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AN EMPIRICAL INVESTIGATION OF TOTAL QUALITY MANAGEMENT IN PALESTINE: A PROPOSED GENERIC FRAMEWORK OF IMPLEMENTATION

THE CONSTRUCTION OF A GENERIC FRAMEWORK FOR EFFECTIVE TQM IMPLEMENTATION IN PALESTINIAN ORGANISATIONS: AN EMPIRICAL INVESTIGATION OF CRITICAL QUALITY FACTORS AND BEST PRACTICE

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ABSTRACT
An empirical investigation of total quality management in Palestine: A proposed generic framework of implementation.

Key words: Total quality management (TQM), critical quality factors, best practice, triangulation, Palestinian organisations, TQM implementation framework.

Although academic interest in TQM increased substantially in the last decade, still the gap in the literature is hardly surprising given that research and theory in TQM implementation are still at a very early stage in the West. To-date, there are only a handful of empirical researches reported in the literature that have attempted to identify what constitute as constructs of TQM that can be manipulated to effectively implement TQM. All but very few are studies done in developed economies. Moreover, knowledge of TQM in developing economies is almost totally lacking. Against this backdrop, this research addresses the identified gaps in the literature on TQM. Thus this thesis focuses on the effective implementation of total quality management in Palestine, a developing economy, through an empirical investigation of critical quality factors.

The research methodology involves combining quantitative and qualitative methodologies to identify the key quality factors cited in the literature and considered by consultants and experts as essential to successful TQM implementation. The research design also included: 1. an empirical investigation to assess the level of TQM awareness and understanding in the Palestinian context, 2. determining which key quality factors are critical to successful implementation using a survey questionnaire, 3. determining what tactics and techniques are used in addressing and implementing these critical quality factors by Palestinian organisations, using semi-structured interviews, 4. determining the prerequisites of effective TQM implementation in the pre-launch stage using in depth interviews. By complementing and integrating the findings, an implementation framework was constructed with the support of the knowledge acquired from the literature review. A simple and practical step by step with implementation guidelines framework aiming at assisting Palestinian organisations in planning on effective implementation of TQM was constructed. The research findings indicate that top management commitment and involvement, employee commitment and involvement, managing by customer-driven system and processes and continuous performance improvement, are essential to effective implementation of TQM. This implies that Palestinian organisations recognise and implement the same critical quality factors found in Western countries.

The proposed framework is built around four major constructs that relate to top management commitment, employee commitment, customer-driven system and processes, and continuous improvement. It emphasises an implementation approach of top-down deployment and bottom-up participation focusing on business processes that add value to customer satisfaction.

In conclusion, this empirical research revealed that TQM could be implemented in the developing economies (such as Palestine) as Palestinian organisations subscribe to the same quality factors as those found in the developed economies.
Dedication

To my wife Inas for her sacrifices and the constant support without which I could not have completed this thesis.

To my sons Issa who virtually grew up along with the thesis and Basel who was born during the field work stage.
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Chapter One

Introduction

1-1 Introduction to the thesis:

The rapidly changing economic and market environments creates real challenges for business organisations. Severe competition, globalisation, rapid transfer of technology and deregulation of markets are the main characteristics of the prevailing business environment. Such environments demand more attention of organisations to the needs of customers to survive in the severe competitive environment. They must reduce costs, innovate every aspect of their business operations for continuous improvement of products, services and processes, and improve productivity. They need a management system that facilitates continuous improvement of every aspect of their business operations to sustain a competitive strategy that aligns an organisation with its stakeholders.

To achieve these objectives, many organisations are changing their traditional business operations from a production-oriented approach to a competitive approach, where customer satisfaction is the heart of their business operations. They resort to total quality management to link organisational vision, mission, operating principles and quality values with customer satisfaction as the top priority. Many business organisations have found that the key to competitive success lies in emphasising product and service quality as a strategic issue when doing business (Kano, 1993; Belohav, 1993). The advent of value seeking, informed consumers, increased global competition and deregulation in a number
of industries is driving companies to quality as a solution to survive (Huang, 1998).

World class textile producer Milliken and company is obsessed with quality. But even at Million, 25 percent of the company’s cost was attributed to quality problems. Roger Milliken wanted the quality problems solved. He wanted quality to be management’s commitment. So at a meeting of 400 managers, he jumped up on a chair, raised his right arm, and asked others to raise theirs and to repeat after him:

I will listen, I will not shoot the messenger; I will recognize that management is the problem.

Milliken believes that was the breakthrough moment. “That day we started to commit... and to embark upon an entirely new approach to quality”. (Heizer and Render, 1999).

To provide a better understanding, table 1-1 compares the traditional management approach with total quality management approach.
Table 1-1
Comparing Traditional Management Approach and Total Quality Management Approach

| Customer needs | Defined by management | Defined by customers |
| Motivation | Motivated by profits | Motivated by customers satisfaction |
| Quality | Inspection for errors after products are produced | Prevention of errors with emphasis on quality of design |
| Control | Vertical hierarchy of organisational structure | Flat organisations structure emphasising employees empowerment |
| Labour | Division of labour | Multi-skill labour |
| Functions and jobs | Independent functions and jobs | Interdependent functions and jobs |
| Focus | Short-term focus and result oriented | Long-term focus and continuous improvement oriented |

This new management philosophy (Total Quality Management) has generated great interest influencing many sectors of the economy in many countries all over the world. According to Kanji (1990) this development is the second industrial revolution.

Quality is an important consideration for executive thinking. The increased awareness of senior executives, who have recognised that quality is an important strategic issue is reflected as an important focus for all levels of the organisation (Crosby, 1989, Oakland, 2000). This requires defining and implementing several factors (identified as quality factors in this research project). These quality factors include top management commitment and involvement, employee empowerment and culture. These factors are known by some writers as the soft aspects of management, while the hard aspects include factors such as improvement tools and techniques and systems (Wilkinson, 1992; Oakland, 1993, and 2000).
However, these quality factors for successful implementation of TQM cited in the literature are not formulated on the basis of empirical research (Black, 1993; Black and Porter, 1996). Various quality factors are identified by various writers based on their own experiences in working as consultants, managers or researchers.

This reflects the gap in the literature. This gap is hardly surprising given that research and theory in TQM implementation are at a very early stages in the West (Sitkin et al., 1994). According to Thiagarajan (1996), while total quality management (TQM) in the West lacks theoretical basis, knowledge of TQM in developing economics is almost totally lacking. He continues to say: the scant attention given to research in the developed nations, confused by the acknowledged limitations of most of the research findings across national boundaries have made any efforts to readily learn and transfer empirically sound knowledge to developing economies all the difficult.

This is evident as to-date, there are few empirical studies reported in the literature that have attempted to identify the essentials of TQM implementation (Garvin, 1983; Saraph et al., 1989; Baker and Starbird, 1992; Bolts, 1992; Black, 1993; Badri et al., 1995; Motwani et al., 1994; Tamimi and Gershon, 1995; Black and Porter, 1996; Flyn et al., 1994; Ahire et al., 1996; Thiagarajan, 1996; Thiagarajan, 1996; Ali, 1997; Tamimi, 1998; Rao et al., 1999; Zhang et al., 2000). All but four (Motwani et al., 1994; Ali 1997; and Badri et al., 1995; Thaiagarajan, 1996) are studies done in developed countries.
The focus of this empirical research is TQM implementation in Palestine, a developing and recently established country. The main purpose is to construct a generic framework to assist in the effective TQM implementation in the context of Palestinian organisations.

Constructing a framework for TQM implementation as a research topic can best be investigated by studying the experiences of organisations advanced in their use of TQM (Black, 1993; Black and Porter, 1996, Ahire et al., 1996; Thiagarajan, 1996; Tamimi et al., 1995; Tamimi, 1998). The aim is to know what is essential to the success of these organisations' TQM programmes. This is, therefore, the general approach adopted for this study and is essential in the construction of the generic framework.

1-2 Definition of total quality management:

Total quality management does not possess a universal definition (Gehani, 1993). According to a study group of the 1992 Total Quality Forum, TQM is defined as:

A people focused management system that aims at continual increase in customer satisfaction at continually lower real cost. TQM is total system approach (not a separate area or a programme), and an integral part of high level strategy. It works horizontally across functions and departments, involving all employees, top to bottom, and extends backwards and forwards to include the supply chain and the customer chain (Bounds et al., 1994).

Another definition is to analyse the three words: total, quality and management. Quality means satisfying customers' requirements continually. Total quality is to achieve quality at low cost. Total quality management aims to obtain total quality by involving everyone's daily commitment (Kanji; 1990).
TQM is defined as an approach to improving the effectiveness and flexibility of business as a whole. TQM is essentially a way of organising and improving the whole organisation, every department, every activity, and every single person at every level. The aim of which is to continuously improve process performance by placing the customers at the focal point of operations in order to satisfy their requirements. TQM is a continuous quest for excellence that has to reach every individual within an organisation in order to make prevention of defects possible and to satisfy customers totally at all times (Oakland, 2000).

Using points of agreement between the writings of the quality gurus, Miller (1996) developed a definition of TQM to serve as a reference for TQM research. His definition of TQM is: an ongoing process whereby top management takes whatever steps necessary to enable everyone in the organisation in the course performing all duties to establish and achieve standards which meet or exceed the needs and expectations of their customers, both external and internal.


The conclusion from these definitions is that TQM is a holistic modern management approach that can be implemented by all types of organisations. A detailed discussion of TQM definition is presented in chapter 2.
1-3  Statement of research problems:

1-3-1  Lack of empirical research:

The bulk of the total quality management literature is based on personal experiences and anecdotal evidence (Baker and Starbird, 1992; Black and Porter, 1996; Rao et al., 1999). According to Black (1993) this exposes total quality management to the risks of losing credibility as a sound management philosophy for improving organisational effectiveness.

The lack of empirical research can be attributed to the following reasons:

1- The existing theoretical base of TQM to support research on total quality is not sufficient (Dean et al, 1994).
2- TQM is relatively recent philosophy outside Japan.
3- The origin of TQM lies outside the academic world (Spencer, 1994).

1-3-2  Lack of empirically sound TQM implementation models.

In a Japanese survey (Yui, 1995), fifty seven out of one hundred thirty eight respondents agreed that they do not understand what is required to introduce and implement TQM, even though they understood its concepts. This reflects the total quality paralysis described by (Oakland, 1993; Kanji, 1990), where organisations attempting to implement TQM are confused where to start. This is because they are overwhelmed by so many concepts, principles, models and prescriptions (see Juran, 1993; Deming, 1986; Oakland, 2000; Crosby, 1979).
Organisations’ top management are questioning the lack of empirically sound models to assist in effective quality management. They recognise that currently available approaches to implementation are organisationally and politically naïve (Dean and Bowen, 1994). Therefore, a model development to explain effective quality management implementation by organising, synthesising, and empirically validating the various key quality factors should serve the needs of practitioners (Thiagarajan, 1996).

1-3-3 Lack of empirical research in the developing economies.

The growing interest in quality has reached, due to globalisation, several developing countries in the Middle East region (Ali, 1997). It is appropriate, therefore, studies in TQM implementation be conducted for the benefit of the managers in these developing countries, where the need is confounded by a dire lack of total quality management information (Thiagarajan, 1996; Ali, 1997). Generally, there seems to be acknowledged limitations of the findings of some of the earlier studies in their applicability across national boundaries (Dawson, 1994; Rao et al., 1999). Therefore, the findings of such systematic studies will generate a new way of thinking concerning total quality management in the various culture contexts.

1-3-4 Palestine as a research focus:

The present economic and industrial reality of Palestine cannot be separated from its history. This reality is an outcome of a series of historical developments which the region has witnessed starting with the first waves of Jewish immigration into Palestine at the outset of this century, followed by the establishment of the state of
Israel in 1948, the June War of 1967, the Intifada (Uprising) of 1987-1993, the Arab-Israeli peace negotiations, and finally the establishment of the Palestinian National Authority's over several areas during the interim period after which will come the final status negotiations to establish the Independent State of Palestine.

The Israeli occupation (1967-1993) of the West Bank and Gaza strip has had a negative effect on the Palestinian economy. Most of the studies found that measures imposed as a result of the occupation posed the biggest obstacles to development of the industrial sector of which, most of the raw materials were imported after a permission of the Israelis is issued (Sabri, 1999; Nasr, 1997).

Starting from 1993, changes began to take place. After the establishment of the Palestinian National authority in 1993, the open door policy was declared. The opening up of market created a more competitive environment. Business organisations faced high value-added competitors from Israel, Neighboring Arab countries and other Western countries. These changes in the economic climate since the 1993 forced Palestinian business to focus on the need of customers. They therefore need a strategy to build a new competitive advantage if they are to respond to the challenges.

Being aware of the severe competition from the low cost labor intensive neighboring Arab countries, the high value-added competitors from Israel and Western countries, and the importance of quality in competitive environment, Palestinian business organisations started to respond by stressing on quality. Many business organisations have started the quality movement and implemented
various quality programmes including quality control and ISO 9000 series as the means to achieving these objectives. In fact, they regard quality in the form of certified quality management system, namely, the ISO 9000 as a competitive tool or as a basic tool for survival. Some business organisations, however, look forward to integrate the certification process within the TQM framework.

Several non-governmental activities to increase the quality awareness and to promote the concept of total quality management and its effective implementation in Palestine are carried out by many training centers. However, much is required from the Palestinian National Authority to promote and reinforce the importance of quality to achieve competitiveness. Particularly, the establishment of "Palestinian National quality is a dire need to boost total quality management in Palestine. Therefore, this provides an interesting and practical arena for an empirical study of effective TQM implementation in Palestine.

1-4 Purpose and significance of the study:

The previous discussion suggests that expanding the current available knowledge of TQM implementation is a valid topic for research. Particularly, this is important as there is a lack of theory and research, and importance of TQM in practice. This is important for creating knowledge for the benefits of developing economies' business organisations.
1-4-1 Statement of Purpose:

The main purpose of this study is to construct a generic framework for TQM. implementation to assist Palestinian organisations to effectively implement their TQM initiatives. The intention is to provide non-prescriptive implementation guidelines.

Studying Palestinian Organisations that have implemented TQM is needed to identify the so-called critical quality factors of TQM implementation and to understand how they are deployed and implemented. This provides the framework the “what” and “how” of TQM implementation.

To achieve this purpose, the following requirements are needed:

1- Developing an understanding of the current knowledge of TQM implementation.
2- Assessing TQM understanding and perception of Palestinian managers.
3- Investigating TQM implementation experiences in Palestinian organisations.
4- Analysing the data gathered by the investigations to identify the so-called critical quality factors for effective implementation in Palestinian organisations.
5- Analysing how critical quality factors are deployed and implemented by Palestinian organisations.

1-4-2 Research objectives

These requirements reflect five main objectives. The first objective is to identify the quality factors that are critical to effective implementation of TQM based on
the up to date existing knowledge of implementation in the developed countries. This requires a thorough and in-depth review of the available literature.

The second objective is to assess the level of awareness and understanding of TQM. This involves identifying factors of over-emphasis and factors of underemphasis compared to other similar studies.

The third objective is to identify the quality factors that are critical for effective TQM implementation in Palestinian organisations. The effort involves Palestinian organisations that are advanced in their use of TQM agreeing on a set of quality factors based on their implementation experiences.

The fourth objective is to understand how the critical, quality factors are deployed and implemented. The investigation involves identifying the tactics and techniques used by Palestinian organisations in implementing the quality factors.

The final objective is to identify the critical issues in the pre-launch stage of TQM. This involves identifying the foundation elements for TQM implementation in the Palestinian organisations.

1-4-3 Aim of the study

This study is basically concerned with proposing a holistic TQM implementation model appropriate to the Palestinian context, based on assessing the degree of perception and understanding of TQM of Palestinian managers and the
identification of the critical factors for successful implementation of TQM framework.

1-4-4 Significance of the study:
This research addresses a major gap in the literature by empirically investigating TQM implementation in a developing country, namely, Palestine. There is a dearth of theories and generic models of TQM implementation that are empirically based, and validated.

1-5 Structure of the thesis:
The thesis is presented in ten separate chapters. These chapters cover the following aspects:

Chapter 1: Provides a general introduction and an overview of the study.

Chapter 2: It reviews the fundamentals of TQM necessary for a greater understanding of the concepts, evaluations and models. It includes an in-depth review of the literature of the critical quality factors for TQM implementation.

Chapter 3: It deals with research design and methodology derived from the research objectives and the review of literature.

Chapter 4: It involves investigating awareness and understanding of TQM by Palestinian managers. It represents the first stage of the fieldwork.

Chapter 5: It represents the second stage of the fieldwork. It identifies the critical quality factors of TQM implementation using survey questionnaire.
Chapter 6: Representing the third stage of the fieldwork, using semi-structured interviews to identify how the critical quality factors are deployed and implemented.

Chapter 7: Representing the fourth and last stage of the fieldwork, this chapter identifies the foundation elements for TQM implementation. This represents the experience of five case study organisations using open interviews.

Chapter 8: This chapter integrates and discusses the findings of the previous chapters to construct a generic, practical and step-by-step framework with practical implementation guidelines to assist Palestinian organisations in the implementation of TQM.

Chapter 9: It concludes the thesis and provides recommendations to direct future research.
Chapter Two

Literature Review: TQM Fundamentals and Quality factors of TQM implementation

2-1 Introduction

This chapter presents an overview of the fundamentals of TQM. It provides an in-depth review of the essentials of TQM as presented by the quality gurus, empirical studies and models of excellence. The chapter starts with defining quality and total quality management, next it explores the quality factors identified by the quality gurus, empirical research results, experts and consultants contributions and the models of excellence in Japan, USA and Europe. The purpose of this overview is to provide an appropriate framework for the various issues presented and discussed in this research project. This chapter also presents the various issues related to TQM implementation and stressed by quality gurus and writers as being essential for successful implementation of TQM. This involves presenting successful experiences of case study organisations in their implementation of TQM.

The effort involves understanding the implementation processes with a focus on how and why these processes are implemented. This helps the researcher to synthesise the key quality factors for successful TQM implementation process.
2-2 Defining Total Quality Management “TQM”

2-2-1 Defining Quality

As TQM deals with quality it seems reasonable that an essential step toward understanding the meaning of TQM would require an understanding of the word quality. Frequently, quality is used to describe goods or services, but it also means different things to different people. This is apparent in the literature as different writers provide many definitions. Juran (1974) considers quality as “fitness for use”. This implies that the user determines the quality of the goods. The product or service that best satisfies the user is the higher quality product. This definition requires learning how the user plans to use the product and making the product to fit the need. Crosby (1979) describes quality as “conformance to requirements”. This requires specifying the product characteristics and the more closely manufacturing can conform to those requirements, the better the quality of the product. This definition has the advantage of providing objective measures of quality standards. That is nonconformance to requirements means that quality has not been achieved. However, this definition has the disadvantage of that it lacks the concern for the customer’s preferences (Rao et al. 1996). Moreover, the definition was considered too restrictive (Groocock, 1986) which requires some consideration of the degree of conformance. Garvin (1988) proposes for an understanding of the elements of quality as perceived by the user eight dimensions of quality: performance, features, reliability, conformance, durability serviceability, aesthetics, and perceived quality. Therefore, if a product is rated higher on one or more of these dimensions than the competition, it would be considered a higher quality. The criterion Garvin used for defining these
dimensions is that the ranting can be high on one dimension and still be low on the other.

Feigenbaum (1991) defines quality as “a customer determination that is measured against his or her stated or unstated requirement”. Deming (1986) states that quality should be aimed at the needs of the consumer, present and future. Oakland (1989,2000) offers the following definition of quality “meeting the customer requirements. The requirements may include availability, delivery, reliability, maintainability, and cost effectiveness amongst many other features”.

As cited in Heizer and Render (1999), the American Society for Quality Control definers quality as:“ The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs “.

2-2-2 TQM meaning and definition

TQM refers to a quality emphasis that encompasses the whole organization from supplier to customer. The objective of TQM practices is to improve the performance of an organization. TQM is concerned with continual improvement, customer focus and total participation. Although there is no universally accepted definition of TQM, still all agree that quality is defined by the customer which requires a commitment by management to have a continuing company wide drive toward excellence in all aspects of products and services that satisfy the customer’s needs.
The following definitions reveal the basic principles of TQM. Zairi et al. (1994) considers TQM as: “A positive attempt by the organization concerned to improve structural, infrastructural, attitudinal, behavioural and methodological ways of delivering to the end customer, with emphasis on: consistency, improvement in quality, competitive enhancement, all with the aim of satisfying or delighting the end customer”.

According to the Total Quality Management Institute of Australia (1987): TQM is the management philosophy that seeks continuous improvement of all the processes, products, and services of an organization. It emphasises the understanding of variation, the importance of measurement, the role of the customer and the involvement of employees at all levels of an organization in pursuit of such improvement.

Oakland (1993, 2000) describes TQM as: “A comprehensive approach to improving competitiveness, effectiveness and flexibility through planning, organizing, and understanding each activity and involving everyone at each level. TQM ensures that the management adopt a strategic overview of quality and focus on prevention rather than inspection. It is useful in all types of organisations”.

According to Binney (1992), the six best companies in Europe consider TQM as continuously improving processes and performance and involving people to delight customers.

Kelly et al. (1991) point out the British Telecom understanding of TQM:
Total means that everyone is involved.
Quality means meeting customer's requirement at lowest cost, first time, every time. Management means that it is owned and led by the management team top down.

According to Crosby (1979), TQM is: "A management discipline concerned with preventing problems from occurring by creating attitudes and controls that make prevention possible".

It can be generalised from the above definitions that TQM is concerned with satisfying the customer's needs and not only meeting his/her expectations but also exceeding them. This requires commitment from everyone and continuous process improvement.

Kruger (1999) considers TQM as a universal business strategy, which is not culture-bound. It is equally applicable to manufacturing and service industries, private and public organisations, structures of different sizes, and to companies of any socio-cultural background.

2-2-3 The quality gurus

The initial success of the quality movement has been attributed to several leading thinkers who helped to make the quality movement what it is today.

This section will be devoted to individuals who have committed many years of their life times to quality in many ways and many forms.
2-2-3-1 Walter Shewart

Early in 1920s while working at the Bell Telephone Laboratories Walter Shewart developed his theories concerning statistical control of a given process. Shewart identified two types of variation in a given process. The controlled variation, which he attributed to random causes which requires no action to be taken as the process could be considered under statistical control. However, the second type is the uncontrolled variation, which he believed to be caused by assignable "special" causes. This type when presented, the process is considered out of statistical control and action should be taken to investigate causes and remove the causes of variation.

2-2-3-2 Edward Deming

Deming was the first to introduce quality principles to the Japanese on a large scale. He met Shewart in 1927, and it was from him that Deming learned the basic concepts of statistical Quality Control.

Over the years Deming condensed his philosophy into 14 points which became action items for top management to adopt. These points are:

1- Create constancy of purpose toward improvement of product and service.
2- Learn the new philosophy.
3- Cease dependence on inspection of the product to achieve quality. But require statistical evidence of process control along with incoming critical parts.
4- Buy materials only if the supplier has a quality process. End the practice of awarding business on the basis of the price tag alone.
5- Use statistical methods to find trouble spots and constantly improve the system.
6- Institute modern aids to training on the job.
7- Institute modem methods of supervision.
8- Drive out fear.
9- Break down barriers between departments.
10- Eliminate numerical goals.
11- Review work standards to account for quality.
12- Remove barriers that rob people of their pride of workmanship.
13- Institute a vigorous program for training people in new skills.
14- Create a structure in top management that will push the above 13 points everyday.

Deming insisted that management accept responsibility for building good systems.

In addition, Deming felt managers should learn psychology to understand what motivates people. This would give them the tools needed to motivate employees and enable them to enjoy their work.

The PDCA cycle is a structured approach to continuous improvement and problem solving known as Deming / Shewart cycle. He generalised the PDCA cycle to any type of improvement activity and made it an integral part of quality improvement. He recommends in Out of the Crisis (1986) the cycle as a model for improvement and as a procedure for finding special causes of variation.

Deming was recognised for his contribution to the Japanese quality movement by establishing the Deming Prize in 1951. Which is the most important and prestigious quality award in Japan (Knight, 1988; Baila, 1996).
2-2-3-3 Joseph Juran

Juran is regarded as one of the prime architects of the quality initiatives in Japan. In 1951 he published the first edition of Quality control, Handbook, which later became a seminal work in the area and provided him with high reputation as a member of the quality gurus. He was assigned to the inspection function at Western Electric Howthorne in 1924.

His approach to quality involved three basic processes (known as Quality Trilogy). These processes are: quality planning, quality control and quality improvement. According to Juran, quality planning starts from identifying the customer, who is defined as anyone impacted by the process. This definition of the customer includes external and internal customer.

By Quality control, Juran meant that attention must be given to the critical elements that needed to be controlled. This requires identification of such elements, definition of measures and methods of measurement, and establishment of performance standards. In this regard, Juran advocated quality control to be delegated to the lowest possible level, and that if possible, it should be accomplished by the workers responsible for doing the task. This indicates widespread training in data collection and problem-solving techniques.

Juran believes that quality is the responsibility of all employees rather than of a specialised department. He emphasised the concept of managing for quality and getting it right first time rather than inspecting it into finished products.

He called the errors made during the initial planning as chronic waste. He also created the concept of cost of quality (Juran, and Gryna, 1993), as he felt that a
cost measure would be an effective form of communication with management as he agrees with Deming that quality problems are mostly attributed to management, not workers.

2-2-3-4 Philp Crosby

Crosby described quality as free and argued that zero defects was a desirable and achievable goal. He believes that the cost of running a quality programme in an organisation can be more than offset with the financial benefits of satisfied customers. Crosby's quality definition is “Conformance to requirements” His slogan is “Quality is free”.

He recognized that improving quality through increasing inspection efforts would increase cost, he insisted that the way to achieve zero defects was to improve prevention measures and techniques.

Crosby (1979), developed what he called the four absolutes of quality management to articulate his view of quality:

1- Quality means conformance to requirements. Requirements needed to be clearly specified so that everyone knew what was expected of them.

2- Quality comes from prevention. And prevention was a result of training, discipline, example, leadership, and more.

3- Quality performance standard is zero defects. Errors should not be tolerated.

4- Quality measurement is the price of nonconformance.

Crosby proposed a 14-points programme to improve quality:

1- Demonstrate management commitment by being convinced that quality improvement is needed and subscribing to a written quality policy. This policy should specify clearly that each person is expected to perform exactly as specified or cause the specifications to be changed to match the needs of the company or the customer.

2- From quality improvement teams. These should be cross-functional and include department heads to oversee the quality improvement process. The team of department heads should be responsible for promoting quality through the entire company.
3- Establish measurements for quality in all activities. Although many of these measures could be error rates, he also included some others. As examples, he suggested that accounting could use the percentage of late reports; plant engineering could use time lost because of equipment failures.

4- Evaluate the cost of quality and use it to identify where quality improvements could be profitably made.

5- Raise the awareness of quality through the organization. Get employees involved by making them aware of costs.

6- Take corrective action to improve quality in areas identified in the previous steps.

7- Plan for zero defects. Using members of the quality improvement team, plan a zero defects program that fits the company and its culture.

8- Train all employees to carry out their part of the quality improvement program.

9- Hold a Zero Defects Day to signal to all employees that the company has established a new performance standard.

10- Encourage people to set goals for themselves and their groups. These goals should be specific and measurable, and progress should be measured against them.

11- Remove obstacles that prevent employees from achieving these goals by encouraging them to report these obstacles to management.

12- Provide recognition for those who participate. This should be public and non-financial.

13- Establish quality councils consisting of team chairpersons and quality professionals. They should meet regularly, share experiences, and generate ideas.

14- Do it all over again to stress that quality improvement is a continuous process.

Crosby also developed a management maturity grid in which he lists five different stages that include uncertainty, awakening, enlightenment, wisdom and certainty.

In the uncertainty stage, management fails to see quality as a tool, fire fighting is the means to handle problems, which are rarely resolved, and there are no organised activities for quality improvement. However, in the fifth stage, certainty, the organisation is persuaded that quality is important and essential for success, problems are generally prevented, and quality improvement activities are organised, regular and continuing.
2-2-3-5 Armand Feigenbaum:

Early in 1950s Feigenbaum (1991) defined total quality as "an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economic levels which allow "Customer Satisfaction".

Feigenbaum originated the industrial cycle, which includes marketing, design, production, installation and service elements. This industrial cycle is considered nowadays essential in the quality management in an organisation, and in managing a quality management system as BS EN ISO 9000 (James 1996)

Feigenbaum also champions the idea of the hidden plant. This introduced the idea that waste lowered the real capacity of a plant because of rework and not actually getting it right first time. Unlike other gurus who argued that their approaches can be used for any process in the organisation, Feigenbaum limits his focus on the quality of the product or service produced by the organisation (Feigenbaum 1983).

Feigenbaum believes that quality organisation must provide some bases for world-class quality leadership to succeed in the global markets of the 1990’s. He mentions three major requirements for such world-class quality leadership:

1- Full understanding of the market.
2- Quality strategy to satisfy the customer in the global markets.
3- Development of quality organisation culture and an environment promoting and fostering quality leadership.
2-2-3-6 Kaoru Ishikawa

An applied chemistry graduate from the University of Tokyo in 1939, Ishikawa advocated the use of statistical methods and fully committed his life to the promotion of Total Quality through Japan.

Ishikawa was best known for his contribution to quality management through statistical quality control.

He developed the fishbone diagram (known as Ishikawa diagram) and the employment of the other tools of quality. This helped improving the capabilities of Japanese in the usage of problem solving techniques. These tools are: cause and effect “fishbone” diagram, Pareto analysis, histograms, check sheets, scatter diagrams, control charts, process control charts, and stratification (graphs).

Ishikawa defined the customer as the next person in the line, the person who gets your work, or anybody who relies on you. He initiated the quality control circles, which involved forming teams of workers to solve problems related to quality.

Ishikawa’s philosophy is based on his belief of workforce education. Educated workers can deal with quality problems as they can understand the problems and can implement the solution with the support of management.

Ishikawa realised the value of using teams in solving quality related problems. Quality circles were formed from 5-10 workers who understood the problem and who could implement the solution. On voluntarily basis, workers from circles to
solve a problem or to make use of an opportunity for improvement. If the solution was considered appropriate by those workers, they standardise the activities to become part of their daily work. The process used by the circles was a standard process that all Japanese companies were trained to implement by the Japanese Union of Scientists and Engineers (JUSE).

Ishikawa was a strong believer in the philosophy of company-wide quality control. He could create methods that could be taught to large numbers of people. He used the concepts developed and purposed by Deming and Juran and brought them to the level of the common worker.

2-3 Total Quality Management Models

TQM models can be addressed by categorising the available literature into three main categories:-

1- Models offered by empirical work.
2- Models offered by consultants and experts.
3- Models offered by quality awards.

2-3-1 Empirical Work Models

To explore the theory of TQM empirically, several studies have been carried out over the last ten years. The first published paper to address the determination of the critical factors of TQM was in 1989, (Saraph, Benson & Schroeder, 1989).
This pioneer study involved thorough analysis of the literature (writings of the gurus, experts and academics). They extracted one hundred and twenty organisational prescriptions for effective total quality management. Using judgmental process, Saraph et al. (1989) categorised these prescriptions into eight categories of critical factors. An operational instrument to measure these eight critical factors was established utilising the one hundred and twenty prescriptions.

A questionnaire survey directed to twenty firms in Minnesota, U.S.A, was used to validate the instrument. Using a likert scale of five points (1 very low and 5 very high), respondents were asked to rate the level of practicing the factors “items” in their firms.

Using the responses of one hundred and sixty two managers, and applying reliability and detailed item analysis, Saraph et al. were able to validate these eight items as critical factors of quality management. The eight critical factors are presented in Table 2-1.

**Table 2-1: Critical factors and associated operational measures**

<table>
<thead>
<tr>
<th>Factor 1: The role of management leadership and quality policy.</th>
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<tbody>
<tr>
<td>Acceptance of quality responsibility by general managers and department heads.</td>
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<td>Evaluation of top management on quality.</td>
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<tr>
<td>Participation by top management in quality improvement efforts.</td>
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<td>Specificity of quality goals.</td>
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<td>Importance attached to quality in relation to cost and schedule.</td>
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<td>Comprehensive quality planning.</td>
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<th>Factor 2: Role of the quality department.</th>
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<tr>
<td>Visibility and autonomy of the quality department.</td>
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<tr>
<td>The quality department access to top management.</td>
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<tr>
<td>Use of quality staff for consultation.</td>
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<tr>
<td>Coordination between quality department and other departments.</td>
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</table>
Effectiveness of the quality department.

**Factor 3: Training.**
Provision of statistical training, trade training, and quality-related training for all employees.

**Factor 4: Product / service design.**
Thorough scrub-down process.
Involvement of all affected departments in design reviews.
Emphasis on producibility.
Clarity of specifications.
Emphasis on quality, not roll-out schedule.
Avoidance of frequent redesigns.

**Factors 5: Supplier quality management.**
Fewer dependable suppliers.
Reliance on supplier process control.
Strong interdependence of supplier and customer.
Purchasing policy emphasising quality rather price.
Supplier quality control. Supplier assistance in product development.

**Factor 6: Process management.**
Clarity of process ownership, boundaries, and steps.
Less reliance on inspection.
Use of statistical process control.
Selective automation.
Fool-proof process design.
Employee self-inspection.
Automated testing.

**Factor 7: Quality data and reporting.**
Use of quality cost data.
Feedback of quality data to employees and managers for problem-solving.
Timely quality measurement.
Evaluation of managers and employees based on quality performance.
Availability of quality data.

**Factor 8: Employee relations**
Implementation of employee involvement and quality circles.
Open employee participation in quality decisions. Responsibility of employees for quality.
Employee recognition for superior quality performance.
Effectiveness of supervision in handling quality issues.
On-going quality awareness of all employees.

Data on quality management practices and quality performance were collected through self-report questionnaire and on-site observation. The investigation of the quality management practices centered around: quality programmes, policies, management attitudes, quality information systems, product design, production and employee policies, and supplier management.

Assembly line reject rate and after delivery calls rate were analysed as surrogate measures of quality performance.

Garvin concluded that high performers did especially well in several areas of quality management, as follows:

- **Quality is the management's top manufacturing priority.** This commitment is actively demonstrated. Quality issues form a regular agenda in management meetings.
- **Quality department had more visibility with direct access to top management.** Several companies had vice presidents of quality.
- **Quality is customer-driven.** Satisfaction with the product quality is defined from the customers' viewpoint, not the production, marketing or design groups'.
- **Employees' performance appraisal is aligned, not to total output but to defect-free output.** For example, for supervisors, in terms of defect rates, scrap rates, and the amount of re-work attributable to their operations.
- **Consistent improvement through comprehensive goal deployment process at all levels.**
- **Effective monitoring and improvement of quality through the support of supplier quality information system.** Managers receive timely, detailed and accurate quality data.
- **In product design, emphasis on reliability engineering techniques and thoroughness in reviewing and testing of new designs before units reach production.** Involvement of all affected departments at each stage of the review process.
- **Training of new employee was intensive to reduce variations in the production process due to inexperience.** Employees are trained in all
aspects of the jobs required on the line. Training includes SPC techniques, problem identification and remedial techniques.

- Wide usage of quality techniques and tools such as SPC and control charts to control the production process.
- Effective communication especially before and during model changeovers to ensure smooth and defect-free production.
- Suppliers are selected based on their commitment to product and service quality, manufacturing capability and value for money. Careful monitoring of suppliers' quality commitment and quality audits of sites are common.

Garvin also concluded that the Japanese system of permanent employment, contributing to lower absenteeism and turnover, and their employees' union systems also helped to improve quality in Japanese plants.

Baker and Starbird (1992) were the first to publish a research paper applying the instrument developed by Saraph et al. (1989). The study was directed to the food processing industry in California, U.S.A.

The study aimed at assessing the level of critical factors that are present, and to identify the organisational characteristics that are conducive to these critical factors.

The results of this study empirically reinforced the emphasis on the top management’s role and behaviour and quality policy in the efforts of quality management. Another result of this study is that organisation-wide sharing of responsibility is more conducive to quality management implementation than a centralised approach.

Another study by Boltes (1992) replicated the study of Saraph et al. (1989) in the Cooperative Extension System. The findings of this study confirmed the findings of previous studies concerning the critical factor. This study identified the
following seven critical factors (Management commitment and support for quality, strategic quality planning, continuous improvement, strategic human resources management, quality information and analysis, client "customer" satisfaction and quality training and education).

In the Middle East, Badri et al. (1995) replicated the pioneer study of Saraph et al. With the aim to prove the viability of the instrument developed in the original study in the Middle East context. The study reported that awareness among top management about quality improvement and training in basic and advanced statistical techniques are of a very low practice rating. Most service managers in the study reported that technical assistance to suppliers and the use of sampling techniques were irrelevant to their scope of work. In addition, some factors (such as effectiveness of the quality department in improving quality) as reported, needed further explanation.

In India, Motwani et al. (1994) also replicated the pioneer study and used the instrument to study the quality management practices in Indian organisations. The study provided the opportunity to test the validity and reliability of the instrument in the international context.

Using the approach used by Garvin (1983), assembly line reject rates and after delivery reject rates were used as surrogate measure of quality performance of the companies. The effort involved interpretation of data to correlate the critical factors and quality performance. The study reported a few findings contradictory...
to the accepted body of knowledge, namely, top management direct commitment and involvement are not essential for effective quality performance.

Black (1993) conducted a study in the United Kingdom by replicating Saraph et al’s (1989) instrument. The attempt was to scientifically extract the critical factors of TQM. Applying factor analysis, Black (1993) was able to identify thirteen factors. Then he used thirty-nine items from the Baldrige Award model (1992) to develop a survey instrument.

Respondents were asked to assign a ratio score to indicate the importance of each item. Factor analysis was used to identify critical factors. Ten critical factors were identified and grouped into three tiers of importance. These factors are:


Black and Porter (1996) extracted the same ten critical factors applying the same methodology of extracting items from the modified Baldrige Award Model (1995).

None of the pioneer study of Saraph et al. (1989), Black (1993) and Black and Porter (1996) was directed to empirical validation of the quality factors as being essential to successful TQM implementation. Black (1993) and Black and Porter (1996) considered the items incorporated in the Baldrige Award Models as
critical, while Saraph et al. (1989) incorporated whatever items in the instrument on the basis of synthesis from the literature.

According to Rao et al. (1999) only three published studies have developed an empirically validated measurement scales for quality management practices. These studies are the pioneer study of Saraph et al. (1989); Flyn et al. (1994); and Ahire et al. (1996).

Ahire et al. (1996) developed an empirical framework consisting of 12 constructs of integrated quality management strategies derived mainly from the literature. Their study was based on the vehicle parts and accessories industries which were mostly located in the Midwest region of the US. Their constructs include: top management commitment, employee training, design quality management, supplier quality management, internal quality information usage, employee involvement, customer focus, benchmarking, statistical process control, product quality and supplier performance.

The scales were empirically validated using plant managers from 371 plants.

The instrument of Flyn et al. (1994) represented significant departure from the pioneer instrument of Saraph et al. (1989). The instrument was administered at the plant level in view of the fact that quality programmes are most often implemented at that level. Seven major dimensions of quality management and eleven constructs were identified mainly from the practitioner and empirical literature. The study was based on a sample of 42 manufacturing plants from the machinery, transportation components and electronics industry located in the
US. The study targeted functional managers and workers having multiple respondents per plant. The constructs identified by this study include: quality leadership, feedback, inter-functional design process, supplier relationship, quality improvement rewards, selection of teamwork potential and teamwork, customer interaction, process control, cleanliness and organisation.

Tamimi and Gershon (1995) used Deming’s 14 points as critical quality factors to develop an instrument to measure quality management practices. However, it can be argued that these are essentially a list of things to do, prescribed by Deming, and not, in themselves, critical success factors for TQM adoption (Yusof & Aspinwall, 1999).

Applying second-order factor analysis to test whether a set of quality management practices, synthesised from Deming’s philosophy, load on an overall construct that may be termed “Total Quality Management”. Tamimi (1998) concluded that the results suggest that the Deming philosophy should perhaps be viewed as a whole rather than in isolation. That is managers can not be selective in implementing certain quality practices and ignoring others since all the critical quality factors (sub-components) serve as building blocks of one philosophy or one concept.

None of these scales were empirically tested and validated in the international context, which limits their use in studies across countries. To overcome this limitation, Rao et al. (1999) developed a measurement instrument for international quality management practices. They identified 13 constructs of quality practices
through detailed analysis of the literature. These constructs were empirically tested using data collected from the US, India, China, Mexico and Taiwan and the instrument is validated with a hold-out sample set. The constructs include: top management support, quality citizenship, quality information availability, quality information usage, benchmarking, employee training, employee involvement, product/ process design, supplier quality, internal quality results and customer orientation.

Zhang et al. (2000) developed eleven constructs for TQM implementation based on a comprehensive review of the literature. The study used data from 212 Chinese manufacturing companies in 9 industrial sectors for testing and validating the instrument. The purpose of the this study is to develop an instrument for measuring TQM implementation for Chinese manufacturing companies. The constructs of TQM implementation include: leadership, supplier quality management, vision and plan statement, evaluation, process control and improvement, product design, quality system improvement, employee participation, recognition and rewards, education and training and customer focus.

In the Middle East, Ali (1997) developed a framework of TQM implementation based on the European Quality Award Model (1992). He measured the level of awareness and understanding of TQM implementation using the instrument developed by Ramirez and Loney (1993). Then he used the European Quality Award Model as a self-assessment tool to identify the gaps in the process of developing his framework. However, it can be argued that the model may only be appropriate in the context in which the study was conducted, and not for the
Middle East context. This is because the model was developed based on data collected from respondents working in constituent business units of a large organisation in the Gulf region.

Very few empirical studies were directed to the small and medium enterprises (SMEs). One of these studies is conducted by Quazi et al. (1998) in Singapore. They targeted SMEs which are attempting to move towards TQM through the ISO-9000 certification route to assess the training and consultancy needs of these organisations. A questionnaire built around the Malcolm Baldrige/Singapore Award Model was developed to cover seven critical factors identified from the literature review. These factors are: leadership, information and analysis, strategic planning, human resource utilisation, management of process quality, quality results and customer satisfaction.

Another study conducted by Yusof and Aspinwall (2000a) identified ten critical factors for successful TQM implementation in SMEs based on extensive review of the literature. These factors include: management leadership, continuous improvement system, education and training, supplier quality management, systems and processes, measurement and feedback, human resources management, improvement tools and techniques, resources and work environment and culture.

The study revealed the lack of practice in areas including continuous improvement system, supplier quality assurance and improvement tools and techniques.
At the University of San Francisco, Ramirez and Ioney (1993) conducted a study to empirically validate many factors mentioned in the literature as critical factors. This study covered U.S. companies from the manufacturing and services sectors that succeeded in using the Malcom Baldrige National Quality Award (MBNQA) and had been recognised for their quality achievements.

The survey was based on a list of twenty-two (22) items that were considered in the literature as critical to TQM. The study aimed at finding an answer to the following question.

What factors do we really need to have a successful quality process??

A total of 63 persons (26 quality consultant and 37 managers of quality award winning organisations including MBQNA winners) were asked through a self-report questionnaire survey to rate each of the twenty two factors on a three-point scale. Respondents were required to identify the level of importance of each quality factor relying on their experience of quality management process implementation in their firms. Using the three-point scale, each respondent was asked to indicate if the factor was:

1- Neutral regarding the factor.
2- Important but not essential to Total Quality Management process.
3- Critical and absolutely essential to the successful implementation of TQM.

The authors assigned scoring weights of 1,2, and 3 for neutral, important, and critical respectively. Applying this scoring approach, Ramirez and Ioney were able to classify the criticality of the factors according to their scores. The results of this study showed that 10 factors out of twenty-two were found critical, 7 factors important and 5 factors neutral. The critical factors were classified as Tier
The important factors were classified as Tier 2, and the neutral factors were classified as Tier 3.

The first tier's factors are associated with management support and related activities. The second tier's factors are associated with shop floor level in the firm. The third tier's factors represent important techniques and tools (statistical process control, cost of quality, zero defects attitude).

This study of Ramirez and Loney contributed significantly to the body of knowledge of quality management. The study maps out the way for TQM implementation starting with the critical factors followed by the important factors and finally followed by neutral factors.

Thiagarajan (1996) used a descriptive approach in the context of his study which involves best organisations agreeing to a set of quality factors critical to a successful TQM implementation. Thiagarajan (1996) identified 22 critical quality factors, which were stratified into three tiers according to their level of criticality.

This study aimed at constructing a generic framework of TQM implementation in Malaysia. The framework of TQM implementation provided by Thiagarajan (1996) is based on the following critical categories:

1- Institute leadership.
2- Maximise internal stake holder's involvement.
3- Manage by customer- driven processes.
4- Adopt continuous improvement.
This study not only confirms the critical quality factors, which are reported in the other empirical studies but it represents a departure from other studies. It is concerned not only with identifying the critical factors of TQM implementation but also with the level of criticality, how the critical factors are implemented and deployed and what are the foundation elements of TQM implementation process.

Several other studies have been carried out to identify success factors for TQM implementation. Among these studies are those of Johnston et al. (1991), Binney (1992) and Harrington (1993). Most of these studies confirmed the criticality of factors like (continuous improvement, training and education, employee involvement, effective communication, leadership, Integration of TQM to the corporate strategy).

2-3-2 Models offered by quality consultants and experts

Apart from the models and principles of the quality gurus, there are many experts and consultants who identified success factors for TQM implementation.

Burr (1993) states that there are as many models of TQM as there are quality experts. He adds, “there is no one size fits all” model. However, the various models offered by experts can help firms in the implementation process (Boaden and Dale, 1994).

Some of the models that are adopted by UK companies are those of Kanji et al., (1993), Kanji (1996 and 1998a) and Oakland (1993 and 2000).
To show the structure of TQM, Kanji et al., (1993) use a pyramid of four sides.

Each side represents a governing principle into practice. The pyramid model can be presented in the following table:

<table>
<thead>
<tr>
<th>Principles</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delight the Customer</td>
<td>Customer Satisfaction</td>
</tr>
<tr>
<td>Management by fact</td>
<td>All work is a process</td>
</tr>
<tr>
<td>People – based management</td>
<td>Team work</td>
</tr>
<tr>
<td>Continuous Improvement</td>
<td>Continuous improvement cycle</td>
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<td>Prevention</td>
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Kanji’s (1996) modified pyramid model is based on the proposition that to achieve customer satisfaction level (delight the customer), the organisation had to improve continuously all aspects of its operations (continuous improvement); this can be achieved through leadership by making decisions on objective evidence of what actually was happening (management by fact) and by involving all employees in quality improvement activities (people-based management), leading ultimately to business excellence. Kanji’s (1996) modified pyramid model together with the four stage process of implementing TQM, represents an attractive and practical implementation framework for companies to follow (Yusof and Aspinwall 2000b). The four stages are identification and preparation; management understanding and commitment; scheme of understanding; and critical analysis. Kanji (1996) points out the need to identify and collect
information where improvement will have the most impact. This requires a management information of data collection system of fact-based approach.

Kanji’s (1998a) Business Excellence Model translated the pyramid model’s principles and core concepts into a structural model for business excellence. The business excellence model is based on four principles: delight the customer; management by fact, people-based management; and continuous improvement. Each principle is divided into two core concepts, namely: customer satisfaction and internal customers are real; all work is process and measurement; teamwork and people make quality; continuous improvement cycle and prevention. Leadership serves as a prime in this model that must be transmitted through all the principles and core concepts in order to achieve business excellence.

Oakland (1993 and 2000) proposes model for TQM implementation where the customer–supplier chains form the core, which is surrounded by the hard management necessities of a good quality system, tools and team work as seen in figure 2-1
He proposes seven steps for senior management to begin the task of process alignment to a self-reinforcing cycle of commitment, communication and cultural change. The first three steps are:

1- Gain Commitment to charge;
2- Develop a shared vision and mission for the business or desired charge;
3- Develop the critical success factors.

The remaining four steps comprise: defining the core processes and gaining ownership; breaking down the core processes into sub-processes, activities and tasks; and insuring process and people alignment through a policy deployment or goal translation process.
Another model proposed by Creech (1994) identifies five interdependent pillars of TQM: product, process, organisations, leadership, and commitment.

Kano (1993) proposes (The House of TQM). Using the various parts of the house (roof, pillars and base) he describes the factors needed to achieve customer satisfaction and create a prevention management system. Maximising employee involvement, management by fact, continuous improvement, training, teams, tools and techniques, management by policy and the need for building in quality are considered the essentials for TQM.

Hakes (1991) offers a management framework for TQM to answer pertinent questions relating to implementation. Questions like:

1- What are the missions, aims and objectives to be achieved in the short term and long term?
2- How objectives are communicated?
3- How are improvement opportunities highlighted and communicated?
4- How are external customer and competitor data gathered?
5- How will the whole process be coordinated?

Berry (1991) proposed a model containing fifteen sectors within concentric circles to highlight the process evolutionary nature. These circles begins with realising the needs as the first inner circle, structuring for quality is next, determining customer needs, designing the quality process, quality planning, quality improvement teams, unit–level quality, training, awareness and promotion, recognition, demanding vendor quality, enhancing the process and monitoring and measuring progress.
Describing the TQM implementation process in the Harris Corporation Adams (1994) provides five main stages of TQM implementation process. These stages are:

1- Assessment and understanding.
2- Setting the course.
3- Focusing.
4- Planning and aligning.
5- Actual implementation.

From these sample models, it appears that these models are compatible with the models and principles of the quality gurus. These models confirm the importance of such factors as prevention, teamwork, measurement, leadership, company-wide participation, customer focus, management by fact, tools, system and processes.

2-3-3 Models Offered by Quality Awards:
The so-called excellence models now available recognize that customer satisfaction, business objectives, safety and environmental considerations are mutually dependent and are applicable in any organization. Clearly, the application of the ideas involves investment, primarily in people and time - time to implement new concepts, time to train, time for people to recognize the benefits and move forward into new or different organizational cultures. But how will organizations know when they are getting close to excellence or whether they are even on the right road? How will they measure their progress and performance? (Oakland, 2000)
2-3-3-1 The Deming Prize

In recognition of Dr Deming's contribution to the Japanese quality movement in the early 1950s, the Japanese Union of Scientists and Engineers (JUSE) established the Deming prize in 1951. The award is given to firms with significant achievements and improved performance through the application of company-wide quality control strategies.

Kanji et al., (1992) argue that the prestige associated with the award has influenced the Western thinking on the subject.

