, all the planned and systematic actions implemented within the quality system and demonstrated as needed to provide adequate confidence that an entity fulfils requirements for quality. Quality assurance objectives include: to increase customer confidence, enhance the company's corporate image, improve employee participation and morale, and achieve registration as a quality-assured company. An effective Quality assurance requires the involvement of all departments and functions like administration, finance, sales, marketing, design, procurement, manufacture, installation and commissioning within a particular area of operation so that none is subservient to the other (Stebbing, 1989).

However, from the previous chapter it is apparent that Total Quality Management (TQM) is by far a step ahead of Quality assurance since it is centred on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits all members of the organisation and the society. Hence, chapter five analyses TQM implementation in KIST since it has proven as a solution to quality problems. Several other academic institutions have succeeded in using this management approach as earlier reviewed in the previous chapter. The following chapter reveals the research methodology adopted by this study.

CHAPTER FOUR: THE RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter presents an account of how the research was carried out. It describes sampling, data collection, analysis and processing and finally the limitations of the study. This research adopted a case study approach in examining KIST in some detail. The data collected is mainly qualitative and some quantitative in nature. Therefore, in this study, the research design depending on the methods of data collection and analysis, both qualitative and quantitative research techniques were used.

4.2 Research design

According to Cooper & Schindler (2001), research design is the blueprint for fulfilling objectives and answering questions. However, research design definitions differ in details, but together they give the essentials of research design:

- The design is an activity-and time based plan;
- The design is always based on the research question;
- The design guides the selection of resources and types of information;
- The design is a framework for specifying the relationships among the study's variables;
- The design outlines procedures for every research activity.

Thus, the design provides answers to questions such as: what techniques are used to gather data; what kind of sampling is used and how data was analysed as well as indicating any limitations of the research.

4.2.1 Methods and instruments of data collection

The main types of data include secondary and primary data. Secondary data is data that have already been collected for other purpose. They include raw data and published summaries. Primary data is the new data collected specifically for the purpose of the study. Whereas secondary data can be collected by examining and reviewing raw data and published summaries, primary data is collected through observation, interviews, and questionnaires (Saunders *et al.*, 2003). In conducting the study, both primary and secondary sources of data were used to achieve the study objectives.

4.2.1.1 Primary sources of data

During the study, observation and Questionnaires were the major instruments in collection of the primary data.

Observation

Churchill (1992:290) defines observation as “a fact of every day life; that we are constantly observing other people and events as a means of securing information about the world around us”. Participant observation was used in the study since it was rich in providing first hand information especially that the observer is a staff member of the organisation. A diary was used where all the observations were noted down to clearly give what happened or what was said at the time of the study.

Questionnaire

Questionnaires are an inexpensive way to gather data from a potentially large number of respondents. Often they are the only feasible way to reach a number of reviewers large enough to allow statistically analysis of the results. More elaborate questionnaire design or administration may provide better objective data, and are suited to gathering reliable subjective measures, such as user satisfaction, of the system or interface in question (Internet 4).

Saunders *et al.*, (2003) stated that careful design of the questionnaire is important to ensure high rate of response, validity and reliability of data collected. Well-designed self administered questionnaires were used effectively to gather information on both the overall performance of the TQM as well as information on its specific components. Two kinds of questionnaires were used. That is, one questionnaire was for the academic staff and the other for non academic staff. Questions were designed to gather both qualitative and quantitative data. They were carefully crafted and particular questions that assess a qualitative measure were well phrased to avoid ambiguity. In general, the questionnaires were used to measure both qualitative and quantitative data, although qualitative questions required more care in design, administration, and interpretation.

4.2.1.2 Secondary data sources

Any secondary data source was evaluated for point-of-view and accuracy to ensure the interpretation is valid for the study. Secondary sources can include: Journal articles, books, encyclopaedias, critical essays, newspaper articles, Internet and others (Internet 5).

Documentation analysis

According to Kakooza (1992:17) documentation review/library research “is a data collection process, which is based on reading books and other documents”. Different books, Journals, Internet and others were used to help in data collection so as to acquire information needed for achievement of the study objectives. This method has the following advantages as compared to other methods:

- It gives the researcher necessary background and guidelines to the research.
- It can be used to test results from other methods.

This method was used in the study to review literature on TQM and its implementation and how it can lead to quality improvement especially as applied to the case study.

4.2.3 Sampling design

The basic idea of sampling is that by selecting some of the elements in a population we may draw conclusions about the entire population. There are several compelling reasons for sampling including: lower cost, greater accuracy of results, and greater speed of data collection and availability of population element (Cooper & Schindler, 2001).

The ultimate test of a sample design is how well it represents the characteristics of the population it purports to represent. In measurement terms, the sample must be valid accurate and precise. An accurate sample is one in which the underestimates and overestimates are balanced among the members of the sample. This case happens when there are enough elements in the sample (Cooper & Schindler, 2001).

Sampling can be a probability or non probability. Probability sampling is based on the concepts of random selection - a controlled procedure that assures that each population element is given a known nonzero chance of selection. In contrast, non probability sampling is arbitrary (non-random) and subjective. Each member does not have a known nonzero chance of being included (Saunders *et al.*, 2003).

Among probability sampling methods, stratified sampling was used in the study. In stratified sampling there may often be factors which divide up the population into sub-populations (groups / strata) and one may expect the measurement of interest to vary among the different sub-populations. A stratified sample is obtained by taking samples from each stratum or sub-group of a population. When we sample a population with several strata, we generally require that the proportion of each stratum in the sample should be the same as in the population (Internet6). Stratified sampling techniques are generally used when the population is heterogeneous, or dissimilar, where certain homogeneous, or similar, sub-populations can be isolated (strata). Some reasons for using stratified sampling method include: the cost per observation in the survey may be reduced; estimates of the population parameters may be wanted for each sub-population and increased accuracy at given cost (Internet 3).

The size of the sample is largely dictated by the fact that time cannot allow the researcher to reach all staff in the organisation. In the study, the strata included: administrative staff and academic staff. In order to obtain a sample that is representative of the population, a random sample size of 50 people was used, that is, Twenty (20) administrative staff: Five (5) the Centre for Continuing Education (CCE), Five (5) Innovation and Technological Transfer (ITT), Ten (10) Research and Publications and Quality assurance (RPQ), Thirty (30) academic staff: Ten (10) from each faculty, that is, the faculty of management, the faculty of Technology and the faculty of science.

4.2.4 Data analysis

This section explains how obtained data was analyzed. Questions were the basis along which data was arranged through coding and interpretation. Descriptive statistics were used to analyse the data obtained through the questionnaire. Statistical software 'SPSS' was used which made editing/coding of data easy. SPSS helped to analyse the information to come up with statistical results which includes: Percentages, tabulations to mention a few. Cross tabulation was also used to analyse the influence different variables have on each other. It is important to note that data obtained by observation method was analysed manually during the data collection process. That is, analysis and collection of data was done simultaneously and proper interpretation was ensured.

4.3 Validity

Validity is concerned with whether the findings are really about what they appear to be about. This can be internal or external validity. External validity is the extent to which research results can be generalised (Saunders *et al.*, 2003). In this case, although the focus of this study was on KIST, the results can be generalised for other higher Institutions of learning. Whereas, internal validity looks at the accuracy of information from respondents and it is hoped to check the reality of the data collected (Saunders *et al.*, 2003). Internal validity was assured through making sure that appropriate questionnaires were designed for relevant respondents.

4.4 Reliability

Reliability is the degree to which data collection method or methods yielded consistent findings, similar observations would be made or conclusions reached by other researchers or there is transparency in how sense was made from the raw data (Saunders *et al.*, 2003). Two kinds of questionnaires were designed and pre-tested to ensure that the questions were clear to the respondents and that they yielded results relevant to the research objectives. This enabled to show how responses from different categories of respondents were consistent.

4.5 Ethical Considerations

The general ethical issue is that the research design should not subject the research population to embarrassment or any other material disadvantage. Consent from individual participants was ensured. Ethical issues further looks at the implications for the negotiations of access to the organisation, employees and the collection of data (Saunders *et al.*, 2003). An authorisation letter for data collection was acquired from the Graduate School of Business and presented to KIST to grant permission to do the research. Consequently the permission to collect data was granted by KIST management.

4.6 Limitations of the study

Among different limitations to the study, the following were identified: when a questionnaire was administered, the researchers control over the environment was somewhat limited. This is why questionnaires are inexpensive to administer. This loss of control means the validity of the results is more reliant on the honesty of the respondent.

Consequently, it is more difficult to claim complete objectivity with data obtained through questionnaires.

The second set back was the time frame. The period allocated to the study was too short and the research was expected to cover the implementation of TQM for quality improvement which requires critical analysis and noting the situational dynamics and evaluation of the limitations to the implementation of the system, which is not a short term phenomenon. Hence, the study was conducted under pressure which might affect the validity of the results. Also due to resource and time limitations, comparable analysis of other related institutions was not covered in this research.

When undertaking research where a researcher was part of the organisation, some assumptions and preconceptions exist. This was an inevitable consequence of knowing the organisation well. Hence, it prevented the researcher from exploring issues that would enrich the research. Further still, there was a problem of status. As a junior employee, one may feel that working with more senior colleagues inhibits one's interaction as a researcher.

Finally, it is important to note that the sample was a major limitation because it did not include students.