2-3-3-2 The European Quality Award (EQA): The Excellence Model

In Europe it has also been recognised that the technique of self-assessment is very useful for any organisation wishing to monitor and improve its performance. In 1992 the European Foundation for Quality Management (EFQM) launched a European Quality Award which is, now widely used for systematic review and measurement of operations. The EFQM model recognised that processes are the means by which a company or organisation harnesses and releases the talents of its people to produce results performance. Moreover, improvement in the performance can be achieved only by improving the processes by involving the people. This simple model is shown in Figure 2-2:
Essentially customer satisfaction (results), employee satisfaction (results) and a favourable impact on society (results) are achieved through leadership driving policy and strategy, people partnerships, resources and processes, which lead ultimately to excellence in business results (key performance results) - the enablers deliver the results which in turn drive innovation and learning. The EFQM have provided a weighting for each of the criteria which may be used in scoring self-assessments and making awards. This award was presented for the first time in 1992.

These nine elements of the framework are classified as enablers (the first five) and results (the last four), (European Quality Award Criteria, 1999).
The recognition that TQM is a broad culture change vehicle with internal and external focus embracing behavioural and service issues, as well as quality assurance and process control, prompted the United States to develop one of the most famous and now widely used frameworks, the Malcolm Baldrige National Quality Award (MBNQA). The award itself, which is composed of two solid crystal forms 14 inches high, is presented annually to recognise companies in the USA that have 'excelled in quality management and quality achievement'. But it is not the award itself, or even the fact that it is presented each year by the President of the USA, which has attracted the attention of most organisations; it is the excellent framework, which is one of the closest things we have to an international standard for TQM (Oakland, 2000; Vkurka et al., 2000).

In 1987 the MBNQA was introduced for US-based organizations. Many companies have realized the necessity to assess themselves against the Baldrige criteria, if not to enter for the Baldrige Award then certainly as an excellent basis for self-audit and review, to highlight areas for priority attention and provide internal and external benchmarking.

Figure 2-3 shows how the framework's system connects and integrates the categories. This has three basic elements: strategy and action plans (customer and market focused), system, and information and analyses. The main driver is the senior executive leadership, which creates the values, goals and systems, and guides the sustained pursuit of quality and performance objectives. The system includes a set of well-defined and well-designed processes for meeting the
organization's direction and performance requirements. Measures of progress provide a results-oriented basis for channelling actions to deliver ever-improving customer value and organisation performance. The overall goal is the delivery of customer satisfaction and market success leading, in turn, to excellent business results.

Figure 2-3: MBNQA-USA (2000)

The models offered by quality awards were criticised for some shortcomings (Crosby et al., 1991; Garvin 1992), Crosby (1991) expressed his worries concerning the Baldrige award for offering the illusion that there is an easy way to quality through following the criteria. Castadena (1991), and Alexander (1991) debate on whether certain elements should be added within the assessment. Still these models established an essential and important step towards offering a widely accepted TQM framework (Oakland, 2000). Puay et al.,(1998) state that National
Quality Awards play an important role in promoting and rewarding quality and business excellence.

2-4 Quality Factors

To continue the discussion of TQM literature, it is reasonable at this stage to explore the various factors, which are often considered as the initial factors to start the implementation process of TQM successfully.

Factors as top management commitment and leadership, people management, policy and strategy, partnership and resources management and management of processes, are generally considered as the initial inputs to the implementation of TQM. According to the European Foundation for Quality Management (1999), these factors are called the enablers. In this model of excellence, essentially customer satisfaction (results), employee satisfaction (results) and a favourable impact on society (results) are achieved through leadership driving and strategy, people partnership, resources and processes, which lead ultimately to excellence in business results (key performance results). The enablers deliver the results which in turn drive innovation and learning (Oakland, 2000).

2-4-1 Leadership and top management commitment

The literature of TQM emphasises the critical role of leadership in the implementation process of TQM. This is apparent in the writings of the gurus, the empirical studies and the implementation case studies
Durcker (1954) defined leadership as: The lighting of man's vision to higher sights, the raising of a man's performance to a higher standard, the building of a man's personality beyond its normal limitations.

Tannenbaum et al. (1961) defined leadership as: the interpersonal influence, exercised in a situation, and directed, through the communication process, toward the attainment of a specified goal or goals. The European model for excellence (1999) defines leaders as the executive teams, all other managers and those in team leadership position. The model requires a greater focus on the leaders themselves and the improvement of their performance, with an expectation of role-modeling key values (Russell, 2000).

TQM requires increased effort from everyone in the company to satisfy the customer continuously. This requires that quality leadership to be made a strategic objective (Feigenbaum 1993). This means that the leader provides the suitable environment to provide the most comfort to the group members to improve performance and productivity.

Sheehy (1994) considers that without clear and consistent quality leadership, quality cannot hope to succeed. Reiley (1994) believes that quality leadership, based on an extension of the quality improvement concepts, provides a flexible method to address the complex quality management issues facing companies to today. Staub (1993) calls management to cultivate a culture of leadership from top management through all levels in the organization.
The quality gurus emphasised the importance of leadership. Deming (1986) calls for managers to institute leadership rather than supervision in the transformation process of the business philosophy.

Juran (1993), attributes the failure of the quality initiatives in the West in the 1970s and 1980s to senior managers’ lack of personal involvement in quality management. Ishikawa (1985) considers that top managers must assume leadership in quality and quality control.

Juran (1993) related quality excellence of Japanese companies to the commitment of senior managers to quality. Kano (1993) considers commitment of senior executives as a (more) important factor of TQM whereas, their doubts as the greatest enemy. This is also emphasised by Oakland (1993, 2000). According to Easton (1993), the moderate results of TQM programmes of some American companies are attributed to deficient leadership. Zairi (1999a) suggests that if organisations are to compete effectively in this millennium, not only will they have to equip themselves but in addition, they will have to renew themselves by challenging the status quo and re-examining their corporate leadership process.

The importance of leadership is apparent in all Quality Awards. These awards recognize the importance of leadership by placing this item on the top of the list of criteria and in other criteria necessary to successful implementation of quality management (NIST, 1995, 1999; EFQM, 1992, 1999). Moreover, the importance of top management action, is clearly set in ISO-9000:2000, requiring evidence of commitment to the development and improvement of the quality management system, involvement in ensuring customer needs and expectations are met, and
that policies, objectives and plans are set and supported by necessary resources (ISO/DIS 9000-2000, 1999).

And as cited in Thiagarajan and Zairi (1997), Steven and Stanton state:
Everything starts with a committed and passionate leader of the business organisation. A leader who is really committed to making fundamental changes.

In their study, Saraph et al. (1989) identified thirteen variables which relate to the role of management leadership and quality policy. Some of the items included in these variables are:

* Extent of responsibility assumed for quality.
* Support of long-term quality improvement.
* Evaluation of management in relation to policy.
* Types of quality goals.
* Importance of quality in relation to cost and schedule.

Easton (1993), through his experience as an examiner of the Baldrige Award, emphasises the role of top managers in successful implementation process. According to his experience, senior managers are involved in promoting the importance of quality and customer satisfaction.

Conducting interviews with leaders in twenty four organisations, Bragar (1992) identified seven critical quality leadership principles. These include:
Living the strategy, making teams work, communicating, the quality vision and investing in people.
Bertsch and Williams (1994), reported from their study of twenty large international companies (based in Europe, America and Far East) that senior
management assumed active responsibility for the success of the TQM process in their companies.

Another study conducted by Booz, Allen and Hamilton as cited in Rao et al., (1996) revealed seven common problems associated with TQM implementation in the service sector. One of the problems identified was lack of leadership from the top. The research concluded that if these problems were avoided, TQM can be the right management approach for changing behaviour and performance. This indicates the importance of leadership in the implementation process of TQM.

The importance of leadership in successful implementation of TQM is also reinforced in the implementation case studies available in the literature. Rao et al., (1996) describe the case of Motorola, when the company was losing market share in the early 1980s to the Japanese competition in their core products. The chairman of Motorola was determined to match and beat the Japanese, and so, he initiated TQM programme. Adapting the concepts learned from the Japanese and the quality gurus to their culture, the company won the Baldrige Quality Award in 1988. In addition to the recognition, the results have also been spectacular. Motorola has regained market share and at the same time increased its profits. This wouldn't have been achieved without the top management commitment and leadership in the implementation process of TQM programme. Zairi (1999a) considers one of the best ways to appreciate the true meaning of effective leadership is to look at the experience of successful organisations, such as, Motorola.
At the European Air Catering Services, it was the managing director who initiated the Total Quality Performance (TQP). The word performance replaced the word Management to ensure the initiative was seen as affecting the whole company and not just relating to the upper echelons of business (Whitford and Bird, 1996).

To summarise the company's experience; the managing director states the following:

"Getting a culture change like the one we have had over the past six years, requires a spark to set it off. Then it becomes a question of people believing in the core philosophy and spreading this belief throughout the organization. For this you need "Champions", dedicated people who believe it is right and are prepared to see it implemented ".

He goes on to state:

"Any successful Quality programme has to be led from the very top - not even one step below - otherwise it will fail. People have to see you believe what you are saying, they aren't fools and insincerity shines through immediately ".

Finally he concludes:

"The outcome of quality for us, has been to rectify our errors, become more efficient and out perform our competitors - I don't need a calculator to tell me this makes us more profitable".

This is evident in other experiences. According to Browning et al., (1990) the degree of buy-in amongst respondents was favourable for those who saw their managers using the TQM techniques themselves to improve processes. This was the result of the survey they carried out at two UK-based Hewlett - Packard Factories.
Kolesar (1993) describes the case at the Aluminum company of America. He states that the Chief Executive Officer initiated the quality management process. Top management team was formed. This team and the Chief Executive Officer attended quality training and education programmes and visited companies (of high reputation as leaders in quality management) for benchmarking purposes. At the same time, the team was struggling for six months to identify opportunities and challenges before they were able to design and begin the total quality programme.

According to Johnston et al., (1991), the quality initiatives will fail if top management just command employees to improve, they themselves must seek new ways to improve systems and continuous improvement. Bertsch and Williams, (1994) describe the following two cases to show leadership and commitment:

A top executive at Ericsson – Sweden – took ownership of analysis and improving the order–make market system while the vice president at Philips Electronics took the lead of a company – wide task force on quality improvement of software development.

At Shorts Brothers- UK, Oakland et al., (1994) pointed out that the president and his senior executives were the first to attend training on the theory, practice and tools of quality improvement.
Olian et al., (1991) found in their study that most of the Chief Executive Officers of the sixty two major UK-based companies spend more than ten percent of their time in quality improvement efforts.

Zairi (1999a) reports best practices from analysis of full quality award submissions concerning the visible involvement of top management in leading quality. At the Royal Mail – UK the managing director and executive team committed to a new way of working called customer first. Support from entire management team, the managing director, senior and middle managers and supervisors was essential to the improved performance and higher customer satisfaction at ICL Manufacturing Division (UK). At D2D (UK), management has shown leadership by being among the first in Europe to gain ISO-9000, apply for EQA, use scorecards with customers and pilot the environmental standard BS 7750.

In the US, the quality policy statement is signed by the CEO at Milliken. At Cadillac, executive staff establish and communicate the vision, values and methods for achieving excellence as a company. At IBM Rochester, each senior manager owns one of the six critical success factors of improved product and service requirements definition, an enhanced product strategy, a six sigma defect elimination strategy, further cycle time reductions, improved education and increased employee involvement and ownership.

According to Zairi (1999a), the following practices have made Motorola the successful organisation it is, and they all form the basis of searching for, nurturing, developing and empowering senior managers to lead with renewal and conviction, and to create long lasting impacts:
To establish and sustain the proactive, innovative culture of the organisation.

To develop an atmosphere of trust and mutual support.

To stress on reciprocal loyalty and mutual respect.

To focus on achieving standards of excellence through plentifying new potentials.

To seek out new avenues of opportunity and activating the human spirit.

To be able to find and nurture champions, dramatising goals and direction building skills and teams, and spreading irresistible enthusiasm.

To encourage, excite, teach, listen and facilitate.

To have actions which are consistent.

To communicate unshakable core values.

To reflect unleashing energy, freeing, building and supporting.

To lead through ability and willingness to empower their followers.

To lead by virtue of caring deeply for their followers.

To establish a vision and communicate it so that people link their activities to corporate objectives.

To act as supporters, resource providers, obstacle removers, facilitators, consultants and team builders.

To generate commitment not compliance.

To act as custodians of the systems of the organisation.

To have a heart for people and a head for business.

To focus on performance planning and enhancement rather than performance appraisal.

Zairi (1999a) continues, Motorola is found to place a lot of emphasis on 360 degree feedback initiatives so feedback can be received from a four-directional process involving managers, peers, subordinates and customers. He adds, each senior executive is expected to declare a "legacy-leaving" which they would like their entire career to be measured on.

Top management commitment has been identified as one of the major determinants of successful TQM implementation (Dale and Duncolf 1981b). According to Juran (1974) most of the problems associated with quality are attributed to management. Deming (1982) emphasised this idea. This indicates that successful quality management is highly dependent on the level of top management commitment. This requires that top management commitment to quality must convey the philosophy that quality will receive a higher priority over
cost or schedule, and that on the long run, consistent and superior quality will lead to improvement in cost and delivery performance (Ferdows and Demeyer (1990):  
Grain, 1984 and Krajewski and Ritzman 1993). Deming considered quality responsibility is of the top management. Atkinson (1990) points out that 80 percent of TQM failures is mainly attributed to a lack of requisite commitment of top management. In their (A Passion for Excellence) Peters and Austin (1985) suggested that “Quality is a function of commitment”.

They considered that the techniques of quality management are only of value if managers company-wide in all levels are living the message of quality.

To achieve quality in any organisation, Juran (1993) provides the following steps that must be taken by a responsible Chief Executive Officer:

1- Set up and serve on the quality councils of the company.
2- Establish corporate quality goals and make them part of the business plan.
3- Making provision for training for the entire levels of the company in managing for quality.
4- Establish the means to measure quality results against quality goals.
5- On regular basis, review quality results against quality goals.
6- Provide recognition for superior quality performance.
7- Revise the reward system to respond to the changes demanded by world class quality.

Feigenbaum (1961) considers promoting organisational commitment is achieved as a result of top management commitment. This is based on his principle that quality is everybody’s business. According to Senge (1990) top management acts as a driver of quality management implementation, creating values, goals and system to satisfy the customers’ expectations and improve the performance of the organisation.

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Stalk et al., (1992) consider the clarity of quality goals determines the effectiveness of the efforts associated with quality management. Crosby (1967) points out that the development of quality policy is the first step in the top management commitment. Planning for quality in terms of decision making, objectives, staffing, tactics, roles, responsibilities, and principles is considered crucial (Gilbert 1990). Few would argue about the important role which senior executives play in TQM. Their grasp of its purpose and intent is indicative of the amount of time they have given to its consideration, and by implication therefore, their level of involvement (Taylor, 1997).

The critical role of top management in providing leadership has been illustrated for several diverse organisations. At P & P- UK, the Group Managing Director has embraced the quality concept. They committed to regular communication programme and sought to involve staff at all levels in the change process. They top level management mapped out the future for P & P and invited the staff to join the voyage (Whitford & Bird 1996).

At Davy International – Stockton – UK, the Managing Director chaired the steering committee to initiate the TQM programme which was based on a foundation of strategic five year planning embodying company goals and policies (Whiford & Bird 1996).

At Wallace Company- USA (Rao et al., 1996), a Quality Management Steering Committee, consisting of all the senior management, was formed. As a first step, they used the Baldrige criteria to perform a self-assessment.
Johnson Matthey-UK followed the 14 points of Crosby. Department heads were assigned an area of responsibility and involved in improvement team of quality (Coyne 1989). However, there were some hiccups in the implementation process as staff felt that senior executives were not committed (George 1990). Therefore, (George 1990), concludes from the experience of Johnson Matthey, that demonstrating senior management’s involvement is as critical as commitment.

There are plenty of implementation cases cited in the literature reinforcing the importance of top management commitment. There cases are from small and large companies, manufacturing and service sectors, government and non-for-profit organizations (see for example Whitford and Bird, 1996; Olian et al., 1991, George, 1990; Easton, 1998).

Commitment of top management is also highlighted as a critical factor by several empirical studies. Ramirez and Loney (1993) found that management commitment was rated as the most critical factor in quality management implementation. This rating was given by winners of the Malcolm Baldrige Quality Award. The study concluded that management commitment is a key factor for success or failure of quality process. Repeating this study in Britain and other Middle and Far East countries (Zairi and Yousef, 1995; Ali, 1997) reinforced the same conclusion.

Another study conducted by (Ahire et al., 1996) concluded that top management commitment influences product quality through improved customer focus and effective human resource mobilization. (Ahire et al., 1996) developed an instrument for measuring various quality management constructs that affect
product quality. The constructs were empirically tested through a field study of 371 companies in the automotive components manufacturing industry. A comprehensive scale refinement and validation procedure using the confirmatory factor analysis approach was employed. The refined and validated scales were then used for estimating correlation.

Another study measured in 181 small firms, the execution of ten implementation constructs and performance along one outcome construct (Product quality). The results indicated management commitment of small firms is an important implementation construct (Ahire, 1996). Same results have been confirmed by several other studies (Flyn et al., 1994; Thiagarajan, 1996; Ali, 1997, Rao et al., 1999; and Zhang et al., 2000).

Oakland (2000) identified five requirements for effective leadership:

1-Clear beliefs and objectives in the form of a mission statement.
2-Clear and effective strategies and supporting plans.
3-The critical success factors and the critical process.
4-The appropriate management structure.
5-Employee participation through empowerment and (evaluate, plan, do, check, amend – EPDCA) helix.

Therefore, active and visible participation of top management in quality management implementation is decisive in supporting the actions and behaviours that steer the organisation to success in internal and external quality performance. Top management is expected to understand that its responsibility for quality can not be delegated (Rao et al., 1999).
Sun (2000) reports that: in his letter to the 3rd Shanghai International Symposium on Quality, Juran (1998) said:

There is a universal set of actions that are the essential elements of quality management. The first is upper management taking charge of quality.

2-4-2 People Management

While management’s role is critical to achieving total quality, it is often the most overlooked part of the process. Employee involvement evolved out of business’s need to improve performance.

Feigenbaum (1994) in Gatchalian (1997) says that the impact of human resources in the organisation depends on the kind of empowerment given to them. Kanji (1990) defines TQM as “to obtain total quality by involving everyone’s daily commitment”. Kanji et al., (1993) propose people management, including “team work” and people make quality, as one of the four principles of TQM (also Kanji, 1996 and 1998a).

According to Lawler et al., (1992) employee involvement programmes have a positive effect on company performance and internal business conditions. Kotter (1990) believes that with fewer layers of management to supervise work, and with the nature of managerial work changing to one of managing and facilitating development of leaders at all organisational levels, organisations must have employees that can make decisions about their work. Thus employee involvement programmes can be seen as opportunities for organisations in today’s competitive environment. Kano (1993) considers employee involvement and commitment to the goals of the TQM process as a condition to its successful implementation. This is also emphasised by Bank (1992), and Crosby (1989).
Haksever (1996), considers top management involvement and leadership not sufficient to TQM success on their own. Oliver (1988) identified four contextual factors affecting employee commitment to participation: explicitness of performance target, revocability of one’s actions, consequent publicity, and volition (ownership) of actions. Moreover, Oliver (1988) found that employee involvement groups positively impact employee commitment to quality. According to Chevalier (1991), organisations must develop formal systems to encourage, track, and reward employee involvement. Otherwise, the extent and quality of participation declines, leading to a dissatisfied workforce. Crosby (1989) highlights the need for every one in the organisation to understand her or his role to make quality happen. This requires creating a common understanding of quality by all employees and showing the importance of employee involvement to keep and maintain the quality momentum.

When Paul Revere Insurance Company (USA) instituted its “Quality Has Value” program, significant emphasis was placed on generating and rewarding suggestions. The programme required that each person belong to a quality improvement team. At the home office there were 127 teams averaging 10 people per team. Training was provided on conducting meetings, facilitating idea-generation, and problem solving (primarily using brainstorming). As teams came up with ideas, these were logged into a computerised tracking programme, along with estimated cost savings. At the end of each week, the quality group would evaluate all ideas that had been implemented and certify if it could be counted toward an award. Awards were based on the number of ideas or the dollar savings.
In the first year 7109 ideas were logged and 4115 of these were implemented for an annual savings of $3.25 million (Rao et al., 1996).

According to the Chief Environmental Health Officer in Bromely – UK, it was vital to ensure success to improve quality system to get everyone in the organisation involved and help them understand that they have a role to play in making certain everything is delivered as expected to the end user. The most important thing is deciding how you will gain the commitment of the staff. The people involved in the delivery of the service are those who need to be involved in the development of your quality systems (Whitford and Bird, 1996).

In the case of shorts Brothers – UK, the involvement of its workforce in the quality process implementation was seen as an important evidence of progress on the right track (Oakland et al., 1994).

Quality circle meeting discusses the various ideas suggested by employees at Globe Metallurgical and where possible accepted ideas are implemented same day. Whereas, at Milliken, suggestions are acknowledged within twenty-four hours and decisions regarding them are made within seventy-two hours (Nadkarni, 1995).

According to the Chief Executive Officer of Federal express, he considers employee involvement as the human side of quality, which is the foundation for successful quality improvement process in his company (Townsend and Gebhardt, 1992).
Mak (2000) summarises the critical ideas in Japanese management and derives several principles related to people management. He states that management should pursue the Tao “road” of people-based management to that recognises the importance of daily interaction with all employees and a shared identity with them in solving work problems.

Lawler, Ledford and Mohrman (1989) studied employee involvement practices in Fortune 1000 firms to determine whether companies had incorporated employee involvement into their managerial approaches. They asked about the degrees to which business information, training, power, and rewards for performance were spread throughout the organisation. They wondered whether or not employees felt that they controlled their work, got information about their performance, and were rewarded for their performance all-important aspects of participatory management practice.

The results of their survey were that many companies had adopted practices that are associated with employee involvement, such as quality circles, gain-sharing and self-managing work teams. However, the study pointed out that, in 1987, companies were beginning to experiment with employee involvement programmes.

Lawler and his group (1992) discovered that most Fortune 1000 corporations tended to adopt a variety of practices for information-sharing, knowledge-transfer, reward, and power sharing. These practice were adopted only for parts of
the organisation on selective basis. They concluded that this selective adoption limited the levels of employee involvement in the companies surveyed.

However, another study found that companies with a high level of employee involvement have a greater chance for success (Quality progress, 1994). Ahire et al., (1996) found in their empirical study that human resource management is a key link in successful implementation of Quality Management by shaping the Quality Management environment through empowering the employees to make decisions related to quality ensuring a supporting infrastructure for full employee participation, and training employees in technical and management aspects of their role in Quality Management.

In another study, Zhang et al., (2000) found that employee participation is a critical construct for successful implementation of TQM. Similar findings are reported by Rao et al., (1999).

Giving employees so much control over their work and decision making is difficult in large or small organisations if it is hierarchically structured. Many management theorists and business leaders believe that today's employees want and need to exercise initiative and imagination (Rao et al., 1996). These managers firmly believe that driving decision-making power lower into the organisation accomplishes several things at once: customers are better served, and employees are more satisfied and are therefore more productive (Tonnessen et al., 1999).

In his recent speech in the 3rd Shanghai International Symposium on Quality, Feigenbaum (1998) states that quality success requires enthusiasm and commitment of people, employees and managers (Sun 2000).
Vaill (1993) describes empowerment as "the feeling experienced by all employees when they feel that they are expected to exercise initiative in good faith on behalf of the organisational mission, even if it goes outside the bounds of their normal responsibilities. If for some reason, taking that initiative leads to a mistake, then they trust that they will not be arbitrarily penalised for having taken that initiative". Therefore, to be empowered to make decisions regarding their work, employees, regardless of organisational level, must understand and know information relevant to the performance of their business.

According to Ebrahimpour and Withers (1992), the focus on quality at the source requires empowering production workers to inspect their own work and to stop production if the process is out of control.

Everett and Sohal (1991) consider employee empowerment essential to improve in-process quality control. They conclude that due to increased awareness of responsibility and equity among subordinates, empowerment also leads to increasing employee participation.

According to Ahire et al., (1996), empowerment does not mean only shifting the responsibility for quality decisions to workers, it also entails providing supporting framework, such as the necessary resources and technical support, to assist them in such decision making.

Deming (1986), emphasises the importance to empower employees by giving them the authority and autonomy to do their jobs. Juran (1991) stresses the same idea. This is evident in the writings of Deming (1986) and Juran (1991) as they
mention pride of workmanship, self-improvement, self-inspection and self-control.

Major quality awards consider employee empowerment as a major area of assessment (Zink, 1995). The revised (April 1999) EFQM model of excellence and indeed the April 2000 revision of the UK investors in people standard, both place increased emphasis on the consideration of culture and employee motivation in terms of delivering organisational outcomes. Bowden (2000) states that the EFQM Excellence model criterion for “people satisfaction” was enhanced to recognise more comprehensively that “people results” need to address for more than merely an annual measurement of “satisfaction”.

Many companies emphasise the importance of employee empowerment. In the General Electric Company, at the beginning of its well-publicized Workout efforts, the general manager of each business unit met with employees to outline the strategy and performance of the business. Employees involved in Workout could then solve problems that would have a definite impact on the performance of the business. While preliminary efforts focused on eliminating reports, meetings and bureaucracy which detracted from productivity, later Workout examined such significant issues as cycle time, manufacturing processes, and cross functional, or even cross-business, issues (Rao et al., 1996).

Employee empowerment is used as an effective strategy by companies like Toyota and Ford (Ahire et al., 1996).
At D2D, processes were owned by the people responsible for the output of the process. This principle applied from the single tasks performed by the individual operator or member of staff, to the ownership of D2D business by the Managing Director. Ownership was given to the person agreed by appropriate management and employees as having the best ability, based on training, skills and experience, to optimise and maximise the performance of that process (Oakland 2000).

2-4-2-1 Middle management involvement

Thiagarajan and Zairi (1997) consider the act of maximising employee involvement in the quality process requires middle managers within the organisation to make major adjustments. The middle management have a particular role to play, since they must not only grasp the principles of TQM, they must go on to explain them to the people for whom they are responsible, and ensure that their commitment is communicated (Oakland, 2000). Only then, says Oakland (2000), will TQM spread effectively throughout the organisation. Wilkinson et al., (1994) believe that managing according to the philosophy of TQM requires new attitudes and skills from middle managers. For Thiagarajan and Zairi (1997), this means that middle managers must give up some authority as power and control are pushed to lower levels in the organisation. This makes middle managers resist the change in their roles and react with suspicion and uncertainty. Crosby (1989) states that it hard to get people interested in improvement of any kind if they perceive it as a threat to their authority or lifestyle. This emphasises the importance of getting middle managers’ buy-in and being involved to contribute positively to successful TQM implementation (Crosby 1989; Ishikawa 1985).
A survey reported in Quality progress (1993), revealed that middle management are the main roadblocks to successful TQM implementation. With the aim to identify specific practices that have contributed to or detracted from TQM success, the survey targeted 536 organisations that have implemented TQM. The study recommended that top management should work hard to understand and involve middle managers in:

- Designing and promoting TQM
- Providing training and development not only in TQM concepts and practices, but also in new leadership skills
- Creating different but meaningful roles for them in supporting widespread quality improvement initiatives.

Thiagarajan and Zairi (1997a) report that this fact was also reflected in a survey of 161 organisations. It was established that one of the elements that differentiated the successful TQ organisations from the less than successful ones was middle management support. The survey concluded that without middle manager’s support for the quality process, the process will be derailed (Bettman, 1993). According to Manz et al., (1993), the biggest obstacle to successful implementation of TQM is the middle management. This indicates that unless middle managers are convinced that the transition process may cost them in status, power and recognition, only then the implementation of TQM becomes smooth (Johnston et al., 1991).
In this regard, Ishikawa (1985) says that middle management can contribute greatly to quality improvement. He calls for top management to provide greater attention to encourage new roles for middle managers.

Johnson and Johnson’s major recall of millions of Tylenol tablets in the 1980s was initiated by a middle-level manager who used his own judgement and interpretation of the company’s values statement (Marchese, 1991). At Nissan UK, supervisors are involved in staff selection, developing and training their staff and motivating and maintaining morale. They are also the channel for all communications to manufacturing staff (Thaigarajan and Zairi, 1997a). Wacker (1993) reports that at Norand Corporation, middle management training and acceptance were made a priority. Training was designed for middle managers to train them on how to manage empowered employees and how to become facilitators of quality improvement initiatives and coaches of employee development.

### 2-4-2-2 Training and education

Ahire et al. (1996) believe that employee empowerment and involvement framework is not effective unless employees have received formal, systematic training in quality management. Ishikawa (1972) believes that education is crucial in determining the success of quality control.
Moreover, Ishikawa (1985) states that quality begins and ends with training. For Rao et al. (1996) training and development are key components of all TQM programmes. Crosby (1979) considers education of the workforce as being the key to developing awareness and understanding of the new quality philosophy. Oakland (1989) sees training as the single most important factor in improving quality. Oakland (1993) continues to say that training activities should be incorporated within the principles of the quality policy. Oakland (2000) adds that quality training must be objectively, systematically and continuously performed.

Feigenbaum (1961) points out that the importance of training is to ensure that the skills of the workforce do not become obsolete in an environment of change and an understanding and attitude of quality is developed and maintained. This was also supported by Juran (1974). Education and quality awareness programmes across the whole organization (company-wide), were emphasised by Feigenbaum (1961), Juran (1974) and Crosby (1979).

According to Rao et al., (1996) TQM training should be directed at all levels of the organisation since senior managers who understand the TQM process are not only able to break down barriers within their own organisations, but they can also serve as role models for others who may resist to change. Schonberger (1992) believes that employees should be cross-trained, so that indirect as well as direct tasks can be learned.

Deming (1986) emphasized the importance of on-the-job training by making a specific inclusion of this type of training in his considerations of his new philosophy of management. Garvin (1993) attributes failure in TQM programmes
and low success rates to the basic fact that TQM requires a commitment to learning.

In his empirical research of developing a TQM instrument, Zhang et al., (2000) reports that organisations have realised that education and training are an integral part of the TQM initiative. Rao et al., (1999) state that training in quality-related concepts and tools is a prerequisite for the effectiveness of quality improvement activities.

In fact, Japan’s phenomenal productivity success is attributed to the national campaign of training every employer in basic concepts of quality improvement (see Ebrahimpour, 1985; Juran, 1978; Juran, 1981a; Juran, 1981b; Lee and Ebrahimpour, 1985). Also, the Baldrige Award assesses applicant’s efforts in providing quality training to its employees (NIST, 1999). This is also evident in the EQA (1999) and the ISO-9000: 2000 quality management system (1999).

Ahire et al., (1996) state that first and foremost, companies need to view training costs as investments instead of costs. Availability of adequate resources is a prerequisite for an organisation-wide training. Zhang et al., (2000) consider investment in education and training vitally important for TQM success. They add, employees should be regarded as valuable, long-term resources worthy of receiving education and training throughout their career. Galagan (1992) considers participation by various levels of employees and managers in training sessions not only enhances the quality of the immediate session, but due to a breakdown of barriers between ranks, it helps subsequent employee participation. Dowson and Patrickson (1991) emphasise that refresher courses in quality concepts rejuvenate employee participation by reinforcing quality knowledge in
the lights of actual practice. Widman (1994) suggests that effective quality training should concentrate on balancing three aspects:

1-Human (team building, culture, and communication).
2-Technical: (statistical process control, benchmarking and process improvement skills).
3-Leadership: (management of change, empowerment, coaching and counseling).

Similarly, Rao et al. (1996) state that training typically covers problem-solving techniques, problem analysis, statistical process control, quality measurement, organisational diagnosis, group process, and decision making. Zhang et al., (2000) state that all management personnel, supervisors, and employees should accept education and training such as quality awareness education and quality management methods education.

The importance of training and education in the process of TQM implementation is highlighted by several studies.

The DDI (1994) study of five hundred and thirty six Total Quality Management US organisations revealed that among all organisations, training in continuous improvement skills, leadership skills and interpersonal skills was common. The study also reported that timing of training is crucial in achieving maximum impact. Another study in Quality progress (1995a) revealed that quality driven organisations emphasise interpersonal and technical skills. According to the study, one of the most valued employee characteristics by the surveyed organisation is good communication skills.
According to the study conducted by General Accounting Office (GAO) as cited in Olian et al., (1991), training programmes were found to be concentrating initially on TQM awareness and leadership, followed by training sessions in problem-solving techniques and continuous improvement skills.

Payne and Dale (1990) suggest the following major technical and conceptual requirements which they identified by reviewing various TQM training programmes for management:

- The development of quality improvement objectives.
- The measurement of performance and cost of quality.
- The BS 5750 Quality System.
- Project management and the organisation of teams.
- Project improvement.
- Quality Improvement

Several recent empirical studies revealed that training and education are critical to successful TQM implementation (Thiagarajan and Zairi, 1998; Quazi et al., 1998; Rao et al., 1999; Zhang et al., 2000; Ali, 1997; Yusof and Aspinwall, 2000; Black and Porter, 1996; Ahire et al., 1996; Flyn et al., 1994; Tamimi et al., 1995; and Tamimi, 1998).

The literature provides many examples of the crucial role of education and training in the process of implementing quality initiatives.

Many organisations apply cascading approach of training, which is a method of information dissemination in the organisation. This approach involves training a number of managers who after attending the training programs become trainers to conduct internal training tailored to meet their staff’s needs. This cascading approach is used by organisations such as Xerox (Juran, 1991).
The European Air catering Services – UK – adopted this approach. Consultants were employed to give in depth training to five selected managers who would consequently facilitate a cascade of training throughout the organisation. Four key models were established: organising for quality, problem solving, interpersonal skills and teamwork. The training was ongoing and all levels of management have been trained. (Whitford and Bird, 1996).

Another case is the Bio Products Laboratory – UK. This company started extensive training to implement TQM. Initially 100 Managers were taken off site for a management development seminar, which was based on the principles of the teachings of Deming. After additional managerial seminars, six managers were taken away for a week to be trained as instructors. The idea was to transfer specialist skills into the organisation. The six managers did presentations, and they developed an appropriate instructors’ guide to pass on the basic TQM concepts and skills.

The six instructors conducted two types of courses for the remainder of the workforce. A short course was aimed at giving an employee the general tools and techniques of TQM, and was primarily chosen by production operators and some of the office staff.

A longer course focused more on conceptual thinking and the philosophy of TQM, such as brainstorming, process flow charts, deployment flow charts, and statistical process control. Employees started to get excited, and submit improvement ideas. At the end of the courses they were asked to use the tools and techniques of TQM. Those who submitted ideas were asked to talk to their
respective managers and form Quality Improvement Teams to work on improving processes (Whitford and Bird, 1996).

The five Top leaders at Wallace company attended more than two hundred hours in continuous improvement training programme (Binney, 1992).

Rank Xerox considers training as an essential factor for the company-wide total quality process. Recognizing this as a fact, a comprehensive training programme was launched for all employees in all levels since the beginning of the total quality initiative (Cullen et al., 1987).

Similarly, at Shorts Brothers, training is perceived as number one priority. About 400 sessions of training were conducted targeting the president, the management committee and workers. (Oakland et al., 1994).

Large companies like Fuji and Xerox believe that TQM training must be provided for everyone in the organisation to establish a common language of quality and a shared way of thinking. Therefore, they provide training for all employees when they are hired. They believe that by training all employees, TQM concepts are generally understood and implemented which makes communication easier (Johnston et al., 1991).

The Industrial Control Services (ICS) embarked on the largest single training programme that the company had ever undertaken. This was to put all employees in the company through an intensive two-day total quality awareness training
programme. The training started in July 1992, following a six month "sell" by the total quality co-ordinator to the board of directors and continued every week until February 1993. In addition to the 300 employees, they trained one customer representative and six suppliers' representatives who had expressed interest in what the company was doing (Shirley, 1997)

The NIST Precision Engineering Department has initiated an effort based on the application of the principles, concepts and criteria of the MBNQA. The start up of this Baldrige-based effort has involved: introductory training of all staff to increase the effectiveness of the research and services of the Precision Engineering Department (Swyt, 1999).

According to Easton (1994), employees of Malcolm Baldrige Quality Award applicants attend forty to eighty hours of training per year.

For Deming (1975) the responsibility for training rest on managers. In this regard Oakland (2000) considers responsibility for quality training of employees rests with management at all levels. The main elements should include error/defect/problem prevention, reporting and analysis, investigation and review.

This is evident in the finding of Bertsch and Williams (1994). Almost all of the twenty companies surveyed in the US, Europe and the Far East, they found that quality training programmes are frequently given by line managers with consultants used whenever needed on short-term assignments.
2-4-2-3 Rewards and recognition

It goes without saying that an important feature of any quality improvement programme is showing due recognition for improved performance by any individual, section, and department or division within the company (Dale and Plunkett, 1990 in Zhang et al., 2000).

Crosby (1989) considers recognition as one of the most important steps of the quality improvement process.

According to Oakland (2000), TQM is user-driven. This means that the ideas for improvement must come from those with knowledge and experience of the processes, activities and tasks. He continuous to say TQM is concerned chiefly with changing attitude and skills so that the culture of the organisation becomes of preventing failure- doing the right-things, right first time, every time. London and Higgot (1997) consider a transaction in corporate culture towards one of continuous improvement is a fundamental requirement in establishing a TQM process. In this sense, they consider an effective reward and recognition process provides a clear and visible statement to all employee of the organisational values and the commitment to employee involvement.

Rewards and recognition for individual employees remains one of the controversial areas of quality management (London and Higgot, 1997). Scholtes (1995) believes that motivation is an intrinsic property of human nature rather a behaviour to be instilled by management. He believes that rewards, recognition and incentive systems do not work for the following reasons:

1- No data to show long-term benefits.
2- They set up internal competition.
3- Reward systems undermine teamwork and co-operation.
4- They often reward those who are lucky and poss by those who are unlucky.
5- They create cynics and losers.

For Deming (1986) fair ratings in rewards, recognition and incentive systems are impossible as a result of organisational politics, supervisor biases and employee competition.

Many other authors recognise the importance of rewards and recognition in TQM process. Kemp et al., (1997) consider the recognition procedure as basic to increasing the involvement of all employee in the operation of the business. Zhang et. al., (2000) state that recognition and reward activities should effectively stimulate employee commitment to quality improvement. To effective support organisation’s quality efforts, they need to implement an employee compensation system that strongly links quality and customer satisfaction with pay (Brown et al., 1994). Knouse (1995) recognises the importance of reward and recognition systems in TQM processes and attributes any failure of the system to the methods of implementation.

Kondo (1997) states that “we know very well that people doing the work will often display great creativity in a positive way. Utilising people’s creativity in their work is indispensable for motivation”.

A study reported in Quality Progress (1994) found that best practice units within the 86 major corporations used rewards as incentives to advance their TQM process.

Results from a US Council of Communication survey concluded that recognition for a job well done is the top motivator of employee performance (Sweatman, 1996 in London and Higgit, 1997). How people are rewarded, recognised and cared for is assessed by the EQA (2000) and MBNQA (2000). Based on reviewing best practices of quality leaders in Europe, Japan and USA, Johnston et al (1991) concluded that rewards and recognition are one of the enablers which maximises employees' involvement. They add, in doing so, rewards and recognition become one of the main contributors to the company's quality journey.

One of the key items that Xerox (USA) considered in developing the road map to achieve quality was introducing a reward system to recognise people who used the quality tools (Rao et al., 1996). At Exxon Chemical Ltd UK, both a reward and recognition system is in place. The reward mechanism comprises an across-the-board salary increment and individual merit awards. Those whose behaviour is in line with company business needs are made known to management and encouraged. Individuals who succeed in establishing the desired behaviour and results are provided with higher benefits (Thiagarajan and Zairi, 1997a).
Informal rewards also are important (Roa et al., 1996), that is rewards do not have to be monetary (Haksever, 1996; Zhang et al., 2000). Recognition for outstanding customer service and support, for being on a team that delivers continual process improvement, and for initialing new activities within organisations are all important rewards in any organisation.

Haksever (1996) emphasises this as he states that rewards do not have to do be monetary. Paul Revere Insurance Group applied a non monetary reward system by providing bronze, silver, and gold laped pin medals to recognize and reward successful ideas provided by the quality teams (Bank, 1992).

General Electric corporation recognised its first Workout group’s achievements by publicising them in the business unit newsletter (Rao et al. 1996).

From his experience as a Baldrige Award examiner, Easton (1993) points out that there is a widespread amongst the Baldrige applicants to provide an employee recognition scheme for quality.

Binny (1992) describes the experience of Ciba – Gergy – Italy, when the company felt that the enthusiasm of its employee towards Total Quality process faded. Management decided to include quality objectives in the company’s reward to return the employees enthusiasm.

While little has been written on new approaches to pay, which have been adopted in TQM organisations, some organisations are substituting skill – based pay for job – based pay. Skills that are rewarded can include cross utilisation skills, or the
ability to work a variety of functions as required in the work process (Bowen and Lawler, 1992). However, recognising the importance of rewards and incentives by TQM companies is practical in several forms. American express company established and incentive pay plan for the 100,000 employees in its consumer – card and consumer – lending groups. The pay out is based on three measures: customer satisfaction, employee productivity, and shareholders wealth creation. (Rao et al., 1996).

According to Krantz (1989), a framework of appropriate evaluation and reward systems for quality improvement project has been shown to improve quality significantly. Bowen and Lawler (1992) state that it has been noted that the level of employee participation depends on individual or group rewards (also, Walker, 1992). Many TQM firms implemented reward systems that offer profit–sharing programmes to enhance the employees’ ownership in their job and quality improvement activities (Stalk et al., 1992). Juran (1991) states that recognition can be used as part of the motivation for the cultural change required for TQM implementation.

In Florida Power and light – USA, teams were recognized and rewarded with gifts such as baseball caps and sometimes a trip to Japan. Xerox offered additional pay premium (Rao et al. 1996)

2-4-2-4 Teamwork

"Teams are a major part of any Total Quality Management effort because teamwork enables various parts of the organisation to work together to meet customer needs in ways that can’t be done through individual job performance". (Rao et al., 1996)
Methods such as cross-functional teams, within functional teams, quality control circles, voluntary teams, and suggestion activities can be used for encouraging employee participation (Zhang et al. 2000).

According to Dean and Evons (1994), TQM utilises three major types of teams: steering committees, problem solving teams, and self-managed teams.

Steering committees are usually those responsible for establishing TQM-related policy and for guiding its implementation. Problem solving teams usually identify, analyse and develop solutions for organisation quality problems.

Quality circle teams are formed when a small group of volunteer workers get together to discuss how their tasks can be done effectively and efficiently (Rao et al., 1996). Suggestions are made, ideas presented, and plans created. Usually, these circles then go back to management to present suggestions. Quality circles can be broadly defined as the meeting of minds during a quality journey to attain customer satisfaction through continuous improvement and teamwork (Goh, 2000).

One of the most publicised aspects of the Japanese approach to quality has been the quality circles or kaizen teams. The quality circle may be defined as a group of workers doing similar work who meet:

- Voluntary
- Regularly
- In normal working time
- Under the leadership of their "Supervisor"
- To identify, analyse and solve work-related problems
- To recommend solutions to management.
Where possible, quality circle members should implement the solution themselves (Oakland, 2000; Gho, 2000).

Whereas, Kaizen is a philosophy of continuous improvement of all the employees in an organisation so that they perform their tasks a little better each day. It is a never ending journey centered on the concept of starting a new each day with the principle that methods can always be improved. (Oakland, 2000; Heizer and Render, 1999).

Many companies in the Fortune 1000 adopted quality circles as a way of increasing employee involvement and participation in TQM (Rao et al., 1996). Lawler and Mohrman (1985) suggested the use of quality circles as a transitional vehicle toward a more participation management style. However, Lawler et al., (1992) discovered that today quality circle is seen as a less successful method of increasing employee participation, probably because they became much a fad and were perhaps not implemented or utilised to best advantage (Lawler et al. 1992).

Cross-functional teams are common in organisations. They usually are put together to examine organisational processes that require change (Rao et al., 1996). At the University of Michigan Medical centre, the admission department was receiving many complaints. A cross-functional team consisting of housekeeper, nurses, transporters, and admission clerks was put together under the leadership of the director of admissions. Using TQM tools, the team made several recommendations.
The mean number of complaints (which had been 37.3 per month) dropped to 1.5 complaints per month in the following year (Rao et al., 1996). Zhang (2000) considers cross-functional delegated teams as the quality management methods that organisations can use to achieve employee participation.

Self-managed teams (also called autonomous work groups or self-directed teams) have been in place for many years in some organisations. Over the years organisations have become flatter and less hierarchical as these self-managed teams have become more common (Tich and Devanna, 1990).

These teams can exist with or without a supervisor, and they usually handle all aspects of work organisation for that particular unit (Rao et al., 1996).

Each type of team has its advantages and disadvantages, and works best in a particular organisational setting (Parker, 1994).

Parker (1994) summarises:

- Problem-solving intradepartmental teams work well in traditional organisations, in stable, slow growth industries with predictable markets.
- Cross-functional (Interdepartmental) teams can be effective in companies with fast changing markets, where the need to move speedily to meet customer requirements is paramount.
- Self-directed teams can be used in lieu of problem-solving or cross-functional teams as part of an extended employee involvement strategy.

Reviewing the literature reveals that teamwork is a critical factor in Total Quality Management (Crosby, 1989; Bank, 1992; Kanji et al., 1993). Heath (1989) states that teamwork promotes a bottom-up thrust for quality improvement. Employee
involvement encompasses a range of policies that, at the minimal end, permit workers to suggest improvements and at the substantive end, give all employee the ability, motivation and authority to improve continuously how the organisation operates (Rao et al. 1999). One of the major elements of the human resource focus that has been identified by Mehra et al., (1998) as a critical success factors to the success of TQM programmes is teamwork. Teamwork, therefore, becomes a norm and the quality and quantity of communication increases both vertically and horizontally. These are also some of the needs of a programme to successfully improve productivity (Hoffman and Mehra, 1999).

At Rank Xerox Europe, teams from all levels were formed to improve business processes continuously. Xerox – USA – went about gaining employee and union support relying on the participation of the union. The union and Xerox agreed to developed problem–solving teams focused on shop floor activities. Over the next two and a half years, over 150 groups successfully solved problems related to eliminating chemical fumes, machine upgrading, organising tool storage, and reducing machine down time (Rao et al., 1996).

At southern Pacific lines, (Carman 1993), the company created about 890 teams of which more than 200 teams are cross – functional to emphasise the importance of team work to succeed in the quality journey.

Philips recognises that it can only be the best with teamwork, sharing knowledge and communication with each other. In Philips teamwork is the key to
competitiveness and the route to achieving the full potential. By sharing best practices and providing mutual support, Philips is able to outperform competitors.

Competence and knowledge are the foundation for excellence. Philips utilises company talents fully by working in teams and learning from the best internal and external practices.

Open communication both within and between teams, departments, businesses and divisions will mobilise the Philips capabilities (Oakland, 2000).

In his business excellence model, Kanji, (1998a) considers teamwork as a core concept to achieve the principle of people based management. In Oakland’s (2000) TQM model teams are considered one of the major components of the model.

Katzenback and Smith (1993) summarise the approaches used by successful teams to include:

1. Establishing urgency, demanding performance standards and direction.
2. Selecting members for skills and skill potential, not personality.
3. Paying particular attention to first meetings and actions.
4. Setting some clear rules and expectations for behaviour.
5. Setting on seizing on several immediate performance-oriented goals and tasks.
6. Challenging the group regularly, with fresh information.
7. Spending time together on work and non-work activities.
8. Exploiting the power of positive feedback recognition, and rewards.

Oakland (2000) states that good teams have three main attributes: high task fulfillment, high team maintenance and low self-orientation.
2-4-3 Quality Policy and Strategy

According to Juran and Gryna (1993), strategic quality management is the "process of establishing long-range quality goals and defining the approach to meeting those goals." Quality gurus and writers strongly emphasise the importance of strategic planning process based on total quality (Deming, 1986; Crosby, 1979; Juran; 1974; Zairi, 1994; Oakland, 1993; James, 1996; Ahire et al., 1996).

To establish specific guidelines for action, behaviour and decision making in the organisation, Feigenbaum (1961) states that a formal quality policy is needed. This is also emphasised by Juran (1974).

Several quality writers (Crosby 1979; Feigenbaum 1961; Juran, 1974; Oakland, 1989) believe that quality policy is important in the implementation of TQM. Juran (1974) considers Policy development as an integral part of management’s commitment to quality. Crosby (1979) views quality policy as a standard for practice that sets priorities of what to do and what not to do. Crosby (1967) suggests that without a formal policy, people will develop their own individual, and differing standards of practice. Deming (1986) emphasises the need of linking quality efforts within an organisation with the corporate purpose. Oakland (2000) considers a sound quality policy, together with the organisation and facilities to put it into effect, is a fundamental requirement, if a company is to begin to implement TQM. For Rao et al., (1999), strategic quality planning demands the integration of quality and customer satisfaction issues into strategic and operational plans.
Juran (1974) points out the role of policy is to pave the way for unity of direction in planning, controlling, and improvement of processes.

According to Feigenbaum (1991), in developing a policy framework, there is a need to identify and formalise key quality decisions, problems and documentation. Crosby (1979) believes that actual contents of quality policies include the general managers' responsibilities, the standard of performance (zero defects), quality function responsibilities and costs of quality reporting. Juran (1974), however, considers the nature of target market, the product offered, the basis of competition, planning responsibilities and relationships with suppliers to be included in the quality policy. Olian et al., (1991) point out that attention to policy development is a critical factor for success in quality management as best organisations use the process of policy development to ensure employee understanding of the organisation's objectives and how to contribute to achieving the objectives.

The Malcolm Baldrige Award (1999) and the European Quality Award (1999) criteria designate a relatively low score to the content of company quality policies in comparison to the practices and results which arise from policy implementation. The European Quality Award criteria places quality planning under the category of policy and strategy. The aim is to assess the way in which business plans are centered around a policy and strategy that reflect the principles and concepts of TQM. Similarly, the Baldrige Award criteria provide explicit guidelines focusing on the extent to which quality requirements are integrated into the overall business plan. The guidelines address how the organisation deals with
quality, customer satisfaction, and operational performance improvement within its overall business plan. This is emphasised by Juran (1991) as he states that most successful TQM organisations ensure that quality goals are incorporated in the overall business plan.

The research of Dale and Duncalf (1988) concluded from a case study of six companies that those without a formulated quality policy are unlikely to have effective quality-related decision making processes. They state that organisations without a quality policy tend to have gradually an inspection-oriented approach to the management of quality.

This is supported by the Rank Xerox – UK – when they initiated their quality improvement programmes as the first step was to develop and communicate a simple and direct quality policy to all employees (Coleman, 1991). This implies that policy development is perceived as the first step in the development of suitable organisational culture for TQM implementation. This is described by Dale and Duncalf (1988) when they consider policy as a framework for effective decision-making, executive action, leadership, and creation of the correct working environment for implementation and improvement.