4.7 Summary

The research design of the study has been clearly stated in this chapter where various ways of data collection and analysis have been identified. More on how the research was analysed is specified in the following chapter. It also presents the research results and discussion as well as recommendations to the institution.

CHAPTER FIVE: RESEARCH FINDINGS AND DISCUSSION

5.1 INTRODUCTION

This chapter presents and discusses the research results on the implementation of TQM to improve the quality of the education in KIST. The findings are based on the data collected through questionnaires where questions were formulated based on the research objectives. Basing on the research findings, recommendations to the institution are made accordingly.

Two kinds of questionnaires were distributed. One questionnaire was for the non academic staff and the other for academic staff. The reason for distributing two questionnaires was because there were questions that were relevant to the academic staff and others to non academic staff. Questionnaires were carried out amongst people who engage in different activities and are responsible KIST staff i.e. especially the management staff, the Deans of the facilities, Heads of departments, lecturers and other KIST members of staff. The questions looked at the implementation issues of TQM to improve the quality of education.

Descriptive statistics mainly frequencies were used to analyze the questionnaires. There were 17 and 28 respondents for non academic and academic staff respectively. Their responses were the ones on which the analysis in this section was based. Frequencies refer to the number of times various subcategories of a certain phenomenon occur, from which the percentage of the occurrence of the subcategories can be easily calculated (Sekaran, 1992). The structure of questions used was both closed and open ended questions plus rating method.

SPSS software was used in the analysis of the questionnaire; data was coded resulting in tables and figures relating to the questionnaires' responses. The tables and figures show a number of respondents, their responses and the percentages. Cross tabulation was used to analyse the influence different variables have on each other and this was presented in a table form.

5.2 Presentation of research findings

5.2.1 The findings from non academic staff questionnaire

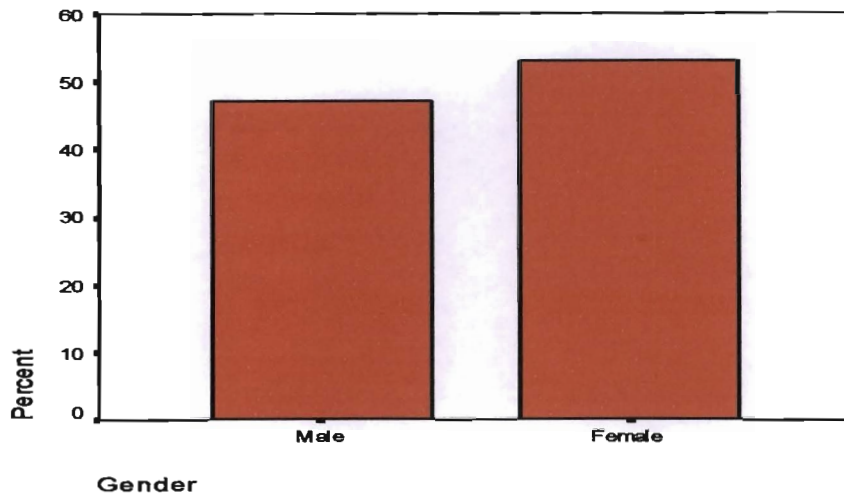


Figure 5.1 Gender

The study indicates that approximately 53 percent of the respondents were female and about 47 percent were male.

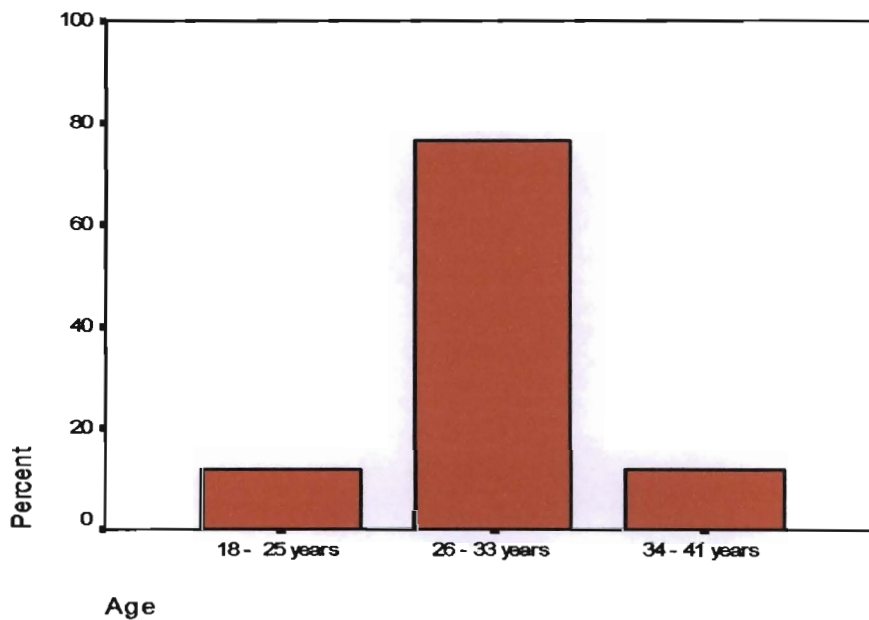


Figure 5.2 Age

The above figure shows that approximately 12 percent of the respondents were in the range of 18 – 25 years, 74 percent in the range of 26 – 33 years, and about 14 percent in

range 34 – 41. The ranges of 18 – 25 years, 42 – 49 years and 50 years and over showed no response to the study.

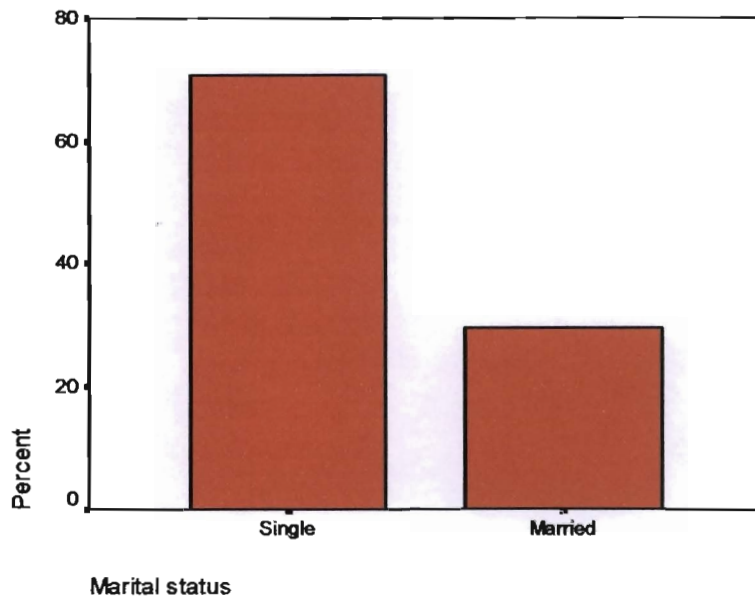


Figure 5.3 Marital status

The study analysis indicates that approximately 73 percent of the respondents are single and about 27 percent are married people. The study showed no response for divorce.

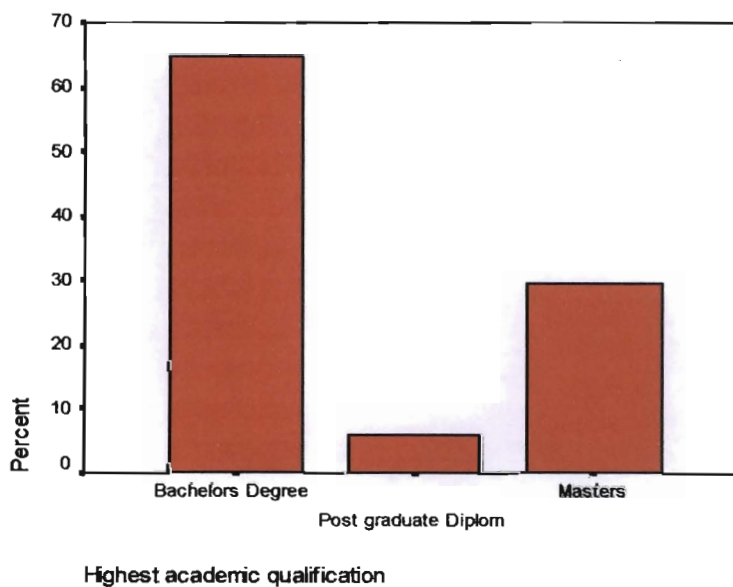


Figure 5.4 Academic Qualification

Approximately 68 percent of the respondents hold bachelors degree, 5 percent postgraduate diploma, and about 29 percent Masters Degree. The study showed no response for Ordinary level Diploma and PhD for the non academic staff.

Table 5.1 Length of service

	Length of service	
	Count	%
0 - 3 years	10	58.8%
4 - 7 years	2	11.8%
8 - 11 years	5	29.4%
Total	17	100.0%

The study showed that 58.8 percent of the respondents were in the range of 0 – 3 years; 11.8 percent were in the range of 4 - 7 years; 29.4 percent in the range of 8 - 11 and no response for the range of 12 years and over.

Table 5.2 Rating the overall quality of education to other universities'

	Rating the overall quality of education to other universities'/institutes	
	Number of respondents	%
Unsure	1	5.9%
Good	9	52.9%
Very good	7	41.2%
Total	17	100.0%

The study revealed that 5.9 percent of the respondents were unsure about rating KIST's quality of education to other universities' and institutes' while 52.9 and 41.2 percent rated it as good and very good respectively. The study showed no response for rating KIST'S quality of education as poor and very poor.