The quality policy should be the concern of all employees, and the principles and objectives communicated as widely as possible (Oakland, 2000).

Talking about quality policy and strategy can’t be separated from strategic planning process related to Total Quality Management. Such a process is based on determining the needs and requirements of all stakeholders (including the
customer), analysing the competitor’s strengths and weaknesses, and identifying
the process capabilities. (Juran, 1974; Crosby, 1979; Deming 1986; Oakland.

For Oakland (1989 and 2000) quality must become part of a continuous review of
functions, strategic planning, supplier systems and the organization’s own system.
He adds, that specific quality plans can be also produced for products and
activities preformed by groups in the organization. These quality plans, he says,
should be directed to the inputs of the involved process.

Easton (1993) reported that applicants for the Baldrige Award normally develop
some sort of written quality plan, which may be part of or separate from the
overall strategic or business plans. Easton (1993), recognises that strategic quality
planning process as ineffective. He believes that this can be attributed to the fact
that strategic quality plans do not realistically address implementation issues or
deployment of the plan throughout the organisation.

Zairi (1995), supports this conclusion by stating that what is implemented is
different from what is planned. This is evident by the results of a study concerned
with strategy development and implementation (Huston as cited in Zairi, 1994)
where seventy three percent of the managers surveyed considered implementation
is more difficult than development. Zairi (1995) explains the reason behind this as
a result of frequent changes faced by strategies while implementation, which
creates misalignment and disruption in performance. Zairi (1999b) says that, the
reality is that strategic planning remains as an enigma for many organisations. He
adds, most strategic planning efforts, it is reported, fail to deliver because they remain as blueprints locked away in senior executives' filing cabinets.

Zairi (1999b) states that one of the best methods to access the effectiveness of policy and strategy is to use criteria of excellence from prestigious models such as MBNQA and EQA. In order to check whether "good" organisations do "walk the talk" and subscribe to the rules in the quality awards policy and strategy assessment criteria, a case study based on a manufacturer of fast moving consumer goods was used to check the validity and applicability of each statement made and to search for evidence of effective subscriptions to the aspects covered. The analysis included winners of the MBNQA and the EQA. Zairi (1999b) concludes that policy and strategy is an integrated process with a dual flow characteristics and the deployment stage (which many senior executives used to regard as a complete process) is only a small portion of the overall process. Indeed, two very challenging aspects represent the communication: a deployment stage and the review and monitoring stage

Despite these problems, many companies such as Procter and Gamble (Bemowski, 1992), NEC - Japan (Smith, 1994), Rank Xerox (Smith 1994; Zairi 1994; Whitford and Bird, 1996), ST Microelectronics (Oakland, 2000) have achieved success in developing, communicating and reviewing strategic plans at all levels in their organisations. Zairi (1994) describes the experience of Rank Xerox as follows: -
"A key process which Rank Xerox can articulate and communicate the vision, mission, goals and vital few programs to all employees. It provides answers to the two questions. What do we need to do? And how are we going to do it."

At Texas Instrument Europe, quality steering teams throughout the corporation cascade the requirements of the worldwide quality policy to all employees. Through the European quality steering teams structure higher level statements are made relevant to staff by creating individual business and regional vision statement. Specific business excellence goals are further deployed through a policy deployment process (Oakland, 2000).

The policy and strategy at Royal Mail (UK) are formulated on the concept of total quality as follows (Zairi, 1999b):

- Mission and values were the fundamental inputs to total quality.
- Policy and strategy formulation to implementation and achievement of results is managed through three processes:
  - strategic direction setting,
  - planning, and
  - performance measurement/review.

Executive committee establishes the vision and direction, business units define the actions to achieve the targets and review process takes place within each of the processes.

- Cross-functional forums own elements of the EFQM model and identify implementation plans from feedback received.
- All business units maintain documented management processes, which are reviewed to ensure their relevance.
2-4-4 Resources Management

2-4-4-1 Communicating for quality

According to Kanji et al., (1993) effective communication is part of the cement that holds together the bricks of the total quality process. Crosby (1979) suggests that in each department there should be a quality council, which would include a quality professional who would act as a regular centre for communication relating to the programme. There are four principal types of communication: verbal (direct and indirect), written, visual and by example (Oakland, 2000).

Effective communication is seen as a means for keeping momentum and morale for quality improvement process (Close 1993). It is important in directing employees towards the corporate expectations.

At British Airways Interior Engineering, the launch of the goals was communicated at a weekly brief to all colleagues. This was followed by a series of workshops run by the general manager to groups of colleagues, until everyone had taken part (Fowles and Edwards, 1999).

At Nissan – UK supervisors are the channel for all communication to manufacturing staff. A five minutes meeting is conducted by the supervisor at the beginning of each shift (Ashton 1992).

Many organisations use a variety of communication techniques. At Redland Roof Tiles – UK, The company produces a monthly newsletter called the Cercular. It is used to introduce or reinforce concepts of TQM and continuous improvement.
The tone is friendly and informal with cartoons and anecdotes. (Whitford and Bird, 1996).

Other companies use advance means of communication as in the case of the Philips Electronics. The chief Executive Officer answers the various questions about TQM programme that he gets from his employees in eighteen European countries through TV – Satellite network (Bertsch and Williams, 1994).

Effective communication is important in the employee empowerment process. The use of teams is a successful means for cross-functional communication in organisations.

To increase communication effectiveness Thorn lighting UK, recognised that the existing multi-tiered management structure inhibited communication. Three layers of management were eliminated – a reduction from seven levels to four and the status of the first line supervisor was elevated. This helped push ownership of the manufacturing process further down the organisation as well as improving the speed of communications and decision making. Along with this, the company used the Team Briefing approach to disseminate information. The plant stops for half an hour each month and everyone is briefed on the company’s performance and other aspects of the business.

The brief is cascaded down from the managing director. The most confidential information such as profit forecasts is shared with the work force and this level of trust has been rewarded. The team briefing has become a two way process with input on issues being fed back to management (Whitford and Bird, 1996).
Effective communication is important for the success of any quality initiative. (Close, 1993). According to Binney (1992) open and two-way communication helps improving relationships between employees and management to integrate quality with business activities. Smith (1994) points out the importance of communication across the organisation to provide continuous customer satisfaction. He describes Digital's worldwide system "Notes" that allows every employee to talk to anyone else to get the information he needs.

Effective communication is critical from the beginning of a change effort. Every element of the change must be talked about, presented and discussed, across levels of the organisation (Rao et al., 1996),

Believable information, which stimulates enthusiasm and clearly demonstrates the reward for participation, is the key for successful communication about quality. Communication about TQM can cover a broad range of activities, including face-to-face conversation, group or site visits, videotapes, brochures, booklets, company newsletter, advertising campaign-anything that talks openly about the ongoing quality initiative.

A Japanese insurance company created a one-page poster to communicate its plan in a succinct manner. The top of the poster (about half a page) stated the guiding vision of the company, which emphasised customer focus. Below this were graphic bars showing the activities of senior management, sales personnel, and cross-functional teams from the main and branch offices. The bottom section of the poster pictured the key events such as steering committee meetings, recognition events, and schedule (Rao et al. 1996).
Cohan (1990) emphasises that supervisors fully understand the programme and be able to communicate it as coaches to employees. Managers must communicate the details and results of change programmes.

Total quality management will significantly change the way many organisations operate and “do business”. This change will require direct and clear communication from the top management to all staff and employees, to explain the need to focus on processes. Everyone will need to know roles in understanding processes and improving their performance (Oakland, 2000).

The key medium for motivating the employees and gaining their commitment to TQM is face-to-face communication and visible management commitment (Oakland, 2000).

At ICL Manufacturing Division-UK, face-to-face communication is a key feature with the Managing Director talking to the whole workforce in small groups of 50 people at least once per year. Seven meetings per day starting with the first shift and going through to 10:30 pm. Staff express their view and listen to the Managing Director. Formal Cascade process is used for announcements on organisational changes, company news, quality results, customer feedback and quality training. Managers and supervisors gather their staff together and make the announcement with questions/answers prepared to assist the managers. Managers take responsibility for finding answers to questions which staff raise and cannot be resolved immediately. Online satellite broadcasts are used where appropriate.
and staff not able to see the broadcast are given a video the next day (Zairi, 1999b).

At D2D, annual kick off events are held by the Managing Director where he talks to every employee in small groups on the previous year’s performance and strategy in a relaxed atmosphere. (Zairi, 1999b).

At IBM Rochester, posters were important in getting the quality message across to all employees (Zairi, 1999b).

A study reported that poor inter organisational communication was highly rated as an obstacle to successful implementation programme (Tamimi and Sebastianelli, 1998).

Another study revealed that for TQM companies the three most severe obstacles, in rank order based on average severity, were lack of time, poor communication and lack of real employee empowerment.

Interesting, the study found that the percentage of TQM and non-TQM companies rating poor communication as a severe obstacle was similar (Salegna and Fazel, 2000).

Larkin and Larkin (1994) suggest the following as the best ways to communicate change to employees:

1- Communicate directly to supervisors.
2- Use face-to-face communication
3- Communicate relative performance of the local work area.
2-4-4-2 Supplier management

Supplier quality management is an important aspect of TQM since materials and purchased parts are often a major source of quality problems (Zhang et al., 2000). Poor quality of supplier products results in extra costs for the purchaser; e.g. for one appliance manufacturer, 75 percent of all warranty claims were traced to purchased components for the appliances (Juran and Gryna, 1993). According to Besterfield (1994) on the average, 40 percent of production cost is due to purchased materials; therefore, supplier management is extremely important. It follows that a substantial portion of quality problems will be due to the supplier. In order for both parties to succeed and their business to grow, a partnership is required. The supplier should be treated as an extension of the production process. Flood (1993) states that companies should treat their supplier as long-term business partners.

Many authors advocate that companies must establish supply chain partnerships to motivate suppliers to provide materials needed to meet customer expectations (Harrison et al., 1996; kumar, 1996; Lambert et al., 1996). Wong et al., (1999) state that partnership with suppliers will lead to quality results from the supply chain. According to Kanji and Wong (1999) the creation and enhancement of the customer-supplier partnership is a major quality practice. This is emphasised by Wong and Fung (1999).

The quality gurus believe that supplier should be viewed as an integral part of the organization's business operations (Ishikawa, 1985; Deming, 1986; Crosby, 1989). Crosby (1989) states that one of the most important parts of the quality improvement process is the relationship between supplier and buyer. In his letter
to the 3rd Shanghai International Symposium on Quality, Juran (1998) (in Sun, 2000) said that there are a universal set of actions that are the essential elements of quality management. These elements include, among others, partnering with suppliers. Feignebaum (1998) (in Sun, 2000) suggested in his speech in the same symposium ten principles of quality management, one of them is that, quality is implemented in a complete system connecting customers and suppliers. Crosby (1998), (in Sun 2000) stated in his speech that management must describe the responsibilities of employees, suppliers, and customers.

Genna (1997) states that the idea of adding value to products and services is keenly linked to customer satisfaction, although not every company realises it. He suggests that steps such as on-time shipment and defect-free can improve the supplier product quality, as well as, help to provide the same quality to the ultimate customers.

Quality management is based on prevention rather than detection. This is emphasised by Eshennawy et al., (1992) when they consider that managing suppliers is a major issue to be addressed to have a complete total quality management organisation.

The Philip’s Group created a long-term business partnership with its suppliers. They coined the phrase “Comakership” to describe the new approach. Comakership simply means working together towards a common goal. It is based on the principle that both parties can gain more through co-operation than by
separately pursuing their own interests. Comakership means establishing a long-term business partnership with each supplier-base operation.

It pushes a desire for both parties to continuously improve the product and to clearly understand their responsibilities. The Philip's Group found that to develop Comakership considerable changes in behaviour and attitudes were required from both customers and supplier. Customers have to prepare to develop plans and procedures for working with suppliers and allocated time and resources to this. Supplier for their part must accept full responsibilities for their products and not depend on their customer's inspectors (Flood, 1993).

This was emphasised by the work of Dale and lascelles (1988) in their studies of product quality improvement through supplier development. They found that supplier development requires as fundamental shift in the supplier – customer relationship.

Rank Xerox, TI Rayleigh and Locas all adopted a comarkership approach with their supplier to improve quality (Flood 1993).

At Toyata and Nissan, full-time specialised management consulting groups provide suppliers with assistance to improve their production and to achieve total quality in their products and service. At least one consultant works with four to six suppliers. All of this supplier assistance is free of charge (Dyer et al., 1993).
Deming (1986) considers the reduction in the supplier base will minimise total cost. Besterfield (1994) says that single sourcing with a large contract will create better quality at a lower cost (also Dyer et al., 1993).

Companies world-wide realise that optimising operations within the four walls of their enterprises is not enough to achieve business excellence. They understand that the involvement of suppliers, which is critical to improve quality and meet customer specifications, can enhance their performance (Kanji and Wong, 1999).

Bevan (1990) reports that one UK motor manufacturer faced with the threat of competition from Europe, the Far East and their competitors in America, came to the conclusion that the most serious threat came from Japan. It was noted that the relationship between Japanese manufacturers and their suppliers is entirely different from all others. Some of the main differences: there are fewer suppliers, working relationships are very close and promote "problem solving", and suppliers were totally committed to their customer's objectives.

Organisations world-wide are using teams to improve the quality of their products and services and recognise that this teamwork should include suppliers (Wong, 2000).

At shorts Brothers–UK, they motivate suppliers to initiate total quality by providing training services and joint involvement teams. This is done as the company. Reduces the supplier base and builds long-term relationships with a number of preferred suppliers (Oakland et al., 1994).
Adopting single sourcing strategy requires supplier selection criteria. Basterfield (1994) suggests that effective selection requires the supplier to be knowledgeable of the purchaser's quality philosophy and requirements. The supplier must demonstrate technical capability and capacity to provide quality products of particular importance is the credibility of the supplier. He continues, A well-designed check-list with weights (for supplier's ability to provide quality products as evidenced by quality system and improvement programme, supplier's control of its suppliers, and suppliers accessibility) will aid in evaluation and selection.

Quality-oriented companies no longer have cost as the primary criterion for selecting suppliers and are being more proactive in developing long-term relationship with their suppliers by extending technical support and training to suppliers to improve the process, quality and productivity of their suppliers (Rao et al., 1999).

Dang (1992) suggests a matrix of selection criteria against which each supplier and part is rated by all departments within the purchasing organization. High scoring suppliers are selected for development of long-term relationships. Low scoring suppliers are encouraged to improve on the identified areas of weakness. Dang (1992) argues if close relations are established incoming inspection may be unnecessary, thereby offering advantages to both vendor and customer.
Easton (1993) states that many Baldrige Award applicants started quality programmes with their supplier (concerned with supplier rating and qualification systems, supplier quality systems audits, joint design teams, joint quality improvement teams, training, and supplier recognition schemes) to spread gradually the quality movement throughout their entire supplier chain.

The report of the U.S General Accounting Office, identified the establishment of close supplier relationships by high-scoring Baldrige Award applicants as a key feature which contributed to improved organisational performance (G.A.O, 1991).

A study conducted by Wong (2000) reveals that working together with suppliers can be very useful for improving customer satisfaction. The findings indicate that supplier satisfaction will help increase the level of customer satisfaction.

During the early 1980s the production of Jaguar cars reached its lowest point as confidence and identity slowly ebbed from this most prestigious of car marques. A critical in depth review of the business was carried out by the purchasing manager of Jaguar cars. Findings pointed to the necessity for Jaguar to address its internal controls, its dealer network and to enlist the support of its suppliers to improve overall quality of the vehicles. The initial task was to identify the problem components from the warranty figures. Following this a supplier conference was held with managing directors and chairpersons of the companies concerned to discuss the issues.

Multifunctional task forces were set up involving the suppliers. Each had a specific role, which clearly identified the suppliers' responsibilities to quality.
Poor suppliers were dropped. Components were resourced in the relentless quest for quality. A single source supplier strategy was implemented and care was taken to involve the supplier at the concept stage (Flood, 1993).

Jaguar claim that a single-source strategy was progressive and during the reduction of the supplier base quality improved, creating better value for money whilst trust and stability were built into the relationships. With the mutual benefits of larger contracts, both Jaguar and its suppliers committed themselves to quality, acknowledging this as a merit of long-term commitment. Another feature of Jaguar's new approach was the introduction of a "Supplier of the Year" award (Flood 1993).

2-4-5 Systems and Process Management

2-4-5-1 Accredited quality management system

Quality systems are designed to provide both the support and mechanism for the effective conduct of quality-related activities in an organization. It is a systematic means to manage quality in an organisation. According to James (1996) the quality-oriented organization ensures that a quality management system is in place and working effectively. The ISO 9000 series certification can be defined as the starting point for entering the competition, the ongoing journey towards TQM must deliver the competitive advantage (van der Weile and Brown, 1998) (also see Quazi and Padibjo, 1997; Williams, 1997; Chittenden et al., 1999).
Since the Publication of the ISO 9000 series of standards in 1987, they are used by many companies and organisations as an important milestone to mark their quality journeys (Lee et al., 1999).

Crosby (1986) considers systems as the communication centres of operations. Quality systems offer organisations a framework for quality control practices to achieve quality assurance through prevention of failure. Therefore, a quality system must communicate the standards of organisational practice through documented procedures and records.

According to Oakland (1989) the aim of the quality system is to provide support to people by addressing the issues of process inputs (materials, information, equipment, methods) to ensure consistent process outputs.

Accredited quality management system (such as the BS EN ISO 9000) forms a major pillar supporting the development and operation of TQM in an organisation (James, 1996). The origins and basis of commercially oriented quality system standards have evolved over the past thirty years or so. Much of the initial development was for military projects in the United States (James, 1996). Conti (1999) states that among the issues that rightly call for international standards are: Liberalisation of trade; people’s safety; and environment protection.

The basis for the development of BS EN ISO 9000 can be squarely placed on its military background. The change came about 1984 when the British Standards
Institution (BSI) managed to convince the International Standards Organization (ISO) -based in Geneva, Switzerland- to develop a generic quality management standard for world-wide use, based on its revised standard of 1979. Up to twenty-six countries were initially involved and all produced clones in 1987, when the new BS EN ISO 9000 standard was finally published. The result depicted a minimum standard that was acceptable to the countries involved (James, 1996).

In repositioning ISO 9000:2000 to focus more on quality management, the authors have sought underpin this change with an emphasis on eight quality management principles (ISO, 1999):

- Customer focus
- Leadership
- Involvement with people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutual beneficial supplier relationships

ISO 9000 is in fact a family of standards developed to assist organisations implement and operate effective quality management systems; ISO 9000 describes the fundamentals of quality management systems; ISO 9000 specifies requirements for quality management systems; whilst ISO 9004 provides guidance on quality management systems (Russell, 2000).

According to Holland (1996) the Director and General Manager of standards–British Standards Institution- “about 100,000 ISO 9000 certificates have been issued in more than 90 countries around the world. It is fast becoming the standard for international trade, certificates are being gained at the rate of 15000 every year. Companies having ISO 9000 range from one man businesses to
multinationals with thousand of employees”. This is evident from the number of registered organisations by the end of 1999. According to the International Standards Organisation (2000) the total ISO 9000 Certification worldwide to the end of 1999 is 343,643.

According to Osman (1996), the Lloyd’s Register Quality Assurance (LRQA) Study conducted in 1992 revealed the following benefits of ISO 9000 certification:

1- Better management control.
2- Ensured consistency of system-company-wide.
3- Productivity gains and increased efficiency.
4- Staff motivation and cost reduction.
5- Ability to open doors to previously closed market segments.
6- Maintaining or expanding market share.
7- Valuable marketing tool.

The study also revealed that external market pressure was the principal driving force behind the majority of decisions to obtain certification. The most important factor is being the increased ability to tender for work from which they would otherwise be excluded.

The need to increase or maintain market share was the second most important ranking factors. Other priorities included better anticipation of customer needs and enhanced marketing efforts.

However, the benefits associated with internal improvements were given a less important priority as a reason for seeking certification. It is worth mentioning that this study was based on interviews with 400 quality managers and senior
managers from a cross-section of LRQAS customer base of a wide range of companies of different size and industry type.

Osman (1996) compares the results of the (LRQA) study with the study conducted by the UK Department of Trade and Industry (DTI) in 1991. He says that many of the findings of LRQA study are supported by the DTI study. The DTI study found that certification brings operational efficiency and increase export sales, gained marketing advantage, increase in profit after two years and an average investment payback of less than two years.

Other studies (PERA, 1992 CUK), Devos et al., (1995) “Belgium and USA” are in accordance with the findings of the previous two studies (also see Beatie et al.,1999; Quazi et al., 1998; McAdam et al., 1999; Zhu et al., 1999). Another benefit is related to the product image problem. Huarng et al., (1999) state that obtaining the ISO 9000 certificate may prove to be another example of how firms can overcome their product image problem. We believe this lesson is crucial to many firms in the developing countries that share this problem.

Many organisations consider ISO 9000 certification as the first step in the implementation process of TQM (Oakland et al., 1994). The ISO 9000 registration programme of Tioxide Group Ltd – UK – helped the company to achieve a higher profile through the active involvement of everyone. They felt that they were in a bitter position to meet the specific requirements of customers and improve their strategic relationships. (Oakland et al., 1994).

A documented quality system as part of a TQM strategy can contribute to TQM by managing the organisation’s processes in a consistent manner (Zhang et al.,
Beattie and Sohal (1999) state that most firms will operate ISO 9000 concurrently with another quality activity, usually TQM. (See also Beattie et al., 1999; Quazi et al., 1998; McAdam et al., 1999; Zhu et al., 1999).

Kanji (1998b) says that ISO 9000 could be integrated with TQM for the development of a TQM process. He proposed an approach to improve quality by examining the organisation’s processes in terms of process definition, process improvement and process design. Once the meanings of the three concepts are determined, then steps for process innovation (ISO 9001) can begin. From the point of view of strategic management, it follows that ISO 9000 must be integrated with human and managerial aspects to become a fundamental part of TQM. The integration of ISO 9000 with TQM generally allows the firm to capture increased profits along the path of quality improvement (Liao et al., 1995) in Huarng et al., 1999). The introduction of ISO 9000 has influenced to a great extent the development of organisational efforts towards quality assurance (Khan and Hafiz, 1999). Oakland (2000) states that to the foundation framework of the customer-supplier chain, processes and the “soft” outcomes of TQM must be added the first hard management necessity – a quality system based on any good international standard.

The European Air Catering Services – UK – decided to implement Quality Management System based on the ISO 9000 quality standard.

The leader of the implementation process of ISO 9000 explained that the system was viewed as a means not an end:
"Although achieving registration to ISO 9002 standard was my ultimate goal, I nevertheless, wanted to implement a system which was flexible, contributed to our goal of continuous improvement and did not require excessive resources in order to maintain it" (Whitford and Bird, 1996).

ISO 9000:2000 is seen to provide complementary rather than competing approaches to the Excellence models such as the EFQM and MBNQA: Russells (2000) states that standards such as ISO 9001:2000 provide complementary rather than competing approaches. Tonk (2000) states that the Baldrige criteria and the ISO 9000:2000 set of quality management systems also attempt a grand unification under which to subsume all of the quality requirements and functional demands of a given organisation.

This is possible because both the Baldrige criteria and ISO 9000:2000 are customer, process and continuous improvement oriented.

According to McTeer and Dale (1996) ISO 9000 quality system standards are applicable to all types of business, whether they are manufacturing industries, such as chemicals, electronics, paper pulp, or steel, or service, such as banking, insurance, medicine or transportation.

D2D is among the first in Europe to gain ISO 9000 and pilot the environmental standards BS 7750 (Zairi, 1999b).

Nearly all Philips organisations are ISO 9000 certified, which lays the foundation for continuous improvement or "Let’s make things better", all the time (Oakland, 2000).
At IBM, the ISO 9000 standards have proven to be a template for the creation of a sound quality system, regardless of whether the target market is located in the United States or overseas. By embarking on the ISO 9000 journey, it is reasonable to expect lower costs, improved customer satisfaction, greater brand loyalty, and stronger market performance associated with this quality effort. The ISO 9000 quality process can be an important step on the road to total quality management.

*Dr. Jack E. Small,*  
*Director ISO 9000,*  
*IBM, USA.*

ISO 9000 was the first goal on our quality journey. With a network of depots all over the United Kingdom, we needed a degree of standardisation to help us identify best practice and to make sure we are pulling in the same direction. ISO 9000 certification gave us that and is the foundation from which all future quality initiatives have been developed.

*Tony Curely,*  
*Group Internal Controller,*  
*TNT UK, European Quality Prize winner in 1996.*

### 2-4-5-2 Organising for quality

The integration of marketing, design, purchasing, operations, and quality assurance is necessary for success in TQM. This was suggested by Feignbaum (1961) when he pointed out that the lack of integration of new design control, incoming material control, product control and improvement is the main cause of the high cost of non-quality operation.

Juran (1974) sees organisation for quality in terms of structure and people. This requires the determination of activities to be performed, the responsibilities associated with the activities, dividing the work into jobs, determining job responsibilities and authority, inter-job relations and channels of communication. Ishikawa (1985) supports the use of cross-functional
management. According to him, this can be done through the use of committees. He suggests that in order for organisations to become strong, the vertical levels present must be interwoven through cross-functional control. Juran (1991) emphasises this suggestion. According to him the cross-functional nature of TQM requires a suitable infrastructure to support training, project development, and teamwork.

Crosby (1989) considers the success of the quality improvement process dependent on effective and systematic implementation. Oakland (1989) describes the Department Purpose Analysis which involves determining key tasks for the department, describing the key processes, including the involved customers and suppliers and subsequent prioritising improvement actions at departmental levels.

Feigenbaum (1961) identifies the role of the quality department in three major activities: quality planning, process control and quality design and development. Crosby (1967) describes the role of the quality department same as Feigenbaum. He emphasises the role of the department as a tool for quality improvement and defect prevention. He also supports the participation of quality professionals in quality steering committees. Juran (1974) recommends a greater role for the quality department that involves all quality programme including analysis of projects, quality planning, coordination, control and providing consultations within the organisation.

Oakland (2000) states that authority must be given to those charged with following TQM through with actions that they consider necessary to achieve the goals. The commitment will be continually questioned and will be weakened,
perhaps destroyed, by failure to delegate authoritatively. For this, Oakland (1993, 2000) proposes a quality structure of three-tiers. The purpose of this TQM structure is to achieve employee participation. A disciplined and systematic approach to continuous improvement may be established in a TQM or Business Excellence “Steering Committee” or Council. The Committee/Council should meet at least monthly to review strategy, implementation progress, and improvement. It should be chaired by the CEO, who must attend every meeting. The council members should include the top management team and the chairmen of any “site” TQM steering committees or process quality teams, depending on the size of the organisation. The objectives of the council are to:

- Provide strategic direction on TQM for the organisation.
- Establish plans for TQM on each site.
- Set up and review the process quality teams that will own the key or critical business processes.
- Review and revise quality plans for implementation.

The process quality teams (PQTs) and any site TQM steering committees should also meet monthly, shortly before the senior steering committee/council meetings. Every senior manager should be a member of at least one PQT. This system provides the “top-down” support for employee participation in process management and development, through either a quality improvement team or a quality circle programme. It also ensures that the commitment to TQM at the top is communicated effectively through the organisation.
Oakland (2000) says the three-tier approach of steering committee, process quality teams and quality improvement teams allows the first to concentrate on quality strategy, rather become a senior problem-solving group. Progress is assured if the process quality team chairmen are required to present a status report at each meeting.

The process quality teams or steering committees control all the quality improvement teams and have responsibility for:

- The selection of projects for the quality improvement teams.
- Provide an outline and scope for each project to give to the quality improvement teams.
- The appointments of team members and leaders.
- Monitoring and reviewing the progress and results from each quality improvement team project.

Oakland (2000) points out that the process quality teams must be given the authority to represent their part of the organisation in the process. The members must feel that they represent the team to the rest of the organisation. In this way the process quality team will gain knowledge and respect and be seen to have the authority to act in the best interests of the organisation, with respect to their process.

A case example of a three-tier structure is a quality structure introduced at a major British construction machinery manufacturer (Goulden 1995, cited in Thiagarajan and Zairi, 1997b). The structure is made up of a plant quality council, steering groups and cross-functional/multilevel project teams. Overall strategy and
management of the quality programme is provided by the council. The steering
groups sponsored and supported individual teams ensuring the required resources
were made available. Members of the teams came from areas closely associated
with the project.

Oakland and Porter (1994) consider that one of the responsibilities of senior
management at the early stage of initiating the TQM programme is the set up of a
quality organisational structure. Such structure is needed to create a framework
which will enable quality improvement to develop and flourish (also Easton,
1993; Bendell et al., 1993). They consider the quality organisational structure as a
key element in ensuring successful implementation of TQM.

At Shorts Brothers, a total quality structure was formed at the beginning of the
implementation process. A quality council headed by the Chief Executive Officer
was established, two divisional councils headed by their respective vice-
presidents and eighteen cross-functional quality teams headed by senior
managers. Total quality secretariat was established to take a leading role in
assisting the quality council to develop a total quality strategy and to coordinate
quality improvement initiatives (Oakland et al., 1994).

The nature of the organisation affects the appropriateness of the organisational
structure. Moreover, the structure may change according to the degree of TQM
maturity of the organisation. This is highlighted by the case of Thomas Cork
SML. A quality council was established to initiate a total quality process. Once
the initiatives got off the ground, the council’s functions were taken over by the management committee (Oakland et al., 1994).

Smith (1994) recommends the need to have a full time post to manage the quality process. Many organisations have realised the importance of the contribution a senior, qualified director of quality can make to the prevention strategy (Oakland 2000). In large organisations, then, it may be necessary to make several specific appointments or to assign details to certain managers. Smaller organisations a part-time quality manager could be appointed if the cost of employing a full-time quality manager is not justified. The following actions may be deemed to be necessary (Oakland, 2000).

Assign a quality director, manager or co-ordinator to be responsible for the planning and implementation of TQM. Depending on the size and complexity of the organisation, and its previous activities in quality management, the position may be either full- or part-time, but it must report directly to the Chief Executive.

Appoint a quality management adviser to advise on the “technical” aspects of planning and implementing TQM. This is a consultancy role, and may be provided from within or without the organisation, full- or part-time.

In the case of Davy International–Stockton–UK a steering committee was formed when the TQM initiative commenced and a TQM manager was appointed. The steering committee chaired by the Managing Director was established to promote and control the launch of TQM at Stockton. The committee ensures that the annual programme of TQM activities is implemented and that an infrastructure is maintained to effectively action ideas submitted by individuals. It also monitors
the activities of the formal improvement teams set up to investigate company-wide areas for improvement (Whitford and Bird, 1996).

AT&T–USA starts by identifying the key business processes that are critical for achieving customer satisfaction. Then they map the key business processes against the functional organisation. The repair process would be mapped to Billing, Maintenance, Repair, Distribution, Manufacturing, Product Design, and Product Management. This is done by the quality council. Then a major stakeholder of the process who is committed to its improvement is assigned as process owner. This person puts together a cross-functional team consisting of middle managers from each of the functional organisations (Rao et al., 1996).

The Royal Philips Electronics is managed by the Board of Management, which also looks after the general direction and long-term strategy of the Philips group as a whole. The Supervisory Board monitors the general course of business of the Philips group, advises the Board of Management and supervises its policies. These policies are implemented by the Group Management Committee, which consists of the members of the Board of Management, chairmen of the most of the seven product divisions and some other key officers. The Group Management Committee, which is the highest consultative committee, also serves to ensure that business issues and practices are shared across Philips (Oakland, 2000).

2-4-5-3 Managing by processes

Throughout and beyond all organisations, whether they be manufacturing concerns, banks, retail stores, universities, hospitals or hotels, there is a series of
quality chains of customer and suppliers that may be broken at any point by one person or one piece of equipment not meeting the requirements of the customer, internal or external. The concepts of internal and external customers-suppliers forms the core of total quality (Oakland, 2000).

A key part of any total quality strategy is the management of processes (Porter and Parker, 1993). According to Ahire et al., (1996) all activities of an organization must be planned and executed to improve processes that lead to manufacturing quality products. However, quality must be incorporated into these activities with a clear customer focus.

All organisational activities can be considered as processes. Therefore, if the aim of the TQM initiative is to achieve overall quality performance, then process management appears to be an essential requirement.

Juran (1974) suggests that the quality of the product and service depends on the quality of design and the quality of conformance. Process management is the concern of quality of conformance.

Process refers to some unique combinations of machines, tools, methods, materials, and people engaged in production (Juran and Gryna, 1993).

Hardaker and Ward (1987) described the business process management as a method of treating business process rather than function as the units of the company for identifying the critical business processes that address the critical success factors of the business. One important matter in process management is to ensure that process capability can meet production requirements (Zhang et al., 2000).
Kurdupliski et al., (1993) believe that despite the use of the latest process improvement techniques and capable management, a firm’s neglect of its customers may lead to a disaster. The importance of customer focus is also evident from the fact that it is assigned the highest weight among the Malcolm Baldrige Award criteria (NIST, 1999) and the European Quality Award (EFQM, 1999).

According to Kanji (1995) operating through vertical functional structures prevents people within the organisation from understanding their role in the process of providing customer satisfaction. A more functional approach, without active management of processes provides barriers to customer satisfaction (Kanji, 1995). In addition, such approach, according to Edson and Shannahan (1991) might allow vulnerability of critical points between departments to organisational noise such as poor inter-departmental communication, turf protection, or conflicting priorities.

Oakland (1995) believes that process management is the key to get employees responsible for what they are doing in relation to customer satisfaction. D2D trained everyone in process management and improvement, and shown how they are part of a supplier-process-customer–chain. Customer-care training was delivered to everyone to reinforce this and to reemphasise that the supplier-process-customer chains are interdependent and the processes all support the delivery of products or services to customers.

Part of everyone’s training was to emphasise that all work is a process and that all activity can be modelled as a supplier-process-customer chain. Almost 3500
people received this process training processes were owned in D2D by the people responsible for the output of the process.

All processes were developed and refined, and measures of the performance of the processes agreed between customers and suppliers. The agreed standard took into account the full customer requirement, at the most cost-effective method of operation, in comparison with competitors and benchmark standards (Oakland, 2000).

Many companies realised the importance of understanding the notion made by Deming (1986) of the internal customer–supplier as being absolutely critical to a quality transformation. When Thomas Cork–SML UK, initiated their programme of Total Quality Management, they experienced needs and expectations exercise to determine who the next internal “immediate” customer are? What are their requirements? Do I have the capabilities to satisfy their requirements? Who are my immediate suppliers? What are my requirements? (Oakland et al., 1994).

The quality–oriented organisation makes customer satisfaction its main focus. To deliver quality products, process owners must determine who their customers are (both internal and external), as well as the needs, requirements and expectations of these customers. Then they must ensure that process outputs meet customer needs (Rao et al., 1996).

To achieve customer satisfaction, Oakland (1993, 2000) emphasises the importance of managing the internal – supplier relationship as the first step to support the process management. This is found in each organisation represented
by an intricate structure of both internal customer and internal supplier. Any weak link or break in this relationship may influence the relationship between the firm and its external customer. This means that process management considers that managers and process owners should control and improve organisational outputs (good, services, ideas, and information) by controlling process inputs (the flow of activities). This means that process management is not considered by the boundaries of department. It is argued that IBM treat business process rather than functions as the units of the company by operating business process management (Snowden, 1991)

Many quality organisations learned the importance of applying clearly-defined customer-focus approaches to manage processes rather than the conventional functional approach of management.

ICL and Shell Chemicals – UK are of such companies (Sinclair 1994). At shorts Brothers – UK – the concepts of the internal customer – supplier was understood by everyone in the company, recognising the importance of satisfying the internal customer as a means for the company to achieve its quality quest (Oakland et al., 1994). Based on the experience of shorts Brothers, McAdam (1996) states that process management (process – based approach) improves customer satisfaction and overcomes the problems associated with management through functional – based approach.

Gopalakrishnal et al., (1992) suggest a number of activities that can be followed to support business processes management. Some of these activities include
methods for determining processes’ capability to meet requirements, design and control of processes, planning, quality systems and methods for product or service design.

2-4-5-4 Benchmarking

Xerox 1979, as it is known today, formally developed the benchmarking process. The word is derived from the benchmark used by surveyors to indicate “a mark in stone or metal, or other durable material firmly fixed in the ground, from which differences of level are measured as in surveys or tidal observations” (Rao et al., 1996). Zairi and Ahmed (1999) state that to trace the history of benchmarking is to trace the history of humankind. Utilising knowledge from different sources to advance and improve has been fundamental in the development of civilisation.

Over the years, it has become a study of processes and a significant strategic tool integrated to TQM (Zairi, 1994). For Zairi (1994) TQM is the wheel for improvement conducting an internal value adding activities for the end customer, whereas, benchmarking is the external activity aimed at identifying opportunities to ensure that the improvement wheel is turning in the right direction towards achieving high standards of competitiveness. According to Oakland (2000) benchmarking measures an organisation’s operation, product and service against those of its competitors. It will establish targets, priorities and operations leading to competitive advantage.

Benchmarking at Xerox evolved as a sophisticated methodology for process improvement. Several companies picked up the methodology and used it to
compare themselves against the competition (Whitford & Bird, 1996; Rao et al., 1996).

A systematic and ongoing process for measuring products, services, and practices against external partners to achieve improved performance (Rao et al., 1996).

Xerox view benchmarking as a structured approach for looking outside the organisation. They consider it to be a learning experience that can help set realistic performance goals and identify the practices to be put in place in order to achieve them. They define Benchmarking as

“A continuous, systematic process of evaluating companies recognised as industry leaders, to determine business and work process that represent best practices, establish rational performance goals”. (Zairi, 1994).

Companies that have been benchmarking have recognised the significant advantages that result:

Convince employees that challenging goals can be achieved by setting targets on the basis of hard data, not intuition (Bogan and English 1994).
Facilitate the implementation of process improvements. The benefits of benchmarking include reduced cycle time and reduced cost for implementing the process improvement (Bogan, 1994).
Increase awareness of the benefits to be derived from using new technology. Bar coding is a technology that was used by food chains five years before other manufacturing industries began to adopt it. If these companies had been using benchmarking, the implementation of the new technology could have been much more rapid (Rao et al., 1996).

Zairi (1994) identifies four essential types of benchmarking:-

1-Competitive benchmarking:
Comparison with primary competitors. GTE USA, measured defect rates and found that its Japanese competitors had defect rates a hundred times less. This benchmark motivated them to devise plans to improve their process and close the gap (Rao et al., 1996).
When they wanted to enter the electronic-typing business, Products Division at Xerox benchmarked IBM. Xerox entered the market in late 1981, and by 1983 it was the market leader with a 20 percent market share (Rao et al., 1996).

2-Functional benchmarking:
Comparison with similar functions or processes within the same broad industry leaders as partners. Unipart, a manufacturer of car components UK, has an information sharing scheme with Yutaka Gigen a counterpart in Japan (Bowen, 1993).

3-Generic Benchmarking:
Comparison with similar functions or process regardless of type of industry. A recent example of this type is the development of the just in time (JIT) production management system. This system aims to eliminate waste in a production process by reducing inventory. The idea came to Taiichi Ohno of Toyota Manufacturing after he saw how inventory was managed in an American supermarket (Rao et al., 1996).

4-Internal Benchmarking:
Comparison within the set up of one’s own corporation (sister organisations or branch offices). It involves an evaluation of practices where knowledge about the processes is uncovered, usually by members of another department or group.
Rank Xerox used this approach of benchmarking with great success. Best practices experience were transmitted to all twenty different operating companies in Europe (Smith, 1994).

Yarrow and Frabhu (1999) attempt to draw lessons from some practical experiences of benchmarking. They concluded that benchmarking is not one technique but three: diagnostic benchmarking, process benchmarking and a combination of the two. Diagnostic benchmarking can help to pinpoint priorities and provide a “call to action". Process benchmarking has the greatest potential to deliver organisational improvement, but also the greatest potential to absorb resources with no guarantee of easy success.

Shetty (1993) suggests that successful firms use benchmarking to be creative not reactive. This underpins the need for planning benchmarking practices. According to James (1996) the results may need to be implemented on an ad hoc basis, as each evaluation may not provide the necessary data to make the effort of implementation worthwhile.

Vaziri (1993) recommends that a manager contemplating benchmarking should ask seven questions about “who and what to benchmark, what to measure, how to collect data and how to implement what is learned by the benchmarking initiative. He continues to suggest that the developed data need to be analysed and any positive influences should be used to change the goals relating to the recipient process.
Yellow Pages (YP) is a division of British Telecommunication PLC (BT). YP’s primary aim is to be the business Information Bridge between buyres and sellers. YP uses the Business Excellence model and was among the nine finalists for the 1998 European Quality Award for Business Excellence. YP won one of the prizes of the EFQM.

YP has 42 benchmarking projects in progress of various types and complexity. The company has 10 years of experience using benchmarking. YP encourages people to use benchmarking mainly through the circulation of the company’s policy and brochure. The company designs benchmarking studies using financial, non-financial and operational performance indicators. The benchmarking model used at YP involves 12 steps:

1- Ensure management commitment.
2- Process selection.
3- Selecting your targets.
4- Process mapping.
5- Start Partnership Selection.
6- Successful Selection.
7- Preparation for site visits.
8- The site visit
9- Identify practical solutions and plan action.
10- Implement.
11- Keep in touch.
12- Continuous improvement.

This model is followed in every case, although it is the project manager’s responsibility to decide if all the steps are followed (Simpson and Kondouli, 2000).

Nadkarani (1995) reports that all Baldrige Award winners applied various types of benchmarking to identify the best practices. Motorola conducts benchmarking against 125 companies.
Benchmarking is seen by large companies as an important tool for an increased rate of improvement (Carman, 1993). Companies like British Airways, Federal Express and the Royal Mail consider benchmarking as a vital component of their total quality programmes (Bank, 1992).

Zairi (1994) points out that in order to have a process-driven benchmarking, it has to involve both the outputs and information on how those outputs are achieved. He cautions that focusing on outputs only (cost-driven benchmarking) while often leads to cost reduction, may commit people to unrealistic quality improvement goals.

Jarrar and Zairi (2000) state that benchmarking or best practice management is increasing being recognised as a powerful performance improvement effort for processes, business units, and for entire corporations. Managing knowledge and best practice are inextricably linked at a variety of levels. First, best practices are a source of learning and this knowledge (Zairi and Ahmed, 1999). According to the American Productivity and Quality Centre (1999) best practices are those practices that have been shown to produce superior results; selected by a systematic process; and judged as exemplary, good, or successfully demonstrated. This source of knowledge needs to be made widespread and it needs to be routinised to an extent that it becomes a natural part of the organisation’s behavioural routines. Second, effective management of knowledge within the organisation facilitates the spread of and routinisation of best practices. Third, effectiveness in knowledge management should lead to creation of new knowledge (Zairi and Ahmed, 1999). Hence, by managing knowledge well a
company would have invested in a corporate culture which encourages customers, employees, and suppliers alike to embody their skills in a pool of knowledge which can be utilised to deliver the perfect quality product and services, which provides for a truly delighted customer experience (Lim et al., 1999).

Dervitsiotis (2000) states that it is noticeable that not only consulting firms but also organisations such as the American Productivity and Quality Centre, and the European Foundation for Quality Management are seriously engaged in the promotion of and training in benchmarking as a fundamental approach to achieve business excellence.

2-4-5-5 Self-assessment

Measuring consumer satisfaction and quality costs provide a tool to assess the performance of the process. Assessing the company’s TQM programme is another important aspect as it identifies areas of weakness within the programme. Zairi (1994) considers self-assessment as an effective technique to measure the culture of quality within the organisation.

According to Conti (1999) the objective of self-assessment is to diagnose, maximising the ability to identify weaknesses that are obstructing the achievement of targets and improvement of performance in general. Self-assessment promotes business excellence by involving a regular and systematic review of processes and results. It highlights strengths and improvement opportunities, and drives continuous improvement (Oakland, 2000). If a process of continuous improvement is to be sustained and its pace increased it is essential that an organisation monitors on a regular basis what activities are going well, those
which have stagnated and what needs to be improved. Self-assessment provides such a framework (Van der Wiele et al., 1997).

Considerable research has been carried out in to the format of the EFQM model of Business Excellence and its use as a tool for Self-assessment (Hakes, 1998; van der Weile et al., 1996). The introduction of internationally respected quality awards (Deming Prize, 1951; MBNQA, 1987; and the EQA, 1991) has provided the opportunity for firms to assess. Using the models of total quality management (TQM) and business excellence which, underpin these awards, the strengths and areas for improvement of their approaches to business improvement (Wilkes and Dale, 1998). Since the award criteria of MBNQA (1999) and the EQA (1999) are generic and well documented, they serve most often as the model for self-assessment (Kueny 2000).

The Baldrige Award criteria can be used to assess the organisation’s total quality management system. Thousands of organisations use the criteria for this purpose, a few hundred organisation actually apply for the award (Sunday et al. 1992), of course, the European Quality Award assessment model can be used for this purpose also.

Zairi (1994) states that self-assessment can help organisations in measuring performance of processes and enablers and their relationship with results, providing the opportunity to benchmark and compare like for like, providing the opportunity to take a broader view of how TQM is impacting on various business operations, measuring financial and non-financial areas, measuring internally and
externally, including objective assessment through third party involvement, measuring for improvement rather than for hard control, creating the desire to do better and perhaps even win awards, and sharing information on successful quality strategies and the benefits derived from implementation of these strategies. It seems that tools as the Balanced Scorecard and EFQM and Baldrige framework are acting as a catalyst to the measurement revolution (Stone and Banks, 1997).

Black et al., (1996) argue that the awards criteria provide a more accepted tools to measure progress towards TQM than those suggested by others like Saraph et al., (1989), as the critical factors were defined on the basis of literature based knowledge and defined by only a small number of assessors.

Oakland (1993) considers the assessment of an organisation progress using an accepted set of criteria (such as Baldrige Award and the European Quality Award) is most valuable. Tioxide Group Ltd. used the European Quality Award criteria for self-assessment (Oakland et al., 1994).

Van der Wiele (1996) reports that in his study of the 117 leader European organisations he found training to be one of the important initiatives to support the self-assessment process. In Tioxide Group Ltd, Approximately four hundred employees have been trained on quality audits which produced a team of professional auditor’s (Oakland et al. 1994).

Bossink et al., (1993) reported a method for assessing TQM based on interviews of managers and employees. It is a lengthy assessment process which is based on
half an hour discussion with the department managers two organisation specific questionnaires and two sets of interviews with managers (One and half hour) and employees (half an hour).

Hewlett-Packard (HP) has its own proprietary self-assessment model, Known as the Quality Maturity System (QMS). Its has been mapped against the US Baldrige Quality Award Model and the Business Excellence Model (BEM), for which there has been found to be a 93 percent overlap. Self-assessment, using the Hewlett-Packard Peer review teams, caused the spread of best practice within the company and the reviews act as facilitators of cross-fertilisation and improvement across the global organisation. There are global databases, for example, for exchanging information.

In the first three years of quality and self-assessment using the QMS, a lot of cost (waste) was taken out of the organisation. This moved on to address the issues of growing the business (three years) and finally into the customer focus (three years).

The Business Excellence Model is integrated into the business planning cycle and the self-assessment outputs feed the annual planning process. It is used very much to drive strategic business improvement.

Training of new managers in the QMS, BEN and self-assessment is conducted to keep the whole approach alive in Hewlett-Packard (Oakland, 2000).

Simpson et al., (1998) describe how self-assessment work; British Telecom Northern Ireland (BTNI) entered the 1994 UK Quality Award on the crest of a
ware. In 1993, BTNI had been the first operational unit of BT to achieve ISO 9000 registration. To continue the improvement process, BTNI had adopted self-assessment in 1993, winning both the BT Group and Northern Ireland Quality Awards within 12 months.

Having entered the Quality Award with realistic expectations of winning, BTNI had to accept the need for organisational change when it was not selected as a winner. BTNI decided to re-enter the 1996 UK Quality Award.

With notable organisational improvements in place and a more professional approach to the award process, the disappointment felt at not winning was, if anything, even more acute than in 1994. However, it is a tribute to the professionalism of the BTNI management that these feelings soon dissipated and, buoyed up by winning 1996 Northern Ireland Quality Award and winning the 1997 UK Quality Award.

Hakes (1996) reports the following benefits of self-assessment:

1- It produces an objective identification of current strengths and areas of improvement.

2- Provides a useful analysis of an organisation’s capability, which is of real interest to potential customers.

3- It helps to create a vision in order to counter an organisation tendency to skip from one initiative to the next. Overall, self-assessment is predominantly used for strategic management and action planning, or as a basis for improvement projects.
In this regard, Oakland (2000) concludes that:

There have been many recent developments, and there will continue to be many more, in the search for a standard or framework against which organisations may be assessed or measure themselves, and carry out the so-called “gap analysis”. To many organisations the ability to judge progress against an accepted set of criteria would be most valuable and informative.

2-4-5-6 Cost of quality

Quality costs are used by management in its pursuits of quality improvement, customer satisfaction, market share and profit enhancement. It is the economic common denominator, which forms the basic data for TQM. A quality cost programme provides warning against oncoming dangerous financial situations.

According to Besterfield (1994) Quality costs are defined as those costs associated with the non-achievement of product or service quality as defined by the requirements established by the company and its contracts with customers and society. Simply stated, it is the cost of poor products or services.

Juran is often given credit for coining the concept of quality costs. He addressed the economics of quality in the first quality control handbook (1951) in which he used the famous analogy of “Gold in the Mine”. He proposed that an optimal quality level could be found where the losses due to defects were equal to the cost of quality control.
The “cost of poor quality of an organisation is the difference between the actual operating cost and what the operating cost would be if there no failures in its system and no mistakes by its staff (Bland et al., 1998).

Krishnan et al., (2000) state that according to the American society for Quality Control (ASQC), quality costs are a measure of costs specifically associated with the achievement or non-achievement of product or service requirements established by the company and its contracts with customers and society. Harrington (1999) states that “whether it is called quality cost or poor quality cost, it is designed to reduce the cost associated with poor quality”.

Managers needed the information to obtain a greater commitment to the benefits of quality and were aware that a positive cost trend would prove the economic value of quality. The traditional cost of quality model began to evolve with Masser (1975) who subdivided quality costs into prevention, appraisal and failure costs. Freeman (1960) and Feigenbaum (1961) further developed the cost of quality model (Rao et al., 1996).

Reporting and understanding quality costs became a requirement in 1963 for US government contractors and subcontractors. The American Society for Quality Control formed the Quality cost committee in 1961. Lending further validity to the concepts.

In 1967 this committee published quality costs – what and how, which established the traditional model of Prevention, Appraisal, Failure (PAF) model of quality costs. (American Society for Quality Control 1991).
The analysis of such cost can be used to persuade management of the need for improvement, as well as measuring the results of improvement process (Thomassen et al., 1992).

According to Besterfield (1994) the cost of poor quality can exceed 20 percent of revenues in manufacturing companies and 35 percent of revenues in services companies.

Heizer and Render (1999) provide the following definitions of the PAF model:

**Prevention Costs:**
Costs associated with all activities designed to prevent defects in products or service. These include the direct and indirect costs related to quality training and education, pilot studies, quality circles, quality engineering’s, quality audits, supplier capability surveys, render technical support, process capability analysis and new product reviews.

These costs are used to build awareness of the quality programme and to keep the costs of appraisal and failure to a minimum.

**Appraisal Costs:**
The costs associated with measuring and evaluating the product or service quality to ensure conformance.
These include the cost of inspection, test or audit of purchases, manufacturing or process operations, and finished goods or services.
The direct and indirect costs of the various tests and inspections to determine the degree of conformity are included in this category.

Internal Failure Costs:
Costs incurred prior to the shipment of the product or the delivery of the service. These costs are associated with defects that are found prior to customer delivery. They include the net cost of scrap, spoilage, rework and overhead, failure analysis, supplier rework and scrap, reinspection and retest, downtime due to quality problems, opportunity cost of product classified as seconds or other product downgrades.

External Failure Costs:
The costs of discovered defects occurring after product shipment or service delivery. These costs include warranty charges, customer complaint adjustments, product recalls, allowances, and product liability. They also include the direct and indirect costs such as labor and travel associated with the investigation of customer complaints, warranty field inspection, tests and repairs.

The prevention and appraisal costs are known as conformance costs and defined as those costs incurred to insure that the manufactured products or delivered services conform to specification. Whilst the internal and external failure costs are known as non conformance costs which are associated with products or services that do not conform to the customer’s requirement (Rao et al., 1996).
There are several well-documented field based US studies (Carr, 1992; Carr and Tyson, 1992; Carr, 1995) which outline the various innovative techniques utilised by such companies as IBM, Xerox, Tennant, Ford, Westinghouse, Pacific Bell and others. These companies employee cost of quality calculation as an integral part of their quality programme. They are flexible with the use of quality cost definitions, comfortable with cost estimations and practical with presenting the information.

Hale et al., (1987) describe how Tennant company – US – has significantly improved product quality and reduced total quality costs. Tennant’s total cost of quality decreased from 17 percent of sales in 1980 to 7.9 percent by 1986 with a further reduction to 2.5 percent of sales in 1988. Average annual sales growth of 11 percent accounted for some but not of the cost reduction.

Xerox applied the cost–of quality principles to its US sales and marketing group realising an outstanding cost of quality savings of $53 million in the first year. The improvements were relatively painless. Line managers, initially skeptical of cost of quality, began to appreciate the value of this tool. Over the subsequent four year Xerox achieved over a $200 million savings in quality costs. Xerox made cost of Quality as integral part of its leadership. Through quality programme and defines quality as 100 percent customer satisfaction (Rao et al., 1996).

Shorts Brothers involved the workforce in the cost of quality projects to motivate employees towards the company’s TQM initiative. Achieving savings persuaded employees to realise the benefits of TQM (Oakland et al., 1994).
Having said that, it is apparent that quality cost measurements serve as an analytical tool, a means to determine when, where, and how quality costs are spent. They also serve to gain management attention and to help coordinate and communicate quality costs throughout the organisation.

According to Tatikonda and Tatikonda (1996) relevant cost of quality reports inform, motivate, communicate, coordinate, prioritise, and measure performance. Such reports monitor progress of quality projects, assess benefits of quality programmes, and link quality effort with productivity increases. Oakland (2000) adds that the analysis of quality-related cost is a significant management tool that provides a method of assessing the effectiveness of the management of quality; and a means of determining problem areas, opportunities, savings, and action priorities (Oakland, 2000).

2-4-5-7 Quality control techniques

Juran (1978) and Taguchi (1983) argue that a sound design quality planning is needed to minimise in-production quality problems. However, when products are being produced on the shop floor, variations in the manufacturing process variable (such as raw materials quality, machine conditions, worker skills...etc.) contribute to a variation in product quality. This indicates that the role of quality control in manufacturing is as critical as the design quality of products and process (Ahire et al., 1996).
Statistical process control (SPC) techniques are used to detect assignable causes contributing to the variation in quality, to provide useful information for product design, and to determine process capability (Ahire et al., 1996). Statistical Process Control is not only a tool kit, it is a strategy for reducing variability, part of never-ending improvement (Oakland, 2000). Although most statistical techniques have been used in the manufacturing environment, but they can be used in non-manufacturing industry, for example the service sector (Xie and Goh, 1999).

SPC helps quality-oriented firms to monitor quality variations and to investigate critical areas where improvements are needed (Deming, 1986). The aim of statistical process control and control charts is first to achieve a stable process and then to reduce successively process variation (Stenberg and Deleryd, 1999).

Modarress and Ansari (1989 reported a wide range of SPC tools that are used by US firms (such as scatter diagrams, Pareto charts, cause–effect diagrams and control chart) to monitor quality. Ebrhimpour and Withers (1992), suggest that to use the SPC tools effectively, production workers should have an adequate knowledge regarding their usage. In this regard, Deming (1982) states: “Management’s new job is embodied in the 14 points. It is necessary for management to learn some rudiments of statistical theory and applications. Education in simple but powerful statistical techniques is required of all people in management, all engineers and scientists, inspectors, quality control managers, management in the service organisations of the company, such as accounting, payroll, purchase, safety, legal department, consumer service, consumer research. Engineers and scientists need rudiments of experimental design.
Deming (1986) adds: “It is essential, however, in industry and in service to understand the distinction between a stable system and an unstable system, and how to plot points and conclude by rational methods whether they indicate a stable system. The point might show (e.g.) weekly figures on sales, quality incoming and outgoing, complaints of customers, inventory, absenteeism, accidents, fires, accounts receivable, beneficial days.”

Stenberg and Deleryd (1999) reported the following major advantages of SPC based on a study of 83 Swedish organisations:

- Lower rejection and quality costs.
- Process and product improvement.
- Better process comprehension.
- Possibility to control the processes.
- Quality insurance and higher tractability.

Among the techniques that form the core of statistical process control, control charts are perhaps the most important and widely used tools (Chinna et al., 2000).

Juran (1974) emphasises the importance of quality control tools to achieve both low-defect production and to improve quality. The skills and techniques developed to assure the quality of output have been well documented since the early work of statistical procedures to provide guides to produce good parts and to disclose the cause of variations (Modarress and Ansari, 1989).

Iskikawa was the author of two of the best-known books on quality: What Is Total Quality Control? The Japanese Way (1985) and Guide to Quality control (1982). The 1982 work was originally published in Japan in 1968 and describes the basic tools that have been found most useful in the improvement of quality by Japanese
quality circles. It became a popular text for quality circle members and leaders who wanted to refine their understanding and use of those tools. In spite of its simplicity, the book has received wide praise from statisticians. Ishikawa’s book covers the following tools: Histograms, Check sheets, Pareto diagrams, Graphs, Scatter diagrams, Cause and effect diagrams and control charts.

Quality practitioners refer to these tools as the seven basic tools or seven basic statistical tools for quality improvement. These tools are simple and find applications in both service and manufacturing activities (Rao et al., 1996).

Gaafar et al., (1992) suggest a number of steps that need to be followed to implement SPC. Once the necessary culture has been established, candidate processes need to be selected, the appropriate measures, charts, sampling regimes and capability studies prepared and an integrated information system provided to assist maintenance of the system.

At Crnau Metalbox PIC, the statistical process control was seen as an important vehicle for wider participation in teamwork. It provided the total quality programme a new boost. Also at Tioxide Group Ltd, Statistical quality control was considered as one of the major elements in the total quality strategy development process (Oakland et al., 1994).

Another statistical quality control tool to focus on customer satisfaction is the six sigma (Munro, 2000). Harry and Schroeder (2000) in Munro (2000) define the six sigma strategy as “a disciplined method of using extremely rigorous data
gathering and statistical analysis to pinpoint sources of errors and ways of eliminating them”.

In January 2000 Ford Motor Co. publicly announced that it would be the first auto maker to use six sigma to focus on customer satisfaction (Munro, 2000).

2-4-5-8 Measuring customer wants and satisfaction

Customers are an economic asset. They’re not on the balance sheet, but they should be (Claes Fornell, 1994 in Kanji et al., 2000).

The emphasis on customer satisfaction or customer-driven quality is considered by many gurus and writers as a major success of the quality management effort (Deming, 1986; Crosby, 1989; Oakland et al., 1994, Rao et al., 1996; Spring et al., 1998; Oakland, 2000; Kanji, 1998a and 1998b, Zairi, 1999a and 1999b). For Oliver (1999) a customer is satisfied when he senses that consumption fulfills some need, desire, goal or so forth and that this fulfillment is pleasurable. When a customer recognises quality, it is reflected in customer satisfaction. Customer satisfaction in turn, can lead to increased revenue.

A strategic concept, customer satisfaction is concerned with such achievements as customer retention and market penetration (Rao et al., 1996). Zairi (1994) considers measuring customer satisfaction as a cornerstone of TQM. The criteria of the Malcolm Baldrige Award (NIST, 2000) and the European Quality Award (EFQM, 2000) have, since established, the use of customer information as a key issue in the management of quality. The highest percentages of the awards scores relate to customer focus and satisfaction (NIST, 2000; EFQM, 2000).
It should be appreciated that continuous monitoring of customer satisfaction contribute an invaluable source for all-strategic business analysis and management. Thus it should play a central role in the company’s TQM (Eklof et al., 1998). Continuous improvement is a management philosophy and system that organises employees processes to maximise customer value and satisfaction (Czarnecki et al., 2000). This requires listening to customer and trying to satisfy their needs (Eklof and Selivanova, 2000).

In their recent speeches to the 3rd Shanghai International Symposium on Quality (Sun, 2000) Crosby (1998) stated that a successful company provides solutions for customers, employees suppliers and community. Juran (1998) said there are a universal set of actions that are the essential elements of quality management. These elements include focusing on customer needs. Feigenbaum (1998) proposed the idea of the quality-value chain in which customers evaluate quality.

According to Nadkarani (1995) focusing on customers satisfaction was a major reason of the success of Baldrige Award winners. Peters (1989) attributes the success in the marketplace to satisfying the customer’s needs better than competitors.

According to Desatnick (1992) companies to achieve customer satisfaction process should cover a number of issues. These issues include methods of determining customer satisfaction, providing centres for customer inquiry, formal improvement process for customer satisfaction, and use of customer satisfaction data positively.
To satisfy the customer, requires identifying the customer’s needs in order to design the appropriate product or service (Spring et al., 1998). Armed with knowledge of “what” the customer wants, product designers need a clear enumeration of the “hows”. A relatively new technique, Quality function Deployment (QFD) has emerged, which effectively relates the “whats” and “hows” of product design, and in so doing translates the voice of the customer from the marketer’s language. (Zairi, 1994, Rao et al., 1996).

QFD was developed in 1972 at Mitsubishi’s Kobe Shipyard. Ford and Xerox first used the technique in the United States in 1986. Since then the technique has gained wide acceptance in the United States, having been adopted by such companies as Hewlett-Packard, Digital Equipment, Eaton Controls, Texas Instruments and the US Army (Rao et al., 1996). Zairi (1994) states the QFD is a method of designing and optimising the process of developing new products based on the wants of the customers. QFD is a multi attribute measurement method that incorporates a significant organisational behaviour component. That is to build the House of Quality—a big part of QFD—personnel from engineering manufacturing, marketing, and sales must convene to hammer out a mutually agreed upon work plan (Rao et al., 1996).

The combination of various customers’ preferences to develop an optimum product design is a fundamental component of implementing a quality function deployment (QFD) project (Lowe and Ridgway, 2000). They add, the success of a QFD project depends upon the identification of a group of customers’ true
requirements and the translation of these requirements into technical targets for a new product design (Also see Oakland, 2000).

QFD is per se a powerful integrative device. In essence QFD promises to provide better products at more favourable cost. QFD is extremely intuitive, does not incorporate statistics (a strength and a weakness), and results in a prioritised list of specific product design targets. QFD involves the development of four “Matrices” or “Houses” which step down the product design and manufacturing process into ever-increasing levels of specificity. The four “Matrices”, “Houses” are

1- The planning Matrix or House of Quality: sets forth the product design specifications or engineering characteristics, in terms of their relative importance and target values to be achieved in design and manufacturing.

2- The Product Deployment Matrix in which design specs from the planning matrix are stepped down on the subsystem and component level. Critical relationships between component and product characteristics are flagged.

3- The Component Development Matrix, which illuminates the exact parameters of component design.

4- The Operator Instruction Sheet, the final key document, defines operational requirements, the process plan checkpoints, and the quality plan chart (Heizer and Render, 1999, Rao et al., 1996).

According to Dawson and Askin (1999) the fundamental tenet of QFD is that increasing customer satisfaction should be the goal. When organisations direct their efforts towards meeting the customer’s needs, internal conflict is minimised. Therefore, product designers need to know how to make tradeoffs in selecting design characteristics, which result in the highest level of customer satisfaction. The larger the contribution, the more influence the design characteristics has on customer satisfaction (Franceschini and Rupil, 1999).

Most of the descriptions of QFD which, have reached the literature speak favourably of the technique. On the other hand, Burrows (1991) reports “horror
stories of frustrating, time-wasting days in front of wall-size QFD matrices...

Many companies (Including Digital corporation) have ended up with 100 by 100 matrices – that’s 10000 cells to fill in – wasting months of precious time. He adds, similarly, a QFD veteran at Helwlett-Packard sounds a cautionary note: It’s worse to oversell (QFD) than to give people a realistic view of what it can do.

Having said that, then, it is apparent that without understanding customers, there can be no customer satisfaction (Crosby 1989).

A variety of tools and techniques can be used by organisations to measure customer satisfaction. Taylor, (1995) mentions customer surveys, close up interview, service visit teams, advisory panels and focus groups as techniques to be used to measure customer satisfaction. (Also Berry, 1991).

The most commonly used technique is the customer surveys (Oakland et al., 1994). They report that at Shorts Brothers, regular consultation with customer representations is conducted to measure customer satisfaction and customers are invited to participate in multidisciplinary design teams.

Nadkarni (1995) reports that the Selection Corporation (Baldrige Award winner) calls on each of its 120 customers to enquire about the level of satisfaction associated with their products and services.

IBM, DuPont, AT&T and Panasonic have stopped creating products with just the buyer in mind and have started considering the end user as well (Thiagarajan and Zairi, 1997b).
These cases not only emphasise the importance to measure customer satisfaction, but highlights also what Deming (1986) recommended. He recommends frequent and continued direct interaction with customers to determine the level of satisfaction. Xerox organizes a Visitor Quality Day for customers every six weeks. (Nadkarni, 1995; Rao et al., 1996).

Garvin (1983) pointed out that the quality leaders in Japan had a clear understanding of what the customers want through extensive data collection concerned with the customer. Some companies consider listening and responding to the customer as religion.

The chief Executive Officer of GTE directions (Baldrige Award winner – 1994) attributes the company’s success to this religion (Bemowski, 1995).

As cited in Andre and Sariva (2000), There are several studies that bring to evidence the benefits, in terms of business results, that derive from a high level of customer satisfaction, namely decrease of failure-related cost (Garvin, 1988; Crosby 1979), increase of products mix provided to customers with enterprises and brand’s prestige in the market (Anderson and Weitz., 1989), easier acquisition of new customers (Fornell, 1992), increases of loyalty and reduction of product’s price elasticity (Garvin 1988; Reicheld, 1996). In this regard, that it should be stressed that in all the above types of contribution to business results customer loyalty plays a decisive role. Loyalty contributes to business results in two essential ways: increase in the number of customer and profit by customer (Andre and Savira, 2000).
Recently, efforts are devoted in several countries to find the customer satisfaction index. The American customer satisfaction index measures the quality of goods and services as experienced by those that consume them (Anderson and Fornell, 2000).

Many countries are interested in their Consumer satisfaction index. In this regard Anderson and Fornell (2000) state "The National Quality Research Centre at the University of Michigan Business School has deployed national systems for measuring customer satisfaction in Sweden (1989) and the US (1994). It has conducted pilot studies in Taiwan, New Zealand, Korea and Brazil; gained approval to launch national indices in Malaysia, Canada and Brazil; and worked with 15 European Union countries to introduce the European Customer Satisfaction Index in 1999".

Indeed, as one of the main drivers behind the Swedish customer satisfaction Barometer and more recently the American Customer Satisfaction Index, Fornell is well placed to offer comments about the importance of customer satisfaction (Kanji and Wallace, 2000).

2-5 Issues in Implementation:

2-5-1 Total Quality Management and national culture

TQM implementation does not require a redesign of the country’s culture, rather it requires adherence to its principles, practices and techniques (Juran 1993).

Ziari (1994) concluded (from a benchmarking study of 22 critical factors of TQM conducted in several countries of major cultured differences) that not all of the critical factors are relevant in generic sense. He reported that the fundamental
factors that were found absolutely essential to successful TQM implementation is top management commitment, clear mission statement and focus on the customer needs.

Kano (1993) points out that culture should be considered when initiating a TQM programme although, he stresses, culture is not a barrier to TQM implementation process. Ali (1997) concludes that there does not appear to be a clear impediment resulting from the nature of culture in the Middle East.

Kruger (1999) states that there are many case studies demonstrating that total quality management is not limited only to Japanese business organisations and their particular culture, but can be successfully realised in the USA, the UK, Germany, and elsewhere.

He adds:

"Total quality management is a universal business strategy which is not culture-bound. At the same time, however, it is useful to consider the quality heritage of national business cultures."

Kruger (1999) concludes that the basic concept of total quality management is universal and equally applicable in any country.

2-5-2 TQM failures

TQM is a philosophy which, emphasises that continuous improvement is a process with customer satisfaction as its ultimate goal.

According to Gatchalian (1997) surveys show that successes in TQM implementation are only within the range of 20 to 35 percent of those who initiated the practice.
This is supported by Harari (1997) when he says that only about fifth-at best one third-of TQM programmes in the United States and Europe have achieved significant or even tangible improvements in quality, productivity, competitiveness or financial returns.

There is ample evidence that properly implemented quality management systems improve organisational performance. Fewer defects, reduced rework and scrap, lower inventory levels, reduced lead times, higher flexibility and increased employee satisfaction are reportedly among the benefits of a successful total quality management programmes (Salenga and Fazel, 2000). A study conducted by Tatikonda and Tatikonda (1996) on winners of the MBNQA reveals that on average these companies achieved a 70 percent increase in return on sales and a 50 percent increase in return on assets.

Zairi (1994) considers its customers ultimately judge the success of implementing TQM in an organisation. Thus, customers also ultimately judge failure.

The literature cautions about the roadblocks to successful implementation of a TQM programme. The major barrier identified lies in a lack of management commitment to the TQM concept (Zhu et al. 1999).

According to Gatchalian (1997) causes of failure are generally associated with:

- Resistance of top management to educate themselves regarding TQM
- Erratic ways of quality programme implementation.
- Jolting but unsustained enthusiasm for TQM.
- Inadequate empowerment at all levels.
- Management of communication strategies not fully in place.
- Quality improvement teams not functioning effectively.
Harari (1997) provides ten reasons for failure:

- TQM focuses people's attention on internal processes rather than on external results.
- TQM focuses on minimum standards.
- TQM develops its own cumbersome bureaucracy.
- TQM delegates quality to quality czars and experts rather than do real people.
- TQM does not demand radical organisational reforms.
- TQM does not demand changes in management compensation.
- TQM does not demand entirely new relationships with outside partners.
- TQM appeals to faddism, egotism and quick-fixism.
- TQM drains entreprenurship and innovation from corporate culture.
- TQM has no place for love.

Salegan and Fazel (2000) conducted a study with a primary objective is to determine the extent to which the obstacles represent major barriers to TQM implementation. A survey was used after refining a questionnaire to assume content validity and mailed to 2000 randomly selected manufacturing firms listed by Dun and Bradstreet. The survey was addressed to company presidents and CEOs, who were asked forward it to other executives if necessary.

They received 109 usable responses to the survey. The study reveals the following obstacles in rank order based on mean ratings and ranks of managers' responses in TQM companies:

1- Lack of time to devote to quality initiatives.
2- Poor interorganisational communication.
3- Lack of real employee empowerment.
4- Lack of employee trust in senior management.
5- Politics and trust issues.
6- Lack of a formalised strategic plan for change.
7- Lack of strong motivation.
8- View of the quality programme as a quick fix.
9- Drive for short-term financial results.
10- Lack of leadership.
11- Lack of customer focus.
12- Lack of a company wide definition of quality.
TQM is a strategy for change in an environment where the accepted paradigms are subject to constant challenge. It is a strategy concerned with developing an organisational culture in which people are able to meet these challenges (Dale and Lascelles, 1997). Therefore, it is generally acknowledge that the longer organisations work at TQM, the more successful they will be (Thiagarajan and Zairi, 1997c).

Man (1992) considers two to three years into implementation as the period after which the tangible benefits of TQM are likely to be evident (See also Thiagarajan, 1996). It does take time for TQM to develop and evolve in any organisation (Taylor, 1998).

Two American studies concluded that organisations that have implemented TQM for more than two years are more likely to have successful TQM initiative.

The first study (Quality Progress, 1994) reported that organisations with active TQM implementation for more than two years are more likely to have very successful initiatives as opposed to those that have implemented TQM for less than two years.

The second study (DDI, 1994) examined 536 TQM organisations and revealed that organisations with more than three years of implementation had significantly better successes than organisations with less than two years of implementation in three TQM aspects: customer satisfaction and retention, operational results and organisational climate.
In this regard, Dale et al., (1997) state that “Total quality management is a long-term process. It can take an organisation years to put the fundamental principles, procedures and systems into place, create an organisational culture which is conducive to continuous improvement and change the values and attitudes of its people, with considerable effort and intellectual input by the senior management team, and clear strategic direction and framework”.

Hendricks and Singhal (1999) confirm that the benefits of TQM are achieved over a long period. A close examination of the evidence provided in their study reveals that even after effective implementation, it still takes a couple of years before financial performance starts to improve.

2-6 Hard and soft Quality Factors

The literature review presented in this chapter regarding the quality factors reveals that:

- Some quality factors have a long-term nature.
- Some are intangible and difficult to measure.
- Some factors are tools and systems.
- Some factors are needed to support the implementation of other factors.

This suggests that the quality factors can be classified as “soft” and “hard” quality factors. Leadership and employee involvement are intangible and difficult to measure quality factors. However, cost of quality, statistical process control and quality management systems impact the internal efficiency of the organisation.

Wilkinson (1992) highlights that it is practical to refer to the experience at Black and Decker (UK) and the Co-operative Bank plc., to classify the quality factors along “soft” and “hard” criteria.
Factors like leadership, employee involvement and quality policy development have long-term nature and some of them are difficult to measure. These factors have an impact on maximising organisation-wide support and involvement in attaining the quality goals of an organisation.

Such factors are considered as internal marketing issues (Wilkinson, 1992). They include:

- Senior executives commitment and involvement, actively demonstrated.
- Comprehensive policy development and effective deployment of goals.
- Entire workforce commitment to quality goals of the organisation.
- Supervisors, unit heads and divisional managers assume active new roles.
- Empowerment.
- Effective communication.
- Internal customer supplier concept.
- Teamwork.
- System for recognition and appreciation of quality efforts.
- Training and education.

These “soft” quality factors are long-term issues, something that cannot be switched on and off. These quality factors must be addressed accordingly in the implementation plan as there is a good chance that the TQM process will end up in failure if there is insufficient attention to “soft” factors (Wilkinson, 1992).

The implementation of the “soft” quality factors must be supported by tools and systems “hard quality factors” to achieve the goals. These “hard” quality factors include:

- Benchmarking.
- Performance measurement.
- Management by fact.
- Managing by processes.
- Self-assessment.
- Quality control tools.
- Cost of quality process.
- Documented quality management system.
- Supplier management.
- Customer management.
These "soft" and "hard" quality factors reflect the total quality management model proposed by Oakland (2000). The "soft" quality factors are expected to be rated highly in terms of criticality and emphasis in TQM implementation process. The "hard" quality factors are considered as tactics rather than strategies (Pegels, 1993). Most of these factors were rated as important (tier 2 and 3) by the majority of Baldrige winners (Ramirez and Loney, 1993).

2-7 Summary

The literature overview presented in this chapter reveals that quality definition is no longer conformance to requirements. The definition improved from conformance to requirement to levels of performance of quality as perceived by the customer. Currently quality is defined as delighting the customer.

To succeed in the competitive environment, organisations should be able to satisfy the needs of the customer by listening to his voice and serving customers effectively with continuous improvement.

This requires commitment of top management and active involvement to achieve employee participation and involvement. Managing through customer-driven processes with flat structure utilising teamwork provide the framework to deploy resources to achieve customer satisfaction. Partnership with suppliers is important to satisfy the needs of customers as both are considered part of the customer-driven business processes.
Deming calls for total transformation of existing management methods to achieve a culture of continuous improvement for continual customer satisfaction. TQM requires that all efforts in the organisation to focus on customer satisfaction through a customer-oriented right-first-time and every time approach. TQM is concerned with systematic pro-active review and measurement of the processes that add value to the customer satisfaction. This strategic approach is the route to success in the marketplace.

*A manufacturer is not through with his customer when a sale is completed. He has only then started with his customer.*

*Henry Ford*

*My life and Work (1922), p. 41*

This chapter also includes a comprehensive literature review of the quality factors. Much of the literature is anecdotal and is not based on empirical work (Black and Porter, 1996). However, this literature review allowed to confirm the framework of “essentials” of TQM implementation developed by Thiagarajan (1996) which is strongly grounded in the literature.

In the next chapter, research design and methodology is described based on the principles of research design found in the literature.
Chapter Three
Research Design and Methodology

3-1 Introduction

A discussion of various social science methodological issues is carried out through this chapter. As this is a management oriented research project, the research design and methodological issues are handled within the context of the research setting discussed in the first chapter along with the literature review presented in chapter 2.

The purpose of research is to discover answers to questions through the application of scientific procedures. Such procedures have been developed in order to increase the likelihood that the information gathered will be relevant to the question asked and will be reliable and unbiased. According to Selltiz et al., (1962) there is no guarantee that any given research undertaking actually will produce relevant, reliable and unbiased information. But scientific research procedures are more likely to do so than any other method known to man.

The main question of this research project is related to identifying the critical factors for successful implementation of TQM within the Palestinian context. Therefore, this chapter discusses the various research design and methodological issues related to deciding on the appropriate principal research technique to find the answer for the questions asked by this study.
3-2 Defining Research

Research can be seen as a systematic process of discovering, acquiring and using knowledge. Bennett (1983) defines research as:

“A systematic, careful inquiry or examination to discover new information or relationships and to expand/verify existing knowledge for some specified purpose.”

For him management research is accepted and acceptable activity. It is a systematic, careful inquiry into anything to do with management. He adds, since all enterprises are managed, the scope for such inquiry is very broad.

Sekaran (2000) emphasises this definition by defining research as:

“A systematic and organised effort to investigate a specific problem that needs a solution. It is a series of steps designed and followed, with the goal of finding answers to the issues that are of concern.”

Having said that, research, thus, encompasses the processes of inquiry, investigation, examination, and experimentation. These processes have to be carried out systematically, diligently, critically, objectively, and logically. The expected end results would be to discover new facts that will help to deal with the problem situation (Sekaran, 2000; Bickman and Rog, 1998).

For Sekaran (2000) most basic or fundamental research is conducted to generate more knowledge in particular areas of interest. The aim is to understand more about certain phenomena and problems that occur in several organisations and industries, and how they can be solved. Sekaran (2000) adds that the main purpose of conducting basic research is to generate more knowledge and
understanding of the phenomena that occur and to build theories based on the study of the phenomena. This process of building on existing knowledge is the genesis for theory building in the management area.

In addition to creating new knowledge and improving understanding, Bennett (1983) states that management research can be used to test application by gathering information about successful management approaches in different circumstances and looking for explanations of their success. He adds that management research can be used to help in decision making by generating confirmation, concepts, frameworks, approaches, and facts that will help managers make more effective and better decisions.

Having this understanding of research in mind. A research methodology, that combines this understanding with the objectives of this study, (which is basically about the application of management theory and concepts that deal with practical issues of organisational and managerial effectiveness), is needed to be selected carefully to achieve what Bennett (1983) demanded:

1- Understanding what management research is about and what it can and can not do.

2- Understanding and using sensible, appropriate methods and techniques.

3- Giving the results of research-wide publicity and seeking to apply them whenever possible.
This emphasis of research methods to be used is a crucial aspect of conducting the research. Sekaran (1992, 2000) defines research methods as:

"The ways in which research studies are designed and the procedures by which data are analysed."

For Nachmias et al., (1981,1987), research methodology is:

"A system of explicit rules and procedures for the research process. Conformity to these rules and procedures are evaluated for claims for knowledge. Claims are rejected if they do not conform."

The main purpose of this study is to construct a generic TQM implementation model for Palestinian organisations based on finding the critical factors for successful implementation framework (that is measurement of "what" needed).

However, the study will move one step further to provide details on the measurement of "how" these factors are implemented by local companies. Chang (1994) states that not only the measurement of "what" is needed, but also detailed explanation of "how" are important to understand best practices.

This is why thorough analysis and due care were given to the research design of the methodology selected in order to ensure that the research project is properly conducted to collect rich information for analysis to provide valuable research outcomes that contribute to the body of current knowledge.

3-3 Research Methodology Selection

Through the various researches involved in TQM implementation it is evident that most approaches to research were of quantitative nature. Many authors who approached the problem used quantitative methodology (Saraph et al., 1989;

Thiagarajan (1996) reports that the most widely – spread approach used in researching TQM implementation field is largely exhibit a quantitative character. He states that even the interview approach by Mann (1992) has a predominant quantitative character.

This study is basically concerned with proposing a TQM implementation model appropriate to the Palestinian context, based on assessing the degree of perception and understanding of TQM of Palestinian managers and the identification of the critical factors for successful implementation of TQM framework.

Although the selection of either a quantitative or qualitative approach as the appropriate method for a particular research project has been recognised as problematic (Downey and Ireland, 1979), the most appropriate methodology concerned with data collection, data processing, and analysis must be carefully considered.

The choice of the appropriate methodology depends very much on the purpose, process of investigation and the desired outcomes. Downey and Ireland (1979) State:

"Methodologies are neither appropriate nor inappropriate until they are applied to a specific research problem. This perspective treats methodologies as tools of inquiry; each inquiry requires careful selection of the proper tools."
In addition to this, the level of scientific sophistication of the research project and the cumulative knowledge and understanding of the topic in question would govern the best choice of research methodology. In this regard Bennett (1983) points out four types of research and three levels of rigour when choosing among research methods.

**Types of Research**

1- **Description**

In this case the research is concerned with describing what exists. This is the most basic level of research. It is used to improve our knowledge of management processes in different countries.

However, Bennett (1983) states that describing “what is” may not necessarily improve our knowledge of management.

2- **Classification**

This type of research allows researchers to classify, or categorise, the things they are studying, on the basis of known, natural characteristics.

3- **Explanation**

While descriptive and classificatory work establishes a basis for building a theory, explanation research starts when the researcher seeks to understand what is happening and why to present this in theoretical developments, models, and propositions.
4- Prediction

This type is concerned with "predicting" using established theories and formulae. Bennett (1983) states that in the field of management, truly predictive theories are rare.

Whilst the testing of hypotheses may take on this predictive form, we are still trying to understand and explain what managers do.

Another factor to consider when choosing among research methods, the researcher must consider the amount of rigour required.

Rigour is used to refer to the extent to which the method employed strictly adheres to the fundamental requirements of research design (Bennett, 1985).

House (1970) as cited in Bennett (1983) identified three levels of rigour:

1- **First level**

This level embraces those methods, which offer a qualitative and narrative approach to the analysis of variables. Such methods offer minimum scope for classification and enumeration of the variables being studied. Such methods include authoritative opinion, the single case study, and narrative history.

2- **Second level**

At this level, measurement, particularly in a quantitative form, becomes important. These methods include survey research, longitudinal or time-series analysis and uncontrolled experimentation. The emphasis is on measuring and
manipulating certain variables and their relationships to one another. Usually such methods enable us to argue that something is related to something else. They seldom allow the researcher to establish a causal relationship (Bennett, 1983).

3- Third level

At this level, the research is concerned with manipulating variables in order to test for causal relationships, to seek out those variables which have critical or important impact on what is being studied and the key relationships involved. Thus, if the research aims to establish why something occurred, then research methods at this level of rigour are necessary. This involves experimentation in a controlled field setting.

It is therefore, after reaching this stage of discussion, and before a decision can be taken on the most appropriate methodology for this study, important to point out the advantages and disadvantages of both the quantitative and the qualitative methodologies.

3-3-1- Quantitative Research Methods

This methodology involves finding answers whenever there is a need to determine what, how many, where and when (Higson, 1987). Hence, this methodology focuses on structural issues rather than more complicated issues related to the process (Van Maanen, 1979 and 1985).

Large mail surveys using a standardised questionnaire is a major tool “instrument” used in quantitative methodology in the field of management research. This
approach of data collection provides the following advantages (Brannon et al., 1979; Sekaran, 2000)

1- Providing data representations and generalisability by reaching a large number of respondents with practical and convenient mean.

2- Ensuring validity and reliability of the results by applying statistical techniques to data analysis and interpretation.

It is because of this, (Brannon et al., 1979) characterised quantitative methodology as generalisable, hard and thin.

Wong (1992) identified some disadvantages of this methodology:

1- Focusing on social structure without addressing the social process itself.

2- Over simplifying and abstracting the subject matters.

3- Insularity from the real context of the problem under investigation.

Sekaran (2000) adds that response rate is almost always low.

3-3-2- Qualitative Methodology

Although qualitative methods are used only to a limited degree, they provide powerful tools for research in management and business administration (Gummesson, 1991).

According to Van Maanen (1985), qualitative researchers describe the unfolding of the social process. This removes the need for data interpretation by the researcher. According to Bryman (1992), the emphasis in qualitative research tends to be on individual’s interpretations of their environment and of their own
and other’s behaviour. The data presentation tends to be sensitive to the nuances of what people say and to the context in which their actions take place. He continues to state that the emphasis tends to be on the understanding of what is going on in organisations in participant’s own terms rather than those of the researcher.

The qualitative techniques are termed “qualitative” for they are generally intended to determine “what things” exist than to determine how many things there are (Van Maanen, 1985; Smith and Manning, 1982).

Qualitative techniques are not concerned with measurement, they are more responsive to needs of respondents and to the nature of the subject matter enabling the researcher to understand the situation at first hand (Walker, 1985; Bryman, 1992; Wong 1992).

There are many occasions when qualitative methods are used. When there is insufficient or inadequate theory on which to ground. When a survey has already been conducted but has produced confusing results. When the subject of inquiry is inherently complex and understanding of this complexity is part of the research brief,

When the subject is sensitive. Finally, when the objective is to study an institution with a focus on understanding the relationship within it (Walker, 1985; Wong, 1992; Van Maanen, 1979 & 1985; Sekaran, 2000).
According to Walker (1985) qualitative methods yield large volumes of exceedingly rich data obtained from a limited number of individuals and whereas the quantitative approach necessitates standardised data collection, qualitative researchers exploit the context of data gathering to enhance the value of the data (see also Aaker et al., 1998).

Case study approach to qualitative research method, has been used by many researchers (see Yin, 1984; Taylor and Bogdan, 1984; Patton, 1990; and Tesch, 1990)

Gummesson (1991) states that the use of the case study for research purposes is becoming widespread in management research. In many countries, doctoral theses dealing with marketing, strategy, organisation, and so forth are often based on case studies.

Robenowitz (1980) in Gummesson (1991) states that:

"Obviously, case studies, irrespective of how well they are planned, lack of scientific weight and general applicability of conventional research methods. However, in certain areas they present the only possible research strategy. Moreover, if a sufficiently large number of cases are examined, they can serve as a basis for fruitful theoretical developments."

A case study approach involving interviews to collect data using semi-structured and open-ended question is used to study situations from the respondent’s perspective. (Burgess, 1982 and 1984). This enables the researcher to discover the world as perceived by the interviewee (respondent) (Wong 1992), making the data comprehensive and realistic (Bryman, 1992). Aaker et al. (1998) support this by stating that a case study is a comprehensive description and analysis of a single
situation. The data for a case study usually are obtained from a series of lengthy, unstructured interviews with a number of people involved in the situation.

As quantitative methods have advantages and disadvantages, qualitative methods are of no exception. The criticism of case studies as scientific method can be summarised under the following (Gummesson, 1991). They lack statistical validity as they are flexible, lack rigid experimental control and also prone to subjectivity.

Wong (1992) adds that these methods are unrepresentative and indefiniteness and do not readily permit comparison over a large number of cases. (Also see Sykes et al., 1991; Kaplan et al., 1988; Nackmias and Nackmias, 1987; and Burgess 1982; Aaker et al., 1998).

It is obvious up to this stage of discussion, that both the quantitative and the qualitative methods have advantages and disadvantages. Therefore, in undertaking a piece of research, inevitably the researcher must choose between these different approaches in making an area of interest researchable (Gill and Johnson, 1994). The nature and content of the problem, as well as the extent of the available resources, clearly influence this choice. It is also important to be aware that the different methods available have differing inherent strengths and weaknesses, which need to be taken into account in relation to the goals of the research when an approach is selected (Gill and Johnson, 1994).
Therefore, the important thing is to be flexible in selecting the most appropriate method for the research project. Thus, there is no reason why one cannot combine research methods to get the most out of the situation being researched. According to Van Maanen (1979 and 1985) different approaches may be applied at different parts of the research to collect information, as the approaches are not necessarily mutually exclusive.

It is attractive for the purpose of this study to combine the research methods to get the most out of the situation by applying different approaches at different parts of the study to achieve balance and intellectual breadth and rigour (Silverman, 1985). This combination of methods is known as triangulation research strategy.

3-3-3 Triangulation Methodology

Denzin (1970) defines triangulation as:

"The combination of methodologies in the study of the same phenomenon."

He adds, multiple and independent methods, especially if undertaken by different research workers investigating the same problem, should, if reaching the same conclusion, have greater validity and reliability than a single methodological approach to a problem.

Triangulation is also described as multi-method/multi-trait or convergent validation. It is seen as complementary qualitative and quantitative methodologies rather than competing approaches (Jick, 1979, Fielding and Fielding, 1986). In Miller and Freisen's (1982) advocacy of longitudinal designs to analyse organisation both qualitative and quantitative methodologies are suggested.
Atkinson et al. (1983) see triangulation's role as strengthening qualitative research findings by combing participant observation, interviewing and documentary source.

Smith (1975) advocates multiple methods to address the same problems, on the basis that in this way, different methodological strengths and weaknesses will be cancelled out to produce more convincing findings. In addition, Mason (1994) states that triangulation allows a holistic picture to develop. It is useful in capturing a more complete, holistic and contextual portrayal of the topic under study.

Triangulation enriches our understanding by allowing for new and deeper dimensions to emerge. Jick (1979) adds that more than one method should be used in the validation process to ensure that the variance reflected that of the traits and not of the method. Thus the convergence or agreement between two methods enhances our belief that the results are valid and not a methodological artifact. Sekaran (2000) emphasises the need for multi-method of data collection as almost all data collection methods have biases associated with them, therefore, collecting data through multi-methods and from multiple sources lends rigour to research. If the responses collected through interviews and questionnaire are strongly correlated with one another, then we will have more confidence about the goodness of the collected data.
3-3-4 The Selected Methodology

For all above discussed reasons, triangulation seems to be appropriate and suitable research methodology for this study. Moreover, this research methodology of triangulation has been used by other doctoral studies in general (Jick, 1979) and Total Quality Management in particular (Thiagarajan, 1996; Aly, 1997)

3-3-4-1 The nature of the research topic:

The literature review presented in the previous chapters reveals that there is a lack of research and theory in TQM. The literature also illustrates that there is generally a lack of knowledge about the key elements that influence the implementation process of TQM and how these elements should be addressed and managed in an organisation. Most of the information is based on the author’s judgement and experience in working in American, European and Japanese organisations and are not formulated on the basis of systematic empirical research (Thiagarajan, 1996; Ali 1997).

Thiagarajan (1996) points out that while the anecdotal evidence has revealed some insight into what constitutes the key levers of TQM that leader in Western organisations can manipulate to implement TQM, much remains unknown, in particular, about the applicability of such knowledge outside the developed economies.

The literature illustrates that there are as many successes in TQM implementation as there are failures. According to Mann (1992) the lack of clear implementation methods may have contributed to the number of failures. This deficiency is compound outside the developed economies by total lack of TQM knowledge
The purpose of the study, which is to construct a TQM implementation framework to guide the selection and/or formulation of an effective TQM implementation approach in the context of Palestinian organisations therefore, is an appropriate one.

The study aims at constructing a generic framework of TQM implementation in the Palestinian context. This requires identifying the quality factors that are considered critical by Palestinian organisations and how these critical quality factors are addressed and deployed in the implementation process. Therefore, it is required to know "what" are the critical quality factors and "how" they are addressed in the implementation process.

In studies of critical quality factors for effective total quality management (TQM) implementation, a descriptive approach rather than a normative one was considered appropriate (Thiagarajan and Zairi, 1998). In the normative approach, it is necessary to make certain basic assumptions regarding perfect knowledge and judgement in the respondents. Whereas, the descriptive study is undertaken in order to ascertain, and be able, to describe the characteristics of the variation of interest in a situation to offer a profile of relevant aspects of the phenomena of interest from an individual, organizational, industry – oriented, or other perspective (Sekaran, 2000). Therefore, a descriptive approach in the context of this study involves best organisations agreeing to a set of quality factors critical to successful quality initiatives in their organisations. The inquiry therefore, requires different levels to address the "what and how" elements of implementation are needed. This emphasises triangulation as a research methodology applying
quantitative and qualitative methods to conduct these different levels of inquiry as each level has different questions and expects different answers.

Various methodologies have been considered for the purpose of the study (Saraph et al., 1989; Black and Porter, 1996; Ahire et al., 1996, Tamimi et al., 1995, Tamimi, 1998, Yusof et al. 1999, Rao et al., 1999; Zhang et al. 2000, Ali, 1997). All of these researchers have applied quantitative methods to identify the critical factors addressing the “what” elements of implementation are needed. However, none of them addressed how these elements are implemented.

Thiagarajan (1996), has applied the triangulation methodology addressing the “what and how” elements of implementation are needed. He conducted three levels inquiry using a descriptive approach. The first level concerns the structure of the implementation process (the “what” element). The second level involves understanding TQM implementation from a different angle, the concern is in the process of implementation (the “how” element). The third level involves uncovering and understanding the issues involved prior to implementation.

This study, therefore, will replicate Thiagarajan’s study (1996) in the Palestinian context in order to construct a generic framework for TQM implementation. However, it will involve four levels of investigation. These levels are:
Level 0: Assessing the level of TQM perception and understanding in the Palestinian context.

Level 1: Identifying the critical quality factors (the "what" element).

Level 2: Understanding the process of implementation (the "how" element).

Level 3: Understanding the issues involved prior to implementation.

Level 0: Assessing the level of TQM perception and understanding:

The effort basically involves assessing the degree of understanding of TQM as perceived by Palestinian managers. The main purposes of this exercise are to create a basis for benchmarking with other experiences, and provide a basis for the process of mapping out the landmarks for developing the generic framework of TQM implementation in Palestine. This suggests a quantitative approach for data collection.

Level 1: Identifying the critical Quality Factors (the "what" element).

The aim of this level of inquiry is to identify the structure of the implementation process. This requires best organisations to agree on a set of key quality factors for effective TQM.

A sample that is large and comprising a wide range of organisations is essential to establish a representative and credible description of the key quality factors. This is very important in the development of a generalisable and applicable framework in the Palestinian context. This suggests the use of a quantitative questionnaire survey.
It is appropriate for this level of inquiry to use a large survey, with a structured questionnaire, which is analysed using statistical techniques. The judgement so derived is representative and allow generalisation to a larger population (McClintock et al., 1979 in Thiagarajan, 1996), an important consideration for the purpose of this study.

**Level 2: Understanding the process of implementation (the “how” element).**

The aim of this level of inquiry is concerned in the process of implementation. That is to know how Palestinian organisations effectively address and implement the critical quality factors (identified in level 1 inquiry). This is a crucial aspect to be addressed as the literature review revealed that there are differences in opinions as how best to address and implement the critical quality factors.

To describe how Palestinian organisations experience the process of implementation, Sekaran (2000) recommends using a qualitative approach in such situation. Therefore, in this level of inquiry, a smaller case study approach using semi-structured interviews to collect data is chosen.

**Integration or complementarily of Methodologies**

Thiagarajan (1996) points out that employing the two levels of inquiry result not only in the unfolding of the implementation structure but also the unraveling of the total process itself. He adds, the need to tap the structured features of implementation – the “what” element – is adequately addressed by the quantitative questionnaire survey. The qualitative components seek to explore the
characteristics of the process of implementation – the “how” element – using qualitative case study interviews. The inquiries are at different levels and can not be adequately addressed using the same method.

This is why triangulation is the most appropriate research strategy for this project. Moreover, the two methods are used to complement each other. The complementary approach as employed in this study basically means that each approach is applied to different part of the study, and the data generated from each approach is taken as complementary, rather than integrated (Thiagarajan, 1996).

**Level 3: Understanding the issues involved prior to implementation**

Thiagarajan (1996) states that the approaches from the two levels (1&2) of inquiry focus on “what” and “how” of the actual implementation process. Much is unknown about the process from the time the implementation gets underway. He adds, it is in order for an inquiry aimed at uncovering and understanding the issues involved prior to implementation proper to be conducted. This will be an useful guide for managers in developing practical implementation roadmap.

Investigating the “what” and “how” of the pre-launch process may be more fruitful by a qualitative approach, rather than a quantitative one (Thiagarajan, 1996). A case research is particularly appropriate for problems in which research and theory are at their early, formative stage, and where the experiences of the respondents are important and the context of action is critical (Bensabat et al., 1987 in Thiagarajan, 1996).
Thiagarajan (1996) considers smaller in-depth longitudinal case studies using unstructured interviews for data collection and analysis appropriate. The reasons for choosing the longitudinal approach for this level of inquiry are:

1- It explores the quality management process in an organisation as a continuing system with a past, a present and a future.

2- It imposes a conceptual framework data collection that results in a coherent and meaningful set of outputs.

3- The longitudinal study of a sequence of events allows varying readings to be taken of the evolution of the quality management process and of the impact of one event on successive and even consequent ones.

Therefore, a longitudinal study of the critical stages of the pre-launch process as a research focus unravels the dynamics of the revolution and development of a process in an organisation (Thiagarajan, 1996). The critical stages are defined as an activity, an event or a decision that is perceived by interviewees as important to the success of the quality management process in their organization.

3-3-5 Identification of Research Problems

Sekaran (2000) defines a problem as any situation where a gap exists between the actual and the desired ideal states. According to Nachmias et al. (1981) a research problem is an intellectual stimulus calling for an answer in the form of scientific inquiry.

Research problems in this study cover the following areas:

1- What are the key quality factors commonly recognised in the developed economies to successful implementation of TQM?
2- What is the Palestinian level of TQM awareness and understanding and how it is compared to other levels in the developed and less developed economies.

3- Which of the key quality factors recognised in the developed economies are critical to the implementation of TQM in Palestinian organisations?

4- How are these critical quality factors addressed and implemented in the Palestinian organisations?

5- What are the foundation elements addressed by Palestinian organisations in the pre-launch implementation process?

6- What are the similarities and differences between this study and the original study (Thiagarajan’s study)?

3-4 The Questionnaire Design

The questionnaire developed by Ramires and Loney (1993) was used to measure perception of TQM understanding in the Palestinian context. Other questionnaire design issues are taken up in chapter 4.

To replicate the original study the questionnaire developed by Thiagarajan (1996) is used to identify the critical quality factors as perceived by respondents. Other questionnaire design issues are taken up in chapter 5.

3-4-1 Choice of variable

The set of variables used in the questionnaire is the product of an in-depth review of the literature and a robust reiterative process of verification and validation (Thiagarajan, 1996). The literature review conducted in this study confirms the set of variables identified by Thiagarajan (1996). Therefore, the quality factors
incorporated in the survey questionnaire also formed the basis of the questions used in the semi-structured interviews.

3-4-2 Validity

Issues of validity are not considered in this as the questionnaires have been validated and passed by a panel of experts. The quality factors also were verified by a robust reiterative process.

3-5 Research Design

According to Sekaran (2000) research design involves the planning of the actual study, dealing with such aspects as the location for the study, how to select the sample and collect the data, and how to analyse the data.

In developing the research design for this study, it must be addressed within the context of the research setting presented in chapter 1. It must be guided by the literature review (chapter 2), and framed by the selected methodology. Figure 3-1 shows the outline of the research design developed for this study.
3. Research Design and Methodology

4. Level 0 Investigation
   Questionnaire Survey

5. Level 1 Investigation
   Questionnaire survey

6. Level 2 Investigation
   Case studies: Semi-structured
   Interviews

7. Level 3 Investigation
   In-depth case studies; Open
   Interviews

8. Construction of TQM Implementation Model

9. Conclusions and Recommendations
3-5-1 Sampling

A sample is a subset of elements from a population (Aaker et al., 1998). Sekaran (2000) defines sampling as the process of selecting a sufficient number of elements from the population so that by studying the sample, and understanding the properties or the characteristics of the sample subjects, it would be possible to generalise the properties or characteristics to the population elements.

Developing a TQM implementation framework as a research topic is best investigated by studying total Quality organisations (Thiagarajan, 1996; Ahire et al., 1996; Tamimi; 1998; Wong 1999).

The effort involves identifying Palestinian organisations recognised as having quality initiatives. Heterogeneous mixture of organisations in terms of size, maturity of TQM implementation, and scope of business is required for the purpose of this study. The sample of organisations will include both manufacturing and service organisations.

As the case in the original study, there is no authoritative database of TQM organisations in Palestine. Moreover, the absence of a Palestinian National or Regional Quality Award makes the identification of total quality organisations more difficult. Hence, the sample was chosen to include all ISO-9000 accredited companies. Using the data available in the Ministry of Trade and Industry and the companies that provided consultation in the implementation process, a list of 78 companies was obtained. The study targeted the whole population and a response rate of 100 percent was set right from the beginning. Descriptive elaboration of
sampling procedures is presented within the investigation conducted for the four levels of fieldwork discussed in chapters 4, 5, 6 and 7.

For measuring TQM understanding and awareness (level 0 investigation) 300 managers were targeted. The criteria used for questionnaire surveys sampling and the selection of case study companies are discussed in chapters 4, 5, 6 and 7.

4-5-2 Respondents

The information sources for the survey concerned with measuring perception of TQM understanding and awareness are senior managers and quality-related managers if available.