Table 5.3 whether KIST has enough non academic staff

	whether KIST has enough non academic staff	
	Number of respondents	%
Yes	13	76.5%
No	3	17.6%
Not sure	1	5.9%
Total	17	100.0%

In the above analysis, it is noted that 76.5 percent of the respondents agreed that KIST has enough non-teaching staff while 17.6 percent disagreed with the statement. It is also indicated that 5.9 percent of the respondents did not have a clue on the sufficiency of the non-teaching staff.

Table 5.4 Academic infrastructure facilities

	Laboratories		computer labs		libraries		Audio-visual equipments		lecturer rooms	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	15	88.5	11	65	12	70.6	11	64.7	12	70.6
No	2	11.8	5	29.4	5	29.4	6	35.3	5	29.4
Not sure			1	5.9						
Total	17	100	17	100	17	100	17	100	17	100

Academic infrastructure facilities as demonstrated above are not sufficient. The table above indicates that 11.8 percent, 29.4 percent, 29.4 percent, 35.3 percent and 29.4 percent respectively indicate that laboratories, computer, labs, libraries, audio-visual equipments and lecture rooms are not sufficient. The respondents further mentioned other lacking facilities such as: books, offices and lecture rooms.

Table 5.5 whether management and staff have a clear idea of KIST's strategic objectives

	Management and staff have a clear idea of KIST's strategic objectives	
	Number of respondents	%
Strongly disagree	1	5.9%
Disagree	1	5.9%
Unsure	2	11.8%
Agree	10	58.8%
Strongly Agree	3	17.6%
Total	17	100.0%

As understanding of the strategic objectives of the Institution is a key to its well being, the results indicated that 76.4 percent of the respondents showed knowledge of having a clear idea of the strategic objectives. Only 11.8 percent disagreed with the idea whereas 11.8 percent were not sure.

Table 5.6 Senior management show commitment towards providing high quality education

	Senior management show commitment towards providing high quality education	
	Number of respondents	%
Disagree	1	5.9%
Unsure	3	17.6%
Agree	8	47.1%
Strongly Agree	5	29.4%
Total	17	100.0%

The research indicates that of all the non-academic staff that responded to the questionnaire, 29.4 percent strongly agreed that senior management showed their commitment while 47.1 percent merely agreed. 5.9 percent disagreed with the statement while 17.6 percent were not sure of the senior management's commitment. A total of 76.5 percent of the respondents agreed with the statement.

Table 5.7 Empowerment on job performance

	Empowerment on job performance	
	Number of respondents	%
Yes	13	76.5%
No	3	17.6%
Not sure	1	5.9%
Total	17	100.0%

Empowerment of employees is a key to the institution's success. 76.5 percent of the respondents agreed with the statement with only 17.6 percent going against it whereas 5.9 percent were not sure of the empowerment.

Table 5.8 Encouraging Teams and Teamwork

	Encouraging Teams and Teamwork	
	Number of respondents	%
Unsure	2	11.8%
Agree	13	76.5%
Strongly Agree	2	11.8%
Total	17	100.0%

Teams and team work is another aspect that is encouraged at the institution. This is presented by the 76.5 and 11.8 percent of the respondents who agreed and strongly agreed

respectively with the question against 11.8 percent who where not sure. A total of 88.3 percent of the respondents agree with the statement.

Table 5.9 Staff feel a sense of responsibility for achieving the Institute's goals

	Staff feel a sense of responsibility for achieving the Institute's goals	
	Number of respondents	%
Unsure	1	5.9%
Agree	8	47.1%
Strongly agree	8	47.1%
Total	17	100.0%

Only 5.9 percent of the respondents lacked knowledge of whether staff members feel a sense of responsibility for achieving the Institute's goals with none of the respondents disagreeing with the idea whereas, 47.1 percent agreed and 47.1 percent strongly agreed.

Table 5.10 whether non academic staff members are happy with their present job

	whether non academic staff are happy with their present job	
	Number of respondents	%
Yes	12	70.6%
No	4	23.5%
Not sure	1	5.9%
Total	17	100.0%

The table above refers to the happiness of the non academic staff members with their present job as determined by the respondents. 70.6 percent of the respondents were happy with their job, 23.5 percent were not happy and 5.9 percent were not sure.

Table 5.11 whether KIST is commitment to staff education and development

Commitment to staff education and development		
	Number of respondents	%
Yes	11	64.7%
No	4	23.5%
Not sure	2	11.8%
Total	17	100.0%

Staff education and development are key aspects that should be considered for effective quality improvement. 64.7percent of the respondents were in favour of the view that KIST is committed to staff education, 23.5 percent were not in favour and 11.8 percent were not sure.

Table 5.12 Cross tabulation 'Fear, threats and punishments get staff to work' and 'Staff feels comfortable in decision making'

		Staff feel comfortable in decision making				Total
		Strongly Disagree	Unsure	Agree	Strongly Agree	
Fear, threats and punishments get staff to work	Strongly disagree	0	1	1	1	3
	Disagree	1	2	3	0	6
	Unsure	0	4	0	0	4
	Agree	0	2	0	0	2
	Strongly agree	0	0	1	1	2
Total		1	9	5	2	17

Fear, threats and punishments influence decision-making in a way. The above analysis shows that 3 respondents strongly disagreed and 6 respondents disagreed with the view that fear, threats and punishments get the staff to work and that it does not influence decision making. Two and 5 respondents strongly agreed and agreed respectively that KIST staff members do not feel comfortable in decision making due to fear, threats and punishments.

Table 5.13 Cross tabulation 'Management and staff have a clear idea of KIST's strategic objectives' and 'Staff members feel comfortable in decision making'

		Staff feel comfortable in decision making				Total
		Strongly Disagree	Unsure	Agree	Strongly Agree	
Management and staff have a clear idea of KIST's strategic objectives	Strongly disagree	1	0	0	0	1
	Disagree	0	1	0	0	1
	Unsure	0	1	1	0	2
	Agree	0	7	2	1	10
	strongly Agree	0	0	2	1	3
Total		1	9	5	2	17

The analysis showed that 10 respondents agreed that management and staff have a clear idea of KIST's strategic objectives and that this makes KIST staff feel comfortable in decision making as supported by 5 respondents. This indicates that members of staff having a clear idea of the institution's strategic objectives makes them feel comfortable in decision making.

Table 5.14 Cross tabulation 'Culture committed towards building a culture of excellence' and 'whether current methods for improving the quality of education are successful'

		Whether current methods for improving the quality of education are successful			Total
		Yes	No	Unsure	
Culture committed towards building a culture of excellence	Yes	13	1	1	15
	No	0	0	1	1
	Not sure	0	1	0	1
Total		13	2	2	17

According to the above analysis 15 respondents agree that KIST is committed towards a culture of excellence and this has led to its success in improving its quality of education as supported by 13 respondents.

Table 5.15 Cross tabulation 'Involvement in benchmarking the quality of education to other universities' and 'whether the curriculum is defined and approved by NCHE'

		Whether curriculum is defined and approved by NCHE			Total
		Yes	No	Not sure	
Involvement in benchmarking the quality of education to other universities	Yes	10	2	3	15
	No	1	0	0	1
	Unsure	0	0	1	1
Total		11	2	4	17

In the analysis, it is noted that KIST involves in Benchmarking and 15 respondents out of 17 agree with this statement and 11 respondents were in support that the curriculum of courses is well defined and approved by the NCHE.

Table 5.16 Cross tabulation 'Processes and systems are designed to meet customer needs' and 'whether current methods for improving the quality of education are successful'

		Whether current methods for improving the quality of education are successful			Total
		Yes	No	Unsure	
Processes and systems are designed to meet customer needs	Disagree	0	0	1	1
	Unsure	1	1	0	2
	Agree	8	1	1	10
	Strongly agree	4	0	0	4
Total		13	2	2	17

Well designed processes and systems to meet the customer needs have proven to lead to success in the quality improvement. In the above table, 10 respondents agreed that KIST's processes and systems are designed to meet customer needs. This being the reason why KIST has been successful in improving the quality of education as 13 respondents supported the statement that KIST methods are successful in improving the quality of education.

Table 5.17 Cross tabulation 'Empowerment on job performance' and 'Staff feel a sense of responsibility for achieving the Institute's goals'

		Staff feel a sense of responsibility for achieving the Institute's goals			Total
		Unsure	Agree	Strongly agree	
Empowerment on job performance	Yes	0	6	7	13
	No	1	1	1	3
	Not sure	0	1	0	1
Total		1	8	8	17

From the above analysis empowerment on job performance makes the staff feel a sense of responsibility for achieving the institution's goals as indicated by 13 respondents who agreed with the statement with only 3 respondents going against it while 1 respondent was not sure of the empowerment. Whereas a total of 16 respondents agreed with the statement that KIST members of staff feel a sense of responsibility.