The information sources for survey and interviews (level 1, 2 and 3 inquiries) are individuals within the organisation who are directly involved in the implementation of the quality initiative. The individuals are likely to be the general managers and the quality-related managers as they are in a position to answer the questions as accurately as possible.

4-5-3 Data Collection and Analysis

There are three methods of data collection for this study:

Questionnaire surveys, semi-structured interviews and open interviews. Different data analysis is used depending on the methodology and objectives of the research (Sekaran, 2000). An overview of data collection and analysis is presented. Detailed descriptions appear in the relevant chapters.
**Level 0: Questionnaire Survey**

The aim of the survey is to identify the level of awareness and understanding of TQM in the Palestinian context. Large sample is needed for this purpose. Respondents were required to rate a list of quality factors (22 factors) developed by Ramirez and Loney (1993) as critical, important or neutral to the success of TQM implementation.

The majority rule is used for the purpose of analysis to classify the 22 quality factors into three tiers of criticality.

**Level 1: Questionnaire Survey**

The aim of the survey is to identify quality factors that are perceived by Palestinian organisations to be critical to the success of their implementation of the quality initiative. The whole population of ISO-9000 accredited companies were targeted to obtain a large database of information.

Respondents were required to rate 31 quality factors as critical, important or of minor importance to the success of their implementation of the quality initiative.

The data analysis aims to identify and interpret a majority consensus amongst respondents in their ratings. Statistical analysis of frequency distribution, computing the central tendency and measure of variability of response distribution are employed as the major statistical techniques.
Level 2: Case studies using Semi-Structured interviews

The primary effort in this level of investigation is to understand the process of TQM implementation. The investigation involves how the identified quality factors in level 1 inquiry are addressed and implemented.

Using Semi-Structured interviews, respondents were asked to describe how the quality factors are implemented and deployed. A smaller number of companies are selected (18 companies) for this purpose.

Cross-Case comparative analysis of the results is used to identify the tactics and techniques of the quality factors implementation, and to identify the similarities and differences of tactics and techniques.

Level 3: Case studies using open interviews

The aim of the open interviews is to explore the critical stages each company went through from the early stages of deciding to implement TQM to when TQM was launched. A smaller number of companies are selected (5 companies) for this purpose.

Comparative analysis is employed to identify the foundation elements of TQM implementation.

3-6 Limitations of this study

This study shares the original study the three of its limitations. These Limitations are:
It is impractical to gain access to enough organisations to satisfy the need for representiveness when conducting case study methods (Thiagarajan, 1996). Although the criteria of selecting case study companies is strongly recommended in the literature, and all identified case study companies are investigated, still no definite answer can be provided to the question of how representative this sample is.

The second limitation is the applicability of the findings while there are some indications of the applicability outside Palestine, this may or may not be the case for other developing countries.

The truthfulness of the respondents is the third limitation. Respondents may have given false data when completing the survey questionnaire or answering the questions in the interviews. However, the degree of discrepancy is expected to be limited by checking data across the various levels of investigation.

3-7 Summary
This chapter provides an outline to the research design and methodology used in conducting the study. The nature of the research topic and the objectives of the research require combing quantitative and qualitative methodologies. For this purpose, several methodologies that have been used by researchers in the field of TQM were considered. The triangulation methodology used by Thiagarajan
(1996) was the best to be used for the purpose of this study. It was decided to replicate Thiagarajan’s study in the Palestinian context for the following reasons:

1- The methodology combines quantitative and qualitative approaches to determine what quality factors are perceived as critical, how the identified critical quality factors are implemented, and what are the foundation elements of pre-launch implementation process. This is the major advantage of this methodology over the other methodologies.

2- The methodology of the original study was implemented in a developing country which has many similar cultural features compared to Palestine.

3- The methodology allows logical data collection, analysis and presentation.

The limitations of this study were presented. These limitations are similar to the original study’s limitation. However, the limitation related to the length of time required to conduct the case studies is not reported in this study. A decision was taken to overcome this problem by scheduling longer time for the interviews than that of the original study.
Chapter Four

TQM Perception and Level of Understanding

An Empirical Study

4-1 Introduction

This chapter is concerned with measuring the level of understanding and perception of TQM in the Palestinian context, using the tool developed by Ramirez and Loney (1993), respondents were asked to rank a list of 22 factors critical to a successful TQM implementation. These factors have been identified based on the teachings of three TQM gurus (Deming, Juran and Crosby) and the Malcolm Baldrige National Quality Award (MBNQA).

The analysis of the data in this chapter represents a benchmarking exercise with other similar studies. This includes:

Original sample of USA companies

The Middle East sample

The South East Asia (Malaysia and Singapore) sample

A West Indies sample, represented by the contribution of five organisations

The UK sample

The Gulf countries sample (Ali’s sample).
4-2 Aims of the Survey

The major purpose of the survey is to collect data on how Palestinian managers perceive the critical quality factors of successful TQM implementation. Secondly, the survey aims at creating a basis for benchmarking with other experiences to identify areas of over and under emphasis. Thirdly, to measure how local managers rank the critical factors for successful implementation of TQM initiatives. Finally to map out the landmarks for developing a generic framework of TQM implementation in Palestine. However, the following important issues were considered before the survey was undertaken (Zairi, 1996):

1- If TQM is a “soft-technology”, modern philosophy of management and is transferable, organisations would subscribe to the same critical factors regardless of where they are operating and regardless of market conditions, location, etc.

2- If TQM is to be considered as a generic philosophy of management, its applicability will cut across various sectors of industry, service, commerce, and public sector.

3- There are many assumptions made about the cultural influences on TQM implementation. By spreading the survey on an international basis, this assumption could be verified and if cultural influences would be having an impact, this could easily be assessed.
4-3 Survey Questionnaire Design

The questionnaire was built along the work of Ramirez and Loney (1993). Their questionnaire has a measurement scale, that solicit respondents to explicitly identify whether the quality factor is critical or not. This permits objective judgements to be made for the purpose of this survey. The questionnaire asks respondents to indicate how they perceive each of the quality factors, as to their level of importance to the successful implementation of TQM.

Issues of validity is not considered in this case as the questionnaire has been validated against established models and passed by panels of experts.

4-4 Sample Selection

The criterion to select the sample for the survey is that targeted manager should come from the industrial and service sectors. Three hundred managers were targeted.

4-5 Respondents Rate

Two hundred forty two usable questionnaires were returned out of three hundred. That is 80.67 percent response rate, which is considered large enough to establish a representation and credible data for analysis.

The questionnaire with a covering letter addressed to the potential respondent explaining the purpose and objectives of the survey was hand-distributed to each respondent. Two weeks were given to collect fill in questionnaires.
4-6 Breakdown of Respondents Organisations

The respondents targeted in this survey represented various types of organisations. The breakdown of these organisations is 57 percent from the service sector and 43 percent from the industrial sector. The breakdown of organisations in each sector is seen in figure 4-1.

Given the response rate of 80.67 percent, this representation of organisations can be considered a good representative of the perception and understanding of TQM of Palestinian managers.
4-7 Data Analysis

The majority rule was used for data analysis by Ramirez and Loney (1993). Although it is a crude and not very scientific (not precise) it provides an acceptable tool to assess how managers perceive and understand TQM principles.

The majority rule is used to classify the 22 critical quality factors into three tiers on the following basis:

1- Critical factors will be classified in tier one if the majority of respondents rate the quality factor as critical.

2- Critical factors will be classified in tier three if less than one third of respondent’s rate the quality factor as critical.

3- Critical factors will be classified in tier two if the majority of respondents rate the quality factor as important at the same time more than one third of respondents rate the quality factor as critical. To put it differently, the residual quality factors after classifying the quality factors in tier one and three will be classified as tier two quality factors.

4-8 Findings of the Various Studies:

4-8.1 The Original Study

The original study conducted by Ramirez and Loney (1993) to identify activities which are critical for successful TQM implementation. They designed a
questionnaire based on twenty-two critical factors grounded to the MBNQA and the teachings of Deming, Juran and Crosby.

The response rate to the questionnaire was 68 percent, including thirty-seven quality award winners and twenty-six consultant firms. The results are presented in figure 4-2.
Figure 4-2 Critical Factors of TQM: Original Study
The findings of Ramirez and Loney (1993) indicate that top management commitment is not only essential, but so is demonstrated management participation by support activities such as setting policy, creating a vision and being involved in designing the strategic plans.

The main purpose of TQM implementation is to achieve customer satisfaction to improve the organisations' competitiveness and prosperity.

A change in culture is required to achieve the long-term benefits of TQM implementation.

Investment in people through training and education is essential to successful TQM implementation.

The findings also indicate that measurement and vendor partnership are not considered very critical. As figure 4-2 shows, these factors are presented in tier 2. Zairi (1996) comments that "measurement however is the catalyst for improvement and is also the essential ingredient for goal setting, monitoring and review". He adds "Vendor partnerships on the other hand are essential for establishing high competitive standards, based on low cost, high quality, speed of responsiveness and innovation amongst others".

Ramirez and Loney (1993) concluded that the temptation to act too quickly with such steps as quality circles, statistical process control, cost of quality, measurement and recognition may be misplaced if the supporting management foundation is not sound.
4-8-2 The Palestinian Study

Three hundred managers were targeted for the survey. The analysis of data provided by two hundred forty two respondents is presented in table 4-1, and the findings are presented in figure 4-3. The following results were found:

Table 4-1
Respondents’ Data Analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Neutral N1</th>
<th>Important N2</th>
<th>Critical N3</th>
<th>Total N</th>
<th>Possible points</th>
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<td>225</td>
<td>520</td>
<td>71.63</td>
</tr>
<tr>
<td>44</td>
<td>258</td>
<td>207</td>
<td>509</td>
<td>70.11</td>
</tr>
<tr>
<td>19</td>
<td>240</td>
<td>309</td>
<td>568</td>
<td>78.24</td>
</tr>
<tr>
<td>32</td>
<td>274</td>
<td>219</td>
<td>525</td>
<td>72.31</td>
</tr>
<tr>
<td>27</td>
<td>264</td>
<td>249</td>
<td>540</td>
<td>74.38</td>
</tr>
<tr>
<td>31</td>
<td>234</td>
<td>282</td>
<td>547</td>
<td>75.34</td>
</tr>
<tr>
<td>34</td>
<td>262</td>
<td>231</td>
<td>527</td>
<td>72.59</td>
</tr>
<tr>
<td>86</td>
<td>222</td>
<td>135</td>
<td>443</td>
<td>61.02</td>
</tr>
</tbody>
</table>
* It is very interesting that six factors out of the eight factors classified in tier 1 correspond to top management commitment and their demonstration of active involvement. This includes involvement in strategic quality planning, developing clear vision statement, goal setting and goal clarity through their participation in the steering committee.

* Customer satisfaction is the second most critical factor reflecting the importance of its impact on organisation’s level of competitiveness and prosperity.

* The second tier lists ten items that a majority of respondents rated as important but not essential or critical to a successful TQM implementation. It is apparent that most of the items can be categorised as tools and processes in a quality process, which cannot be implemented without securing top management commitment and support.
* It is surprising to have cultural change rated very low. This is an indication that cultural change will occur through top management commitment and training. If top management is committed then resources will be allocated to learn new methods and practices to achieve employees buy-in which creates the cultural change.
Figure 4-3 Critical Factors of TQM: Palestine Study
4-8-3 The National Health Care / UK Study

The study targeted providers of primary health care in the Yorkshire and Humberside regions in the UK. Results are presented in figure 4-4. The following observations can be made:

* Top management commitment was rated as the most critical factor. However activities such as strategic quality planning, goal setting, goal clarity, and top management steering committees were perceived as not essential although they are associated with top management role.

* Vender partnership and quality circles and a focus on improvement through projects and publicised success were considered high on the list. Education on the other hand was considered not critical. Zairi (1996) attributes these findings to the nature of work of the health care organisations.
Figure 4-4 Critical factors of TQM: National Health Care- UK Study

Tier 1
- Management commitment
- Q.Circles/Improvement Teams
- Customer Satisfaction
- Vendor Partnership
- Project Improvement Process
- Error Prevention
- Clear vision statement
- Publicised Successes
- Goal Setting
- Top Mgmt Steering Committee

Tier 2
- Cultural Change
- Goal Clarity
- Problem Identification
- Strategic Quality Planning
- Recognition Programmes
- Measurement
- Problem Solving

Tier 3
- Participative Management
- Education
- Statistical Process Control
- Cost Of Quality
- Zero Defect Attitudes

203
4-8-4 Middle East Study

A sample of thirty senior / middle managers representing five middle eastern countries (Suadi Arabia, Kuwait, Bahrain, Qatar and United Arab Emirates) and coming from different industry sectors, were targeted for this study. With a response rate of 56.67 percent, figure 4.5 shows the findings.

Most factors related to top management commitment and support was rated very critical. Education, customer satisfaction and participative management were also rated as tier 1 quality factors.

Vender partnership was rated very low on the list. This does perhaps suggest that the nature of industrial projects is such that partnership with suppliers is not considered to be of paramount importance. Most industries are in the commodities sectors and most rely on the exploitation of natural resources such as oil and natural gas (Zairi, 1996).
4-8-5 The Malaysia and Singapore Study

From the two countries 120 managers from different industry sectors were targeted for this study. The response rate was 25 percent and revealed the following results:

There is little difference between most critical quality factors. Top management commitment and demonstration of involvement in the various activities (developing vision statement, goal setting and goal clarity). However, strategic quality planning and having a structure for quality deployment through a top management steering committee were not considered critical although they are associated with top management role. According to Zairi (1996) this tends to suggest that there is poor understanding of the senior management role in TQM implementation or even perhaps that there is confusion regarding the role of TQM.

Education, customer satisfaction, participative management, cultural change, participative management and zero defect attitude are rated high on the list. However, vender partnership is considered very low. Figure 4.6 presents the findings of this study.
Figure 4-6 Critical Factors of TQM: Malaysia and Singapore Study
4-8-6 Ali’s Study

This study reveals results from analysing 595 questionnaire. As figure 4-7 reveals, top management commitment and role is highly rated in the list alongside with customer satisfaction, education and problem identification and solving. However the structure for quality deployment through a steering committee is not considered critical.

It is interesting to note that both vendor partnership and cultural change are rated very low. The reason for vendor partnership being rated very low could be attributed to the reason provided by Zairi (1996) for the Middle East sample. However, for cultural change, the reason provided for the Palestinian case could be appropriate.
Figure 4-7 Critical Factors of TQM: Ali's Study
4-8-7 West Indies Study

In this study respondents from Lever, Cannings, Glass, IBM, and West Indies companies returned 119 questionnaire. Figure 4-8 presents the findings of this study.

Thirteen factors were listed in tier 1 which includes all top management roles that demonstrate commitment. However, it is surprising to have education rated very low in the list.
Figure 4-8 Critical Factors of TQM: West Indies Study
4-9 Benchmarking the Finding

4-9-2 Benchmarking the Findings against the mean average score of all studies

To benchmark the twenty-two factors across countries and industry sectors, the mean average score of all studies was calculated. The findings of the Palestinian study is compared against the mean average score of both all studies and the Middle East studies to identify factors of over emphasis and under emphasis. This exercise provides a benchmarking measure to assess awareness and understanding of TQM implementation in Palestine. Table 4-2 shows the percentage score of each study and the mean average score for all studies and the mean average score of the Middle Eastern countries.
**Table 4-2**  
The Mean Average Score – All Studies  
And the Middle Eastern Countries’ Studies

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>Original</th>
<th>NHC/UK</th>
<th>West Indi</th>
<th>Mal-Sing</th>
<th>M.East</th>
<th>All's</th>
<th>Palestine</th>
<th>M.E.Mean</th>
<th>All Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management commitment</td>
<td>99.47</td>
<td>75.33</td>
<td>96.08</td>
<td>85.6</td>
<td>94.1</td>
<td>92.55</td>
<td>84.3</td>
<td>90.2</td>
<td>90.6</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>97.35</td>
<td>70.67</td>
<td>95.52</td>
<td>85.6</td>
<td>82.4</td>
<td>91.32</td>
<td>83.75</td>
<td>89.0</td>
<td>89.3</td>
</tr>
<tr>
<td>Clear vision statement</td>
<td>96.3</td>
<td>64.67</td>
<td>88.8</td>
<td>87.8</td>
<td>92.2</td>
<td>88.4</td>
<td>81.4</td>
<td>86.5</td>
<td>86.3</td>
</tr>
<tr>
<td>Cultural Change</td>
<td>91.01</td>
<td>58.67</td>
<td>91.04</td>
<td>78.9</td>
<td>72.5</td>
<td>70.31</td>
<td>68.73</td>
<td>69.9</td>
<td>73.1</td>
</tr>
<tr>
<td>Education</td>
<td>90.48</td>
<td>43.33</td>
<td>56.86</td>
<td>77.8</td>
<td>86.3</td>
<td>85.71</td>
<td>80.44</td>
<td>84.2</td>
<td>79.7</td>
</tr>
<tr>
<td>Participative Management</td>
<td>87.3</td>
<td>48</td>
<td>82.91</td>
<td>78.9</td>
<td>76.5</td>
<td>76.47</td>
<td>75.34</td>
<td>76.2</td>
<td>76.3</td>
</tr>
<tr>
<td>Strategic Quality Planning</td>
<td>86.24</td>
<td>55.33</td>
<td>85.15</td>
<td>73.3</td>
<td>78.4</td>
<td>81.06</td>
<td>79.75</td>
<td>80.6</td>
<td>80.1</td>
</tr>
<tr>
<td>Goal Clarity</td>
<td>86.24</td>
<td>58</td>
<td>86.27</td>
<td>81.1</td>
<td>84.3</td>
<td>84.82</td>
<td>82.78</td>
<td>84.2</td>
<td>83.3</td>
</tr>
<tr>
<td>Error Prevention</td>
<td>85.19</td>
<td>66.67</td>
<td>75.35</td>
<td>72.2</td>
<td>62.7</td>
<td>78.54</td>
<td>76.44</td>
<td>77.6</td>
<td>77.2</td>
</tr>
<tr>
<td>Top Mgmt Steering Committee</td>
<td>83.6</td>
<td>60</td>
<td>77.03</td>
<td>76.7</td>
<td>76.5</td>
<td>79.89</td>
<td>79.06</td>
<td>79.6</td>
<td>78.6</td>
</tr>
<tr>
<td>Problem Solving</td>
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<td>52</td>
<td>83.47</td>
<td>76.7</td>
<td>70.6</td>
<td>84.87</td>
<td>78.1</td>
<td>82.7</td>
<td>81.2</td>
</tr>
<tr>
<td>Measurement</td>
<td>81.48</td>
<td>52.67</td>
<td>82.91</td>
<td>71.1</td>
<td>72.5</td>
<td>74.12</td>
<td>76.17</td>
<td>74.7</td>
<td>74.9</td>
</tr>
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<td>Problem Identification</td>
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<td>86.83</td>
<td>77.8</td>
<td>70.6</td>
<td>83.98</td>
<td>77.55</td>
<td>81.9</td>
<td>81.1</td>
</tr>
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<td>Goal Setting</td>
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<td>60.67</td>
<td>83.75</td>
<td>78.9</td>
<td>86.3</td>
<td>83.64</td>
<td>83.33</td>
<td>83.6</td>
<td>82.2</td>
</tr>
<tr>
<td>Recognition Programmes</td>
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<td>75.63</td>
<td>77.8</td>
<td>70.6</td>
<td>74.4</td>
<td>74.38</td>
<td>74.3</td>
<td>73.8</td>
</tr>
<tr>
<td>Q.Circles/Improvement Teams</td>
<td>76.72</td>
<td>70.67</td>
<td>78.15</td>
<td>74.4</td>
<td>66.7</td>
<td>73.84</td>
<td>76.44</td>
<td>74.4</td>
<td>74.8</td>
</tr>
<tr>
<td>Vendor Partnership</td>
<td>76.72</td>
<td>68</td>
<td>73.39</td>
<td>70</td>
<td>54.9</td>
<td>70.42</td>
<td>78.24</td>
<td>72.3</td>
<td>72.4</td>
</tr>
<tr>
<td>Project Improvement Process</td>
<td>73.54</td>
<td>67.33</td>
<td>78.99</td>
<td>65.6</td>
<td>56.9</td>
<td>70.08</td>
<td>72.31</td>
<td>70.4</td>
<td>71.3</td>
</tr>
<tr>
<td>Publicised Successes</td>
<td>71.96</td>
<td>64</td>
<td>69.19</td>
<td>64.4</td>
<td>62.7</td>
<td>65.04</td>
<td>74.38</td>
<td>67.6</td>
<td>67.8</td>
</tr>
<tr>
<td>Statistical Process Control</td>
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<td>40.67</td>
<td>66.95</td>
<td>70</td>
<td>60.8</td>
<td>71.48</td>
<td>75.34</td>
<td>72.4</td>
<td>70.1</td>
</tr>
<tr>
<td>Cost Of Quality</td>
<td>65.08</td>
<td>35.33</td>
<td>79.83</td>
<td>75.6</td>
<td>70.6</td>
<td>70.64</td>
<td>72.59</td>
<td>71.2</td>
<td>70.3</td>
</tr>
<tr>
<td>Zero Defect Attitudes</td>
<td>64.02</td>
<td>34</td>
<td>78.71</td>
<td>77.8</td>
<td>60.8</td>
<td>74.79</td>
<td>61.02</td>
<td>70.6</td>
<td>69.7</td>
</tr>
</tbody>
</table>

| N | 63 | 50 | 119 | 30 | 17 | 595 | 242 | 854 | 1116 |
The mean average score was calculated using the weighted average of respondents in each study. That is the mean average score for each factor is the sum of multiplying the percentage score respondents in each study by the number of respondents. The sum of this process was then divided by the total number of respondents in all studies.

Comparing the results of the original study with the mean average score of all studies (figure 4-9) reveals that all factors are over emphasised except the following factors which are under emphasised:
Problem identification

Goal setting

Statistical process control

Cost of quality

Zero defects attitude
Figure 4.9 Benchmarking critical factors of TQM: Original versus mean score of all studies
For the NHC/UK study all factors are under emphasised as seen from figure 4-10.

In the West Indies study, the following factors are under emphasised (figure 4-11)

- Education
- Error prevention
- Top management steering committee
- Statistical process control

Whereas, the rest of the factors are over emphasised.
Figure 4-10 Benchmarking critical factors of TQM: NHC/UK versus mean score of all studies
Figure 4-11 Benchmarking critical factors of TQM: West Indies Study versus mean score of all studies

<table>
<thead>
<tr>
<th>Factor</th>
<th>All Mean</th>
<th>West Indi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Defect Attitudes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Of Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistical Process Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publicised Successes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Improvement Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vendor Partnership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.Circles/Improvement Teams</td>
<td></td>
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<tr>
<td>Recognition Programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Identification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Mgmt Steering Committee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Prevention</td>
<td></td>
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<tr>
<td>Goal Clarity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic Quality Planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participative Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
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<tr>
<td>Cultural Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear vision statement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management commitment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 4-12 illustrates that in the South East Asia (Malaysia and Singapore study) all factors were under emphasised except the following factors which are over-emphasised:

- Clear vision statement
- Cultural change
- Participative management
- Cost of quality
- Zero defects attitudes
Figure 4-12 Benchmarking critical factors of TQM: Malaysia-Singapore Study versus mean score of all studies

- Zero Defect Attitudes
- Cost Of Quality
- Statistical Process Control
- Publicised Successes
- Project Improvement Process
- Vendor Partnership
- Q.Circles/Improvement Teams
- Recognition Programmes
- Goal Setting
- Problem Identification
- Measurement
- Problem Solving
- Top Mgmt Steering Committee
- Error Prevention
- Goal Clarity
- Strategic Quality Planning
- Participative Management
- Education
- Cultural Change
- Clear vision statement
- Customer Satisfaction
- Management commitment
In the Middle East study, management commitment and most of their tasks (clear vision statement, strategic quality planning, goal clarity and goal setting) alongside education, participative management and cost of quality are over-emphasised, while the rest of the factors are under emphasised (figure 4-13).
Figure 4-13 Benchmarking critical factors of TQM: M. East study versus mean of all studies
In the second Middle East study conducted by Ali (1997), benchmarking reveals that most factors are over-emphasised. The under emphasised factors include (figure 4-14):

- Cultural change
- Strategic quality planning
- Measurement
- Quality circles / improvement teams
- Vendor partnership
- Project improvement process
- Publicised success
Figure 4-15, shows the benchmarking exercise of the Palestinian study. Half of the factors are over-emphasised and half of them are under-emphasised. The under-emphasised factors include:

- Management commitment
- Customer satisfaction
- Clear vision statement
- Cultural change
- Participative management
- Strategic quality planning
- Goal clarity
- Error prevention
- Top management steering committee
- Problem solving
- Problem identification
- Zero defects attitude
Figure 4-15 Benchmarking critical factors of TQM: Palestine study versus mean score of all studies
4-9-3 Benchmarking the Findings of the Middle Eastern Countries Results with the Mean Average Score of the Middle East

The benchmarking process reveals the following:

1. The results of the Middle East study over-emphasise the following factors (figure 4-16):
   - Management commitment
   - Clear vision statement
   - Cultural change
   - Education
   - Participative management
   - Goal clarity
   - Goal setting
Figure 4.16 Middle East versus Middle East Mean Score
2- The results of Ali’s study in the Middle East over-emphasise (figure 4-17):

Management commitment

Customer satisfaction

Clear vision statement

Cultural change

Education

Participative management

Goal clarity

Error prevention

Top management steering committee

Problem solving

Problem identification

Goal setting

Recognition programmes

Zero defect attitude
Figure 4-17 Ali's Study versus Middle East Mean Score

- Zero Defect Attitudes
- Cost Of Quality
- Statistical Process Control
- Publicised Successes
- Project Improvement Process
- Vendor Partnership
- Q.Circles/Improvement Teams
- Recognition Programmes
- Goal Setting
- Problem Identification
- Measurement
- Problem Solving
- Top Mgmt Steering Committee
- Error Prevention
- Goal Clarity
- Strategic Quality Planning
- Participative Management
- Education
- Cultural Change
- Clear vision statement
- Customer Satisfaction
- Management commitment
3- The results of the Palestinian study over-emphasise the following factors (figure 4-18):

Recognition programmes

Quality circles / improvement teams

Vendor partnership

Project improvement process

Publicised successes

Statistical process control

Cost of quality
Figure 4-18 Benchmarking critical factors of TQM: Palestine study versus M. East mean score
The analysis conducted so far provides evidence that low level of awareness and understanding of TQM implementation in the Palestinian context. Although, many of the factors classified in tier I are in accordance with the original study, still the level of awareness is low.

Most of the over-emphasised factors found in the previous parts of this chapter correspond to the tools of TQM applied at the operational level. Factors corresponding to the strategic level are under-emphasised. These include management commitment and the major tasks of top management role in demonstrating active involvement. Moreover, it is apparent that there is more emphasis on quality assurance and the control of non-conformance of the product-related factors. Costs of quality are more emphasised than the mean.

Recognition programmes and publicised successes are over-emphasised. This is evident by the under-emphasis of education and participative management to sustain TQM through improvement projects.

Under-emphasising the need to have a clear vision, a dedicated focus to customer satisfaction and the need to deploy TQM goals through strategic quality planning and continuous measurement and action demonstrate respondents belief that TQM is still at the early stages of implementation. It seems that culture is something special within the Palestinian context, which is taken for granted.
The need for goal clarity and having a quality strategic planning process and a top management structure for driving quality forward and deploying quality goals organisation-wide is also evident. Furthermore, problem solving, problem identification, quality circles and teamwork are all important for driving the improvement wheel forward towards continuous performance improvement. The emphasis on continuous learning through education and training to improve people's creativity, innovation and ability to add value for the benefit of the end customer is also evident.

Discussion of these findings is taken up in details in chapter 8.

4-10 Summary

The list of twenty-two factors generated by Ramirez and Loney (1993) was used to survey Palestinian managers' perception and level of understanding. The survey proved to be a very useful tool for checking applicability, order of critically and relevance of TQM in the Palestinian context. Benchmarking the twenty-two factors across countries and industry sectors using the results of various studies conducted in USA, UK, Malaysia and Singapore and some Middle Eastern countries was a useful vehicle to assess the level of awareness and understanding of TQM implementation in the Palestinian context.

This empirical study proved that factors related to top management commitment and their involvement in the strategic quality planning process focusing on customer satisfaction, and continuous learning through education and training are more emphasised than other factors. These factors are classified as tier 1 factors, which are very critical to successful TQM implementation.
Moreover, the benchmarking process revealed that the level of awareness and understanding is low compared to the responses of the original study’s sample, the mean average score of all studies and the mean average score of the Middle Eastern countries.

With these results, and as the main purpose of the research project is to construct a generic framework of TQM implementation in the Palestinian context, a step further of deeper investigation is needed to identify the critical quality factors for successful implementation process. As evident in the literature, studying organisations with quality initiatives is best to develop TQM implementation framework. Therefore, chapter 6 investigates the quality factors and their criticality as perceived by respondents who have quality initiatives implemented in their organisations.
Chapter five

Investigating Critical Factors of Quality:

Questionnaire Survey

5-1- Introduction:

This chapter deals with the first level investigation required to achieve the objectives of this study to develop a generic framework of TQM implementation in Palestine.

This level of Investigation is conducted using a questionnaire survey to identify the critical factors of quality that are absolutely important (essential) for successful implementation of TQM in Palestinian organisations.

The main aim of is to define the critical factors of quality as perceived by ISO certified organisations to determine the quality levers that management need to deploy to achieve successful implementation of Total Quality Management.

This requires directing the efforts towards stratifying the defined critical quality factors according to their perceived criticality to highlight the implementation phases priorities. This process of identifying the critical factors of Quality, and the determination of the quality levers with prioritising the implementation phases form the essence of the Total Quality Management framework of implementation.

As mentioned in Chapter 3, similar methodology is used to replicate Thiagarajan’s study (1996), and a comparison of findings is found in this chapter.
5-2- Objectives of the Questionnaire Survey:

The questionnaire survey targeting the total population of ISO certified companies in Palestine aims at identifying the perception of these organisation of each of the 31 quality factors identified through the literature review as to its level of criticality in successful implementation of TQM. The survey was originally designed primarily to allow objective identification of consensus amongst the organisations concerned (Thiagarajan, 1996).

5-3- Design and Management of the questionnaire survey:

5-3-1- Design of questionnaire survey:

The survey design is established to generate a large pool of information with minimum level of details to obtain a representative list of critical factors of quality from the responses of large number of organisations advanced in their application of quality management. A complementary stage for the questionnaire survey (to elaborate on the findings) is presented in the semi-structured interviews discussed in the following chapter.

5-3-1-1 Sample Selection:

To select the sample for the questionnaire survey, the criterion used is that selected organisation must be perceived to be advanced in their use of quality management. However, there is little research in the literature as to how to identify such organisations (Thiagarajan, 1996). Moreover, there is no reliable data bank listing such organisations operating in Palestine.
Developing a set of questions (to be incorporated in the survey questionnaire) in order to ascertain the level of use of TQM was ruled out (Thiagarajan, 1996). He attributes this for the following reasons:

1- Lacking empirical research in the literature means that the criteria used by one research to identify TQM organizations may not match those chosen by other researchers (Sinclair, 1994).

2- To keep the survey questionnaire short to improve survey responses.

3- Organizations may disqualify themselves when probed on their status of their “TQM ness”.

Researchers in the field of TQM have used various approaches to sample selection. Ramirez & Loney (1993), and Sinclair (1994) consider successful applicants of National Quality Awards as TQM leaders. In their study, Ramirez and Loney (1993) their sample was winners of the Malcolm Baldrige National Quality Award and other coveted US Quality Management Award.

Mann (1992) selected his sample through quality management publications. Other researchers considered participants of quality management courses and seminars, membership of quality management organisations (Black, 1993), and opinions of academics and a non-academic practitioners as the criteria for selection (Sinclair 1994).

Thiagarajan (1996) decided to use some of the criteria used by previous researchers as well as new ones he developed himself. His sample included the following:
Winners and qualifiers of national and state-level quality management awards.

Multinational Subsidiaries of winners of reputable quality awards such as (Malcolm Baldrige National Quality Award, The European Foundation for Quality Management, and the Deming's Quality Award in Japan).

Large Japanese multinational companies or their subsidiaries.

Organisations recognised in the mass media as TQM leader.

Organisations that had discussed their TQM processes in selected journals and at TQM conferences.

Organisations that had advertised for senior TQM positions in their organisations.

Organisations identified and introduced by experts.

Other researchers selected their sample from the database of ISO 9000 certified organisations (Quazi et al., 1998).

The decision concerning the survey sample was made to target the total population of the Palestinian ISO 9000 certified organisation. This decision was made because of the following reasons:

1- The concept of TQM in Palestine is very new.

2- Absence of Palestinian National Quality Awards or any quality awards to select winners or qualifiers.

3- Absence of previous research in the area of TQM in Palestine.

4- Absence of an authoritative database listing TQM Palestinian organisations.
5- Absence of multinational companies (British, American, or Japanese) in the Palestinian Territories

According to the Palestinian Ministry of industry and commerce (2000). The total number of ISO certified organisations was 72, looking for other sources such as, consulting companies that provided consultation for organisations in the certification process were contacted. From the lists provided from the consulting companies, several names overlapped with the list provided by the ministry of industry and commerce. The final sample list comprised 78 organisations, which is the total population.

Those organisations were considered to be the more advanced in their use of TQM in Palestine. Therefore, the sample size of 78 ISO 9000 certified organisations, selected using this criterion, are a representative sample of the Palestinian case, permitting generalised use of the survey findings.

Thiagarajan (1996), selected a sample of 86 organisations and concluded that the selected organisations are representative sample of organisations perceived to be advanced in their use of TQM in Malaysia which will permit the survey findings to be generalised.

5-3-1-2 Respondents Targeted:
The questionnaire is directed to the individual who is considered as a key person with respect to quality management in her or his organisation. This individual is directly involved in the implementation of quality management, hence, in a
position to answer the questions listed in the questionnaire as accurately as possible. Thus, the questionnaire is targeting TQM manager, director, quality assurance manager, management representative for quality...etc.

5-3-1-3 Survey Questionnaire Design:

The questionnaire that was produced by Thiagarajan (1996) is used to replicate his study in the Palestinian context. In designing the questionnaire, Thiagarajan (1996) and the approach used by Ramirez and Loney (1993) to specifically measure the perceived importance of the Quality Factors to the success of TQM in the respondent’s organisation which is in accordance with the objectives of this study at this level of Investigation.

Moreover, the process of identifying the Quality Factors critical to the success of TQM and their stratification in order of importance must be as robust and objective as possible.

This is a key feature in the questionnaire used by Thiagarajan (1996) which was absent in the questionnaires used by other researchers (Saraph et al., 1989; Mann, 1992; Black, 1993).

This emphasises the use of the questionnaire used by Ramirez & Loney (1993) which is based on a measurement scale solicit respondents to explicitly identify a quality factor as critical or not which permits objective judgements to be made.

In addition, the questionnaire focuses on the organisation by asking respondents to indicate how they perceive each of the 31 quality factors, as to their level of
importance to the success of TQM implementation in their organisation. This focus is absent in the studies of Saraph et al., (1989); Benson et al., (1991); Black (1993); and Black and Porter (1996).

Respondents were asked to rate each of the quality factors (labelled as quality-related factors in the questionnaire) as to their level of importance to a successful implementation of quality management processes in their organisation, using the following criteria:

**Critical**: Factors that you feel are critical and absolutely essential. The process stands a good chance of ending in failure if these factors are not part of the quality management process.

**Important**: Factors that you feel are important but not absolutely essential. The process will survive if these are not addressed, but the organisation may experience some unnecessary delays to its quality management process until these factors are eventually addressed.

**Minor Importance**: Factors that you feel are of minor importance. These factors will not seriously affect the success or failure of the quality management process.

Thiagarajan (1996) states that analysis and interpretation of the responses to the questionnaire will then allow objective judgement to be used in identifying
consensus on the level of perceived importance of the Quality Factors, a requisite to developing a hierarchical critical Quality Factor structure.

The questionnaire was translated into Arabic and a pre-test was conducted to test the workability and the rating to be used, the appropriateness of translation and the ease of filling it in. As Nunnally (1978) advises, that any pre-test must be carried on a similar group, in this case Palestinian managers, the questionnaire was distributed to managers joining the MBA programme as students of the researcher at Birzeit University.

They were asked to rate the quality factors as critical, importance or of minor importance according to the definition of the ratings. Respondents were asked if they faced any difficulty related to the rating, wording or problems to fill in the questionnaire. All respondents replied that they faced no problem at all in filling the questionnaire.

5-3-1-4 Choice of Variables:
Thiagarajan (1996) produced the set of variables used in the questionnaire by an in-depth review of literature and a robust reiterative process of verification and validation based on the experience of six British companies advanced in their use of TQM and the opinions of experts and academics.

The in depth literature review carried out in this study confirms the appropriateness of the questionnaire designed by Thiagarajan (1996).
5-3-2 Survey Management:

5-3-2-1 Administration of the Survey:

As the focus of analysis for this level of investigation is the organisation measured by the respondent’s perception, a single form was handed in per organisation. This single form approach eliminates the potential for bias and skewness of results. This can’t be achieved when multi-forms approach is used, as uneven number of returns across the organisation might occur. Moreover, the single form approach provides an accurate demographic analysis of variables while the multi-forms approach creates some confusion in terms of the unit of analysis.

Although the multi-form approach was used by other researchers (Saraph et al., 1989; Black and Porter, 1996) to allow them to work with larger pool of respondents, the single form approach used by Thiagarajan (1996) deem appropriate for this study of a small sample.

5-3-2-2 Response Rate:

Having a small sample which represents the total population targeted; being the first study of this kind to be carried in Palestine; and as the area of Palestine is very small (land area is 6170 squared km, 130 km long and 40-65 km in width), it was decided right from the beginning to achieve 100% response rate. This rate was chosen to establish a representative, credible and generalised set of data.

To achieve 100% response rate, the refined list of the total population provided by the Ministry of Industry and Commerce and the consulting companies was used to divide the population of the organisations into three main regions:
north, middle and south. A phone call was made by the researcher to every single organisation to identify the appropriate person who is involved in the quality management process. Reaching the targeted person, the researcher made an appointment for a five minutes with each to hand in the questionnaire in person. This created a positive attitude, right from the beginning.

Fortunately, the researcher knew many of the targeted persons in the capacity of being his mates, students or trainees. Upon appointment, the researcher handed in the questionnaire, with a covering letter explaining the objectives of the survey, to the targeted person.

A verbal explanation for the survey objectives stressing the importance of the survey and agreeing upon an appropriate date for collecting the filled in questionnaire were the major results of this short meeting. A phone call was made later for each targeted person to remind him with the agreed upon date for collecting the questionnaire. The researcher collected the questionnaire in the same manner he distributed them.

Seventy-eight usable questionnaires were collected, achieving the 100% response rate that was determined at the outset. Thiagarajan (1996) achieved 94.2% response rate which compares very favourably with similar studies involving TQM organisations (see Ramirez and loney. 1993; Sinclair, 1994; Black and Porter, 1996)
According to Thiagarajan (1996), the higher than-usual response rate was primarily attributed to the personal involvement in the data collection of the director of the National Productivity Corporation – Malaysia and his supervisor. This study confirms the fact of that personal involvement in the data collection increases the response rate significantly.

5-3-2-3 Organisations Breakdown:

The 78 organisations targeted in this study are all Palestinian organisations. The breakdown of these organisations represents a heterogeneous mixture, where 53.8 percent are manufacturers, 38.5 percent service, 5.1 percent producer and 2.6 percent construction companies. Figure 5-1 shows the distribution of the organisations by sector.

Figure 5-1 Breakdown of Organisations by Sector
Regarding the organisations size in terms of the number of employers, 83.3 percent of the targeted organisation have less than 500 employees, 10.3 percent of the organisations have 500-999 employees, whereas 6.4 percent of the organisation have more than 1000 employees. This is illustrated in figure 6-2.

Figure 5-2 Breakdown of Organisations by Size
TEXT CUT OFF IN ORIGINAL
5-4 Data Analysis:

5-4-1 Aim of the analysis:

The main aim of the data analysis is to interpret consensus on the level of perceived importance of the quality factors to the successful implementation of TQM in the respondents' organisations, and to identify similarities and commonalities between the quality factors to achieve the objectives of this level of investigation. Statistical summaries (frequency distribution) of the responses are very helpful for this kind of interpretation and identification processes.

5-4-2 Methodology:

As this study is a replication of Thiagarajan's study (1996), the same methodology of data analysis is used.

The level of measurement used in the survey questionnaire is a 3-point ordinal scale with critical, important, and minor importance as categories. Although the categories are ordered, they are non-numeric, i.e., there is no indication of distance between them. Integer scoring to assign numbers to the critical, important, minor importance categories (1,2,3 respectively) is used.

Based on the definitions used in this questionnaire survey, almost all quality experts will disagree that the interval between the three categories to be treated equality. This means that ordinal variables should not be treated as metric
variables. Hence, metric analysis should be precluded (Weisberg, 1992). In this regard, Thiagarajan (1996) pointed out that the treatment of ordinal scale as an interval in Ramirez and Loney’s (1993) study by assigning weights of 3, 2, and 1 for critical, important and neutral respectively to summarise their data is fallacious. He adds that even the study developed by Saraph et al., (1989) in the United States and its European replication by Black (1993) treated ordinal variables as metric ones.

Weisberg (1992) suggests to organise the data into frequency distribution to allow examination and description on the patterns of the responses to be made which can be exhibited effectively in tabular or graphic form. In frequency distribution, each category is listed with its corresponding number of responses (frequency) falling in to than category (see also Sekaran, 2000).

For this level of investigation, frequency distribution is most appropriate for the data organisation as it allows the responses distribution for a variable to be summarised by computing the typical value (point of central tendency) and it can be seen how typical this value is (measure of spread) (Weisberg, 1992; Carlson and Thorne, 1997). This is exactly what is needed to achieve the objective identification of consensus and the quantitative comparison of criticality of the quality factors.

5.4.3 Measure of Centre (Point of central Tendency):
The point of central tendency summarises the typical response of a variable. This is very useful as it represents the entire set of data in the distribution (Carlson and
Thorne, 1997). Specifying the point of central tendency that represents the entire set of responses for each of the quality factors incorporated in the questionnaire survey is a fundamental requisite of the objectives of this level of investigation. As the scale categories (critical, important, minor importance) used in the questionnaire relate to the level of importance of the quality factors being rated as of critical, important, or minor importance to the success of TQM in Palestinian organisations.

The identification of the point of central tendency of a distribution can be achieved using three common methods (Levin and Rubin, 1994). These common methods are the mean, the median and the mode. The measure of centre must allow ease of identification of perceived importance of each of the quality factors in an objection manner (Thiagarajan, 1996).

5-4-3-1 The Mean:
Mean is the arithmetic average (Carlson and Thorne, 1997). By this definition, the mean is totally inappropriate to achieve the aim of this level of investigation. This is true since the rating scale used in the questionnaire is ordinal not numeric.

5-4-3-2 The Median:
Median is the point, which divides the distribution in half so that the same number of cases lie above and below the point (Levin and Rubin, 1994). Again, the median is not appropriate to achieve the objectives of this study as by definition, it is a positional measure, showing the category for central observation. It is,
therefore, important that the method be appropriate to the problem (Hammond et al., 1970)

5-4-3-3 The Mode:
Mode is the measure of central tendency indicating the category that contains the largest number of responses (Levin and Rubin, 1994). The mode measures the most typical category and objectivity shows what the consensus on a quality factor is. Therefore, modal category can be equated to a quality factor being perceived (rated) as critical, important or minor importance to the success of TQM in Palestinian organisations. Thiagarajan (1996) states that given that identification of such a consensus is one of the focal points of the investigation. He adds, this makes the selection of the mode as the measure of central tendency appropriate for this investigation.

5-4-4 Measurement of Spread:
As distribution may have similar centres with different amount of variation, the organisation of data into frequency distribution and calculating the point of central tendency will not provide a satisfactory description of the problem. Weisberg (1992) states that measuring centre finds the typical value for a variable, while measuring the variability or spread of the response distribution tells us how typical that value is. This highlights the importance of finding the variability (spread) of the distribution. According to Weisberg (1992), there is no single agreed-upon frequency-based measure of spread. It is, therefore, suggested to use several measures of spread.
rather than a single one (see also Levin and Rubin, 1994; Carlson and Thorne, 1997).

The range variance and standard deviation are the commonly used measures of dispersion or spread. For metric variables the appropriate measures of spread are the variance and the standard deviation.

Therefore, variance and standard deviation are not of this study’s concern to be considered. The other appropriate measures of spread are variation ratio, index of diversity and index of qualitative variation (it is the norm version of index of diversity) (Weisberg, 1992).

These lower level measures of spread are appropriate for this kind of investigation. Before, discussing these spread measures, it is useful to put all what have been said in the perspective of the main objectives of this level of investigation. As the mode identifies what the consensus on a quality factor is, and permits the organisation of the quality factors as critical, important or minor importance; measuring how typical critical the quality factor is, will permit the interpretation of the extent of consensus and exact comparisons of the importance of the critical quality factor. Measuring the spread is therefore an important prelude to build the critical quality factors in a hierarchical structure.

Having said that it is a rational step to discuss the various measures of spread appropriate for this investigation in more details.
5-4-4-1 Range:

Range is defined as the difference between the maximum and minimum data values (Carlson and Thorne, 1997). In the context of this investigation, the range is the difference between the extreme end categories when responses cluster. The range will indicate how much the perceived criticality of a quality factor varies in practice.

According to the scale used in the questionnaire (3-point scale), there are only three possible range values. A zero value of the range occurs when all respondents give a quality factor the same rating (that is, 1, 2, or 3) where the maximum rating and the minimum rating will be the same. Therefore, if all respondents rate the quality factor with (1), then the range equals the difference between 1 and 1, that is, zero. The same applies if, the quality factor was rated by all respondents with 2 or 3.

A zero value will mean no spread on the quality factor, which indicates a tendency for all the responses to cluster into any one of the three categories. For example, a zero range value for a response distribution with important as the modal category means unanimity in returning the quality factor as important.

A value of one will indicate that the tendency of responses is dispersed around two consecutive categories. This is to say: all respondents rated a quality factor as
critical and important or it was rated as important and of minor importance by all respondents. If the first rating occurs, the maximum scale value will be 2 (for important) and the minimum scale value will be 1 (for critical) and the range will equal 2-1=1. The same applies if the quality factor was rated as important and of minor importance.

The maximum scale value in this case is 3 (for minor importance) and the minimum scale value is 2 (for important) the range therefore will equal 3-2=1.

A value of two will indicate a tendency for the responses to be dispersed around all three categories or two extreme end categories. That is either a quality factor was rated as critical, important and of minor importance by all respondents, or it was rated as critical and of minor importance by all respondents. In both cases, the maximum scale value is 3 (for minor importance) and the minimum scale value is 1 (for critical), and the range value therefore will equal 3-1=2.

In the instances of a value of one or a value of two of the range, the range by itself tells little about the general agreement on the importance of a quality factor. Moreover, this makes the task of building a hierarchy of quality factors more difficult. When a quality factor is rated as critical by say 97% of respondents while the same quality factor is rated as of minor importance by 1% of the respondents (2% of respondents rated the quality factors as important). In this case, the range value will be (2) where as the percentage of consensus is 97%. This highlights the importance of looking at other complementary measures of spread to achieve the objectives of this investigation.
5-4-4-2 Variation Ratio:

Variation ratio is the proportion (percentage) of responses that do not fall into the modal category. It is an appropriate measure of spread for the ordinal (non-numeric) data that we have in this investigation. Variation Ratio (VR) is calculated using the following simple formula:

\[ VR = 1 - \text{Frequency distribution of the mode}. \]

Unless the extent of consensus is indicated, knowing what the consensus is on a quality factor is not satisfactory as what the consensus is by itself says little. Because of that, variation ratios is a very useful measure of spread for the purpose of this study as it shows how descriptive the mode is of the data (Weisberg, 1992). Therefore, variation ratio must be computed to show the extent of consensus on objective basis in identifying a quality factor as critical. A value of zero will mean unanimity (all respondents rated the quality factor as critical).

Values of 0.5 or less mean majority consensus (more than 50 percent of respondents rated the quality factor as critical), values of more than 0.5 indicate no majority consensus in rating a quality factor as critical.
However, the variation ratio doesn't take into account the full distribution of responses. The measure of spread that does take such an account when dealing with non-metric data is the index of diversity.

5-4-4-3 Index of Diversity:

The index of diversity is defined as a dispersion measure based on a proportion of responses in each category (Weisberg, 1992). In mathematical terms:

$$\text{Index of Diversity} = 1 - (p_1^2 + p_2^2 + \ldots + p_k^2).$$

Where $p_k$ is the proportion of responses in category $k$ and $k$ is the number of categories. For example, if 90% of respondents rated a quality factor as critical, 7% of respondents rated the same quality factor as important and the remaining 3% of respondents rated the quality factor as of minor importance then the index of diversity

$$= 1 - \{0.9^2 + 0.07^2 + 0.03^2\}$$

$$= 1 - 0.816 = 0.184$$

This index shows the degree of concentration of responses in a few large categories as squaring proportions emphasises the large proportion, much more than the small ones (Weisberg, 1992)

Thus, in the context of this investigation, the index of diversity can be considered as a surrogate measure of agreement amongst respondents concerning the response distribution of each of the quality factors.
A low index value means general agreement on the importance of a quality factor, whereas, high index value means general disagreement on the importance of the quality factor. This means that an index value close to zero will imply near unanimity. A value close to 0.5 is, when there is equal clustering (concentration) around two large categories.

A near uniform distribution in the three categories will give a maximal value close to 0.667 (3-1/3), which in this case will mean high level of disagreement. This index will be used to calculate the comparative criticality index later in this chapter.

5-5 Analysis of responses:

The use of mode as the measure of central tendency for this level of investigation is proved appropriate as all of the quality factors response distributions are unimodal. Unimodal means that the most frequently occurring responses appear on one category, illustrated as a single peak in the bar charts representing the response distribution of each of the 31 quality factors (see figure 5-3). These charts are a graphical representation of the tabular statistical summaries of the frequency distributions, which are presented in appendix B.
As it is apparent from the charts presented in figure (5-3), there is no U-shaped (double-peaked) distribution. The J-shaped is prevailing in most distribution where very few are short and rounded (Platykurtic).

Thirty quality factors were stacked on critical and important categories, while one quality factor was returned as of minor importance by the vast majority of the respondents.

This factor is related to employees’ union support of the organisation’s quality initiative. This is attributed to the fact that unionisation is not a common Phenomena in the Palestinian context due to the recent establishment of the Palestinian National Authority which took over late 1993 as a result of the Peace treaty signed by the Palestinian Liberation Organisation and Israel.
The non-existence of the U-shaped distributions indicates homogeneity of the sample, as there is no two distinct groups in the sample of dichotomy in opinions on the quality factors importance are implied. Whereas, the short and rounded (Platykurtic) distributions represent little agreement on the importance of the quality factor and its impact on the success of TQM implementation.

The absence of the double peaked and platykurtic distributions and the presence of large numbers of J-Shaped distribution are in accordance with the shapes of distributions of the original study of Thiagarajan (1996). This should be expected given that every quality factor in the survey questionnaire had gone through a reiteration process to verify and validate its criticality as a quality factor during the preliminary research conducted by Thiagarajan (1996) and the researcher’s literature review process.

5-5-1 Modal Category:

The mode provides a summary of how respondents perceive the criticality of the quality factor to the success of the implementation process of TQM in their organisations. Based on the identification of the mode for each quality sample, 19 factors were identified as critical, 11 factors were identified as important and only one factor was identified as of minor importance which is related to the employee’s union support to the organisation’s quality initiative. Thus, the three types of modal categories are identified, that is, critical, important and of minor importance.

These modal categories are presented in table 6-1, below.
### Table 5-1

#### Quality Factors' Modal Category

<table>
<thead>
<tr>
<th>Modal Category – Critical</th>
<th>Question</th>
<th>Quality Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>1</td>
<td>Senior executives assume active responsibility for evaluation and improvement of management systems, and leading quality derive.</td>
</tr>
<tr>
<td>Q2</td>
<td>2</td>
<td>Visibility of senior executive commitment to quality and customer satisfaction.</td>
</tr>
<tr>
<td>Q3</td>
<td>3</td>
<td>Clear, consistent communication of mission statement and objectives defining quality values, expectations and focus.</td>
</tr>
<tr>
<td>Q4</td>
<td>4</td>
<td>Comprehensive policy development and effective deployment of goals</td>
</tr>
<tr>
<td>Q6</td>
<td>5</td>
<td>Effective top-down and bottom-up communication.</td>
</tr>
<tr>
<td>Q7</td>
<td>6</td>
<td>Elements of quality management structure in place to manage the organisation’s quality journey.</td>
</tr>
<tr>
<td>Q8</td>
<td>7</td>
<td>The entire organisation understands that each individual and each process has internal customers and suppliers.</td>
</tr>
<tr>
<td>Q9</td>
<td>8</td>
<td>The entire workforce understands, and is committed to the vision, values, and quality goals of the organisation.</td>
</tr>
<tr>
<td>Q12</td>
<td>9</td>
<td>Supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement, coaches of new methods and leaders of empowered employees.</td>
</tr>
<tr>
<td>Q15</td>
<td>10</td>
<td>Training for employees to improve interactive skills (such as communication skills, effective meeting skills, empowerment and leadership skills).</td>
</tr>
<tr>
<td>Q16</td>
<td>11</td>
<td>Training for employees in problem identification and solving skills, quality improvement skills and other technical skills.</td>
</tr>
<tr>
<td>Q19</td>
<td>12</td>
<td>Systematic review and analysis of key process measures that have a direct or indirect impact on value-addition to customer satisfaction.</td>
</tr>
<tr>
<td>Q20</td>
<td>13</td>
<td>Problem solving and continuous improvement processes based on facts and systematic analysis.</td>
</tr>
<tr>
<td>Q21</td>
<td>14</td>
<td>Application of total quality approach to the management of support service and business process.</td>
</tr>
<tr>
<td>Q25</td>
<td>15</td>
<td>Cost of quality process to track rework, waste, rejects and for continuous improvement</td>
</tr>
<tr>
<td>Q27</td>
<td>16</td>
<td>A formal documented quality management system in place.</td>
</tr>
<tr>
<td>Q28</td>
<td>17</td>
<td>Reliance on reasonably few dependable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money.</td>
</tr>
<tr>
<td>Q30</td>
<td>18</td>
<td>Comprehensive identification of customers and customer needs and alignment of process to satisfy the needs.</td>
</tr>
<tr>
<td>Q31</td>
<td>19</td>
<td>The use of customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction.</td>
</tr>
</tbody>
</table>
### Modal Category – Important

<table>
<thead>
<tr>
<th>Question</th>
<th>Quality Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q5</td>
<td>20- Top management push decision-making to the lowest practical level.</td>
</tr>
<tr>
<td>Q10</td>
<td>21- The use of employee surveys and tracking of other key measures to assess employee support of and involvement in the quality initiatives.</td>
</tr>
<tr>
<td>Q11</td>
<td>22- Employees suggestion schemes in place, with target time scales for management response.</td>
</tr>
<tr>
<td>Q14</td>
<td>23- System for recognition and appreciation of quality efforts and success of individuals and teams.</td>
</tr>
<tr>
<td>Q17</td>
<td>24- Informal benchmarking and other forms of information acquisition and sharing with organisations in different sectors and industries to identify best practices for improvements and opportunities.</td>
</tr>
<tr>
<td>Q18</td>
<td>25- Competitive benchmarking made against primary competitors.</td>
</tr>
<tr>
<td>Q22</td>
<td>26- The use of self-assessment tools and other mechanisms to track and improve performance gaps in the implementation and effectiveness of systems, processes and practices.</td>
</tr>
<tr>
<td>Q23</td>
<td>27- A team approach (such as quality circles, cross-functional teams) in problem solving and continuous improvement.</td>
</tr>
<tr>
<td>Q24</td>
<td>28- The use of statistical process control to control variability and improve processes.</td>
</tr>
<tr>
<td>Q26</td>
<td>29- Zero defects as the quality performance standard.</td>
</tr>
<tr>
<td>Q29</td>
<td>30- Long term relationship and working partnership with key suppliers.</td>
</tr>
</tbody>
</table>

### Modal Category – Minor Importance

<table>
<thead>
<tr>
<th>Question</th>
<th>Quality Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q13</td>
<td>31- Employees’ union support of the organisation’s quality initiative.</td>
</tr>
</tbody>
</table>

Thiagarajan (1996), states that it is a mathematical possibility that the typical category of a quality factor may have relatively fewer returns compared to the same category of another quality factor with a different typical category. In such instances, some special discussion would be warranted.
No such cases are found in this study. This is evident from the frequency distribution of the quality factors presented in appendix (A) and from the absence of a double peaked and platykurtic distributions.

Although a quality factor was returned as of minor importance which means that a third mode is present, still the majority of the quality factors were returned as critical. This is attributed to the in depth literature review process carried out for this study and the original study, in addition to, the rigorous process of verifying and validating the importance of each of the quality factors.

5-5-2 Range Analysis:

As mentioned earlier in this chapter, the range is used to indicate how the perceived importance of a quality factor varies in practice.

This investigation reveals that the response distributions of the quality factors include only two possible types of ranges, which are 1 & 2. Unfortunately a zero value of range was not exhibited. Few distributions exhibit a range of 1 (9 distributions, the majority of the distribution exhibit a range value of 2 (22 distributions), while no single distribution exhibits a range value of zero.

Distributions with a range value of 1 can be dispersed into two categories, that is, critical and important, whereas distributions with a range value of 2 can be dispersed into all three categories. However, in this investigation, distributions with a range value of 1 are clustered into one category, that is, critical. The other 22 distributions are dispersed into the three categories.
To illustrate these findings, table 5-2 summarises the categories of the quality factors by the range values.

Table 5-2

<table>
<thead>
<tr>
<th>Range Value</th>
<th>No of Factors</th>
<th>Quality Factor</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>Q1, Q2, Q3, Q4, Q7, Q9, Q20, Q27, Q30</td>
<td>Critical</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>Q5, Q6, Q8, Q10-Q19, Q21-Q26, Q28, Q29, Q31</td>
<td>Critical, Important, of minor importance</td>
</tr>
</tbody>
</table>

It is apparent from this categorisation of the quality factors that in practice organisations perceive the importance of the quality factors with heterogeneous patterns. That is supported in the literature, which indicates that the level of emphasis on many of the quality factors varies in practice.

Looking at table 5-1 and 5-2 permits an objective assessment of the implication of the response pattern. The quality factors with a range value of 1 were returned as critical indicating that these nine quality factors impact the successful implementation of TQM. The remaining 22 quality factors have a range value of 2, implying that some respondents returned these factors as of minor importance. From these quality factors, the majority consensus returned 11 factors as important and 1 quality factor as of minor importance, namely, Q5, Q10, Q11, Q14, Q17, Q18, Q22, Q23, Q24, Q26, Q29; and Q13 respectively.
Therefor, it will be rational not to analyse these 12 quality factors and to treat all of them as non-essential quality factors in the implementation of TQM in the Palestinian context.

This supports the conclusion from the literature review that there is little unanimity essentiality of many of the quality interventions to the success of TQM implementation. This highlights the need for stratifying the quality factors in terms of their importance (criticality).

5-5-3 Variation Ratio and the Index of Diversity:

Using the variation ratio will help separating the quality factors with majority consensus from other quality factors with no majority consensus as perceived by some respondents as of no consequence to the success of failure of the implementation process of TQM.

As stated earlier in this chapter, variation ratio is computed to show objectively the consensus of opinions in rating the quality factor as critical. This objective categorisation of the quality factors is based on the following:

Variation ratio of zero means unanimity

Variation ratio of 0.5 and less means majority consensus

Variation ratio of more than 0.5 mean no majority consensus.

This categorisation process of the quality factors should be consistent with the categorisation process using the Index of Diversity.
The index of diversity shows the degree of concentration of responses in a few large categories. Therefore, the index of diversity can be considered as a surrogate measure of agreement amongst respondents concerning the response distribution of each of the quality factors. A low index value means general agreement on the importance of a quality factor. This means that an index value close to zero will imply near unanimity. A value close to 0.5 is when there is equal clustering around two large categories, and a value close to 0.667 will indicate high level of disagreement. Table 6-3 shows the computed variation ratio and the index of diversity for the 19 quality factors returned by respondents as critical.

Table 5-3

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>Variation Ratio</th>
<th>Index of Diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Q1</td>
<td>0.012</td>
<td>0.024</td>
</tr>
<tr>
<td>2 Q7</td>
<td>0.167</td>
<td>0.278</td>
</tr>
<tr>
<td>3 Q2</td>
<td>0.205</td>
<td>0.326</td>
</tr>
<tr>
<td>4 Q27</td>
<td>0.231</td>
<td>0.355</td>
</tr>
<tr>
<td>5 Q20</td>
<td>0.308</td>
<td>0.426</td>
</tr>
<tr>
<td>6 Q3</td>
<td>0.308</td>
<td>0.426</td>
</tr>
<tr>
<td>7 Q4</td>
<td>0.308</td>
<td>0.426</td>
</tr>
<tr>
<td>8 Q30</td>
<td>0.333</td>
<td>0.444</td>
</tr>
<tr>
<td>9 Q9</td>
<td>0.346</td>
<td>0.453</td>
</tr>
<tr>
<td>10 Q15</td>
<td>0.359</td>
<td>0.469</td>
</tr>
<tr>
<td>11 Q6</td>
<td>0.359</td>
<td>0.480</td>
</tr>
<tr>
<td>12 Q12</td>
<td>0.397</td>
<td>0.488</td>
</tr>
<tr>
<td>13 Q16</td>
<td>0.436</td>
<td>0.513</td>
</tr>
<tr>
<td>14 Q8</td>
<td>0.449</td>
<td>0.544</td>
</tr>
<tr>
<td>15 Q21</td>
<td>0.462</td>
<td>0.549</td>
</tr>
<tr>
<td>16 Q31</td>
<td>0.487</td>
<td>0.571</td>
</tr>
<tr>
<td>17 Q19</td>
<td>0.500</td>
<td>0.546</td>
</tr>
<tr>
<td>18 Q25</td>
<td>0.513*</td>
<td>0.557</td>
</tr>
<tr>
<td>19 Q28</td>
<td>0.513*</td>
<td>0.592</td>
</tr>
</tbody>
</table>

*Represents no majority consensus.

Table 5-3 shows the critical quality factors arranged according to their variations ratio values and index of diversity. From this table, it is obvious that the index of
diversity values support the level of agreement identified by the variation ratio. This is apparent, as the value of the index of diversity did not reach the maximal value of 0.667. This implies agreement among the respondents concerning the criticality of these quality factors.

The variation ratio values, however, identified 17 quality factors to have majority consensus (those with variation ratio value of 0.5 or less), and two quality factors of no majority consensus (those with variation ratio values greater than 0.5). The findings, therefore, represent the fundamentals to build the stratified structure of the critical quality factors in the process of developing the generic framework for successful TQM implementation in the Palestinian Context.

5-6 Stratification of the Identified Critical Quality Factors:
The methodology of data analysis so far has identified the critical quality factors that are absolutely important and essential to successful TQM implementation process. Two more requisites are needed to construct the basis to develop the TQM implementation model. These are ordering the critical quality factors into a hierarchical structure and (based on the level of majority consensus in returning the quality factor as critical) stratifying the hierarchical structure.

Using the range, and the variation ratio provide an opportunity for objective judgement in the process of ordering and stratifying the critical quality factors, exactly as the mode did in the identification of these quality factors.
Based on the modal category, the quality factors were identified as critical, important, and of minor importance as shown in table 5-1. Thus 19 quality factors were identified objectively as critical factors. Sorting and ordering these quality factors according to the level of consensus is measured by the variation ratio, which shows how descriptive the mode is of the responses.

As a measure of extent of consensus in rating quality factors as critical, variation ratio is appropriate as a surrogate measure of relative importance. The sorting and ordering of the 19 critical quality factors using the variation ratio and the Diversity Index provide a hierarchical structure in a descending order of criticality which is presented in table 5-3.

Having identified the critical quality factors using the modal category, and developed the hierarchical structure using the variation ratio, the stratification of these critical quality factors becomes essential.

Many researchers stratified the hierarchical structure of the critical quality factors in the process of building their TQM implementation models (Ramirez and Loney, 1993; Black, 1993; Mann, 1992; Thiagarajan, 1996; Ali; 1997). All of these researchers stratified the quality factors into three hierarchical tiers of importance to develop their models.

As discussed in the previous chapter, Ramirez and Loney developed a three-tier structure based on the majority rule of responses. They stratified the quality factors into critical, important and neutral. Ali (1997) replicated this study and
stratified the quality factors similarly. Applying arbitrary criteria, Mann (1992) stratified the identified quality factors into three categories, which is inappropriate for this study. The criteria of quality factors stratification used by Black (1993) is also inappropriate, as he used the relative size of the total factor importance score as the basis for stratification.

Moreover, Ramirez and Loney (1993) stratified all the quality factors into three tiers even those that were identified as important and neutral. Therefore, their approach to stratification is inappropriate for this study.

On the other hand, Thiagarajan (1996) stratified the quality factors applying the modal category in the identification process of the quality factor; the variation ratio to rank the criticality of the identified quality factors; and used the variation ratio and the range as the objective criteria for three tiers stratification of the quality factors.

It is, therefore, apparent that previous studies suggest a three-tier hierarchical structure of critical quality factors. It is, however, pertinent that the number of tiers primarily rests on the aim of stratification and, to a certain extent, is determined by the survey returns (Thiagarajan, 1996).

Having similar research objectives as those of Thiagarajan (1996), a three-tier structure is appropriate for the process of developing an implementation framework of TQM. Moreover, the range and the calculated variation ratio values impose a three-tier structure. That is, if several factors were returned with a range
value of zero, and others with range value of 1 and 2, and the calculated variation ratio values were between zero and greater than 0.5, then, most probably a 4-Tier structure might prevail.

Stratification of the quality factor, therefore, describes the identified quality factors with regard to their degree of impact in the successful implementation of TQM applying prioritisation process of these quality factors according to their perceived criticality. Table (5-4) presents the quality factors ranked in a descending order of their variation ratio and the range of these factors. The criteria to be used in the stratification process is as follows:

**Tier 1 Quality Factors:**
Those quality factors that have a range value of 1 with the highest consensus level.

**Tier 2 Quality Factors:**
Those quality factors that have a range value of 2, but their variation ratio value is 0.5 or less.

**Tier 3 Quality Factors:**
Those quality factors that have a range value of 2, and their variation ratio value is greater than 0.5.
### Table 5-4

**Quality Factors Clusters**

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>Range =1</th>
<th>Range =2</th>
<th>Variation Ratio Value</th>
<th>Stratification into Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q1</td>
<td>0.012</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Q7</td>
<td>0.167</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Q2</td>
<td>0.205</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Q27</td>
<td>0.231</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Q20</td>
<td>0.308</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Q3</td>
<td>0.308</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Q4</td>
<td>0.308</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Q30</td>
<td>0.333</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Q9</td>
<td>0.346</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Q15</td>
<td>0.359</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Q6</td>
<td>0.359</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Q12</td>
<td>0.397</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Q16</td>
<td>0.436</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Q8</td>
<td>0.449</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Q21</td>
<td>0.462</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Q31</td>
<td>0.487</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>Q19</td>
<td>0.500</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>Q25</td>
<td>0.513</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Q28</td>
<td>0.513</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

#### 5-6-1 Critical Quality Factors Stratified in Tier1:

The Tier 1 critical quality factors are those that are essential to successful TQM implementation as perceived by all respondents to impact on the success of TQM implementation.
This tier includes 9 quality factors, which are (in order):

1* Senior executives assume active responsibility for evaluation and improvement of management system, and leading quality drive.

2* Elements of quality management structure in place to manage the organisation’s quality journey.

3* Visibility of senior executive commitment to quality and customer satisfaction

4* A formal documented quality management system in place.

5* Problem solving and continuous improvement processes, based on facts and systematic analysis.

6* Clear, consistent communication of mission statement and objectives defining quality values, expectations and focus.

7* Comprehensive policy development and effective deployment of goals.

8* Comprehensive identification of customers and customer needs and alignment of processes to satisfy the needs.

9* The entire workforce understands, and is committed to the vision, values, and quality goals of the organisation.

As table 5-4 shows these critical quality factors have a range of 1 with a majority consensus as indicated with the low variation values. This represents a higher degree of agreement amongst respondents compared to the other quality factors.

The low values of variation ratio and a range value of 1, indicate that there is uniformity in this tier of quality factors amongst organisations concerning the
criticality of these factors regardless of the organisation's type of business (sector) or its size.

Given such uniformity in the various organisations' perception, these quality factors should be treated as basic components of the TQM implementation model that must be considered with priority in the early stages of the implementation process. Particularly the critical factor concerned with (Senior Executives assume active responsibility for evaluation and improvement of management system, and leading the quality drive) which was considered by all respondents (except one) as a critical factor.

5-6-2 Critical Quality Factors in Tier 2:

The Tier 2 quality factors are absolutely essential as perceived by the majority of the organisations while some organisations perceive them to be of no consequence with regard to the success of TQM implementation.

Tier 2 includes 8 quality factors, which are arranged in order to their majority consensus level as follows:

1* Training for employees to improve interactive skills (such as communication skills, effective meeting skills, empowerment and leading skills)
2* Effective top-down and bottom-up communication.
3* Supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement, coaches of new methods, mentors and leaders of empowered employees.

4* Training for employees in problem identification and solving skills, quality improvement skills and other technical skills.

5* The entire organisation understands that each individual and each process has internal customers and suppliers.

6* Application of total quality approach to the management of support services and business processes.

7* The use of customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction.

8* Systematic review and analysis of key process measures that have a direct and indirect impact on value-addition to customer satisfaction

As seen from table 5-4 these quality factors have a range of 2 (which means that some respondents considered these factors as of minor importance) with a majority consensus as indicated with the variation ratio value of 0.5 or less. This can be interpreted as more than half of the respondents perceived these quality factors as absolutely essential for successful implementation of TQM. These critical quality factors are suggested to be addressed immediately after addressing the Tier 1 quality factor in the TQM implementation framework.
5-6-3 Critical Quality Factors in Tier 3

The Tier 3 quality factors are those that have the lowest impact on the implementation process of TQM. Tier 3 includes the remaining two critical quality factors, which are arranged in order to their majority consensus as follows:

1* Cost of quality process to track rework, waste, rejects and for continuous improvement.

2* Reliance on reasonable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money.

As presented in table 5-4 these critical quality factors have a range value of 2 and a variation ratio value greater than 0.5.

This means that relative to the other seventeen critical quality factors, less than 50 percent (about 49 percent) of the respondents (organisations) perceive these critical quality factors as absolutely essential. Some respondents perceive them to be of no impact in the implementation process of TQM. Moreover, the high value of the variation ratio for these critical factors indicates low majority consensus (low level of agreement) amongst the responding organisations as to the level of criticality of these critical quality factors.
5-7 Comparison of results with the original study:

Thiagarajan (1996) identified 22 critical quality factors using a sample of 81 organisations selected on their level of advanced in TQM implementation where about 44 percent of these organisations were non-Malaysian (Japanese, American, Europeans and others) and about 56 percent of these organisations were Malaysian.

This study identifies 19 critical quality factors using the same methodology of the original study (Thiagarajan, 1996) using a sample of 78 organisations representing the total population of the Palestinian ISO 9000 certified organisations where 100 percent of these organisations are National (Palestinian) organisations. Table 5-5 summarises this comparative items related to samples.
Many of the identified critical quality factors in this study were found critical in the original study, however, it is their stratification in the three tiers that varies. This investigation identified using the modal category as the criterion used by the original study 19 critical quality factors, while the original study identified 22 critical quality factors. Table 5-6 provides insight concerning these factors.
Table 5-6
Comparing the Identified Quality Factors

<table>
<thead>
<tr>
<th>CRITICAL QUALITY FACTORS</th>
<th>Original</th>
<th>Palestinian</th>
<th>Common Factors</th>
<th>Only Original</th>
<th>Only Palestinian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>q1</td>
<td>q1</td>
<td>q1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>q2</td>
<td>q2</td>
<td>q2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>q3</td>
<td>q3</td>
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<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>q6</td>
<td>q6</td>
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<tr>
<td>6</td>
<td>q7</td>
<td>q7</td>
<td>q7</td>
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<tr>
<td>7</td>
<td>q8</td>
<td>q8</td>
<td>q8</td>
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<td></td>
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<tr>
<td>8</td>
<td>q9</td>
<td>q9</td>
<td>q9</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>q11</td>
<td>q12</td>
<td>q12</td>
<td>q11</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>q12</td>
<td>q15</td>
<td>q15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>q14</td>
<td>q16</td>
<td>q16</td>
<td>q14</td>
<td></td>
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<tr>
<td>12</td>
<td>q15</td>
<td>q19</td>
<td>q19</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>q16</td>
<td>q20</td>
<td>q20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>q17</td>
<td>q21</td>
<td>q25</td>
<td>q17</td>
<td>q21</td>
</tr>
<tr>
<td>15</td>
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<td>q30</td>
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<td></td>
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<tr>
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<td>q19</td>
<td>q27</td>
<td>q31</td>
<td></td>
<td>q27</td>
</tr>
<tr>
<td>17</td>
<td>q20</td>
<td>q28</td>
<td>q28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>q22</td>
<td>q30</td>
<td>q22</td>
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<td></td>
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<tr>
<td>19</td>
<td>q23</td>
<td>q31</td>
<td>q23</td>
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<tr>
<td>20</td>
<td>q25</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>21</td>
<td>q30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>q31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5-6 reveals that the Malaysian based and the Palestinian based respondents share the same perception concerning the criticality of 16 quality factors. These factors are: top management commitment and visible involvement, the development of a clear mission statement that is communicated consistently, the
development of a comprehensive policy and deployment of goals effectively, emphasising the top-down and bottom-up effective communication, organising for quality to manage the organisation's quality journey, understanding the concepts of internal and external customer concept, maximising employee commitment and involvement, training and education, emphasising management by fact and cost of quality process for continuous improvement, and the importance of identifying and satisfying customers needs.

Comparing the differences, the Palestinian respondents under emphasised maximising employees' improvement and involvement through suggestion schemes, recognition and appreciation systems and quality teams. Moreover, they under emphasised formal and informal benchmarking and the use of self assessment tools, while the Malaysian-based respondents under emphasised the application of total quality approach to the management of support services and business process, the formal documented quality system and the reliance on selected dependable few suppliers. Table 5-7 reveals such differences.

<table>
<thead>
<tr>
<th>Tier</th>
<th>CQFs-Original Study</th>
<th>CQFs-Palestinian Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>Q1, q3, q9, q2, q16,q8, Q12, q14,q6 No. of Factors =9</td>
<td>q1, q7, q2, q27, q20, q3, q4,q30,q9 No. of Factors =9</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Q20, q4, q23, q30, q31, Q15 No. of Factors =6</td>
<td>q15, q6, q12, q16, q8,q21 q31, q19 No. of Factors =8</td>
</tr>
<tr>
<td>Tier 3</td>
<td>q7, q11, q22, q18, q25,q17, q19 No. of Factors =7</td>
<td>q25, q28 No. of Factors =2</td>
</tr>
<tr>
<td></td>
<td>Total No. of Factors = 22</td>
<td>Total No. of Factors = 19</td>
</tr>
</tbody>
</table>

Table 5-7
**Stratification of the Critical Quality Factors (CQFs)**
*By the Original Study and the Palestinian Study*
However, such differences in the identification and stratification are supported by the conclusion from the literature review that there is little unanimity concerning essentiality of many of the quality intervention of the success of TQM implementation. Further discussion is carried out in chapter 9.

5-8 Generalisability of the critical quality factors:

Black (1993) suggests that the best approach to confirm the generalisation of the critical quality factors’ structure is the examination of the responses of new sub-samples of organisations. As this is not possible, Thiagarajan (1996) conducted a tentative examination of the quality factors returns by appropriate sub-samples of the data set from which the structure has been developed to measure the generalisability of the structure. This approach is appropriate for this study as the sample, although composed of the total population, has sub-samples related to the scope of businesses’ size and level of maturity in TQM implementation (see table 5-5).

As consensus in returning a quality factor as critical is the basis for constructing the structure, a percentage of critical returns on the quality factors will be used as the criterion to compare differences between sub-samples. When there is significant difference between the sub-samples, some special mention would be
warranted in recommending the structure to organisations in that sub-population (Thiagarajan, 1999).

Running a cross-tabulation process for the returns of the critical quality factors by business category, size and level of maturity confirmed that there is no significant difference between any of the critical returns produced by the various sub-samples. This indicates that there is no impact of size, scope of business or maturity level on the respondents' perception of how critical the critical quality factor is. This is obvious, however, for the size and level of maturity as table 5-6 reveals that the vast majority of the organisations are small and medium sized and the level of maturity for the vast majority of the organisations is for less than three years.

This analysis, therefore, provides an evidence of the generalisability of the critical quality factor structure, which is in tandem with the general contention that TQM is a generic philosophy of management applicable across organisations of different size, business scope, and level of maturity (Zairi, 1996; Kruger, 1999).

5-9 Comparative Criticality Index:

The original study (Thiagarajan, 1996) suggests that the quantitative measure of how critical a critical factor is, is useful. By definition, a critical factor is absolutely essential to the success of TQM implementation, which means that the implementation process stands a good chance of ending in failure if this critical quantity factor is not part of TQM. Such measure of criticality has several applications for the purpose of this study, further researchers and as a particular
standard for industry use (Thiagarajan, 1996). He developed a self-assessment tool for the TQM implementation process using the comparative criticality index so that Malaysian organisations can identify and act accordingly to rectify areas where gaps exist. For researchers using similar research methodologies, Thiagarajan (1996) suggests that they can use the index to examine how TQM organisations under different circumstances differ in their emphasis of key quality factors. The comparative criticality index is appropriate for this study, particularly, as Palestine has no National Quality Award to use as a self-assessment tool. Thus this index can be developed so that it can be used as a self-assessment tool for Palestinian organisations.

The comparative criticality index developed by Thiagarajan (1996) is based on dividing the variation ratio by the maximal value. The maximal value, as discussed earlier, is obtained when a third of the organisations returned the quality factor as critical. Therefore, the comparative criticality index (CCI) can be calculated as follows:

\[
CCI = \frac{\text{Variation Ratio}}{\text{Maximal Value}}
\]

\[
\text{Maximal Value} = \frac{(k-1)}{k}
\]

\[ k = \text{number of categories} \]

In this case, \( k = 3 \) (critical, important, of minor importance)

and the maximal value = \( \frac{3-1}{3} = 0.667 \)

However, calculating the CCI based on this formula, provides no more decisive measure for criticality than the variation ratio, that is, dividing the variation ratio by the maximal value (0.667) will always provide the same classification of the
quality factors regarding their criticality. Based on this, calculating the CCI this way can be improved. The reason for this improvement is the very small differences between the bands in terms of the criticality of their critical factors' stratification. To illustrate, consider the following example:

Two Quality factors were returned by 80 respondents as follows:

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>Critical (1)</th>
<th>Important (2)</th>
<th>of minor importance (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>60</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Y</td>
<td>60</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

Using some statistical analysis reveals the following:

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>%1</th>
<th>%2</th>
<th>%3</th>
<th>Variation Ratio</th>
<th>CCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>75%</td>
<td>22.5%</td>
<td>2.5%</td>
<td>0.25</td>
<td>0.375</td>
</tr>
<tr>
<td>Y</td>
<td>75%</td>
<td>18.75%</td>
<td>6.25%</td>
<td>0.25</td>
<td>0.375</td>
</tr>
</tbody>
</table>

Therefore, which is more critical, is it X or Y?? To answer this question, the index of diversity is helpful.

Index of diversity for X = 1 - \[ (0.75)^2 + (0.225)^2 + (0.025)^2 \] = 0.385

Index of diversity for Y = 1 - \[ (0.75)^2 + (0.1875)^2 + (0.0625)^2 \] = 0.3984
As the case with variation ratio and the CCL, the index of diversity of lower values represents a more critical value. For the example, then, quality factor X is more critical.

If we look at a more complicated situation:

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>Variation Ratio</th>
<th>CCI</th>
<th>Index of diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>20</td>
<td>30</td>
<td>50</td>
<td>0.50</td>
<td>0.75</td>
<td>0.620</td>
</tr>
<tr>
<td>Y</td>
<td>10</td>
<td>42</td>
<td>48</td>
<td>0.52</td>
<td>0.78</td>
<td>0.583</td>
</tr>
</tbody>
</table>

This example provides another evidence that the index of diversity is a more accurate measure for criticality to be used as an index of comparative criticality. For this reason, the comparative criticality index for this study will be based on the index of diversity. Table 5-8 presents the CCI for the 19 critical quality factors distilled in this investigation and stratified into the previously identified three tiers.

The index of diversity is divided by the maximal value (0.667) to provide a scale that ranges between 0 and 1, where 0 value represents unanimity in returning the quality factor as critical, and 1 means that the quality factor is the least critical. In other words, the comparative criticality index is calculated as follows:

\[
\text{CC Index} = \frac{\text{Index of Diversity}}{\text{Maximal Value}}
\]

\[
\text{Maximal Value} = \frac{(k-1)}{k} \text{ where } k \text{ is the number of categories.}
\]
### Table 5-8
Comparative Criticality Index

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>Comparative Index</th>
<th>Criticality</th>
</tr>
</thead>
<tbody>
<tr>
<td>q1</td>
<td>0.038</td>
<td></td>
</tr>
<tr>
<td>q7</td>
<td>0.416</td>
<td></td>
</tr>
<tr>
<td>q2</td>
<td>0.489</td>
<td></td>
</tr>
<tr>
<td>q27</td>
<td>0.532</td>
<td></td>
</tr>
<tr>
<td>q3</td>
<td>0.639</td>
<td></td>
</tr>
<tr>
<td>q4</td>
<td>0.639</td>
<td></td>
</tr>
<tr>
<td>q20</td>
<td>0.639</td>
<td></td>
</tr>
<tr>
<td>q30</td>
<td>0.666</td>
<td></td>
</tr>
<tr>
<td>q9</td>
<td>0.679</td>
<td></td>
</tr>
<tr>
<td>q15</td>
<td>0.703</td>
<td></td>
</tr>
<tr>
<td>q6</td>
<td>0.727</td>
<td></td>
</tr>
<tr>
<td>q12</td>
<td>0.733</td>
<td></td>
</tr>
<tr>
<td>q16</td>
<td>0.769</td>
<td></td>
</tr>
<tr>
<td>q8</td>
<td>0.816</td>
<td></td>
</tr>
<tr>
<td>q19</td>
<td>0.819</td>
<td></td>
</tr>
<tr>
<td>q21</td>
<td>0.821</td>
<td></td>
</tr>
<tr>
<td>q25</td>
<td>0.835</td>
<td></td>
</tr>
<tr>
<td>q31</td>
<td>0.868</td>
<td></td>
</tr>
<tr>
<td>q28</td>
<td>0.887</td>
<td></td>
</tr>
</tbody>
</table>

A more detailed discussion of the findings is presented in chapter 8.

5-10: Summary:

This chapter deals with the survey questionnaire aimed at identifying and stratifying the critical quality factors as perceived by respondents from various organisations of different size, maturity level of TQM implementation, and business category. The results of this survey questionnaire are analysed. The analysis reveals that 19 quality factors are perceived as critical and absolutely
essential for the successful implementation of TQM. These factors are identified using objective methodology and stratified into three tiers of criticality where nine of them are found fundamental to be addressed in the early stages of the implementation process.

The next chapter deals with how these quality factors become directly manageable by investigating how quality management organisations address the implementation of the quality factors.
Chapter Six

An Investigation into the Tactics and Techniques Used to Address the Critical Quality Factors Through Case Studies Using Semi-Structured Interviews

6-1: Introduction

In chapter six, 19 critical quality factors were identified using a questionnaire survey. This chapter deals with the dynamics of TQM implementation process using semi-structured interviews to provide a helpful roadmap for organisations starting their TQM implementation journey. This second level investigation is a vital step in the process of developing a holistic portrayal of TQM implementation in the Palestinian context.

This second level of enquiry involves 18 case studies representing Palestinian organisations that have implemented quality management for more than two years. Semi-structured questions are used to solicit information on tactics and techniques used to implement and deploy the 19 critical quality factors that were identified in the first level of investigation discussed in chapter 5.

The interview data of the case study organisations are compared with the data of the case study organisations of the original study, where appropriate, similarities and differences are analysed and discussed.

The first level of inquiry was concerned with determining WHAT are the critical quality factors to be addressed in the process of implementing TQM successfully
(chapter 5). However, this second level of enquiry is concerned with determining HOW the identified critical quality factors are addressed in the implementation process, which gives the meaning to the survey findings. This important feature is absent from some of the earlier studies (Thiagarajan, 1996).

6-2: Aims of the interview:

The primary aim of the interviews (as in the original study) is to solicit information on HOW a TQM organisation deploys and implements the critical quality factors, to complement the survey findings. This involves soliciting information from TQM organisations about their experiences around the development and implementation of the quality factors listed in the survey questionnaire in general, and the 19 critical quality factors that have been identified in chapter 5, in particular.

6-3: Design and Management of Interviews

6-3.1: Design of interviews:

A semi-structured interview schedule is developed, structured on gathering data from organisations advanced in their use of quality management in the techniques and tactics employed in the implementation of the quality factors listed in the survey questionnaire.

6-3.1-1 Selecting the case studies

Thiagarajan (1996) used the criterion to select the sample based on that participating organisations must have actively implemented quality initiative for at least two years. According to Sanderss et al. (1993), a period of two to three years is the time required to fully implement TQM in an organisation. The DDI (1994) study of
quantity practices revealed that organisations of more than tow years of active
implementation of quantity initiatives are more likely to have a very successful
initiatives than organisations that have had programmes for less than two years.
A criterion of at least two years into implementation of quality initiative is deemed
appropriate for many researchers, (Thiagarajan, 1996; Mann, 1992)). Therefore, at
least two years into implementation is taken as the period in selecting cases for this
study which is appropriate for the comparative purposes with the original study.

Using the population of the ISO 9000 organisations identified in chapter 6, a total of
18 organisations were identified to have an implementation period of more than two
years. Thiagarajan (1996) highlights the importance of obtaining a heterogeneous
mixture in selecting the cases. However, he recognises the constraints facing a study
of this sort, particularly, getting agreement from managers to interview them
(Easterby-Smith et al., 1991). The approach he used for selecting cases was one of
convenience sampling by selecting cases where access is not a problem.

For this study, however, 18 organisations were identified as the appropriate cases
using the criterion of at least two years of implementation. With heterogeneous
mixture of these organisations (with regard to business category, and size), the
researcher was determined to include all of them in this study as personal
relationships were either reinforced or initiated through the survey management
approach used in the first level of inquiry (see chapter 5).
6-3-1-2 Interviews

General managers and quality related managers are the subjects targeted as they are more likely to have the required information sought by this level of investigation.

6-3-1-3 Contacting organisations

As a result of reinforced or created personal relationships with respondents that have been achieved from the first level investigation (see chapter 5), it was very easy to arrange for the second level inquiry.

A phone call was made to contact the various General Managers and Senior Managers to arrange for an interview. All contacted Senior Managers agreed to interview them. A general phenomenon was observed concerning the appropriate time for the interviews as all contacted managers preferred the afternoon and around the end of the working days’ time as these periods were considered to be least demanding period of their time.

Several contacted managers asked for assurance of anonymity of their organisations in the thesis, while, few did not mind mentioning their organisations. However, as the majority requested anonymity of their organisations, a decision was made to convey assurance of anonymity of the organisations in the thesis. A request was also made to conduct an in-depth case study interview, which requires more time than the semi-structured interview.
Eighteen managers, representing the eighteen organisations that were identified as the sample, agreed to a site interview over the telephone. One manager telephoned to change the interview date.

A confirmation call was made two days before each interview to confirm the appointment. Table 6-1 shows the breakdown of the case study organisations and the positions of respondents. In five cases, two respondents each were interviewed.

Table 6-1
Breakdown of Case Study Organisations and Positions of Interviewees

<table>
<thead>
<tr>
<th>Case</th>
<th>Business Category</th>
<th>Interviewee’s Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Service: Commercial Bank</td>
<td>Quality Manager</td>
</tr>
<tr>
<td>2</td>
<td>Service: Engineering Consultancy</td>
<td>General Manager</td>
</tr>
<tr>
<td>3</td>
<td>Producer: Gravel, Concrete &amp; Asphalt</td>
<td>TQM Manager</td>
</tr>
<tr>
<td>4</td>
<td>Producer: Mineral Water</td>
<td>Quality Assurance Manager</td>
</tr>
<tr>
<td>5</td>
<td>Manufacturer: Plastic Pipes</td>
<td>Quality Control Manager</td>
</tr>
<tr>
<td>6</td>
<td>Manufacturer: Pharmaceuticals</td>
<td>Quality Assurance Manager</td>
</tr>
<tr>
<td>7</td>
<td>Manufacturer: FMCG</td>
<td>General Manager</td>
</tr>
<tr>
<td>8</td>
<td>Service: Marketing FMCG</td>
<td>General Manager</td>
</tr>
<tr>
<td>9</td>
<td>Manufacturer: Food Processing</td>
<td>Quality Control Manager</td>
</tr>
<tr>
<td>10</td>
<td>Manufacturer: Shoes</td>
<td>Production/Quality Manager</td>
</tr>
<tr>
<td>11</td>
<td>Service: Computer Networks &amp; Software</td>
<td>Management Representative</td>
</tr>
<tr>
<td></td>
<td>for Quality</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Service: Laboratory Inspection</td>
<td>Quality Manager</td>
</tr>
<tr>
<td>13</td>
<td>Service: Private Health Care Services</td>
<td>General Manager</td>
</tr>
<tr>
<td>14</td>
<td>Manufacturer: Furniture</td>
<td>General Manager</td>
</tr>
<tr>
<td>15</td>
<td>Service: Telecommunication</td>
<td>Quality Manager</td>
</tr>
<tr>
<td>16</td>
<td>Service: Engineering Designs</td>
<td>Project Manager</td>
</tr>
<tr>
<td>17</td>
<td>Manufacturer: Oxygen Cases</td>
<td>Quality Assurance Manager</td>
</tr>
<tr>
<td>18</td>
<td>Manufacturer: Aluminium</td>
<td>Quality Manager</td>
</tr>
</tbody>
</table>
It can be seen that the respondents are likely to have some knowledge of the quality management process in their organisations.

6-3-1-4 Design of the interview questionnaire

For the purpose of this level of inquiry, a semi-structured interview schedule is deemed appropriate to solicit information related to the case study organisation's experiences in the deployment and implementation of 31 quality factors incorporated in the questionnaire survey. Specific questions related to top management support and involvement in the deployment and implementation of critical quality factors were also included. This provides the interviewee an opportunity to relate in his/ her own words other pertinent issues. Thiagarajan (1996) points out that the use of a semi-structured questionnaire allows uniformity and economises on interview time as the structured feature of the questionnaire ensures that the interviews are conducted as uniformly as possible, and discussion of unrelated topics is kept to a minimum. He adds, it minimises interviewer bias- a problem in conducting highly structured interviews is the possible introduction of “interviewer bias” by restricting responses to a particular set.

Moreover, I believe, based on previous experiences, that the use of the semi-structured questionnaire economises on analysis time, and facilitates cross-case analysis.

For this, several previous interview questionnaires were studied in designing the semi-structured questionnaire to provide ideas on presentation and ease of data
collection. This was very useful in developing lists of possible answers to be provided by respondents.

6-3-1-5 Designing the questions

The questions used in the interview questionnaire were built around the 31 quality factors incorporated in the questionnaire survey with emphasis on top management commitment and involvement. Questions representing each one of the 31 quality factors were designed to solicit information concerning the tactics and techniques employed in the deployment and implementation process.

The design of the questions did not neglect the advice of Mann (1992) that it is important, in designing questions, that the information sought should be known by the interviewee or be easily “at hand”. Examples of questions are:

- Do you use a team approach (such as quality circles, cross-functional teams, and quality management teams) in problem solving and continuous improvement? If yes, what type of teams do you use? Does top management form them or they are formed on voluntary basis?

- Do you use self-assessment tools to track and improve performance? If yes, what are the tools, and how the results are used?

- Do you use customer surveys and feedback process? If yes, what type of surveys is used? What type is used most frequently?
If no, do you use any other key measures to assess customer satisfaction? What is it?

As mentioned earlier, itemised lists of possible answers were prepared to aid in data collection. However, to avoid any interviewer bias, these lists were not used to help interviewees in their responses.

As with Thiagarajan (1996), the questionnaire was not piloted. It was reviewed for improvement after each interview. The process resulted mainly in additions to the itemised lists of possible responses.

6-3-2 Management of Interviews

6-3-2-1 Conducting the interviews

All interviews were conducted on site. None of the interviewees had an objection to tape record the interview. The researcher showed the interviewee how to stop recording and asked her/him to stop recording whenever she/he feels uncomfortable.

To overcome the problem concerning the interview time faced Thiagarajan (1996), an interview time of two and a half hours was requested instead of two hours at the time of interview arrangement. The times ranged from 100 minutes to two hours and averaged one hour and fifty minutes. This affected the quality of data positively to meet the full objectives of the enquiry. Moreover, interviewees were asked for documents of their organisations’ TQM implementation process to take away at the end of the interview.
Finally, a summary of key findings of the first level enquiry was handed in at the end of the interview in a closed envelope as promised in the covering letter that accompanied the questionnaire. This was highly appreciated by interviewees.

6-3-2-2 Method of Analysis

Following the approach used by Sinclair (1994), Chang (1994) and Thiagarajan (1996), the case studies are analysed using cross-case comparative analysis of the results. For most quality factors analysed, cases are arranged in tables to examine differences and similarities of their deployment and implementation. Due to the interrelationship of the critical quality factors, many of them are not discussed separately.

The analysis of the data focuses on the critical quality factors that have been identified in the previous chapter, i.e. the 19 critical quality factors. In addition, data related to the quality factors (that were not identified as critical), of such as, teams, suggestion schemes, reward and recognition and benchmarking, are analysed to provide a wider base for comparative analysis with the original study on one hand, and to assess their level of deployment and implementation in the case study organisations on the other hand. The interview data of the case study organisations are also compared with the interview data of the original study.
6-4: Cross-Case Analysis

6-4-1: Organising for quality

6-4-1-1 Quality infrastructure

To plan and implement TQM, support infrastructure is required to facilitate and manage the implementation process. This support infrastructure usually comprises a body of groups that directs the implementation process. As reported in the literature review, such body of groups meets on regular bases to follow up, monitor, evaluate and, hence, steer the implementation process of TQM.

All Palestinian case study organisations have quality infrastructure in place to support their quality journey. Table 6-2 summarises the quality infrastructure findings.
### Table 6-2

#### Quality Infrastructure

<table>
<thead>
<tr>
<th>Case</th>
<th>Implemented</th>
<th>Quality Council</th>
<th>Composition</th>
<th>Head</th>
<th>Department Steering Committee</th>
<th>Quality Management Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>11</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>12</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>14</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>15</td>
<td>Yes</td>
<td>Yes</td>
<td>SMM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>16</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>17</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
<tr>
<td>18</td>
<td>Yes</td>
<td>Yes</td>
<td>SM</td>
<td>GM</td>
<td>Yes</td>
<td>FT</td>
</tr>
</tbody>
</table>

**Key to Responses:**

- **SM** - Senior Managers
- **GM** - General Manager
- **SMM** - Senior and Middle level Manager
- **FT** - Full Time

**Key to Quality Structure:**

- Implemented: The organisation has some form of a quality infrastructure comprising of a body of groups that meets on regular bases to steer the implementation and the operation of TQM.

- Composition: Composition of the quality council

- Head: Head of the quality council

- Departmental Steering Committees: The organisation has groups that support the quality council by promoting quality awareness and involvement at departmental level.

- TQM Positions: Status of Quality Management Support, Personal assigned to assist the management on quality matters.
Table 6-2 reveals that all interviewees reported having Quality Council (in some organisations Steering Committee) sits at the top of the structure. The council is responsible for planning for successful implementation process, monitoring and evaluating progress, and steering the implementation process. The council also creates an enabling quality environment in the organisation as most interviewees consider the council as an illustrative means of top management commitment and involvement in the implementation process. This is of no surprise as the number one person, that is the General Manager, heads all quality councils of the case study organisations. Further, in 11 organisations, the quality council is composed of senior managers, while in the other 7 organisations, senior and middle managers compose the quality council.

To support the quality council in promoting quality awareness and involvement at departmental levels, all interviewees reported the presence of departmental steering committees. In one of the organisations, region steering committee is reported. The managers of the departments head these steering committees with members from the department’s staff. The region manager who is a member of the quality council heads the region steering committee. In each region, departmental steering committees are in place.

All interviewees reported having full time quality related positions to advise, assist and participate in the quality management implementation process. With senior management positions of all, only one of them has a title of TQM manager, while the
rest going by the designation of Quality Assurance (Control) Managers, and Quality Managers.

In 4 cases, the managers are assisted by a small staff of three, while in the majority of the cases, the managers are assisted by a smaller staff of one. In all cases, managers report directly to the General Manager.

The majority of the Malaysian organisations interviewed in the original study reported having similar quality infrastructure, with similar composition, and to an extent similar commitment and involvement of top management. Furthermore, the two-tier support infrastructure was also reported. Finally, quality positions in the organisations were reported in this study and the original study as a key requirement of a Total Quality Management initiative.

In this regard, Oakland (2000) believes that in large organisations a quality director will contribute to the prevention strategy. Smaller organisations may appoint a member of the management team to this task on a part-time basis.

These findings are also in accordance with the majority of the six UK companies that Thiagarajan (1996) interviewed in his study, as they reported having similar forms of two-tier support infrastructures for their quality processes and all reported having more than one full-time coordinator / facilitator (Thiagarajan, 1996).

These findings shed more light on the survey findings were quality infrastructure is returned as tier 1 critical quality factor.
6-4-2: Strategic planning and goal deployment

Reliance on feedback from internal sources (such as employees and process capability), and external sources (such as customers, suppliers and competitors) are necessary to develop a comprehensive policy and goal setting and deployment for successful TQM implementation. In the essence of the strategic planning is the development of a mission statement, which communicates the strategy to the employees. This requires identifying critical success factors (CSFs) accompanied by key performance indicators (KPIs), assignment of responsibilities and setting process and individual targets at all levels. This provides more focus on specific strategic factors.

Table 6-3 presents the interviewees' responses concerning strategic planning and goal deployment.
Table 6-3
Strategic Planning and Goal Deployment

<table>
<thead>
<tr>
<th>Case</th>
<th>Mission</th>
<th>Information Source</th>
<th>Critical Success Factors</th>
<th>Means of Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>C</td>
<td>Yes</td>
<td>W, M</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>C</td>
<td>Yes</td>
<td>W, M</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>C</td>
<td>Yes</td>
<td>W, M, P</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
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- **Statistics:**
  
  \[
  C=18 \quad E=3 \quad S=1 \quad Co=1 \quad W=18 \quad M=18 \quad P=4
  \]

- **Definition of Column Titles:**
  - **Mission:** The organisation has developed a statement of mission
  - **Information Source:** The source of information for factors taken into consideration during policy development.
  - **Critical Success Factors:** The organisation has developed a subset of critical success factors at organisational level.
  - **Means of Communication:** How mission/policy statement is communicated.

- **Key to Responses:**
  - 3rd- Feedback from Customer.
  - S- Feedback from Supplier.
  - E- Feedback from Employees.
  - Co- Competitors information.
  - W- Workshop.
  - 13th- Management briefings.
  - P- Posters.

As apparent from table 6-3, all the case study organisations relied on information about their customers in developing their quality policies. Three organisations took
into consideration employee information. Supplier information and competitors information was considered by only one organisation.

Only one organisation indicated the use of information from all sources.

All interviewees reported the development of a mission statement in their organisations, and subset of critical success factors to help achieve the mission. The use of training workshops and management briefings at company levels is the most common means of communicating the mission as all cases indicated. Few, only 4 cases, use posters to communicate their mission statements. Top management involvement of mission and policy is high in all cases (as discussed later in this chapter).

These findings are in tandem with the information in the literature that suggests that quality policy and its effective implementation is crucial to integrating the quality process into the management system. It is also in tandem with the survey questionnaire findings, where policy development and goal deployment were returned as tier 1 critical quality factors.

Moreover, these findings are in accordance with the findings of the original study as the Malaysian based organisations highlighted the criticality of these factors.

Another important point, which is revealed from the two studies, is that the benefit of the voice of the suppliers in shaping the organisation’s strategy is ignored by most of the cases. For the Palestinian organisations, information to bring about a better understanding of competitors to be incorporated into their strategies is more ignored than it is for Malaysian organisations.
6-4-3: Communicating for quality

Houghton (1991) considers one of the reasons why some TQM implementation processes are unsuccessful is when management overlooks the benefits of communication. This is why management of best organisations emphasises various forms of communication to create supportive quality culture to their strategic needs (Smith, 1994).

In all case study organisations, prior to the implementation process, memos were the most popular forms of communication. However, briefings for top level management are heavily used as reported by all interviewees. Categorising the results in terms of top-down and bottom-up and across is helpful.