5.2.2 The findings from the academic staff questionnaire

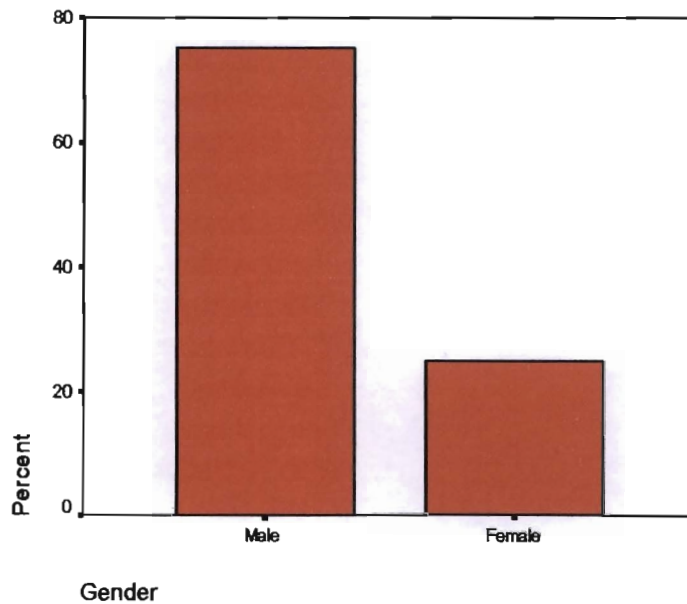


Figure 5.5 Gender

As illustrated in the figure above, 78 percent of the respondents were males while 22 percent were females.

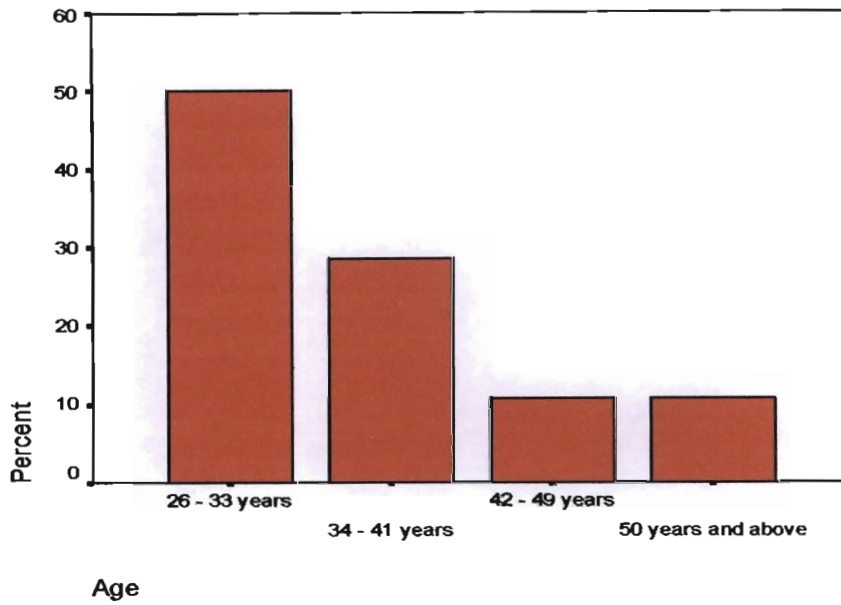


Figure 5.6 Age

From the figure above 50 percent of the respondents were in the range of 26 – 33 years, 28 percent in range of 34 – 41 years, and 11 percent of the respondents in the range of 42 – 49 years as well as 50 years and above.

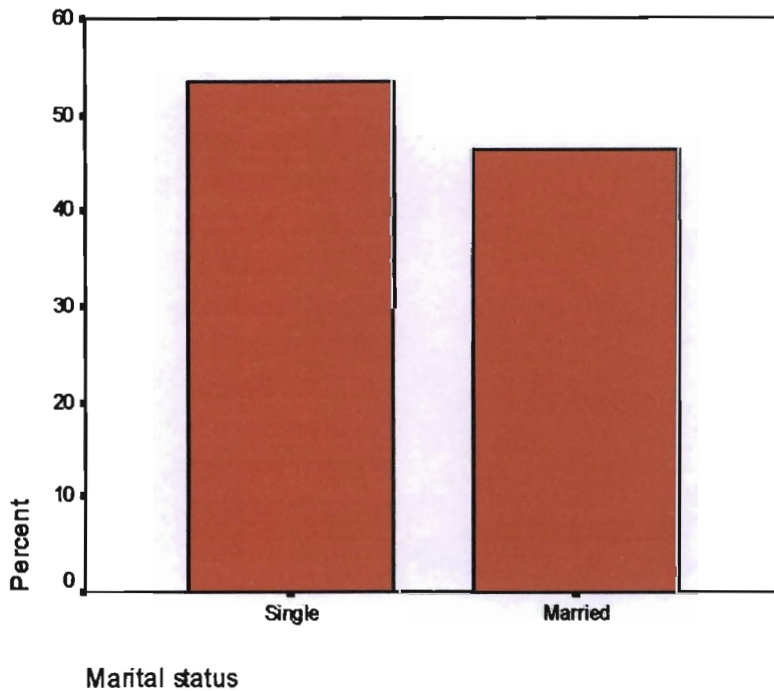


Figure 5.7 Marital status

Approximately 55 percent of the respondents are single and 45 percent are married. The research showed no response for divorced respondents.

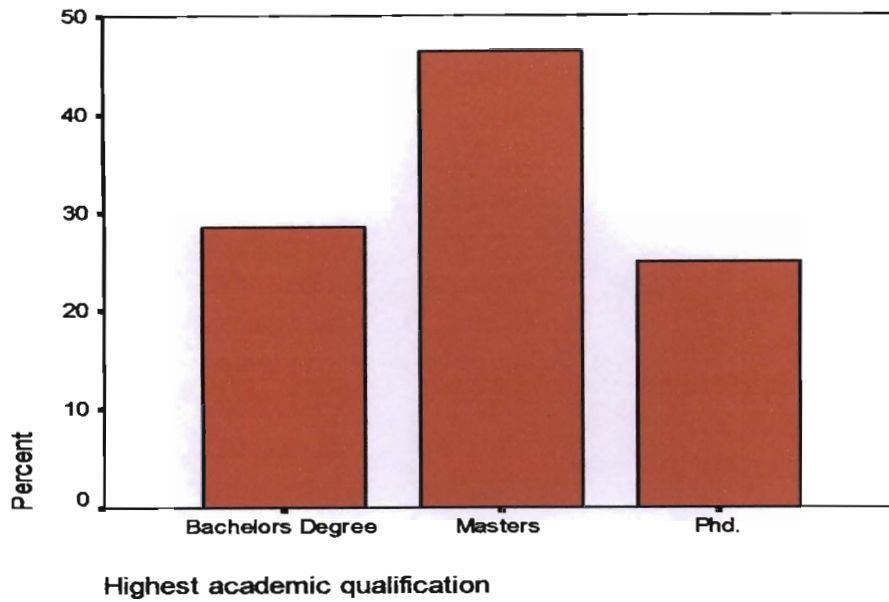


Figure 5.8 Academic Qualification

Highly qualified lecturers are essential for improving the quality of education of any higher institution of learning. 28 percent of the respondents hold Bachelors degree, 48 percent Masters Degree and 24 percent PhD. The study showed no response for Ordinary level Diploma and post graduate diploma for the respondents.

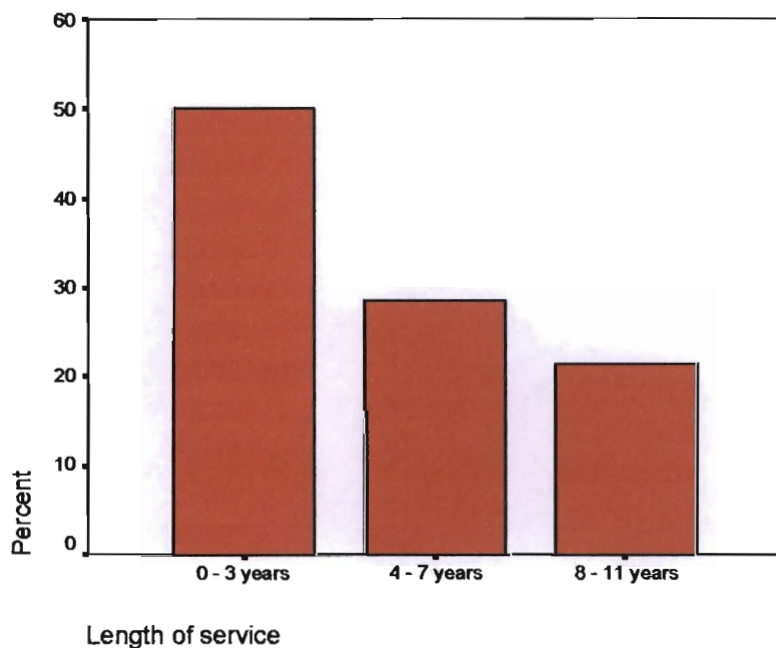


Figure 5.9 Length of service

Approximately 50 percent of the respondents have served KIST for 0 – 3 years, 28 percent in the range of 4 – 7 years and 22 percent in the range of 8 – 11 years.

Table 5.18 Teacher by profession

	Number of respondents	Percent
Yes	18	64.3
No	10	35.7
Total	28	100.0

It is important for the lecturers to have teaching skills. 64.3 percent of the respondents were teachers by profession while a significant number of 35.7 percent were not teachers by profession.

Table 5.19 whether the academic members of staff are happy with the present job

	Number of respondents	Percent
Yes	18	64.3
No	10	35.7
Total	28	100.0

The members of staff are expected to be happy with their jobs in order to perform efficiently and effectively their duties. 64.3 percent of the respondents are happy with their present job while a significant number of 35.7 percent are not happy.

Table 5.20 Are students provided with academic assistance?