6-4-3-1 Top-down communication

Early-introduction stage

Face to face communication was highly used by all General Managers of the case study organisations to set the new mission across the entire organisation.

This reflects a high level of commitment and involvement of the number one person (General Manager) in the organisation.

The most common communication tactics during this stage are General Manager’s briefings, workshops, departmental managers and memos. Posters are used by four organisations, and in-house bulletins are used only by one organisation.
This emphasises that during the introduction stage, face-to-face communication is more effective than artefacts such as memos, posters and in-house bulletins.

This is evident by the direct involvement of all General Managers in providing briefings through meetings with all employees on regular basis. Most interviewees pointed out that the briefings of the General Manager were very important as this helped communicating the new mission throughout the organisation effectively, kept employees informed about the progress in the implementation process, and highly motivated the employees, increased their commitment and involvement and raised their moral.

Table 6-4.1 shows the communication tactics used by the management of the case study organisations.
Table 6-4.1
Top-Down Communication Tactics

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<th>Early-Introduction Stage</th>
<th>Post-Introduction Stage</th>
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</thead>
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</tr>
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Frequencies:

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<tr>
<td>B</td>
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</table>

Key to Responses:

- GM: Briefing by General Manager
- DM: Briefing by Departmental Manager
- RM: Briefing by Region Manager
- W: Workshops
- M: Memos
- P: Posters
- B: In-house bulletins
Post-introduction stage

The emphasis during the post-introduction stage is on communicating what is happening and reporting progress achieved. In this stage, most case study organisations' General Managers continue their direct involvement in providing briefings concerning progress being made. The general manager of case 6 (Manufacturer of FMCG) states:

"Providing employees with briefings concerning what is happening in the progress being achieved is as crucial as communicating the new mission at the early stage. This is how we maintained high moral and commitment of our employees."

However, these briefings were reported to be conducted less frequently than those are at the early introduction stage. This is because a wider role of departmental managers is exercised in keeping employees informed about what is happening and the progress being achieved (see table 6-4.1).

Although, there is an increase in the number of the case study organisations using posters to keep employees informed, face-to-face communication tactics still used by the majority of the organisations through management briefings and work shops as evident in table 6-4.1.

In summary, it is evident that face-to-face communication using management briefings and workshops is highly emphasised by Palestinian organisations in the early-introduction and post-introduction stages. This indicates some difference with the findings of the original study concerning the post-introduction stage, where
Thiagarajan (1996) states that communication via artefacts such as posters and in-house bulletins are used increasingly to keep employees informed of progress and achievements during the post-introduction stage.

This difference could be attributed to the differences in the size of the case study organisations, the differences in principle ownership of the case study organisations, in his sample or simply cultural differences.

6-4-3-2 Bottom-up and horizontal communication

Table 6-4.2 shows the various tactics used in bottom-up and horizontal communications.
Table 6-4.2

Bottom-up and Horizontal Communication Tactics

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</tr>
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<td>WS, T, SG</td>
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</tr>
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<td>WS, T</td>
</tr>
<tr>
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<td>WS, T, SG</td>
</tr>
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<td>WS, T, SG</td>
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</tr>
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Frequencies:

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<tr>
<td>SG</td>
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</table>

Definition of Column Labels:
- Bottom-up: Communication tactics for employee feedback
- Horizontal: Communication tactics between departments

Key to Responses:
- MSM: Management Staff Meeting
- SS: Suggestion Scheme
- EP: Employee Presentations
- ES: Employee Survey
- WS: Workshops
- B: In-home Bulletins
- T: Teams
- SG: Social Gathering
According to Blackburn and Rosen (1993) the Baldrige Award-Winning companies not only emphasise effective top-bottom communication but also find ways to improve employee feedback and communication across departmental lines. This is evident from table 6-4.2 in the Palestinian context. Management staff meetings, workshops and suggestion schemes are most commonly used tactics for employee feedback. Only six case study organisations use employee surveys while employee presentations to management and contributions to in-house bulletins are used only by one organisation.

The most common modes of horizontal communication used are workshops and teams. Six organisations use social gathering to improve cross-departmental communication.

It is worth mentioning at this stage, that suggestion scheme as a communication tactic to get employee feedback, and teamwork to improve horizontal communication across departments are both highly emphasised and used by the case study organisations. However, these two critical quality factors which are identified by the information from the literature as fundamental elements of successful TQM, were returned as important factors rather than critical. This finding should, therefore, be considered in the development of the TQM model especially as these factors (suggestion schemes and teamwork) are used by the case study organisations. Suggestion schemes are implemented by 14 case study organisations while teamwork is used by all case study organisations. This issue will be discussed in more details in the relevant sections.
It is evident, therefore, that management staff meetings, workshops and employee suggestion schemes are most commonly used modes for employee feedback in the Palestinian context as it is in the Malaysian context. Moreover, workshops and teamwork are found in both studies as the most common modes of cross-departmental communication.

It is worth highlighting the communication strategy of D2D as presented in the original study (Thiagarajan, 1996):

1. A communication committee reviews the effectiveness of communication. It meets monthly to review specific communication events.

2. Employee surveys are used to identify areas of improvement in communication. Survey briefs are presented to the staff in writing and face-to-face.

3. Basic business information is formally cascaded to all staff at a team brief every month. Information on business performance and strategic developments are presented by the managing director every year.

4. In addition to management briefings and reports, other modes of communication used are one-to-one meetings, posters and banners, in-house news bulletins, and electronic media. For example, satellite television is used to broadcast half-year results, business update and local recognition.
6-4-4: Training for Quality

Training is the single most important factor in actually improving quality, once there has been commitment to do so (Oakland, 2000). Table 6-5 shows that all case study organisations appreciate the importance of training and education to improve quality. The most commonly implemented training programmes were directed towards concepts of quality management and creating awareness and commitment to quality. Thirteen cases stated that their training programmes are directed at providing employees with problem identification and solving skills and continuous improvement skills. Four cases reported that they are planning to do so. Fourteen cases reported that they provide interaction communication and teamwork training programmes.

Ten cases reported having all types of training programmes.

A complete, comprehensive and coherent training programme is designed and implemented with the following sequence:

1. Introduction to the concepts and philosophy of TQM, importance, benefits, implementation requirements, and critical quality factors.

   This is to introduce participants to the concept and to create the required awareness to facilitate gaining their commitment to quality.

2. Communication skills and teamwork skills. This is to improve interactive skills in the implementation process.

3. Problem-identification, problem solving and continuous process improvement skills.
This is to equip participants with the necessary skills to achieve continuous improvement.

Four case study organisations (3,5,6, and 15) reported using a cascading approach of training as the training programme is designed to train some key staff, who then train other staff. This process is repeated at the various organisational levels. In all of them, top management participated in the training programmes and then trained other staff. The average number of days per year of training in all case study organisations is calculated to be around 6 days per annum. As two cases reported less than 4 days of training, twelve cases reported 4-8 days and four cases reported having 8-10 days of training per employee per year.

Calculating the average number of days per annum of training for the original study, it is around 5 days. Comparing the two averages, it is obvious that the Palestinian organisations have a higher average.

Moreover, in the Palestinian context, each day of training is 6 contact hours, that is, the average number of hours per year is 38 hours. This falls short of the 40-80 hours of annual training put in by employees of Baldrige applicants (Easton, 1993).

These findings support the classification of training and education as Tier 1 critical quality factor. It is, therefore, evident that training employees at all levels in the Palestinian organisations is considered as the mechanism to increase the potential of employees in the implementation process.
# Table 6-5

## Training

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**Planning for training:**

- Tools: 4, Interactive: 2
- Period 1 (less than 4 days): 2
- Period 2 (4-8 days): 12
- Period 3 (8-10 days): 4

**Definition of Column Labels:**

- Quality Concepts: Training programs of TQM concepts and philosophy.
- Quality Awareness: Training programs to create awareness and commitment to quality.
- Tools: Training programs of problem identification and solving and continuous improvement (Kaizen) tools and techniques.
- Interactive: Training programs of interactive communication and teamwork skills.
- Period: Average number of days per year of training during the first two years of implementation.

**Key to Responses:**

- P : Planning for training.
6-4-5: Measuring for Quality

Traditionally, performance measures and indicators have been derived from cost accounting information, often based on outdated and arbitrary principles. In the organisation that is to succeed over the long term, performance must begin to be measured by the improvements seen by the customer (Oakland, 2000).

According to Zhang et. Al., (2000) evaluating the situation in organisation's quality management practices provides an important base for organisations to improve their quality management practices. Juran and Gryna (1993) state that a formal evaluation of quality provides a starting point by providing an understanding of the size of the quality issue and the areas demanding attention.

TQM organisations use and can use many performance measures (Zairi, 1992c; Oakland, 2000). These measures include direct output or input figures, the cost of poor quality, comments and complaints from customers, information from customers or employee surveys. That is measures related to customer needs and satisfaction, employee development and satisfaction and employee support and involvement in quality management implementation process. These include customer surveys, employee survey and average number of training days per year, employee suggestion schemes and quality teams.
These various performance measures are discussed under various headings in the discussion of the critical quality factors as there is no such thing as a separate performance measurement system (Sinclair, 1994).

Moreover, the discussion will include quality factors that have been returned by the first level investigation respondents (Chapter 5) as important. This is done for two main reasons:

1. To compare results of the two level inquiries.
2. To compare results with the original study and the information found in the literature.

6-4-5-1 Benchmarking

Both formal and informal benchmarking were returned as important (not critical) quality factors by the majority consensus in the first level investigation (Chapter 5). Oakland (2000) states that benchmarking is the continuous process of measuring products, services and processes against those of industry leaders or the toughest competitors. Thus, formal benchmarking is the main interest for this level of inquiry. That is comparing performance between organisational departments and with best-in-class performers or primary competitors (Zaira 1996).

It is obvious from table 6-6 that benchmarking practices are almost absent in the Palestinian context. Only four case study organisations conduct internal benchmarking within departments. None of the case study organisations practices benchmarking with primary competitors and only one case study organisation (case 15) conducts benchmarking with recognised leader in the telecommunication
industry outside Palestine. This highlights the reason of returning benchmarking factors as not essential quality factor to the successful implementation of TQM.

However, other reasons as revealed by the semi-structured interviews include:

1- The concept of benchmarking is completely new for many interviewees.

2- Most of the Palestinian organisations do not realise the importance of benchmarking as a powerful tool that can bring about benefit for benchmarking partners and lead to improved performance.

3- Difficulties to locate potential local partners.

4- Israeli companies are the main source of competition and are recognised as market leaders. Due to the political situation, benchmarking with primary competitors and recognised leaders is almost impossible.

5- Lack of practical experience to conduct benchmarking.

It is apparent from the literature, however, that benchmarking practices are conducted by few organisations in Malaysia (Thiagarajan, 1996) and the UK (Beadle et al. 1995; Sinclair, 1994).
Table 6-6

Benchmarking

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<th>Organisation</th>
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</table>

**Definition of Column Label:**
- Organisation: Organisation conducts benchmarking within departments
- Corporation: Organisation conducts benchmarking with other sister companies
- Primary Competitor: Organisation conducts benchmarking with primary competitors
- Recognised Leader: Organisation conducts benchmarking with recognised leaders.

**Key to Responses:**
- NA - Not Applicable
6-4-5-2 Costs of Quality

The analysis of quality costs as part of the evaluation activities is crucial for performance improvements (Zhang et al., 2000). Oakland (2000) considers the analysis of quality-related costs as a significant management tool that provides a method of assessing the effectiveness of the management of quality and a means of determining problem areas, opportunities, savings, and action priorities. As shown in table 6-7, all case study organisations have implemented some measures of the quality-related costs. All cases measure the appraisal cost of quality, only four organisations measure the prevention cost of quality, and five organisations measure the internal failure cost of quality. Only one organisation (case 15) reported having measures of all types of quality costs using the P-A-F model (Prevention, Appraisal, Failure) but excluding the external failure cost.
Table 6-7
Costs of Quality

<table>
<thead>
<tr>
<th>Case</th>
<th>Implemented</th>
<th>Prevention</th>
<th>Appraised</th>
<th>Internal Failure</th>
<th>External Failure</th>
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</tbody>
</table>

Statistics:
- Implemented: 18
- Prevention: 4
- Appraised: 18
- Internal Failure: 5
- External Failure: 0

Definition of Column Labels:
- Implemented: Organisation measures the cost of quality
- Prevention: Organisation measures prevention costs
- Appraisal: Organisation measures appraisal costs
- Internal Failure: Organisation measures internal failure costs
- External Failure: Organisation measures external failure costs
It is apparent that most of the case study organisations underestimate the benefits of measuring the quality costs as a performance improvement tool as the vast majority of the organisations do not implement the P-A-F model of quality costing. Only one organisation out of the eighteen case study organisations appreciates the importance of measuring the costs of quality. Although the Malaysian based organisations interviewed in the original study have a better appreciation of the P-A-F model, still Thiagarajan (1996) concludes that the limited scope in application of the total P-A-F model is due to lack of appreciation to the true benefits of measuring quality costs as a performance improvement tool.

Moreover, in both studies, this study and the original study, costs of quality has a low criticality rating in the survey as it was stratified as a Tier 3 critical quality factor in both studies.

6-4-5-3 Self Assessment

Zairi (1994) considers self-assessment as a tool for measuring the culture of quality, which is relatively a new phenomenon outside Japan. To many organisations the ability to judge progress against an accepted set of criteria would be most valuable and informative (Oakland, 2000). Therefore, self-assessment is defined as the regular and systematic review of the organisation’s activities and results (European Foundation for Quality Management, 1999).

In their pursuit of TQM, organisations around the world began turning to quality award programmes for performing self-assessment to measure progress made. Such
quality award programmes include the Malcolm Baldrige National Quality Award (USA), European Quality Award (Europe) and Deming’s Prize (Japan).

Self-assessment was returned by the majority consensus (Chapter 5) as an important quality factor. This is reinforced by the findings of this level of investigation as none of the case study organisations perform self-assessment. As all case study organisations are accredited to the ISO 9000 standards, they rely on the feedback of the mandatory third party accreditation surveillance audit to track their organisational performance. The non-existence of a National Quality Award in Palestine, or in the neighbouring Arab countries makes it much more difficult to exercise self-assessment. In addition, using the European or the American quality awards criteria is very difficult due to the language problem and more importantly, the absence of expert assessors of such criteria (as mentioned by most case study organisations).

Although self-assessment was returned as a critical quality factor in the original study Thiagarajan (1996) points out that both survey and interview findings indicate low emphasis and activity in self-assessment amongst Malaysian organisations. He also points out that self-assessment appears to be a relative new technique in the UK as his study of the six UK companies revealed. Other studies showed that only 20-25 percent of the companies undertakes formal self-assessment exercises (Longbottom, 1995; Sinclair, 1994).

7-4-5-4 Measuring Customer Wants and Satisfaction

The ultimate measure of company performance is customer satisfaction, which may very well predict the future success or failure of an organisation (Kanji and Asher,
1993). The customer should be closely involved in the product design and development process, with inputs at every stage of the process so that there is less likelihood of quality problems once full production begins (Flynn et al., 1994). Therefore, to achieve quality, it is essential to know what customers want and to provide products or services to meet their requirements (Ishikawa, 1985). This means that the key to quality management is maintaining a close relationship with the customer in order to fully determine the customer's needs, as well as to receive feedback on the extent to which these needs are being met (Zhang et al., 2000). A successful organisation, therefore, recognises the need to put the customer first in every decision made (Zhang et al., 2000; Oakland, 2000).

Measuring customer wants and satisfaction is reported by all cases as a major priority. Table 6-8 presents the findings related to the external customer satisfaction.
### Table 6-8

**External Customer Satisfaction**

<table>
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<tr>
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<th>Requirements</th>
<th>Satisfaction</th>
<th>QFD</th>
</tr>
</thead>
<tbody>
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<tr>
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</tr>
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</tr>
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</tr>
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<tr>
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</table>

**Definition of Column Labels:**
- **Requirements:** The organisation uses techniques to identify customer requirements.
- **Satisfaction:** The organisation uses techniques to measure customer satisfaction.
- **QFD:** The organisation adopted the concept of Quality Function Deployment.

**Definition of Techniques:**
- **SU:** Surveys
- **RC:** Regular Contacts
- **FG:** Focus Group
- **IM:** Internal Measures

Table 6-8 reveals that most of the case study organisations rely on regular contact to track customer requirements and satisfaction. Two organisations use surveys to identify customer requirements and to measure customer satisfaction. Another two organisations measure customer satisfaction via surveys. Focus Groups are used only
by 4 cases to identify customer requirements. The majority (11 cases) rely on internal measures (customer complaints and number of returned items) to measure customer satisfaction. In general, most organisations prefer informal methods to track customer requirements and satisfaction.

None of the case study organisations has adopted the Quality Function Deployment concept. As evident in the information provided in the literature, QFD has a low level of usage. Longbottom (1995) attributes this to unfamiliarity with the technique, as it is not easy to be used by many organisations.

Although QFD concept is not adopted by all case study organisations, still identifying customer requirements and measuring customer satisfaction are tracked using formal and informal methods of data collection. This is in accordance with the findings of the survey (chapter 5) as customer requirement and satisfaction are highly rated and emphasised in Palestine.

6-4-6: Managing by Process

Oakland (2000) defines a process as the transformation of a set of inputs which can include actions, methods, and operations, into outputs that satisfy customer needs and expectations, in the form of products, information, services or -generally- results.

Managing by process starts with understanding the internal customer-supplier chain. Throughout and beyond all organisations there is a series of quality chain of customers and suppliers to meet the requirements of the customer, internal or
The concept of internal and external customers/suppliers forms the core of total quality (Oakland, 2000).

Although all case study organisations recognise the importance of reorganising around processes rather than function, non-of them started to map business processes. Using the ISO-9000 quality management system, all case study organisations promote managing by process emphasising the concept of internal customer-supplier chains. Cross-functional teams are also used by some organisations to promote internal customer-supplier concept.

Organisation 15 considers defining the business process as a difficult task, which requires more time to create the appropriate environment to reorganise around processes. Smith (1994) supports this as he states that in most organisations, the prerequisite of defining business processes is not an easy task.

In the original study, Thiagarajan (1996) reports that only two organisations out of sixteen reorganised around processes rather than functions as one of these organisations realises that business processes provide the means by which an organisation conducts its business and implements its strategies. They provide framework for deployment of people and other resources to meet the needs and the wants of the customers.

Thiagarajan (1996) also reports that all UK case study companies reported that they are beginning to define and manage by process, although the extent of the practice may vary. However, all still retain functional structure. He reports the following other findings.
1. The concept of internal customer-supplier chain is promoted in all cases.

2. Formation of cross-functional teams is also widely practised.

3. Employees responsible for performing the processes at Elida Gibbs carry process mapping.

4. Processes are documented at Kodak, American Express and D2D.

5. Process champions are responsible for the successful execution of processes in some cases.

Thiagarajan (1996) provides useful highlight of how internal customer-supplier attitude and managing by processes are achieved at one of the case study organisations:

- Recognition by the management that managing by processes (rather than the traditional organisation structure), is a key determinant in nurturing a ‘culture’ of continually satisfying the customer.

- Reorienting the perspective of all employees to the customer right from the beginning by requesting them to cease activities that they cannot relate to adding value to the customer.

- Promote ownership of activities. Everyone is declared a quality manager.

- Recognition that the organisation is a giant process that begins and ends with the customer, and is a composite of processes aligned to the customer.

- Recognition that customer satisfaction results from effective and efficient execution of business processes.

Resources, including people, are deployed to achieve this.
• Senior managers are assigned as process champions to manage critical processes. Each manager then breaks down his or her process into sub-processes activities, and relates these to a new set of process ownership. This process work is cascaded down to the lowest practical level.

• Measures are set and tracked to be used as evidence of success of attaining customer values attached to processes and sub processes. Targets are continuously recalibrated.

• Process improvement teams are formed wherever inter-process dependencies are identified.

• Sharing of experiences between processes is maximised by applying a standard process definition methodology to manage continuous improvement.

6-4-7: Internal Stockholders’ Involvement and Support for Quality

Internal stockholders refer to the organisational insiders at three levels of the organisational structure. This includes top management, middle management and employees. According to Hoffman and Mehra (1999) TQM stresses total organisational involvement through continuous improvement. Involvement through continuous improvement means every participating member, top management level to the floor level, stresses positive incremental changes.

This emphasises the importance of discussing middle management involvement, employee’s involvement. Moreover, employees commitment and involvement and middle managers’ commitment and involvement are placed as Tier 1 and Tier 2 critical quality factors respectively in the survey respondents’ organisations (chapter 5).
6-4-7-1 Employee involvement

Mehra et al., (1998) have presented a hierarchical structure of TQM elements that are contained in a set of five factors critical to the success of TQM programmes. This structure supports the information presented in the literature by emphasising total employee involvement in successful TQM implementation process. Another study reported in Quality Progress (1994) suggests that organisations with high level of employee involvement stand a greater chance of success. Employee involvement, therefore, is critical for successful implementation of TQM. Such involvement is achieved through teams and suggestion schemes, which are reinforced by rewards and recognition.

6-4-7-2 Employee teams

The complexity of most of the processes that are operated in industry, commerce and the services places them beyond the control of any one individual. The only really efficient way to tackle process improvement or problems is through the use of some form of teamwork (Oakland, 2000). However, the introduction and promotion of such teams without training, appreciation, rewards and recognition, and internal customer-supplier chain will lead to failure (Oakland 2000; Casbourne 1991). Thus, the emphasis in the semi-structured interviews was on soliciting information about formal team structure and team culture reinforcement tactics and techniques.

All case study organisations have some form of teamwork to tackle process improvement or problems as table 6-9 reveals.
### Table 6-9

**Team work**

<table>
<thead>
<tr>
<th>Case</th>
<th>Work area teams</th>
<th>Cross functional teams</th>
<th>Management quality teams</th>
<th>Culture reinforcement</th>
</tr>
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<td>D</td>
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</table>

**Statistics**

R=13  T=14  M=6  C=11

**Definition of responses:**
- D- Delegated teams
- R- Rewards and recognition
- M- Mission statement
- T- Training
- C- Internet customer-supplier concept.

All cases that have work area teams (14 cases) and cross functional teams (13 cases) reported that these teams are delegated by management to deal with a certain problem identified by departmental managers (for work area teams) and senior managers (for cross functional teams). Team members are then selected according to
the problem to be addressed. None of the case study organisations reported having voluntary teams at employee level.

All cases reported having quality management teams who deal with problems identified by top management, which is related to various departments in the organisation. Team members are selected according to the problem from the various departments. Nine organisations reported having work area, cross-functional and quality management teams.

In terms of team culture reinforcement tactics, thirteen cases reported aligning their rewards and recognition scheme as a reinforcement tactic. Fourteen cases reported that team culture reinforcement is achieved through providing training on teamwork, and problem identification and solving skills. Cross-functional teams are reinforced using the concept of internal customer-supplier chain by eleven case study organisations. Only six organisations reinforce team culture using the mission statement. Moreover, only two case study organisations use all tactics of rewards and recognition, mission statement, training and the concept of internal customer-supplier chain to reinforce the team culture in their organisations.

It is apparent from these findings that all case study organisations recognise that the setting-up of teams is one of the cornerstones of the employee involvement programme, which is an essential component of the implementation of TQM (Oakland, 2000). This, however, does not support the findings of the survey (chapter 5) as teamwork was returned as an important rather than critical quality factor. This issue will be discussed later in this chapter.
6-4-7-3 Suggestion schemes

Lloyd (1999) advises managers not to dismiss a suggestion scheme as an outmoded method for upward problem solving. This advice is based on the conclusion he makes from his study:

Employees have a definite desire to overcome obstacles to their job, to make the organisation more effective and competition and to improve its financial success because this improves their own job security. Therefore, managers should take more notice of their employees' genuine belief and commitment to business goals and should explore better ways of involving them in the continued growth of the company.

This means that suggestion schemes are used to support, to evaluate, to appreciate and to implement the employees' ideas for improvements (Zink, 1995).

Lloyds (1999) considers suggestion schemes as a means for employee involvement in the TQM implementation, while Zink (1995) considers suggestion schemes as the first step in the employee empowerment hierarchy.

Although 14 case study organisations implement suggestion schemes to encourage employee involvement in the implementation process, none of them allow employees to implement their ideas without the approval of top management. Table 6-10 shows the results concerning suggestion schemes.
### Table 6-10

**Employee Involvement through Suggestion Schemes**

<table>
<thead>
<tr>
<th>Case</th>
<th>Suggest</th>
<th>Recommend</th>
<th>Implement</th>
<th>Time</th>
<th>Rewards</th>
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</thead>
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<tr>
<td>18</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>B</td>
</tr>
</tbody>
</table>

**Statistics**

Suggest: 14  Recommend: 6  Implement: 0  NF: 2  F: 1  B: 11

**Definition of column table:**

**Suggest:** Employees suggest ideas. Management reviews and takes responsibility to implement ideas. Idea originators may or may not be involved in the implementation exercise.

**Recommend:** Employees suggest ideas and provide recommendation for implementation. Management decides to adopt or not. Idea originators are usually involved in the implementation exercise.

**Implement:** Employees are allowed to implement ideas that do not disturb operations, without the formal consent of management.

**Time:** The organisation has a target time scale for management response (in terms of acknowledgement and responses).

**Reward:** Type of reward for successful ideas: Financial or Non financial or both.

**Definition of Responses:**

F: Financial  NF: Non financial  B: Both  P: Planning to
All of the 14 case study organisations don't have time scale to provide management response. With such suggestion scheme where employers only suggest improvement ideas without a target time scale, the suggestion schemes is operated in the following manner:

1- Employees suggest
2- Management reviews and decides to adopt or not without target time scale.
3- Management forms appropriate team to recommend implementation plan.
4- Implementation.

The majority of the case study organisations reported that in many instances it took more than a month to respond to the improvement ideas. Johnson et al (1993) state that employee suggestion schemes will only survive if management is quick to respond to ideas put forward, either in terms of acknowledging or recognising successful ideas.

Eleven case study organisations use financial and non-financial rewards to reinforce successful improvement ideas, two cases use non-financial and only one case uses financial rewards. Non financial rewards include letters of appreciation, certificates and recognition of success. All employees are informed about successful ideas and their originators.

The findings concerning suggestion schemes compared with the original study reveal that the Malaysian organisations are more aware of suggestion schemes as indicators
of employee involvement. While none of the Palestinian organisations has a target time scale for management to respond to the ideas suggested, in the Malaysian organisations the majority have target time scale (Thiagarajan, 1996).

However, the Palestinian organisations share with the majority of the Malaysian organisations a suggestion scheme that is characterised by employees suggest - management decides.

6-4-7-4 Rewards and recognition

Although Crosby (1989) considers recognition as one of the most important steps of quality improvement process, the majority consensus returned rewards and recognition schemes as an important rather than critical quality factor (chapter 5). However, all case study organisations reported implementing rewards and recognition schemes to maximise employees’ commitment and involvement. All cases reported that they emphasised their reward and recognition schemes that were based on individual, departmental and organisation performance and added rewards and recognition schemes based on team performance after implementing the quality initiative.

The rewards and recognition schemes have financial and non-financial aspects. The most common non-financial aspect is celebrating successful team performance with all senior management and staff, where team members are recognised in front of all their colleagues. Letters and certificates is another non-financial tactic which is commonly and where all letters of appreciation and certificates of distinguished work are signed by the general manager.
All cases reported that non-financial rewards are reinforced by financial rewards as Palestinian employees value both financial and non-financial aspects of rewards with preference to the former type of recognition.

Table 6-11 shows the responses of the case study organisations regarding rewards and recognition schemes.
Table 6-11
Rewards and Recognition

<table>
<thead>
<tr>
<th>Case</th>
<th>Individual</th>
<th>Team</th>
<th>Department</th>
<th>Organisation</th>
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<td>N</td>
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</tr>
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<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
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<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>6</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>7</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
</tr>
<tr>
<td>8</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>9</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>10</td>
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<td>N</td>
<td>N</td>
</tr>
<tr>
<td>11</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>12</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
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<td>Y</td>
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<td>N</td>
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</tr>
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<td>16</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>17</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>18</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

Statistics
Individual: 13  Team: 18  Department: 5  Organisation: 10

Definition of column label:
Individual: Organisation bases rewards and recognition (R & R) on individual performance.
Team: Organisation bases R & R on team performance.
Department: Organisation bases R&R on departmental performance.

Defining of responses:
Y- Yes including both financial and non-financial rewards.
N- NO

As shown in table 6-11, all case study organisations have reward and recognition scheme based on team performance. Thirteen cases base their scheme on individual performance, five base their schemes on departmental performance and ten base their scheme on organisational performance. It is therefore, apparent that Palestinian organisations reinforce team culture with reward and recognition schemes. This
indicates that motivation schemes are used as an enabler to increase employee commitment and involvement in quality initiatives (Williams et al., 1993).

Organisations 3 and 15 use all aspects of performance (individual, team, departmental and organisational) bases for rewards and recognition.

In comparison with the original study, Palestinian organisations heavily use team performance to base their reward and recognition schemes (18 cases compared to 12 cases in the original study), while the Malaysian organisations heavily rely on organisational performance (15 cases compared to 10 cases in the Palestinian organisations) in their rewards and recognition schemes. Few organisations were found to base reward and recognition schemes on all aspects of performance (2 in the Palestinian context and 1 in the Malaysian context). It is interesting that one of the two Palestinian organisations that base rewards and recognition on all aspects of performance is from the service sector (telecommunication) and the only one of the Malaysian organisations also comes from the service sector (Bank).

6-4-7-5 Middle management involvement

Oakland (2000) points out that the middle management have a particularly important role to play, since they must not only grasp the principles of TQM, they must go on to explain them to the people for whom they are responsible, and ensure that their own commitment is communicated. Many quality gurus (Kano, 1993; Crosby, 1989; Ishikawa, 1985) advocate central roles for middle management to lead quality initiatives.

Middle managers require special training and education and top management assistance and guidance (Oakland, 2000; Carmen, 1993). Middle managers should be
provided with the technical skills required to design, implement, review and change
the parts of the quality management system that will be under their direct operational
control. This is to assume new roles as facilitators of the new management system,
coaches of new methods and leaders of empowered employees (Oakland, 2000;
Wacker 1993; Manz et al. 1993).

Four cases reported that they have separate training programmes for middle
managers as shown in table 6-12. The major training programmes were designed to
provide comprehensive training on the philosophy and concepts of teamwork,
application of statistical process control, communication skills, continuous
performance improvement and training skills. While the rest of the cases reported
that middle managers attended training programmes with the rest of the employees.
The reason for not separating middle managers is stated by one of the case study
organisations.

"To overcome organisational barriers to effective communication, co-
operation and co-ordination between all staff at all levels, all managers,
including middle managers, undergo training with the rest of the
employees." (Organisation 17).

Nine cases reported that middle managers assume new roles in the implementation of
the quality initiative. The new roles include facilitating the implementation of the
new management system, coaching new methods and empowering their subordinates
(training their staff).

These new roles, with changes taking place in the organisation culture (cross-
functional team, top management is closed to the shop-floor employees, and internal
customer-supplier chain) all require the support from top management to provide
guidance and assistance to middle management (Cashbourne 1991; Carmen, 1993).
In this regard, all case study organisations reported that in interaction between top management and middle management has increased since the introduction of the quality management initiative.

Table 6-12

Middle Management Support

<table>
<thead>
<tr>
<th>Case</th>
<th>Separate Training</th>
<th>New Roles</th>
<th>Increased Interaction</th>
</tr>
</thead>
<tbody>
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<td>NO</td>
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</tr>
<tr>
<td>2</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>3</td>
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<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>4</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>5</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>6</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>7</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>8</td>
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<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>9</td>
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<td>YES</td>
<td>YES</td>
</tr>
<tr>
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<td>NO</td>
<td>NO</td>
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</tr>
<tr>
<td>11</td>
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<td>NO</td>
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</tr>
<tr>
<td>12</td>
<td>NO</td>
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</tr>
<tr>
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<tr>
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<tr>
<td>18</td>
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<td>YES</td>
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</table>

Statistics:
Separate training: 4
New roles: 9
Increased Interaction: 18

Definition of column label:
Separate Training: Middle managers receive separate training.

New Roles: Middle managers assume new roles.

Increased Interaction: Interaction between top management and middle management has increased since the introduction of the quality management initiative.
6-4-8: Quality Management System

All case study organisations are ISO-9000 certified. The ISO-9000 series are basically standards “used for external quality assurance purposes and designed for internal use” (Zhu and Schenermann, 1999). The main benefit of ISO-9000 is that it should produce an effective quality system which will assist in eliminating errors and therefore save money on rework and scrap. By building in quality at every stage customer satisfaction should be improved (McAdam and McKeown, 1999).

From the point of view of strategic management, it follows that ISO-9000 must be integrated with human and managerial aspects to become a fundamental part of TQM. The integration of ISO-9000 with TQM generally allows the firm to capture increased profits along the path to quality improvement (Huarng et al., 1999).

The new version of ISO-9000 is ISO/DIS 9001-2000. This international standard specifies requirements for a quality management system where an organisation needs to demonstrate its ability to provide consistently product that meets customer satisfaction through an effective application of the system, including processes for continual improvement and the prevention of non conformity (Russell, 2000). The International Organisation for Standardisation (ISO) 9000-2000 series (1999) set out methods by which a system can be implemented to ensure that the specified customer requirements are met. According to Oakland (2000) an appropriate quality management system will enable the objectives set out in the quality policy to be accomplished.
All case study organisations reported that a documented quality management system is critical quality factor to improve customer satisfaction. This supports the finding of the survey questionnaire (chapter 5) as 77 percent of respondents returned this quality factor as critical where 74.3 percent of respondents stated that improving customer satisfaction was the main purpose for pursuing certification.

The majority of the cases considered ISO-9000 certification as a major drive for TQM implementation as it comes as a first step towards TQM. The certification as reported by the case study organisation help creating a positive environment for continuous improvement emphasising team work, establishing a common understanding of the internal custom-supplier chain and emphasising meeting customer requirements and wants. Organisation 15 is in the process of integrating ISO-14000 and TL-9000 with ISO-9002 to jump several steps forward towards TQM. Oakland (2000) considers a good quality management system is a basic component of his TQM model.

**6-4-9: Supplier Management**

Supplier quality management is an important aspect of TQM since materials and purchased points are often a major source of quality problem (Zhang et al., 2000). Garven (1983) finds that organisations that manufacture the highest quality products have purchasing departments that rank quality rather than cost minimisation as their major adjective. Conversely, in organisations with lowest quality performance, he finds that primary objective of the purchasing department is to obtain the lowest price for technically acceptable components. The importance of supplier management is recognised by the Malcolm Baldrige Quality Award (1999) and the
European Quality Award (1999) and ISO/DIS 9001-2000 (1999). Poor quality of supplier products results in extra costs for the purchaser; e.g. for one appliance manufacturer, 75 percent of all warranty claims were traced to purchased components for the appliances (Juran and Gryna, 1993).

Clearly suppliers need to be evaluated and selected on their ability to supply the product or service in accordance with the organisation’s requirements. Suppliers evaluations, supplier audit records and evidence of previously demonstrated ability should be considered when selecting suppliers and when determining the type and extent supervision applicable to the purchased materials/services (Oakland, 2000).

If organisations pursue good supplier quality management, they should establish long-term co-operative relations with their suppliers (Zhang et al., 2000).

As shown in table 6-13, the majority of the case study organisations select a reasonable few dependable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money. Eleven cases reported establishing long-term co-operative relations with their suppliers by participating in supplier quality activities and providing feedback on the performance of supplier’s product. The majority of the cases reported that they conduct supplier evaluations, they consider suppliers audit records and evidence of previously demonstrated ability. They prefer ISO-certified suppliers and regard product quality as the most important factor for supplier’s selection.
Table 6-13
Supplier Management

<table>
<thead>
<tr>
<th>Case</th>
<th>Select</th>
<th>No. of suppliers</th>
<th>Relationship</th>
</tr>
</thead>
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</tr>
<tr>
<td>2</td>
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<td>N</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>Few</td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>7</td>
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<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>8</td>
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<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>9</td>
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<td>Many</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
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<td>Many</td>
<td>N</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>14</td>
<td>Yes</td>
<td>Few</td>
<td>N</td>
</tr>
<tr>
<td>15</td>
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<td>Few</td>
<td>LTP</td>
</tr>
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<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
<tr>
<td>18</td>
<td>Yes</td>
<td>Few</td>
<td>LTP</td>
</tr>
</tbody>
</table>

Statistics:
Select : 15 Few : 15 LTP : 11

Definition of column label:
Select: Selection of reasonably few dependable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money.

Relationship: Long term relationship and working partnership with key suppliers.

Definition of responses:
LTP: Long term partnership.
N: The organisation does not have long term partnership with key suppliers.

6-5 Cross-Case Comparative Analysis

Findings from the semi-structured interviews with the case study organisation emphasise the existence of the identified critical quality factors in the first level of investigations (chapter 5). However, it is not clear whether the order of emphasis exists as stratified in the critical quality factors structure (constructed in chapter 5) in any individual case study organisation.
The cross-case analysis of the case study data reveals that there are similarities in the tactics and techniques employed in the deployment and implementation of critical quality factors, and differences in the extent of the deployment between the case study organisation as well. Much of the similarities is evident among organisation 3,6,7 and 15 which have a higher level maturity than the rest of the organisations (implementation period is more than three years). However, some tactics and techniques were reported by all cases to be implemented in their organisation. This includes: general managers heading the quality council, the presence of senior managers in the quality councils, full time quality management positions, customer feedback as the source of information for factors taken into consideration during policy development, briefings by the general manager as a communication mode in the early introduction stage, management staff meeting as the bottom up mode of communication, training employees on quality concepts and creating quality awareness, measuring appraisal costs of quality, having quality management teams, increased interaction between senior managers and middle managers since the implementation of the quality management initiative.

However, some important differences in organising for the deployment and implementation of critical quality factors are also evident between case study organisations. While some of the differences are expected given the differences in their business situation and available resources it is likely that the approaches impacted the level of integration of TQM case study organisation (Thiagarajon, 1996; Easton, 1993 and 1998).
6-5-1 Top Management Direct Involvement

Table 6-14 summarises the evidence of top management involvement as reported by the case study organisations.

### Table 6-14

<table>
<thead>
<tr>
<th>Case</th>
<th>Areas of Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>MS, QC, RV, FB, MM, CS, TR, CH, VC</td>
</tr>
<tr>
<td>3</td>
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</tr>
<tr>
<td>18</td>
<td>MS, QC, RV, FB, MM, CS, TR, CH, VC</td>
</tr>
</tbody>
</table>

Statistics:
MS: 18  QC: 18  RV: 18  FB: 18  MM: 18
CS: 18  TR: 16  CH: 11  VC: 16

Definition of Responses:
MS: General Manager and Senior managers direct involvement in the communication of mission statement and objectives defining quality values.
QC: General managers head the quality council.
RV: Review of quality matters at management meetings.
FB: General manager and senior managers meet staff regularly to discuss quality matters, and get feedback from them.
MM: Senior managers assume responsibilities to evolve middle managers to assume new roles.
CS: Senior managers’ involvement in celebrating superior quality performance.
TR: Senior managers have received quality training.
CH: Senior managers’ involvement in training and coaching others.
VC: General manager and senior managers’ commitment to visit and meet key customers regularly.
It is evident from table 6-14 that the general manager and senior managers have a
direct involvement and support in the critical quality activities. In all cases, the
general manager heads the quality council, has a direct involvement in
communicating the mission statement, reviews quality matters at management
meetings, meets regularly with staff to discuss quality matters and participate in
celebrating superior quality performance. Senior managers as reported by all cases,
communicate the mission statement, participate in reviewing quality at management
meetings, meet regularly to discuss quality matters, and assume responsibility to
evolve middle managers to assume new roles.

The major findings of this level of enquiry can, therefore, be presented as follows:

1- Structure and deployment of critical quality factors:

   It is evident from the findings that similarities in deployment and structure of
   the identified critical quality factors exist in all case study organisations.
   However, some differences were evident in the extent of deployment among
   case study organisations. Some organisations (3, 6, 7 and 15) appear to
   implement and deploy more elements of individual quality factors than the rest
   of case study organisations. Examples include the use of customer surveys,
cross functional teams, measuring costs of quality and supplier management.

2- Enabling Environment:

   To support successful implementation of the quality initiative, the vast majority
   of the case study organisations implement some form of support infrastructure
to reinforce successful implementation. Some organisations (3, 6, 7, and 15) use
more types of support infrastructure than other organisations for reinforcement purposes. However, all case study organisations highlight the importance of using reinforcement (rewards and recognition schemes) to create an enabling environment for successful implementation. Moreover, critical quality factors such as training and workforce commitment to the quality initiative are seen by the case study organisations as enablers to support the implementation of other quality factors. This is in tandem with the information found in the literature concerning the interdependency of critical quality initiatives and activities.

3- Tactics and Techniques:

It is apparent also, that case study organisations use various tactics and techniques at different levels in terms of number of the tactics and techniques and the extent of implementations (2, 3, 6, 7 and 15) appear to realise the benefits from using a wider range of tactics and techniques in their implementation process than other organisations.

4- Implementing in stages:

All case study organisations appear to see the need to implement some of the quality activities in stages. A clear evidence is the perception of having a formal documented quality management system, i.e. ISO-9000 as an important stage to implement TQM.

5- Ownership of Quality Initiatives:

Top management commitment and direct involvement in critical quality activities are considered in the literature to be essential and central to successful
and effective TQM implementation process. The findings of the semi-structure interview provide evidence that top management commitment and direct involvement is essential to successfully implement quality management initiative in the case study organisations. The direct involvement of the General Managers and the senior managers (see table 6-14) in almost all quality activities emphasises this critical quality factor for successful implementation process.

**Detailed discussion is taken up in chapter 8.**

**6-6: Summary**

Using semi-structured interviews, more insights concerning the tactics and techniques to implement the critical quality factors were presented based on the experiences of 18 case study organisations. Cross-case analysis is used to form the important prerequisites to successful implementation of the critical quality factors.

In chapter 6, the survey findings suggest that the TQM initiative in an organisation stands a good chance of success as the critical quality factors are addressed with proficiency.

This chapter framed the important tactics and techniques (prerequisites) to effective implementation of the critical quality factors. Chapter 7 is another step further by completing the examination of the essential factors to the successful implementation of TQM. Therefore, chapter 7 explores the foundation elements that should be addressed prior to introducing a quality management initiative.
Chapter Seven
An Investigation of Critical Elements of TQM Introduction Stage Through
Case Studies (Open Interviews)

7-1: Introduction

The case study approach is a method for understanding phenomena of interest and
gathering additional knowledge in that area, where we try to describe certain
characteristics of the phenomena on which interest centres (Sekaran, 2000).
Therefore, this chapter describes the critical stages of TQM implementation in
five organisations using the case study approach.

To complement the previous stages of investigations (chapter 4, 5 and 6), this level
of investigation involves describing the critical stages each case study
organisation experienced from the time a decision was made to implement TQM
to the time it was launched. The objective of this level of investigation is
understanding the fundamental elements of the critical stages (activities, events
and for decisions that contributed significantly to the success of TQM
implementation process) required to start TQM. Therefore, the findings of this
level of investigations is used to supplement the identified 19 critical quality
factors (chapter 5) relating to the development of the TQM implementation model
in the Palestinian context.

The objective of the case study approach (open interviews) is to identify pre-
implementation critical activities, decisions and for events experienced by case
study organisations that are not addressed by the survey questionnaire (chapter 5)
and semi-structured interviews (chapter 6). The aim is, therefore, to understand the wider issues of TQM implementation process, in general, and pre-implementation process, in particular (Thiagarajan, 1996).

7-2 Design and Management of the Case Study Interviews

7-2-1 Research design

Thiagarajan (1996) points out that given the huge stream of events, activities and decisions that surround an organisation’s implementation process, attempting to encourage interviewees to describe their full “TQM story” can not only be an extremely time-consuming exercise, but more importantly, may result in output that is disjointed and meaningless. As this study is a replication of the Malaysian based study of Thiagarajan (1996), it was decided in the research design and methodology (chapter 3) to follow the same methodology of longitudinal study of a set of critical stages in an organisation implementation process. As the research design for a case study allows data collection to take place in a coherent and meaningful manner (Sekaran, 2000; Pettigrew, 1979).

To allow appropriate data collection and in depth study of the critical stages, the interviews focused on the critical soft outcomes in the pre-launching to a formal launching of TQM in the five case study organisations.

7-2-2 Research Management

The criterion used to select cases is that participating organisations must be advanced in their use of TQM (Thiagarajan, 1996). However, it is very difficult to identify such an organisation in the Palestinian context for the reasons elaborated
in the sample selection section (chapter 5). Therefore, the criterion used in selecting organisations is based on an objective measure, that is, the quality management initiative period of implementation. Minimum of three years implementation period was set as the criterion for selection cases. From the survey questionnaire findings (table 5-5, chapter 5), the percentage of organisations with more than three years period of implementation is 6 percent, that is 5 organisations. Therefore, these five organisations are selected as the case study organisations for this level of investigation.

**Interviews:**

General Managers and quality related managers are the subjects interviewed.

**Contacting Organisations:**

This process is fully elaborated in chapter 6.

**Utilisation of the Interview Questionnaire:**

The objective of the interviews is to allow interviewees to tell their own TQM story by expressing their experiences. To achieve this objective unstructured interview using open ended questions is an appropriate interview tool to understand a phenomena of interest using the opinions and beliefs of interviewees (Sekaran, 2000; Easterby-Smith et al., 1991).
Conducting the Interviews:

The five interviews were conducted on site through in-depth discussions in an unstructured manner. All interviews were tape recorded with the permission of the interviewees.

Interviewees were simply asked to relate, starting from the time the decision was made to implement TQM, the critical events, activities and/or decisions which significantly have contributed to the success of the quality management initiative in their organisation. Interviewees were first asked to elaborate on the implementation decision process. Interviewees were asked for elaboration on the tactics and techniques employed at each critical stage.

The average time of the case study interviews is one hour and seven minutes.

7-3 Case Studies:

Five organisations were interviewed and an in-depth elaboration of critical events is discussed below.

7-3-1 Case Study 1: Company 1

Background Information

Company 1 is an engineering company that provides consultation services and implements various projects. Total number of employees is 117. The company was ISO-9000 certified in early 1997.
Decision to implement TQM:

In 1995 the general manager received an invitation to attend a training course in total quality management sponsored by an American organisation in association with a training centre of one of the Palestinian Universities. After attending the training course, he decided to learn more about TQM. He studied Deming, Juran, Crosby and others including various success stories of TQM implementation. At the same time, he attended other training courses in TQM and ISO-9000 quality management system.

When he realised the benefits that TQM implementation can bring to his company, he decided to share his knowledge with senior managers.

Seniors managers commitment and involvement:

The general manager invited senior managers for a whole day meeting without telling them the purpose of that meeting. On that day, he was very well prepared to conduct a one-day TQM workshop. By the end of the workshop more materials were distributed to senior managers. A week later, a meeting with all senior managers was conducted to discuss the materials that were distributed. By the end of this meeting, a collective decision was made to invite an expert in the field to conduct a training course for all senior managers. This indicated commitment of senior managers. Immediately after the training course, the quality council was established headed by the general manager, with the membership of all senior managers. This meant that the quality initiative was started.
PAGES 356, 357 MISSING IN ORIGINAL
The quality infrastructure started with the quality council that is headed by the general manager and the membership of all senior managers. The quality council is responsible for setting implementation policy, reviewing training needs provided by department committees, designing the training programmes and monitoring and evaluation of the implementation plans.

The departmental committees duties were expanded to include not only assessing training needs of the employees in each department but also to deploy the policies of the quality council in the various departments, and to solve work-related problems. Each committee is headed by the corresponding department manager and reports directly to the quality council. Cross-functional teams are formed by the quality council to provide recommendations to certain problems on a project basis. Cross-functional teams are led by a senior manager and report directly to the quality council.

**Training and Education:**

A programmed training and education was initiated at the time a decision to implement TQM. Departmental committees are responsible for identifying the training needs of employees in each department. The quality council is responsible for reviewing these needs and designing the appropriate training package. Senior managers conduct the training to staff whenever possible and external trainers are contracted whenever needed. The training policy is to have senior managers attend training courses conducted by external trainers. This policy of conducting training by senior managers and their attendance of training
courses by external trainers is recognised by top management as a tactic to maximise employees commitment and involvement.

Employees are trained on teamwork, communication skills, and problem identification and solving skills.

**Role-Modeling:**

The general manager realises that the most effective tactic to achieve employee commitment and involvement company-wide was to demonstrate top management commitment and involvement in general, and his commitment and involvement in particular.

"Demonstrating top managements' ownership of the quality initiative left no room for employees to suspect our serious intention to make it work"

Through training, the general manager and the senior managers were able to show their competence and comprehensive understanding of the benefits of TQM implementation. This was reflected in the face-to-face meetings with staff. Top management was able to demonstrate their commitment by role-modeling and active involvement in the implementation process right from the outset.

**Rewards and Recognition:**

To make this change happen, and to reinforce positive behaviour of employees towards this change, top management decided to implement a new reward and recognition scheme based on individual, team and organisational performance. Training is also related to the reward and recognition scheme. The number of
training hours an employee attends is considered when it comes to rewards and recognition. This creates an incentive for employees to take training seriously. Management sees reinforcement of behaviour through rewards and recognition as a key factor to the successful introduction of the quality initiation.

7-3-2 Case 2: Company 2

Background information

Company 2 started as a stone crasher to produce gravel. In the past ten years it expended its operations to manufacture asphalt and concrete. The company employs 275 persons. It became ISO-9000 accredited company back in 1997. The company has excellent reputation for its high quality products and customer satisfaction. Its customers are other manufactures and construction contractors as well as ultimate consumers.

Decisions To Implement TQM:

Pressures from large customers and severe competition in the marketplace introduced top management in general, and the general manager in particular, to quality and quality systems. A local consultant was contacted to arrange for a meeting with management.

The general manager and all senior managers attended the meeting. By the end of the meeting with the consultant, management realised the difference between quality management system and total quality management.

"We were to decide whether to implement a quality management system to meet the requirements of the system or total quality management to satisfy our customers all the time on continuous basis".
The decision was to initiate a quality management process to implement TQM through seeking ISO-9000 registration. All senior managers believed that this approach would yield short-term benefits (through ISO-9002 registration) to support the long-term strategic goal of company-wide continuous process improvement to satisfy customers (through TQM).

This decision directed the efforts towards learning more about the quality management system and total quality management. All senior managers including the general manager attended a long in house training course in TQM conducted by external trainers. The training course emphasised how ISO-9000 quality management system can be integrated as a first step towards TQM. Moreover, senior managers attended other training courses necessary to start the quality initiative company-wide. This required investment of time and effort for more than four months on almost daily basis.