	Number of respondents	Percent
Yes	22	78.6
No	6	21.4
Total	28	100.0

A significant number of 78.6 percent of the respondents agreed that students are provided with academic assistance whereas 21.4 percent of the respondents did not agree with the statement.

Table 5.21 Number of students per a class

	Number of respondents	Percent
10 – 34	2	7.1
35 – 44	7	25.0
45 – 60	8	28.6
60 and over	11	39.3
Total	28	100.0

It is apparent that a significant percentage of 28.6 of the respondents support the view that students per class are in the range of 45 – 60 and 39.3 percent support the range of 60 and over. Thus, this makes it clear that the classes are excessively large. While only 25

percent of the respondents believe that the number of students per class is in the range of 35 – 44 and 7.1 percent support the range of 10 – 34.

Table 5.22 whether KIST has enough academic staff

	Number of respondents	Percent
Yes	13	46.4
No	15	53.6
Total	28	100.0

A significant percentage of 53.6 of the respondents felt that KIST does not have enough academic staff whereas 46.4 percent disagree with the statement.

Table 5.23 whether KIST has defined regulations on the admission, progression and assessment of students

	Defined regulations on the admissions of students		Defined regulations on the progression students		Defined regulations on the assessment of students	
	Count	%	Count	%	Count	%
Yes	20	71.4%	23	82.1%	25	89.3%
No	6	21.4%	3	10.7%	2	7.1%
Not sure	2	7.1%	2	7.1%	1	3.6%
Total	28	100.0%	28	100.0%	28	100.0%

From the table above, it is clear that KIST has well defined regulations on the admission, progression and assessment of students as 71.4 percent, 82.1 percent and 89.3 percent of the respondents respectively agreed with the statement. While 21.4 percent, 10.7 percent, and 7.1 percent of the respondents never supported the statement.

Table 5.24 whether KIST has enough academic infrastructures

	Laboratories		Computer labs		Libraries		Audio-visual equipments		Lecturer rooms	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	13	46.4	16	57.1	18	64.3	7	25	13	46.4
No	12	42.9	12	42.9	10	35.7	21	75	15	53.6
Not sure	3	10.7								
Total		100.0	28	100.0	28	100.0	28	100	28	100.0

The table above shows that 42.9 percent, 42.9 percent, 35.7 percent 75 percent and 53.6 percent respectively indicate that laboratories, computer, labs, libraries, audio-visual equipments and lecture rooms are lacking with only 46.4 percent, 57.1 percent, 64.3 percent, 25 percent, and 46.4 percent respectively with a view that KIST does not have sufficient academic facilities.

Table 5.25 Well defined and approved curriculum of the programmes by NCHE

	Number of respondents	Percent
Yes	19	67.9
No	4	14.3
Unsure	5	17.9
Total	28	100.0

It is important for the institute have defined and approved programmes to comply with the standards either at the national level or international level. 67.9 percent of the respondents agree with the statement that KIST has well defined and approved curriculum while 14.3 percent disagreed whereas 17.3 percent were unsure.

Table 5.26 Sufficient duration of the programmes

	Number of respondents	Percent
Yes	24	85.7
Not sure	4	14.3
Total	28	100.0

A significant percentage of 85.7 of the respondents agree that KIST has sufficient duration for the programmes whereas 14.3 percent were not sure.

Table 5.27 Rating the overall quality of education to other universities

	Number of respondents	Percent
Poor	1	3.6
Unsure	4	14.3
Good	15	53.6
Very good	8	28.6
Total	28	100.0

The table above indicates that 53.6 And 28.6 percent of the respondents rated KIST's quality of education as good and very good respectively while 14.3 percent of the respondents were unsure. 3.6 percent rated it as poor.

Table 5.28 Involvement in benchmarking the quality of education to other universities

	Number of respondents	Percent
Yes	22	78.6
Unsure	6	21.4
Total	28	100.0

It is significant that KIST involves in benchmarking where 78.6 respondents agreed with this statement while 21.4 percent of the respondents were unsure. The respondents further pointed out that KIST's quality standards of education are formulated at national and international level.

Table 5.29 whether management and staff have a clear idea of KIST's strategic objectives

	Number of respondents	Percent
Disagree	1	3.6
Unsure	5	17.9
Agree	21	75.0
Strongly agree	1	3.6
Total	28	100.0



75 percent of the respondents agree with the statement that management and staff have a clear idea of KIST's strategic objectives. 17.9 percent were not sure while 3.6 percent disagreed with the idea.

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Table 5.30 Senior management show commitment towards providing high quality education

	Number of respondents	Percent
Strongly Disagree	2	7.1
Disagree	1	3.6
Unsure	4	14.3
Agree	17	60.7
Strongly agree	4	14.3
Total	28	100.0

From the above it is clear that 60.7percent of the respondents agreed that senior management show commitment and 14.3 percent strongly agreed. 3.6 percent merely agreed, 7.1 percent disagree with the statement whereas 14.3 percent were unsure of the senior management's commitment.

Table 5.31 Empowerment on job performance

	Number of respondents	Percent
Yes	19	67.9
No	6	21.4
Not sure	3	10.7
Total	28	100.0

It is apparent that a significant number of the academic members of staff are not empowered on their job performance and this is shown by 21.4 percent of the respondents who disagreed with the statement and 10.7 percent were not sure. With only 67.9 percent who believe that, the members of staff are empowered.

Table 5.32 Members of staff feel comfortable in decision-making

	Number of respondents	Percent
Strongly Disagree	1	3.6
Disagree	4	14.3
Unsure	4	14.3
Agree	17	60.7
Strongly agree	2	7.1
Total	28	100.0

The distribution of responsibilities among various levels and units within the institute must be specified clearly. 60.7 percent of respondents agreed with the statement that KIST members of staff feel a sense of responsibility in decision-making. 14.3 percent disagreed with the statement, While 14.3 percent were unsure.

Table 5.36 Staff feel a sense of responsibility for achieving the Institute's goals

	Number of respondents	Percent
Unsure	8	28.6
Agree	16	57.1
Strongly agree	4	14.3
Total	28	100.0

The members of staff must work actively to reach new groups of students and reinforce their ability to deal with them. 57.1percent of the respondents agreed that KIST staff feel a sense of responsibility for achieving the Institute's goals while 28.6percent were unsure.

Table 5.37 Fear, threats and punishments get staff to work

	Number of respondents	Percent
Strongly disagree	7	25.0
Disagree	13	46.4
Unsure	5	17.9
Agree	1	3.6
Strongly agree	2	7.1
Total	28	100.0

Fear, threats and punishments influences how members of staff perform their duties. The above analysis shows that a total number of 71.4 percent of the respondents disagreed with a view that fear, threats and punishments get KIST staff to work whereas, a total of 10.7 percent were certain about the statement.

Table 5.38 Fear, threats and punishments get students to work

	Number of respondents	Percent
Strongly Disagree	9	32.1
Disagree	16	57.1
Unsure	2	7.1
Agree	1	3.6
Total	28	100.0

The analysis showed that a significant total of 89.2 percent of the respondents believe that students at KIST do not work under fear, threats and punishments with only 10.7 percent of the respondents being uncertain about the statement.

Table 5.39 Commitment to staff education and development

	Number of respondents	Percent
Yes	25	89.3
No	3	10.7
Total	28	100.0

A significant percentage of 89.3 of the respondents believe that KIST is committed to staff education and development. Whereas, 10.7 percent of the respondents believe that KIST is not committed to education and development of its academic staff.

Table 5.40 whether current methods for improving the quality of education are successful

	Number of respondents	Percent
Yes	21	75.0
No	4	14.3
Not sure	3	10.7
Total	28	100.0

It is important to assess whether KIST's current methods of improving the quality of education are successful. 75 percent of the respondents agreed that the current methods for improving the quality of education are successful while 14.3 percent of the respondents disagreed.

Suggestions from the respondents for quality improvement in KIST

The possible ways to improve KIST's quality of education as suggested by the respondents include: Provision of teaching materials, laboratories, books, etc.; researching new developments in quality and continued enhancement; focussing on KIST's strategic plan and employing highly educated personnel. Most of the respondents emphasized that training especially of the academic staff to improve their skills could be one the solutions to improve the quality of education. Motivation through improving the remuneration as well as giving rewards to the employees who performs better was one of the reasons pointed out by the respondents. Strengthening the quality assurance team to carryout reviews and assessment of levels of standard to identify the gaps was also suggested.

KIST in the next five years

In the next five years, 80 percent of the respondents anticipated KIST to be the centre of excellence if given support from both the government and KIST staff. It is clear that with proper implementation of TQM philosophy in KIST, the institution's goals and objectives will be realised and most importantly improvement of the quality of education. Furthermore, Most of the respondents felt that KIST is seen as the future of Rwanda and that it has served as a foundation for Rwandan human resource development. They further see KIST's future as bright.

5.3 Discussion of research findings

This section discusses the research findings and makes recommendations on major areas which need improvement.

“Gender”

The study indicated that KIST has more females of the non academic staff compared to males with more males of the academic staff compared to females. It is important to note that the questionnaire was distributed in a systematic way hence every non academic and academic staff had an equal chance of responding to the questionnaire. Equal opportunities policy must be revised constantly to ensure active and sustainable endeavours to achieve equal opportunities among men and women in everything.

“Age”

KIST has more staff in the range of 26 and 33 which facilitates TQM implementation. TQM requires people who can be able to work as a team and this is possible with young blood who are capable of adjusting to team requirements as compared to old people who are not flexible consequently they stick to their old ways of doing things.

“Marital status”

The study indicated that KIST has more singles of the non academic staff and less married people. It is further important to note that the questionnaire was distributed in a systematic way and that every non academic and academic staff had an equal chance of responding to the questionnaire.

“Academic Qualification”

It is important to consider the academic qualifications for KIST staff as a requirement for TQM implementation. As compared to the non academic staff where more members of staff hold Bachelors degree, more academic staff members hold Masters Degree as well as PhD. This means that for KIST’s quality of education to be improved, further education of the staff is indispensable as educated staff are a foundation of the improving the quality of education. For TQM to be well implemented, the staff must be well qualified to be capable of performing their duties to achieve the Institutes’ goals and objectives. Therefore, KIST should be committed to training and education of its staff.

“Whether KIST’s academic members of staff are teachers by profession”

Teachers by profession are required for the success of any university or institute of learning. It is unfortunate that the study revealed that a significant number of the academic staff members are not teachers by profession hence there is a need for KIST to train further its academic staff to provide them with teaching skills.

“Length of service”

From the research results, it is also clear that a significant percentage of KIST employees are in the range of 0 – 3 years therefore they lack familiarity with the processes and design of their activities. Thus this could possibly be one of the reasons why the respondents felt that the institution is not committed to education and development of the staff. TQM’s standards encourage commitment towards staff education and development and it could address this problem consequently leading to quality improvement.

“Rating the overall quality of education to other universities”

The fact that a large percentage of respondents rated KIST’s quality of education as good and not very good leaves room for improvement. Furthermore other respondents rated it as poor and others were not sure. The respondents further felt that, the institution lacks academic materials and that the lecturers lack teaching techniques which has a negative effect on the quality of education. It was also noted that the students who join KIST may have poor education background therefore this takes us back to the government to ensure that Rwandans are provided with quality basic education. This means that KIST has a long way to go so as to provide quality education. However, with TQM implementation,

academic infrastructure. The respondents felt these facilities are not sufficient in terms of quality and quantity, availability and accessibility to all staff and students. Other lacking facilities emphasized by the respondents include; books, projectors, seats in both offices and lecture rooms, etc. Some of the reasons given by the respondents for insufficiency of facilities include; the institution being it the growth stage, lack of sufficient funds and government financial support. Therefore, respondents felt KIST should seek financial support from the government and other funding agents in order to acquire enough facilities. This problem might be a barrier to TQM implementation as it requires enough resources to be successful.

“Defined regulations on the admission, progression and assessment of students”

It is clear from the study that KIST has well defined regulations on the admission, progression and assessment of students. Student progression involves having a clear strategy for student entry into academic programmes, carefully matching student entry with the intended outcome of programmes and modules, and clear procedures to ensure that grades and qualifications awarded to students are fair and unbiased. All activities which affect students’ education and situation at the Institute must be based on co-operation between staff and students, and characterised by attempts to ensure mutual trust and responsibility. Lecturers are required to spend a great deal of time in their own education understanding these processes.

“Management and staff have a clear idea of KIST's strategic objectives”

The study showed that the management and staff have a clear idea of KIST’s strategic objectives. This gives an indication that, KIST management and staff are well conversant with the institution’s objectives and this would help them in performing their duties effectively. This will facilitate TQM implementation in KIST as employees having a clear knowledge of the institute’s strategic objectives is one of the fundamentals of this philosophy.

“Senior management show commitment towards providing high quality education”

TQM advocates and champions on the basis of their own experiences agree that the administration has to first buy into the concept and give it support and resources. Therefore, there was a need to find out if senior management shows commitment to the

improvement of KIST's quality of education. The study revealed that KIST senior management show commitment to the improvement of the quality of education and this will smooth the progress of TQM implementation. Essentially, the administration should practice quality on its own processes before asking the faculties to adopt the philosophy.

“Empowerment on job performance”

Empowering the staff leads to a sense of responsibility for achieving the Institute's goals and objectives of which in the case of KIST include providing quality education which is comparable to none. The academic staff respondents felt that KIST's methods of management tend to create situations in which lectures are undermined and rendered ineffective. They further emphasized that there is no transparency in performance assessment and this keeps them uninspired. However, as indicated in the research results, KIST non academic staff members are empowered on their job performance as compared to the academic staff. Employee empowerment is one of the requirements for TQM implementation. It makes the decision-making processes more transparent and readily accessible at all levels so that the people affected can exert an influence on the foundations on which decisions are made.

“Encouraging Teams and Teamwork”

The study reveals that KIST encourages teams and team work. This is a good idea to the institution as teamwork usually leads to better performance. However, only mature, skilled teams should work on academic processes. Academic processes touch on sensitive issues, such as instructor effectiveness or academic freedom. The education and training process prepares the members of the team to use TQM techniques and work as a team.

Teams are a basic building block in every successful quality effort. They can be departmental, cross-functional, special project, or any other combination of people who touch a work process. Teams are the mechanism through which continuous improvements are made (Internet 14). Hence, KIST should lay more support in team building. However, teams can not be so effective, if the senior faculty and administration's lack a clear understanding about what TQM can and cannot accomplish; reluctance to empower subordinates; and the difficulty faculty have in accepting the concept that academic work can be measured and improved through processes.

“Staff feel a sense of responsibility for achieving the Institute's goals”

As indicated in the research results, KIST staff members feel a sense of responsibility for achieving the institution's goals. This is indicated by a total of 94.2 percent of the respondents who agreed that staff feel a sense of responsibility for achieving the Institute's goals. Only a small percent of the respondents showed lack of knowledge to the responsibility with none of the respondents disagreeing with the idea. This will ease TQM implementation in KIST for quality improvement as almost all members of staff feel responsible for their actions.

“Members of staff feel comfortable in decision-making”

It is important to note that, some respondents emphasised that the staff feel uncomfortable in decision making. The study revealed that there is a relationship between members of staff having the idea of the Institute's strategic objectives and being comfortable in making decisions. This could be due to lack of the knowledge about the institute's strategic objectives as well as staff working under fear and threats. This might be a barrier to TQM implementation in KIST as it requires the staff to be well trained and comfortable with making decisions and it does not encourage staff to work under fear, threats and punishment in order to keep them constructive.

“Whether staff members are happy with their present job”

Some of the respondents showed that they were not happy with their job especially the academic staff. Some of the reasons given by unhappy staff include; poor remuneration, lack empowerment, lack of training, not being included in the decision making and that the management is rigid. For quality improvement to be successful, the employees must be happy with their job in order to accomplish their duties thus achieving the organisational objectives. The members of staff are expected to be happy with their jobs in order to perform their duties efficiently and effectively.

“Whether KIST committed to staff education and development”

The study results showed that to some extent KIST is committed to staff education and development. However, KIST must analyse what skills are required to allow its strategies to be effectively implemented, and allocate time to skills development for all the staff. Mobility between academic and administrative services and tasks must be encouraged. It

also must seek to achieve and implement target oriented recruitment of new staff with high skills levels. Education and development is one requisite for the success of TQM implementation.

“Involvement in benchmarking the quality of education to other universities”

The study revealed that KIST bench marks its quality of education to other universities’ and institutions’. The respondents further mentioned that KIST develops the range of courses in terms of form, availability and content so that they meet the needs of both undergraduate studies and further education and training in lifelong learning. Hence, they make most of the opportunities offered by information technology to create courses tailored to individual requirements.

“Culture committed towards building a culture of excellence”

The study revealed that KIST has a culture that is committed to building excellence. It also revealed this culture has lead to successful improvement of the quality of education. Commitment towards building a culture of excellence is central principle of TQM and hence KIST’s commitment towards this principle will facilitate its implementation.

“Processes and systems are well designed to meet customer needs”

A significant percentage of respondents revealed that they were not sure whether KIST’s Processes and systems are well designed to meet customer needs. Also some respondents criticized the administrative processes and hence requested for creating simpler procedures, reducing duplicate work and prioritising tasks. This is one of the critical areas which can be well addressed by TQM as it enables to improve the organisation of the functions on all levels to create an optimal working method. The quality of any process is defined by the customers of that process. For instance, in the classroom, the students are the customer of the teacher i.e. the person who most directly receives the teaching service. According to the Report and recommendations by the Carnegie commission on Higher education (1973:212), the fundamental areas as curriculum, subject matter and methods of instruction, research, faculty status, and those aspects of student life that relate to the educational processes are responsibilities of the faculties.

“Whether current methods for improving the quality of education are successful”

The study revealed that KIST current methods of improving the quality of education are successful. Reasons for the success include that KIST emphasises on continuous assessment and reviews of the curriculum. However, some of the respondents felt that KIST management is inflexible and hence wastes time in decision making.

5.4 Summary

Due to the increasing importance of quality management, a sense of quality awareness exists in KIST. The research revealed that a lot has to be done for KIST to provide quality education. The academic staff members seem unhappy and it is imperative to note that faculty motivation is a very important resource in order to pursue rapid changes in the quality of education and influence ideas encapsulated in the staff mindsets. However impressive and attractive the administration improves its functions may be the real potential for TQM appears to lie on the academic side in order to improve the quality of education.

CHAPTER SIX: RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

This chapter presents the recommendations for further research and conclusions which are based on the findings from the study. In addition, the objectives of this research were major guiding principles in data analysis which lead to the conclusions as well as recommendations for future research.

6.2 Recommendations for future research

The success of total quality management in industry prompted many people to ask "Why not in Education?" A few people have begun to answer that challenge and today have enough experience to say that quality management works well in education. When properly adapted, experiences to date show that quality management can make as great a difference in education as it has in industry. Education can be improved, productivity of teachers enhanced, teachers and students can find greater joy in their work and the leaving students are more likely to make positive contributions to their society (Internet14). This can only be fully achieved and enjoyed after effective TQM implementation. Limited time was a major obstacle that hindered a detailed analysis in this research as earlier mentioned. It is in this regard therefore that for TQM to be effectively implemented in KIST further research could be undertaken in detail to include the following;

- ❖ Look at how the institution can see itself as a learning organisation i.e. one that: promotes student learning, research, and service; studies, monitors, and evaluates the processes; makes active collaborators in the improvement process of all concerned, including faculty, staff, students, parents, suppliers, employers, and community members.

- ❖ Investigate further on how KIST can focus on a truly professionalizing, "soft" and individualistic user-focused friendly culture that provides a sufficient condition for the rhetoric on quality to become reality.

- ❖ Address issues that are important to make KIST management believe in the necessity of research and higher degrees to get promoted and understanding that adequate support will be available for research. This will enable KIST Faculties

and departments to develop a proper career path for research. These career paths must provide promising researchers with recent research with the opportunities to establish their own research and groups of researchers.

- ❖ Deal with identifying the values that guide the Institute's actions.
- ❖ Tackle how KIST can develop a strong leadership that communicates continuously to faculty, staff, and students the mission and goals, values, and vision.
- ❖ Identify KIST's critical processes i.e. teaching, research, and service.
- ❖ Consider how the Institute can provide continuing educational opportunities for all employees, both in group process and in job-related skills.
- ❖ Study how KIST can push decision-making to the lowest appropriate level, creating an attitude of interdependence and trust throughout the institution.

In addition, the sample was a major limitation because this study did not include students and hence further research could include the students in the sample.

Therefore, although the philosophy underlying TQM is profound, taking the above into consideration could lead to the success of its implementation in KIST hence improving the quality of education. It is an inevitable that clinging to the life-raft of TQM and quality management to satisfy key performance indicators, provides a reassuring resting place for those with a real concern for quality (Internet 15).

6.3 Conclusion

The objective of this study was to assess the feasibility of TQM implementation for improving the quality of education in KIST to improve the areas of competitiveness. The research results showed that the success of the implementation of this philosophy depends largely on the commitment of KIST staff particularly the top management. Commitment and trust is developed between the staff and the management. It is imperative that the management shows total commitment for the staff to respond positively leading to high efficient and effective levels. Also clear communication and a culture of excellence in the institution facilitate TQM success.

The results further revealed that true quality of education at whatever level encompasses the whole provision, the systems, structures and procedures which could be taken care of in an institutional TQM philosophy, but more importantly it involves: students, staff and the community in active and interactive exchange and development. The real issue of quality lies at the level of the individual interaction, the benefits and experiences gained during and in the case of life-long learning capabilities.

In essence, those with strategic responsibility are recommended to be true advocates of KIST whose rationale is driven by quality and not an institution where those in the driving seat are striving simply to test for and demonstrate total quality management techniques and philosophies.

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Internet5: libweb.sonoma.edu/assistance/research/primary.html

Internet6: www.stats.gla.ac.uk/steps/glossary/sampling.html

Internet7: <http://www.iso.org/iso/en/iso9000-14000/understand/inbrief.html>

Internet8: <http://www.isoeasy.org/>

Internet9: <http://www.johnstark.com/fwis9.html>

Internet10: <http://home.att.net/~iso9k1/tqm/tqm.html>

Internet11: <http://home.att.net/~iso9k1/tqm/tqm.html>

Internet12: <http://www.skyenet.net/~leg/tqm.htm>

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QUESTIONNAIRE FOR NON ACADEMIC STAFF

Dear respondent,

This study is carried out to understand and apply Total Quality Management for Quality improvement in Kigali Institute of Science, Technology and Management (KIST). I kindly ask you to sacrifice a few minutes of your valuable time to answer this questionnaire. Your answers are essential in building an accurate picture of the issues that are important in improving the quality of education provided to Rwandans. Your honesty and diligence will be highly appreciated.

This questionnaire is anonymous hence you do not need to fill in your name and please be assured that the information provided will be treated with high confidentiality.

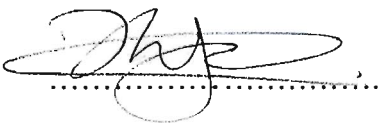
For further clarity about the questions regarding the questionnaire, do not hesitate to contact the researcher on;

Phone: +27723078707 (Cell)

Email: kyatengwa@yahoo.com

Your kind response and support will be highly appreciated.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lilian', is written over a horizontal dotted line. The signature is fluid and cursive.

KYATENGWA Lilian

Tick whichever is applicable:

1. Gender

1. Male	
2. Female	

2. Age

1. 18 – 25 years	
2. 26 – 33 years	
3. 34 – 41 years	
4. 42 – 49 years	
5. 50 years and over	

3. Marital Status

1. Single	
2. Married	
3. Divorced	

4. What is your highest academic qualification?

1. Ordinary level Diploma	
2. Bachelors Degree	
3. Post Graduate Diploma	
4. Masters Degree	
5. PhD	

5. Length of Service

1. 0 – 3 years	
2. 4 – 7 years	
3. 8 – 11 years	
4. 12 years and over	

6. Is KIST's curriculum of the academic programmes well defined and approved by National Council of Higher Education?

1. Yes

2. No

3. Not sure

7. Which academic programmes are provided by KIST?

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.....

8. What is the duration of each programme mentioned in question eight?

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9. What is the Mode of Study (Full time or Part-time) of the programmes mentioned in question eight?

.....

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.....

.....

10. What kind of academic system does KIST use?

- | | | | | |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. Academic year
System | 2. Semester
System | 3. Trimester
System | 4. Quarter
System | 5. Other
(.....) |

11. How would you rate the overall quality of education provided by KIST in relation to other universities and institutes on the global scale?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. Very poor | 2. Poor | 3. Unsure | 4. Good | 5. Very Good |

12. Are students provided with academic assistance in the course? (E.g. Extra explanations to individual students)

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. Yes | 2. No | 3. Not sure |

13. Does KIST have enough non academic staff?

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. Yes | 2. No | 3. Not sure |

14. Does KIST have enough.....

- | | | | |
|------------------|--------------------------|--------------------------|--------------------------|
| 1. Laboratories? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1. Yes | 2. No | 3. Not sure |

- | | | | |
|---------------|--------------------------|--------------------------|--------------------------|
| 2. Libraries? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1. Yes | 2. No | 3. Not sure |

- | | | | |
|-------------------|--------------------------|--------------------------|--------------------------|
| 3. Computer labs? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1. Yes | 2. No | 3. Not sure |

- | | | | |
|-------------------|--------------------------|--------------------------|--------------------------|
| 4. Lecture rooms? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1. Yes | 2. No | 3. Not sure |

- | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|
| 5. Audio-visual equipments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1. Yes | 2. No | 3. Not sure |

6. Others specify;

15. The management and other staff have a clear idea of the Institute's strategic objectives.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

16. Senior management show commitment towards providing an education of high quality.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

17. Are employees empowered on their job performance?

1. Yes 2. No 3. Not sure

If No, explain

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18. Members of staff feel comfortable in making decisions.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

19. KIST's culture is committed towards building a culture of excellence.

1. Yes 2. No 3. Not sure

20. Does KIST get involved in benchmarking its quality of education to other universities' or institutes'?

1. Yes 2. No 3. Not sure

N.B By benchmarking, I mean the comparison of the KIST's quality of education to other universities' or institutes'.

21. KIST's processes and systems are designed to meet customer (students, Lecturers, employees and others) needs.

NB. Processes and Systems include but not limited to; Method of assessment, grading system, Attendance and curriculum and structure.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

22. KIST culture encourages Teams and Teamwork to encourage a participative work culture.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

23. Members of staff feel a sense of responsibility for achieving the Institute's goals.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

24. Fear, threats and punishments are methods mainly used to get staff to do their work.

1. Strongly Disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly Agree

25. Are you happy with your present job?

1. Yes 2. No 5. Not sure

If No, explain

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26. Is KIST committed in the education development of its staff?

1. Yes 2. No 3. Not sure

27. Are the current methods for improving KIST's Quality of education successful?

1. Yes

2. No

3. Not sure

Please explain

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28. What do you think are possible ways to improve KIST's Quality of education?

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.....

29. Where do you see KIST in the next five years?

Please explain.

.....
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.....
.....

Thank you for your time and assistance in completing this questionnaire.

QUESTIONNAIRE FOR ACADEMIC STAFF

Dear respondent,

This study is carried out to understand and apply Total Quality Management for Quality improvement in Kigali Institute of Science, Technology and Management (KIST). I kindly ask you to sacrifice a few minutes of your valuable time to answer this questionnaire. Your answers are essential in building an accurate picture of the issues that are important in improving the quality of education provided to Rwandans. Your honesty and diligence will be highly appreciated.

This questionnaire is anonymous hence you do not need to fill in your name and please be assured that the information provided will be treated with high confidentiality.

For further clarity about the questions regarding the questionnaire, do not hesitate to contact the researcher on;

Phone: **+27723078707 (Cell)**

Email: **kyatengwa@yahoo.com**

Your kind response and support will be highly appreciated.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lilian', is written over a horizontal dotted line. The signature is fluid and cursive.

KYATENGWA Lilian

Tick whichever is applicable:

1. Gender

1. Male	
2. Female	

2. Age

1. 18 – 25 years	
2. 26 – 33 years	
3. 34 – 41 years	
4. 42 – 49 years	
5. 50 years and over	

3. Marital Status

1. Single	
2. Married	
3. Divorced	

4. What is your highest academic qualification?

1. Ordinary level Diploma	
2. Bachelors Degree	
3. Post Graduate Diploma	
4. Masters Degree	
5. PhD	

5. Length of Service

1. 0 – 3 years	
2. 4 – 7 years	
3. 8 – 11 years	
4. 12 years and over	

6. Are you a teacher by profession?

1. Yes

2. No

3. Not sure

If No, please specify your profession

.....

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7. Are you happy with your present job?

1. Yes

2. No

3. Not sure

If No, explain

.....

.....

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.....

8. Are students provided with academic assistance in your course? (E.g. Extra explanations to individual students)

1. Yes

2. No

3. Not sure

9. Does KIST have enough academic staff?

1. Yes

2. No

3. Not sure

10. Is KIST's curriculum of the academic programmes well defined and approved by National Council of Higher Education?

1. Yes

2. No

3. Not sure

11. Does KIST have well defined regulations on the admission of students?

1. Yes

2. No

3. Not sure

12. Does KIST have well defined regulations on the progression of students?

1. Yes

2. No

3. Not sure

13. Does KIST have well defined regulations on the assessment of students?

1. Yes

2. No

3. Not sure

14. Which academic programmes are provided by KIST?

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15. What is the duration of each programme in question eight?

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16. Is the duration of the academic programmes sufficient?

1. Yes

2. No

3. Not sure

If No, Please explain

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17. What is the number of students per a class?

1. Below10	
2. 10 – 34	
3. 35 – 44	
4. 45 – 60	
5. 60 and over	

18. Does KIST have enough;

1. Laboratories?

1. Yes

2. No

3. Not sure

2. Libraries?

1. Yes

2. No

3. Not sure

3. Computer labs?

1. Yes

2. No

3. Not sure

4. Lecture rooms?

1. Yes

2. No

3. Not sure

5. Audio-visual equipments?

1. Yes

2. No

3. Not sure

6. Others specify;

19. How would you rate the overall quality of education provided by KIST in relation to other universities' and institutes' on the global scale?

1. Very poor

2. Poor

3. Unsure

4. Good

5. Very Good

20. Does KIST get involved in benchmarking its quality of education to other universities' or institutes'?

1. Yes

2. No

3. Not sure

N.B By benchmarking, I mean the comparison of the KIST's quality of education to other universities' or institutes'.

21. The management and other staff have a clear idea of the Institute's strategic objectives.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

22. Senior management show commitment towards providing an education of high quality.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

23. Are you empowered on your job performance?

1. Yes

2. No

3. Not sure

If No, explain

.....

.....

.....

.....

24. Members of staff feel comfortable in making decisions.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

25. Is KIST's culture committed towards building a culture of excellence?

1. Yes

2. No

3. Not sure

26. KIST's processes and systems are designed to meet customer (Lecturers, students and employees) needs.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

NB. Processes and Systems include but not limited to; Method of assessment, grading system, Attendance and curriculum and structure.

27. Does KIST encourage Teams and Teamwork to encourage a participative work culture?

1. Yes

2. No

3. Not sure

If No, explain

.....

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28. Members of staff feel a sense of responsibility for achieving the Institute's goals.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

29. Fear, threats and punishments are methods mainly used to get staff to do their work.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

30. Fear, threats and punishments are methods mainly used to get students to do their work.

1. Strongly Disagree

2. Disagree

3. Unsure

4. Agree

5. Strongly Agree

31. Is KIST committed to the education and development of its staff?

1. Yes

2. No

3. Not sure

32. Are KIST's current methods for improving Quality of education successful?

1. Yes

2. No

3. Not sure

Please explain

.....

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33. What do you think are possible ways to improve KIST's Quality of education?

.....

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34. Where do you see KIST in the next five years?

Please explain.

.....

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.....

Thank you for your time and assistance in completing this questionnaire.



23rd November 2004

TO WHOM IT MAY CONCERN

MBA DISSERTATION – LILIAN KYATENGWA 203512742

The abovenamed student is registered in the Master of Business Administration (MBA) programme at the Graduate School of Business of the University of KwaZulu-Natal.

Our MBA programme contains a research dissertation component and Lilian has chosen the following topic “Total Quality Management for quality improvement”.

Accordingly, we would be grateful for any assistance you can provide in facilitating the collection of data in support of this study.

Thank you for your co-operation.

With kind regards.

BILL HARRISON

Director

Graduate School of Business

Howard College campus

Graduate School of Business

Postal Address: Graduate School of Business Building, Francols Road, Durban 4001

Telephone: + 27 (0) 31 260-1105 Facsimile: +27 (0) 31 260-1235 E-mail: gsb@ukzn.ac.za Website: <http://www.gsb.ukzn.ac.za>

Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

CHAPTER THREE: THE OVERVIEW OF QUALITY IN KIGALI INSTITUTE OF SCIENCE, TECHNOLOGY AND MANAGEMENT

3.1 INTRODUCTION

This chapter reviews on how KIST deals with quality improvement issues as stated earlier in chapter one and it is on this basis that an analysis of its current strategies for improving the quality of education given today's fast changing/uncertain environment is made.

KIST is struggling to build a Quality Assurance culture. The key to the success of building a firm and viable quality assurance culture in KIST lies with each individual member of the KIST community, but more importantly, with those in positions of responsibility who are also expected not only to practice but also to enforce the guidelines contained in the quality Manual. The support and encouragement of top management of the Institute has been crucial to the realization of the KIST goals, but a responsive community of staff, students, and friends of KIST play a central role in ensuring quality education is taking place (Internet 2).

3.2 INSTITUTIONAL QUALITY STANDARDS

KIST Quality Assurance Manual (2004) indicates that the Directorate of Quality Assurance (QA) put together the following ten institutional quality standards to be met by KIST in anticipation of setting and enhancing its own quality standards and of accreditation by external quality assurance agencies. That is, these ten institutional standards act as guide to KIST in anticipation of institutional audits, both academic and financial, or of assessment and/or accreditation by external assessors.

3.2.1 Institutional Vision and Mission

KIST is expected to have clear statements of the vision and mission that define the institution, its educational purposes, its student constituency, its place in the core programmes of science, technology, and management education, research, and service to community.

3.2.2 Governance and Administration

The standard of governance and administration requires KIST to have a clear governance system and organisational structure with a governing council responsible for the quality and integrity of the institution. The system is to be designed in line with the provisions of

Table 5.33 Culture committed towards building a culture of excellence

	Number of respondents	Percent
Yes	19	67.9
No	6	21.4
Not sure	3	10.7
Total	28	100.0

The table shows that 67.9 percent of the respondents agreed that KIST is committed towards a culture of excellence whereas 21.4 percent disagreed. 10.7 percent were not sure. The basis for everything is a culture that centres on objectivity and critical thinking and paves the way for new perspectives.

Table 5.34 whether Processes and systems are well designed to meet customer needs

	Number of respondents	Percent
Unsure	3	10.7
Agree	17	60.7
Strongly agree	8	28.6
Total	28	100.0

A significant percentage of 89.3 of the respondents agree that KIST's Processes and systems are well designed to meet customer needs while only 10.7 percent were unsure.

Table 5.35 Encouraging Teams and Teamwork

	Number of respondents	Percent
Yes	20	71.4
No	6	21.4
Not sure	2	7.1
Total	28	100.0

It is evident from the above table that 71.4 percent of the respondents agreed that KIST encourages teams and teamwork while 21.4 percent disagreed.

KIST's quality of education will be improved as it ensures right processes, procedures and systems in place.

“Enough staff”

KIST has sufficient non academic members of staff. However, the study showed that it has a shortage of academic staff. For KIST to provide quality education it must have enough academic staff. A limited number of the academic members of staff mean that they become overloaded consequently may not be able to deliver quality service. It is important to note that with sufficient as well as well trained staff and proper TQM implementation, KIST can accomplish a bright future and in the long run becoming a centre of excellence.

“Providing students with academic assistance”

The study revealed that the students are not provided with sufficient assistance. Providing students with assistance like proving sufficient notes, course guidelines and extra explanations to individual students are requirements for their success. The staff felt that the institution lacks enough books, which makes it difficult for lecturers to prepare notes for students and even make references to different textbooks. They further noted that the number of students per class is large which makes it difficulty to make follow up of an individual student.

“Fear, threats and punishments get students to work”

It is apparent that KIST students do not work under fear, threats and punishments. Therefore, it is important to define the levels of competency the students have in order to let them not work under fear, threats and punishments. Some measures of student performance may be increased by threats, competitions for grades or prizes. Habitually, the students' attachment to learning requires them to be under fear, threats and punishments although it is unhealthy. However it is important to note that it takes a quality experience to create an independent learner.

“Academic infrastructure facilities”

It is significant that KIST does not have sufficient academic infrastructure as indicated by the research results. This was revealed by the academic staff that have a clear picture and hence they were the ones who gave appropriate information of the availability of the