The result was the creation of the quality council composed of all senior managers and headed by the general managers.

Middle Management Commitment and Involvement:

Middle management buy-in is crucial to successful TQM implementation (Oakland, 2000). Hence, an important first step towards gaining a company-wide buy-in, winning the minds and hearts of middle management early in the implementation process was one of the top priorities. Senior managers started to convey quality matters in their regular meetings with department managers.
Later, senior managers started to nominate middle managers for quality management workshops. This created the appropriate foundation to conduct a general meeting between top management including the general manager and all middle managers. In this meeting, the general manager briefed middle managers on the effort and time invested by himself and senior managers learning about TQM. He summarised the benefits that the TQM can bring in for the company emphasising the roles that middle managers have in the implementation process.

Many questions were addressed in that meeting. Questions were raised by middle managers and the general managers and senior managers provided answers. The ability to provide appropriate answers by top management indicated serious commitment and involvement of top management to implement the quality initiative.

Middle managers attended several in house training conducted by senior managers aiming at creating TQM awareness to learn about TQM and its implementation. They were also sent for external training in team building, communication skills and problem identification and solving skills and training of trainers.

Middle managers were the leaders of the work-area teams that were formed later. They used to report directly to the quality council. Some middle managers became members of the quality council at a later stage.
Employee Communication and Involvement:

Middle managers started to convey quality messages to their staff in their regular meetings. Quality messages were also conveyed through posters, which were deployed throughout the company offices, the crasher, the concrete and asphalt plants.

Middle managers conducted several one-day workshops for their staff to introduce them to the concept of TQM. An open day meeting was held. The general manager, senior managers, middle managers and the rest of the employees attended this meeting. The general manager emphasised the benefits of initiating the quality management programme and briefed all employees on the progress made so far. He pointed out the importance of training for all employees in the company including himself to make the quality programme work. Finally, he stressed the concept of internal supplier-customer chain and the importance of creating team culture in the implementation process.

Later, middle managers conducted several training courses to their staff in the areas of team building, problem identification and solving skills. The face-to-face meetings between top management and the staff were conducted on regular basis to provide briefings on the progress being made, provide answers to the questions raised by employees and to get feedback. These meetings are viewed by the general manager as essential contribution to the successful implementation of the quality programme.
Training and Education:

Training of all employees was emphasised by the general manager. A programme approach to training was used as senior managers attended several training courses who in turn delivered these training courses to middle managers. Middle managers eventually trained their employees. A general training policy was adopted by the quality council that requires each manager who attends external training courses to conduct in house training for other appropriate staff members.

This reflects that the training policy is based on a cascade approach where senior managers attending training and in turn develop and design training packages to train staff who in turn train their staff.

Training staff on a cascade basis indicates the high level of top management involvement and presents their modeling role in the implementation process. It also reveals the amount of time and effort invested by top management in the pre-launch stage to gain company-wide buy-in.

Communication:

To achieve company-wide commitment and involvement, the most common mode of communication is the face-to-face meetings. These meetings were held to convey the quality messages from the general manager to the middle managers and all employees. They are used by middle managers to convey the quality messages to their staff.
Workshops and training sessions are another mode of communication to convey quality messages. The use of the cascade approach of training represents a two-way communication mode for management and staff. Posters also are displayed throughout the company conveying various quality messages.

**Rewards and Recognition:**

To reinforce team culture and the concept of the internal supplier-customer chain, rewards and recognition scheme is based on individual, team and company performance. This reward and recognition scheme includes salary increments, bonuses and non-financial incentives for all employees in all levels based on their personal performance, their performance in the work-area teams and the performance of the whole company.

The rewards and recognition scheme has been successful in gaining and sustaining company-wide commitment and involvement.

**Quality Infrastructure:**

To create ownership of the quality initiative, top management found that a formal quality infrastructure is necessary. A quality council headed by the general manager and the membership of senior managers was formed as a quality management team. Prior to the implementation process, some middle managers became members of the quality council. The main function of the quality council is to manage the transformation process.
Quality teams were formed at the middle management level to implement and manage the decisions of the quality council. Department managers were titled as quality leaders to foster their ownership of the quality initiative. The quality leaders are responsible for training their staff, achieving greater employee involvement in the quality initiative, and creating an enabling environment to foster the concept of internal supplier-customer chain.

Work-area teams were formed at the department levels. Members of such teams are brought together by the work-area head to solve work-related problems and submit solutions to the department manager. The main purpose of forming the work-area teams is to achieve quality improvements.

7-3-3 Case 3: Company 3

Background information:

Company 3 is a pharmaceutical company that produces medicines and cosmetics. The company has local market and exports its products to some European, African and Arab countries. It was the first pharmaceutical company to get ISO-9002 registration in 1997. The company has a good reputation for its quality pharmaceutical products. The total number of employees is 150.
Decision to Implement TQM:

The initiative started at the quality assurance department in the company. The manager of the quality assurance department promoted the initiative to the general manager. The general manager accepted the initiative and asked for more details. Based on a TQM training course that was attended by the quality assurance department manager, he prepared a written document including the definition and benefits of TQM and submitted it to the general manager. Further discussions were conducted between the general manager and the quality assurance department manager. The general manager asked for relevant materials to learn more about TQM.

Top Management Education:

Arrangement for a training courses directed to the top management were made. An external trainer delivered five days training course in TQM to all senior managers and the general manager. By the end of the fifth day the external trainer was recruited as the company’s TQM consultant and a steering committee was formed to plan, monitor and evaluate the implementation of the quality initiative.

Senior managers attended several external-training courses to enhance their interactive skills in communication, coaching, facilitating, team building and effective meetings. This was aimed particularly at addressing quality matters that promote company-wide commitment and involvement to achieve the vision, and quality goals of the company.
Employee commitment and involvement:

A long letter from the general manager addressed to all employees in the company was distributed. The letter conveyed the meaning of TQM, its importance and benefits.

Accompanied with this letter, posters were displayed company-wide. A staff meeting with the general manager, senior managers and the consultant was held a week later. In this meeting the general manager emphasised the messages conveyed in his written litter and announced the initiation of a team work culture in the company. An open discussion based on a question-and-answer approach took place.

All employees attended compulsory training courses in teamwork, communication skills, problem identification and solving skills to achieve employee commitment and involvement.

Later, the employees were asked to join an introductory course in TQM on voluntary basis. Surprisingly, all employees expressed their willingness to attend the course. This signaled a company-wide commitment and involvement.

Communication:

In the pre-launch implementation stage, the general and senior managers held weekly face-to-face meetings with all employees. These meetings were used to
convey quality managers, provide answers to questions and to get employee feedback. Moreover, these meetings demonstrated top management commitment and involvement.

**Rewards and Recognition:**

In the pre-launch implementation stage, a new rewards and recognition scheme was developed. For the first time management decided to develop a separate budget for rewards and incentives. Although individual performance and company performance are considered in the new rewards and recognition scheme, team performance is highly emphasised.

The rewards and recognition scheme was developed with a separate budget to maximise the company-wide commitment and involvement in the quality programme. Emphasising the team performance as a basis for rewards and incentives is used to foster the teamwork culture company-wide.

**Quality Infrastructure:**

A steering committee (equivalent to quality council) was formed. Headed by the general manager, with all senior managers and the consultant as members. The consultant provided advice to the committee concerning planning and implementation. The primary function of the committee is to manage the implementation process. In the early stages the committee developed the company’s vision, produced the mission statement and developed the quality policy with the assistance provided by the consultant.
Cross-functional teams are formed on a project basis by management. Middle managers and skilled and knowledgeable staff members join these teams to deal with a particular problem and recommend the appropriate course of action. In most cases, a senior manager heads cross-functional teams. In few cases, these teams are headed by middle managers.

Another form of quality infrastructure is the work-area teams where members are brought together by the head of the work-area to solve work-related problem and submit solutions to the department head.

7-3-4 Case 4: Company 4

Background information

Company 4 is a Fast Moving Consumer Good (FMCG) company. It manufactures various types of chocolates, candy bars and wavers.

The company employs 290 persons. It was the first Palestinian Company to get ISO-9002 registration.

Decision To Implement TQM

With opening up of markets as a result of the peace treaty between the Palestinian Liberation Organisation (PLO) and Israel, the company faced severe competition from Israeli companies and other foreign countries. The company suffered market share losses over 1994 and 1995.
After several top management meetings, the general manager concluded that the main reason for the market share loss is quality as competitiveness is equated with TQM. Top management decided with consensus that to survive in the market place, a quality programme must be implemented.

Top Management and Training

During six months before TQM was formally launched, top management involved in a training and education programme. This programme was designed to address the various issues related to the quality programmes, that is, vision, values and quality goals of the company.

Top management attended several courses of training to enhance their awareness and understanding of TQM, communication skills, coaching skills and other interactive skills. To maximise company-wide commitment and involvement, top management was trained to conduct training courses and effective meeting management.

Role Modeling

Being trained to lead training sessions, top management demonstrated their commitment and involvement by conducting several workshops to middle managers on TQM concepts and benefits. Other workshops were conducted to explain the vision, mission, values and goals of the company.
Top management provided a model of leading by example to middle managers who, in turn, provided a model of leading by example to their staff by conducting briefing sessions and workshops explaining the company’s vision, mission, values and goals.

**Middle managers commitment and involvement**

"The success of the implementation of the quality initiative was dependent on the collaboration of all our colleagues and they were unlikely to change unless they also recognised the need"

Although middle managers knew about the market share losses, they were called for a meeting with top management. The general manager pointed out the size of the market share losses and asked middle managers to provide suggestions to the problem.

This was the starting point in getting the middle managers involved as the general manager discussed the benefits of TQM to achieve survival.

A week later, the general manager organised and conducted a one-day TQM awareness workshop to middle managers. This conveyed a very strong message to middle managers regarding the extent of top management’s commitment and involvement to implement TQM.

This one-day workshop opened the doors for middle managers to attend a series of TQM training courses to learn more about the implementation process of TQM and its tools, and develop interactive and leadership skills required to assume their new roles.
Middle managers were trained to lead training sessions, and to enhance their communication skills to enable them explain TQM effectively to their staff.

**Employee Commitment and Involvement**

The new TQM philosophy was introduced to the company’s workforce through a series of meetings with middle manages who conveyed the quality messages to them. The general manager and the senior manager held several meetings with all employees explaining the benefits of TQM. A senior manager designed and conducted a one-day TQM awareness workshop for all employees applying the question-and-answer approach. Later several meetings were held to share information and explain the new management concepts. In these meetings, the employees met with top management in groups of 30-35 people.

Thus training the company’s people became the priority to develop a total quality organisation.

**Communication**

The most common mode of communication is face-to-face meetings that top management conducted with middle managers and the rest of the employees and those conducted by middle managers with the rest of the employees. Workshops and training programmes were used as a top-down and bottom-up communication tactics. Moreover, posters that convey quality managers and ethics were displayed company-wide.
Quality Infrastructure

As soon as it was decided to implement TQM, top management comprised the quality council, which is headed by the general manager. The main objective of the quality council is to plan, monitor and evaluate the implementation process. Moreover, the quality council is responsible for reviewing the training needs of the various departments. The quality council comprises all senior managers and some middle managers. Middle managers lead the quality teams at the departmental levels. These teams are formed to implement and manage the decisions and policies of the quality council. Cross-functional teams are formed to address a particular project-related problem at the departmental level and to provide a recommended course of action. Middle managers or senior managers lead the cross-functional teams.

Work-area teams are formed to solve work-related problems and report the solutions to the department head.

7-3-5 Case 5: Company 5:

Background information

Company 5 is a telecommunication company. It is a monopoly as no such company exists in the market place. Customer satisfaction is the main focus of its operations to maximise revenues. It employs more than 2000 people. It is ISO-9002 certified company. Currently the company is seeking ISO-14000 and TL-9000 registration.
The Decision to Implement TQM

Quality awareness in the company started when the general manager met with a group of foreign consultants who arrived to help the company on technical aspects. This awareness was reinforced when the general manager visited telecommunication companies abroad. He attended a TQM workshop, which he felt is not enough. He decided to learn more. By learning more, he was more convinced that TQM can provide many benefits to the company.

He started introducing the concept of TQM to the company through the in-house bulletin. He conveyed several quality massages before calling senior managers for a meeting. By the end of that meeting, all senior managers were ready to buy-in. Thus, the commitment and involvement of senior managers was reflected by forming the steering committee (equivalent to the quality council) that comprises all senior managers and led by the general manager. At a later stage, some middle managers were introduced as active members to the steering committee.

The steering committee conducted several meetings and reached a consensus that TQM to the company means customer satisfaction through excellent services.

Role Modeling

Top management invested time and effort to learn about TQM. They attended several training courses on TQM, communication skills, team building, training of trainers, and coaching skills. The investment in time learning about TQM
 emphasised the importance of leading the early quality training for lower-level managers. This conveys a strong message of management commitment by demonstrating leading by example.

**Middle Managers Commitment and Involvement**

The general manager called middle managers and the region manager to a meeting. In the meeting, the general manager explained the reasons why the company is planning to implement the quality initiative and the benefits such an initiative can bring to the company and the employees. The general manager and the senior managers answered the questions raised by middle managers.

A week later, the general manager delivered a one-day TQM awareness workshop to middle managers. This demonstrated the high level of commitment of top management.

Middle managers attended several training sessions conducted by senior managers and were sent in-groups for other training courses including TQM awareness and implementation and training of trainers.

**Employee Commitment and Involvement**

Top management conducted several meetings with the staff explaining the reasons for planning to implement a quality initiative and the benefits it can bring to the company and employees. Top management met with employees in-groups of 100 people.

Following these meetings, middle managers conducted TQM awareness training sessions for their employees. Whenever was needed, employees were sent in-
groups to attend external training courses. The training courses focused on teamwork, communication skills, problem identification and solving skills and continuous performance improvement.

**Communication**

The communication modes that are used to achieve company-wide commitment and involvement include:

- Face-to-face meetings between the top management and employees on regular basis.
- Cross-functional and work-area teams regular meetings.
- Suggestion schemes.
- Display of posters throughout the company.
- The monthly in-house bulletin.

**Training**

Steady increase in the training budget demonstrates its importance to successful TQM process. The company has provided an average 5.5 days of training per year for all employees to improve their problem identification and solving skills and work-related skills. Middle managers attended training courses in leadership to improve their coaching and facilitating skills.

The various training programmes are directed towards increasing employees understanding of TQM and its tools to achieve continuous performance improvement. This is to maximise employees’ commitment to the vision, mission, values and goals of the company. Those who attend external training are required
to train their staff and colleagues. The main purpose of this policy is to create internal ownership of training.

**Rewards and Recognition**

Management reinforced its efforts to get the desired behaviour to sustain the quality initiative by rewards and recognition schemes. Improvements of the existing compensation scheme are made to align employees' efforts towards the achievement of the company's goals. Management sees such improvements of the rewards and recognition schemes as essential to the success of the quality initiative.

**Continuous Improvement**

To maximise employee involvement in the quality process, the introduction of continuous improvement initiatives is seen by management as a crucial aspect to be addressed in the early stages. Continuous process improvement using cross-functional teams on cost reduction programmes was one of the early continuous improvement initiatives in the company. Rewards and recognition of employees' success reinforces their continuous improvement efforts.

**Quality Infrastructure**

The quality structure at the company consists of the quality steering committee headed by the general manager with all senior managers and some middle managers as members. The steering committee is responsible for coordinating TQM implementation and monitoring and evaluation of progress. Departmental, committees translate the steering committees' directives into quality initiatives.
Cross-functional teams and work-area teams are formed at all levels of the company. The primary function of the cross-functional teams is to work on project basis to deal with certain problems and provide recommendations. Work-area teams deal with work-related problems and submit solutions to the work-area head.

7-4 Comparative Analysis

Analysis of the critical stages presented in the case studies reveals the following foundation elements of TQM implementation that are found common in all case study companies. The foundation elements are described in sequential manner to show the pre-launch implementation critical stages that these companies went through in the pre-launch of their TQM process.

1-Realisation of the benefits that TQM can bring in to the company:
In all case study companies, the decision to implement TQM was made when top management realised the benefits that a quality initiative can bring to the company.

2- Top management education and training:
Top management including the general manager of the case study companies attended several training courses to learn about TQM. This investment of time and effort of top management was seen essential to gain company-wide commitment and involvement.
3- Active demonstration of top management commitment and involvement:

The implementation process started at the top and cascaded down company-wide. It started at the general manager’s office in all case study companies.

4- Company-wide commitment and involvement gaining

In all cases, top management gained middle managers and employees commitment and involvement by demonstrating active commitment involvement in various activities such as training and face-to-face meetings.

5- Other initiatives

All cases study companies reported the following initiatives:

Training and education of all employees including top management is seen as a critical prerequisite to implement and sustain TQM.

In all cases, senior managers conducted training to middle managers who in turn trained their employees.

Face-to-face communication was reported as the most effective mode to convey quality messages to gain company-wide commitment and involvement.
Social gatherings were used to enhance cooperation between employees and foster team building. The major events were reported to take place in Ramadan were collective break fasting meals are provided for all employees and their families.

Improvements of rewards and recognition schemes to account for individual, team and company performance. These schemes were reported to reinforce desired behaviours in the transformation process.

All case study companies reported that their quality journey started with implementing a formal documented quality management system as the first step towards their TQM implementation process.

**A detailed discussion of the findings is taken up in chapter 8.**
7-5 Summary

In this chapter, the foundation elements of TQM implementation were identified using the case study approach. Five case study companies were presented. The analysis revealed that in the pre-launch of TQM implementation companies’ top management realised the tangible benefits of TQM implementation, invested time and effort in training and education, demonstrated active commitment and involvement, and gained internal stakeholders (company-wide) commitment and involvement.

From these cases, the foundation elements of TQM implementation support addressing tier 1 critical quality factors (identified in chapter 5) as fundamental factors in the TQM model of implementation. These factors are:

1- Top management commitment and involvement
2- Middle managers and employee commitment and involvement
3- Communication
4- Training and Education
5- Quality Infrastructure
6- Formal documented quality management system

However, it is not apparent whether the order of emphasis of the foundation elements exists as suggested by the critical quality factor structure presented in chapter 5.
warranted in recommending the structure to organisations in that sub-population (Thiagarajan, 1999).

Running a cross-tabulation process for the returns of the critical quality factors by business category, size and level of maturity confirmed that there is no significant difference between any of the critical returns produced by the various sub-samples. This indicates that there is no impact of size, scope of business or maturity level on the respondents' perception of how critical the critical quality factor is. This is obvious, however, for the size and level of maturity as table 5-6 reveals that the vast majority of the organisations are small and medium sized and the level of maturity for the vast majority of the organisations is for less than three years.

This analysis, therefore, provides an evidence of the generalisability of the critical quality factor structure, which is in tandem with the general contention that TQM is a generic philosophy of management applicable across organisations of different size, business scope, and level of maturity (Zairi, 1996; Kruger, 1999).

**5-9 Comparative Criticality Index:**

The original study (Thiagarajan, 1996) suggests that the quantitative measure of how critical a critical factor is, is useful. By definition, a critical factor is absolutely essential to the success of TQM implementation, which means that the implementation process stands a good chance of ending in failure if this critical quantity factor is not part of TQM. Such measure of criticality has several applications for the purpose of this study, further researchers and as a particular
8-1 Introduction:

This chapter involves integrating and complementing the analysis of information of the four levels of investigations presented in chapters 4, 5, 6, and 7 and the in-depth literature review discussed in chapter 2.

The research findings are discussed and presented in two parts: part one discusses the quantitative research findings while the second part deals with the qualitative research findings. The discussion presents the key findings of each part and the interpretation of the findings. The implications of the quantitative and qualitative research findings are integrated to lay the foundation for the construction of the framework of TQM implementation in the Palestinian context.

Constructing the model of TQM implementation requires a practical structure. Such structure is best achieved by presenting the model in the form of implementation guidelines with the critical quality factors superposed as a useful checklist (Mann, 1992; Thiagarajan, 1996; Ali, 1997).

To achieve this, the TQM literature recommends that in developing guidelines for effective implementation, there is a need to:

1- List the key quality levers that have to be manipulated to implement TQM. These are termed in this study as major top management actions.
2- Describe the organisational activities needed to deploy and implement the constructs.

3- Present the guidelines for implementation.

This chapter also includes proposed tools to assess the progress of the implementation process particularly needed during the early years of implementation.

The purpose of constructing this framework is to provide applicable TQM implementation plan that is suitable to the Palestinian business environment and available resources. The researcher views that the framework should be useful for at least the first two years of implementation especially with the absence of any national quality award.

8-2 Discussion of the Study Findings

The findings of the study are composed of two main parts:

Findings from the quantitative investigations and findings from the qualitative investigations. The findings of the quantitative investigations relate to the assessment of TQM awareness and understanding of the Palestinian managers and the identification of the critical quality factors of successful implementation of TQM. Findings of qualitative investigations relate to the identification of the tactics and techniques used to deploy and implement the critical quality factors
and the foundation elements required in the pre-launch stage of TQM implementation.

8-2-1 Discussion of Quantitative Research Findings:
The discussion involves the key findings of the two survey questionnaires and the interpretation of these key findings.

8-2-1-1 Assessment of TQM Awareness and Understanding
Using the instrument developed by Ramirez and Loney (1993) to assess the level of TQM awareness and understanding revealed a low level of awareness and understanding of TQM implementation in the Palestinian context. Although, many of the factors are in accordance with the original study of Ramirez and Loney (1993), nevertheless the level of awareness is low. As evident from figure (8-1) most of the factors are under-emphasised compared to the original study, the mean average score of all studies and the mean average score of the Middle Eastern countries (see chapter 4).

Most of the over-emphasised factors correspond to the tools of TQM applied at the operational level. Factors corresponding to the strategic level are under-emphasised. These include management commitment and the major tasks of top management role in demonstrating active involvement. The reasons for this low level of awareness and understanding can be attributed to:
1- The concept of TQM in the Palestinian context is very new.

2- Most of the respondents don’t have a quality initiative in their organisations.
Figure 8-1 Benchmarking critical factors of TQM: Palestinian versus mean score of all studies, M.East mean score, and the Original Study
Moreover, it is apparent that there is more emphasis on quality assurance and the control of non-conformance of the product-related factors. Costs of quality are more emphasised than the mean. This is because of the new business environment resulted from the Peace Treaty which highlights the importance of cost and making the country very attractive for foreign capital investment and joint venture programmes (Zairi, 1996). Vendor partnership is over-emphasised to achieve better level of quality assurance and lower costs as competition is based on the companies' ability to produce lower cost products (goods and services) (Ali, 1997).

Recognition programmes and publicised successes are over-emphasised reflecting the fact that most of the organisations don't appreciate the abilities of their staff (Ali, 1997). This is evident by the under-emphasis of education and participative management to sustain TQM through improvement projects.

Under-emphasising the need to have a clear vision, a dedicated focus to customer satisfaction and the need to deploy TQM goals through strategic quality planning and continuous measurement and action demonstrate respondents' belief that TQM is still at the early stages of implementation. It seems that culture is something special within the Palestinian context, which is taken for granted. This is evidenced by rating cultural change as a tier 3 factor and under-emphasised when compared with the mean average scores.

Zairi (1996), states that TQM implementation is certainly not about doing the bare minimum through using simple tools and techniques such as SPC, being obsessed
with zero defects as a tangible goal and wanting just to reduce costs. These are important, but they are not the core elements (Ramirez and Loney, 1993). This is evident from the analysis conducted in the wider context of benchmarking the twenty-two factors across countries and industry sectors. Top management commitment, have a clear vision statement and a clear commitment towards customer satisfaction are emphasised almost with the same degree of criticality.

The need for goal clarity and having a quality strategic planning process and a top management structure for driving quality forward and deploying quality goals organisation-wide is also evident. Furthermore, problem solving, problem identification, quality circles and teamwork are all important for driving the improvement wheel forward towards continuous performance improvement. The emphasis on continuous learning through education and training to improve people’s creativity, innovation and ability to add value for the benefit of the end customer is also evident. Successful TQM implementation can only come from radically challenging and changing the culture of the organisation (Rao et al., 1996; Oakland, 2000).

Finally, it is apparent that the conclusion made by Zairi (1996) that not all the twenty-two critical factors are relevant in a generic sense to any organisation is supported by the interpretation of the findings. The criticality level varies and most factors are over, or under-emphasised when comparing the mean average scores of samples’ respondents.
Identification of the Critical Quality Factors

Findings from this level of investigation identified the critical quality factors of successful TQM implementation in the Palestinian context and stratified these factors into three tiers according to their level of criticality. Tier 1 represents the most critical quality factors that have to be addressed first, tier 2 includes the critical quality factors that have to be addressed second and tier 3 includes the critical quality factors that have to be addressed at a later stage of implementation (see chapter 5).

Most of the critical quality factors stratified in tier 1 are known in the TQM literature as fundamental components to be emphasised in the early stages of the implementation process. Particularly: top management commitment to lead the quality drive and their visible involvement to quality and customer satisfaction; communication of mission statement; strategic quality planning (policy development an effective deployment of goals); organising for quality to manage the organisation’s quality journey; maximising employees’ commitment and understanding of the vision, values and quality goals of the organisation; management by fact to solve problems and continuous process improvement and aligning process to improve customer satisfaction.

A formal documented quality management system in place is considered as the communication means of the standards of organisational practice through documented procedures and records (Crosby, 1986). James (1996) considers
accredited quality management system, as a major pillar supporting the
development and operations of TQM in an organisation. Moreover, several case
studies (see Whitford and Bird, 1996; Quasi & Padibjo, 1998) and empirical work
(Quasi et al., 1998) pointed out the importance of a formal documented quality
system in the journey towards TQM. Nonetheless, it is not surprising that this
critical quality factor was ranked highly and stratified in Tier 1 as all respondent
organisations are ISO 9000 certified.

The vast majority of organisation’s returned the critical quality factor (senior
executives assume active responsibility for evaluation and improvement of
management system, and leading quality drive) as absolutely essential to the
success of the implementation process. Almost unanimity of consensus (77 out of
78 respondents) was achieved returning this factor as critical.

This is in tandem with all previous studies (Saraph et al., 1989; Mann, 1992;
Ramirez & Loney, 1993; Flyn et al., 1994; Black and Porter, 1996, Thiagarajan,
1996; Ali; 1997; Ahire et al., 1996; Tamimi, 1998; Rao et al., 1999; Zhang et al.,
2000), with the literature review and all major quality awards (EQA, MBNQA,
and Deming’s prize).

This is evident as there is unanimity in opinions amongst all quality gurus and
every author of TQM on the importance of top management commitment,
involvement and leadership (Zairi, 1999a).

Clear and consistent communication of mission statement and objectives defining
quality values, expectations and focus is considered the major indication of top
management commitment giving priority to customer satisfaction based on a comprehensive identification of customers and customer needs and alignment of processes to satisfy the needs (Smith, 1994; Zairi, 1999b; Oakland, 2000). In harmony with this, development of comprehensive policy and deployment of the goals effectively is the essence of strategic quality planning to be assumed by top management (Deming, 1986; Zairi, 1999b; Oakland, 2000). Consequently, organising for quality to manage the quality journey of the organisation required to achieve the commitment to the vision, values and quality goals by the entire work force through effective communication so that they understand them (Crosby, 1979; Kanji et al., 1993; Salegna and Fazel, 2000).

This is a natural prerequisite to maximise employees' commitment and involvement, which is stratified in tier 2 critical quality factors. A systematic approach to problem-solving and continuous process improvement as an essential factor of TQM is identified to emphasise the concept of management by facts (Oakland, 2000; Kanji, 1998a) where a formal documented management system appears to be one of the means.

As for tier 2 critical quality factor, maximising employees commitments and involvement starts by middle management buy-in as supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement, coaches of new methods, mentors and leaders of empowered employees (Thiagarajan and Zairi, 1997a; Crosby, 1989; Ishikawa, 1985; Oakland, 2000). This leads to a common understanding by the entire organisation.
that each individual and each process has internal customers and suppliers (Oakland, 1993 and 2000).

To empower employees and to develop an appropriate culture for continuous improvement, requires training employees to improve interactive skills (such as communication, effective meeting, empowerment and leadership skills), and training in problem identification and solving skills, quality improvement skills, and other technical skills (Deming, 1986; Rao, et al., 1999; Oakland, 1989, 1993 and 2000).

To support continuous process improvement and improve customer satisfaction, systematic review and analysis of key processes (Rao et al., 1996; Kurdupliski et al., 1993); measures that have a direct or indirect impact on value-addition to customer satisfaction (Oakland, 2000); the application of total quality approach to the management of support service and business processes and the use of customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction (Zhang et al., 2000; Kanji and Asher, 1993) are all required.

However for tier 3 critical quality factors, the emphasis is on the operational level of the organisation, which is related to having a system for measuring key indicators that impact the way the organisation operates to add value to customers. This is apparent from applying cost of quality process to track rework, waste, rejects and for continuous improvement and reliance on reasonably few
dependable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money.

The identified 19 critical quality factors are in accord with many Quality Awards’ principles (MBNQA and the EQA) in the following:

1- Top management commitment and involvement.

   Top management commitment and responsibility for sustainable quality environment. Top management commitment and involvement are demonstrated by providing role models, developing clear mission and defining quality values (strategic quality planning), developing comprehensive policy and goal setting and planning process, promoting quality awareness, and creating the elements of quality management structure.

2- Employee involvement and empowerment:

   Directing active involvement of employees to the vision, values and quality goals of the organisation to meet its expectation. Maximising employee empowerment by training and education, and active roles of middle management.

3- Continuous process improvement:

   Using quality tools (systematic approach to problem identification and solving) to create a culture of continuous process improvement emphasising management by facts.
4- Importance of external customer focus and understanding the internal customer concept.

5- Selecting reasonably few dependable suppliers based on evaluation of their capability and commitment to product and service quality.

6- Having systems for measuring key indicators that impact the way the organisation adds value to customers (cost of quality and the use of customer surveys).

This discussion reveals that about 17 out of 19 critical quality factors identified in this investigation share most of the values covered by the key principles espoused by the Malcolm Baldrige National Quality Award (2000) and the European Quality Award (2000).

8-2-1-3 Comparison of results with the original study:
Thiagarajan (1996) identified 22 critical quality factors using a sample of 81 organisations selected on their level of advanced in TQM implementation where about 44 percent of these organisations were non-Malaysian (Japanese, American, Europeans and others) and about 56 percent of these organisations were Malaysian. In terms of organisation size measured by the number of employees, about 84 percent of the organisations were small and medium sized as they employed less than 1000 employee, while about 16 percent of these organisations were large as they employed more than 1000 employee.
Finally, about 65 percent of the organisations implemented TQM for less than three years while about 35 percent of the organisation implemented TQM for more than three years. About 73 percent of the organisations come from the producer/manufacturer sector, while about 27 percent of the organisations come from the service sector.

This study identifies 19 critical quality factors using the same methodology of the original study (Thiagarajan, 1996) using a sample of 78 organisations representing the total population of the Palestinian ISO 9000 certified organisations where 100 percent of these organisations are National (Palestinian) organisations. In terms of organisations size as measured by the total number of employees, about 94 percent of the organisation are small and medium sized as they employ less than 1000 employees, while about 6 percent of the organisations are large as they employ more than 1000 employer. About 94 percent of the organisations surveyed implemented their quality management initiative for less than three years, while the rest 6 percent implemented the quality management initiative for more than 3 years. Finally, about 59 percent of the organisation belong to the manufacturer/producer sector, while about 41 percent belong to the service-related sector (see chapter 5).

Many of the identified critical quality factors in this study were found critical in the original study, however, it is their stratification in the three tiers that vary. This investigation identified using the modal category as the criterion used by the original study 19 critical quality factors, while the original study identified 22 critical quality factors.
The findings reveal that the Malaysian based and the Palestinian based respondents share the same perception concerning the criticality of 16 quality factors. These factors are: top management commitment and visible involvement, the development of a clear mission statement that is communicated consistently, the development of a comprehensive policy and deployment of goals effectively, emphasising the top-down and bottom-up effective communication, organising for quality to manage the organisation's quality journey, understanding the concepts of internal and external customer concept, maximising employee commitment and involvement, training and education, emphasising management by fact and cost of quality process for continuous improvement, and the importance of identifying and satisfying customers needs.

Comparing the differences, the Palestinian respondents under-emphasised maximising employees' improvement and involvement through suggestion schemes, recognition and appreciation systems and quality teams. Moreover, they under-emphasised formal and informal benchmarking and the use of self assessment tools, while the Malaysian-based respondents under-emphasised the application of total quality approach to the management of support services and business process, the formal documented quality system and the reliance on selected dependable few suppliers.

In both cases of under-emphasis, it is, nonetheless, worth mentioning that these factors were returned by the majority as important. This means, while the modal category for the under-emphasised factors by Palestinian respondents was
important, many respondents returned these factors as critical. The same is true for the under-emphasised factors by the Malaysian-based respondents.

These differences, however, can be attributed to the following reasons:

1. The concept of TQM in Palestine is more recent than the in Malaysia as the percentage of organisations that have implemented the quality management initiative in Palestine for more than 3 years is 6% compared to 35% in Malaysia, taking into consideration the time gap between the two studies.

2. Benchmarking and self-assessment are under-emphasised as a result of the absence of a Quality Award and Multinational Corporations in Palestine.

3. The Palestinian sample is composed of all ISO-9000 certified organisations, which naturally will lead to emphasise this factor as critical.

4. In addition to these differences the stratification of these critical quality factors is different in the two studies.

However, such differences in the identification and stratification are supported by the conclusion from the literature review that shows little unanimity concerning essentiality of many of the quality intervention of the success of TQM implementation.
8-2-2 Discussion of Qualitative Research Findings:

The following discussion involves the key findings of the semi-structured and open interviews with the case study organisations and the interpretation of these key findings.

8-2-2-1 Identification of the tactics and techniques of the critical quality factors deployment and implementation

Findings from the semi-structured interviews with the case study organisations emphasise the existence of the identified critical quality factors in the first level of investigations. However, it is not clear whether the order of emphasis exists as stratified in the critical quality factors structure in any individual case study organisation.

It is important, at this stage, however, to discuss the findings of the survey questionnaire and the semi-structured interviews related to teamwork. In the survey questionnaire the quality factor related to teams was returned as an important rather than critical quality factor with majority consensus of the survey respondents returning it as not essential. This may seem difficult to reconcile given that information in the literature suggests that quality teams and its effectiveness is crucial to implement quality management initiative successfully (Oakland 2000; Zhang 2000; Goh, 2000; MBNQA, 2000; EFQM, 2000; Mehra et al., 1998; Ishikawa, 1985; Deming, 1986; Kano, 1993; Crosby, 1989; Kanji, 1998a). However, its rating as an important quality factor may be due to a proportion of Palestinian quality management organisations underestimating the full benefit of quality teams. Moreover, one other reason could be the very low level of
maturity of the vast majority of Palestinian organisations (with less than two years implementation process).

In all case studies, organisations reported having a number of teams with different functions (work area and cross-functional teams and quality management teams). Given this background, it is felt that some special consideration of treating quality teams with tier 1 critical quality factor would be warranted when constructing the TQM implementation model.

Based on his finding in the semi-structured interviews and supported by the literature review, Thiagarajan (1996) treated quality policy development and deployment with tier 1 critical quality factor in constructing his TQM implementation framework although quality policy development was rated by a third of the survey respondents as not essential.

The cross-case analysis of the case study data reveals that there are similarities in the tactics and techniques employed in the deployment and implementation of critical quality factors, and differences in the extent of the deployment between the case study organisation as well. Much of the similarities is evident among organisations, which have a higher level maturity than the rest of the organisations (implementation period is more than three years). However, some tactics and techniques were reported by all cases to be implemented in their organisation. This includes: general managers heading the quality council, the presence of senior managers in the quality councils, full time quality management positions, customer feedback as the source of information for factors taken into
consideration during policy development, briefings by the general manager as a 
communication mode in the early introduction stage, management staff meeting as 
the bottom up mode of communication, training employees on quality concepts 
and creating quality awareness, measuring appraisal costs of quality, having 
quality management teams, increased interaction between senior managers and 
middle managers since the implementation of the quality management initiative.

However, some important differences in organising for the deployment and 
implementation of critical quality factors are also evident between case study 
organisations. While some of the differences are expected given the differences in 
their business situation and available resources it is likely that the approaches 
impacted the level of integration of TQM case study organisation (Thiagarajan, 
1996; Easton, 1993).

Comparing these findings with the original study, Palestinian organisations 
implement similar tactics and techniques to those implemented by Malaysian-
based organisations. However, in few instances, case study organisations reported 
in the original study seem to be more advanced in the level of implementation 
(number of cases) and implement more tactics and techniques that are not used by 
Palestinian organisations. Examples include (electronic communication means, 
voluntary teams, managing by process). This, of course, can be attributed to the 
higher maturity level of TQM implementation of the case study organisation 
reported in the original study in terms of implementation period and ownership 
(Japanese, European and American).
In both studies, the case study data reveals the existence of the critical factors (identified in the level 1 investigation of both studies). In the case study organizations, however, it is not clear whether the order of emphasis exists as listed in the structure in any individual case study organisation.

It is evident from the findings of this level of investigation that the general manager and senior managers have a direct involvement and support in the critical quality activities. In all cases, the general manager heads the quality council, has a direct involvement in communicating the mission statement, reviews quality matters at management meetings, meets regularly with staff to discuss quality matters and participate in celebrating superior quality performance. Senior managers as reported by all cases, communicate the mission statement, participate in reviewing quality at management meetings, meet regularly to discuss quality matters, and assume responsibility to evolve middle managers to assume new roles.

This top management active support and involvement in the quality journey represent a primary activity in their realm. The scope of their involvement and support is unlimited.

Comparing these findings with the findings of the original study, Palestinian organisations’ top management appears to have more direct support and involvement in critical quality activities than their Malaysian counterparts.
The major findings of this level of enquiry can, therefore, be presented as follows:

1- Structure and deployment of critical quality factors:

It is evident from the findings that similarities in deployment and structure of the identified critical quality factors exist in all case study organisations. However, some differences were evident in the extent of deployment among case study organisations. Some organisations appear to implement and deploy more elements of individual quality factors than the rest of case study organisations. Examples include the use of customer surveys, cross-functional teams, measuring costs of quality and supplier management. These findings are in tandem with the findings of the original study.

2- Enabling environment:

To support successful implementation of the quality initiative, the vast majority of the case study organisations implement some form of support infrastructure to reinforce successful implementation. Some organisations use more types of support infrastructure than other organisations for reinforcement purposes. However, all case study organisations highlight the importance of using reinforcement (rewards and recognition schemes) to create an enabling environment for successful implementation. Moreover, critical quality factors such as training and workforce commitment to the quality initiative are seen by the case study organisations as enablers to support the implementation of other quality factors. This is in tandem with
the information found in the literature concerning the interdependency of critical quality initiatives and activities.

In the original study, Thiagarajan (1996) reports that the majority of the case study organisations have some form of support reinforcements with organisations appear to use a wider range of reinforcements than others. Also he reports that some of the critical quality factors are seen to be implemented as a means to support the existence of other critical quality factors.

It is apparent, therefore, that the findings of this study support the findings of the original study and in accordance with the information found in the literature.

3- Tactics and techniques:

It is apparent also, that the case study organisations use various tactics and techniques at different levels in terms of number of the tactics and techniques and the extent of implementations. Some organisations appear to realise the benefits from using a wider range of tactics and techniques in their implementation process than other organisations.

Also, Thiagarajan (1996) reports that some organisations appear to have not fully benefited from the critical quality factors due to limited range of modes and techniques used in their implementation while other organisations appear to employ a wide range of modes and techniques.
4- Implementing in stages:

All case study organisations appear to see the need to implement some of the quality activities in stages. Clear evidence is the perception of having a formal documented quality management system, i.e. ISO-9000 as an important stage to implement TQM.

Implementations in stages is also reported by Thiagarajan (1996) as he mentions that some case study organisations appear to see the need to implement some of the critical activities in stages.

5- Ownership of quality initiatives:

Top management commitment and direct involvement in critical quality activities are considered in the literature to be essential and central to successful and effective TQM implementation process. The findings of the semi-structure interview provide evidence that top management commitment and direct involvement is essential to successfully implement quality management initiative in the case study organisations. The direct involvement of the General Managers and the senior managers in almost all quality activities emphasises this critical quality factor for successful implementation process. The findings of the case study investigation support the survey questionnaire findings in this respect.

Comparing the level and extent of Palestinian top management involvement with the Malaysians, it is apparent that the former has a more emphasis role than the latter.
The findings of this level of inquiry support the findings of the survey questionnaire and the findings of the original study, and provide more insights towards how to implement the identified critical quality factors. The general findings from the two levels of investigation call for organisations in implementing the critical quality factors to consider the following tactics (Thiagarajan. 1996)

1- Implement and deploy all the elements of the critical quality factors.
2- Use a wide range of tactics and techniques in the implementation process.
3- Create an enabling environment to support the critical activities.
4- Implement the critical activities in stages.

8-2-2-2 Foundation elements of the pre-launch stage of TQM implementation

Analysis of the critical stages presented in the case studies reveals the following foundation elements of TQM implementation that are found common in all case study companies. The foundation elements are described in sequential manner to show the pre-launch implementation critical stages that these companies went through in the pre-launch of their TQM process.

1-Realisation of the benefits that TQM can bring in to the company:

In all case study companies, the decision to implement TQM was made when top management realised the benefits that a quality initiative can bring to the company. Without the belief in the tangible benefits of TQM, companies wouldn’t have invested time and resources to make it work. The belief of that TQM can bring tangible business and operating benefits
to the company, made top management committed and involved in the implementation process.

Full convention and belief of the tangible benefits of TQM implementation is evident in the pre-launch of TQM implementation process of all case study companies.

2- Top management education and training:

Top management including the general manager of the case study companies attended several training courses to learn about TQM. This investment of time and effort of top management was seen essential to gain company-wide commitment and involvement.

Oakland (2000) stresses the role of training the chief executive and his team of strategic policy makers to establish real commitment to the quality initiative. The need for such understanding at top management level is also stressed by Kanji (1990 and 1998a).

In all case study companies, the general manager and all senior managers invested time and effort in attending training courses, conducting meetings to develop mission statements and quality policies, preparing implementation plans, and conducting face-to-face meetings with middle managers and the rest of employees.

3- Active demonstration of top management commitment and involvement:
In all case study companies, the general manager and senior managers demonstrated active commitment and involvement. They attended training courses, conducted training courses, held face-to-face meetings with employees, and leading by example show their commitment and involvement in the process from the first time they decided to implement TQM.

In all cases, top management composed the quality council (steering committee) which all were headed by the general manager. This also demonstrates their active commitment and involvement.

The implementation process started at the top and cascaded down company-wide. It started at the general manager's office in all case study companies.

“To be successful in promoting business efficiency and effectiveness, TQM must be truly company-wide, and it must start at the top with chief executive or equivalent” (Oakland, 2000)

4- Company-wide commitment and involvement gaining

Company-wide commitment and involvement is crucial to successful TQM implementation. In all cases, top management gained middle managers and employees commitment and involvement by demonstrating active commitment involvement in various activities such as training and face-to-face meetings.

5- Other initiatives

All cases study companies reported the following initiatives:
Training and education of all employees including top management is seen as a critical prerequisite to implement and sustain TQM.

In all cases, senior managers conducted training to middle managers who in turn trained their employees.

Face-to-face communication was reported as the most effective mode to convey quality messages to gain company-wide commitment and involvement.

Social gatherings were used to enhance cooperation between employees and foster team building. The major events were reported to take place in Ramadan were collective break fasting meals are provided for all employees and their families.

Improvements of rewards and recognition schemes to account for individual, team and company performance. These schemes were reported to reinforce desired behaviours in the transformation process.

All case study companies reported that their quality journey started with implementing a formal documented quality management system as the first step towards their TQM implementation process.

It is apparent from the cases, that all companies emphasise the criticality of teamwork to successful implementation of TQM. Moreover, all cases reported improvements in their rewards and recognition schemes to reinforce behaviour in the transformation process.
Both teamwork and rewards and recognition were returned by the majority consensus of respondents as important rather than critical quality factors. However, in the investigations carried out in chapter 6 and chapter 7, all case study organisations emphasised these factors as critical quality factors. It was decided in chapter 6 to consider teamwork in the construction of the TQM framework as tier 1 factor. This decision is reinforced by the findings of this level of inquiry. Rewards and recognition schemes, therefore, must be addressed as a critical quality factor when constructing the TQM framework for the Palestinian context.

8-3 Implications of Findings

The major implication of these findings is that most of the critical quality factors that are identified and implemented in the West are recognised and implemented by Palestinian organisations. This means that such factors are generic and can be implemented in various cultures and economies, which makes the construction of a generic framework of TQM implementation in the Palestinian context possible as the findings are in common with the published literature to date. This is true, as TQM must start at the top. The most senior managers must all demonstrate that they are serious about quality. Top management must accept the responsibility for commitment to a quality policy that deals with the organisation for quality and for the satisfaction of the customer needs. This commitment to quality and leadership must be demonstrated by developing and communicating the vision and mission organisation-wide.

The tangible business and operating benefits of TQM must be realised by top management as a prerequisite for their serious commitment and involvement
(Thiagarajan, 1996). This involves managing the organisation’s quality journey through a quality council (Oakland, 1993 and 2000) led by the general manager, and a full-time quality-related manager is recruited to provide support for the quality council.

All senior managers who are members of the quality council are responsible for developing a comprehensive policy based on the inputs of the various organisation’s stakeholders (Thiagarajan and Zairi, 1997b; EFQM, 2000; MBNQA, 2000). This policy including the quality goals must be deployed effectively at all levels of the organisation through effective communication to ensure common understanding of the organisation’s expectations and direction to achieve organisation-wide commitment (Zairi, 1999b; Oakland, 2000).

This early initiative of building consensus and setting the strategy’s direction on TQM helps to develop a comprehensive view at the top on what TQM really means to the organisation (Thiagarajan, 1996).

In order to ensure commitment and involvement of everyone in the organisation in the quality improvement top management’s commitment and involvement must be visible by promoting TQM and applying its concepts, philosophies, processes and tools (Deming, 1986; Juran, 1993; Easton, 1993 and 1998; Juran, 1998 in Sun, 2000, Rao et al., 1999; Zhang et al., 2000).

Top management should enable all employees in the preparation, implementation and evaluation of improvement activities (Oakland, 2000; Mak, 2000, Oliver, 1988). Practical assistance, training, recognition and participation should be given to ensure that the relevant knowledge and experience are acquired by all
employees to attain the quality goals of the organisation (Kanji, 1990, 1996 and 1998a; Rao, et al., 1996)

Employees need to be informed about the quality initiative and participate in the improvement activities through top-down and bottom-up communication (Feigenbaum, 1994 in Gatchalian, 1997; Kano, 1993). Senior managers should provide support for middle managers by working closely with them in the early stages to assume the new roles. Teamwork skills are needed to have employees work together and review of the reward and recognition schemes is another factor to ensure and reinforce employee commitment and involvement (Crosby, 1989; Juran, 1991; Zink, 1995; Rao et al., 1999; Zhang et al., 2000).

To be successful in the marketplace, each part of the organisation must work properly together towards the same goals, recognising that each person and each activity affects and in turn is affected by others. This means focusing on business systems and processes that add value to customer satisfaction (Oakland, 2000; Crosby, 1986).

Managing quality management system will enable the objectives set out in the quality policy to be achieved. The ISO 9000:2000 series set out methods by which a system can be implemented to ensure that the specified customer requirements are met (Beattie et al., 1999; Zhu et al., 1999; Huarng et al., 1999). The quality management system should apply to and interact with processes in the organisation. Therefore, managing by customer-driven system and processes requires deploying the human and other resources along the processes to add value for customer satisfaction. This is associated with the concept of internal customer supplier relationship (Oakland, 1989, 1993 and 2000).
An early stage in the implementation process is to seek certification of a formal quality system to determine the assembly of components (organisation structure, responsibilities, processes and resources) for implementing TQM (James, 1996; Zhang et al., 2000; Quazi et al., 1998; McAdam et al., 1999). This requires comprehensive identification of customers and customer needs and the alignment of processes to satisfy the needs. This involves promoting internal customer-supplier relationship in the quality chain. Understanding the core processes and gaining process sponsorship and ownership are critical to ensure that appropriate resources are made available to map, investigate and improve the process.

Breaking down the core processes into sub-processes to understand the customer needs at each level is also critical to change the traditional organisation structure to the competitive structure of customer-focused processes (Oakland, 2000).

Continuous improvement is related to never-ending pursuit in meeting external and internal customer needs. The continuous improvement of existing products, services and processes is fundamental for continuous customer satisfaction. The concept is firmly tied to a continuous assessment of customer needs and depends on a flow of ideas on how to make improvement, reduce variation and generate greater customer satisfaction (Oakland, 1993, 1995 and 2000).

To sustain the focus on continuous customer satisfaction, management should rely on management by facts and commitment of all employees with emphasis on teamwork to promote a bottom-up thrust for quality improvement (Kanji, 1995 and 1998a, Porter and Parker, 1993). Tools and techniques such as cost of quality should be used to identify continuous improvement opportunities (Ahire et al., 1996; Rao et al., 1996; Tatikonda and Tatikonda, 1996).
8-3 Development of the framework:

The knowledge of total quality management is still very limited (see chapter 2). This means that it is improper and unscientific to provide a complex model for TQM implementation. Therefore a logical and simple model closely based on the empirical evidence derived from the analysis is provided including the major top management actions, the organisational activities and the guidelines for effective implementation.

8-3-1 Major Top Management Actions:

Major top management actions are the actual quality levers that top management need to perform and deploy to implement the critical quality factors (chapter 5) and the foundation elements (chapter 7). Therefore, the findings presented in chapters 5, 6 and 7 comprise the fundamentals of the major top management actions.

These findings offer a practical, logical and simple framework that is based on arranging the critical factors from the most critical to the least critical factors in deriving the major top management actions of effective implementation.

The findings in chapter 7 revealed that there are two main stages that require different major top management actions, namely, the pre-launch stage and the implementation stage. Therefore two stage approach representing two categories of major top management actions is adopted whenever appropriate.
1- Pre-Launch stage: Major top management actions that must be taken pre-launching TQM programme. The foundation elements presented in chapter 7 and some of Tier 1 critical quality factors identified in chapter 5 define the major management actions appropriate for this stage.

2- The implementation stage: Major top management actions in the implementation process. Major top management actions needed in the implementation of TQM. This stage is defined by most critical quality factors stratified in Tiers 1,2, and 3.

8-3-2 Organisational Activities:

These activities identify the tactics and techniques employed to perform the major top management actions. These activities are defined primarily by the findings discussed in chapter 6. Therefore the organisational activities describe what it involves or what must be done to implement the major top management actions. The primary aim of the organisational activities is to describe the tactics and techniques employed in deploying and implementing the major top management actions, and where appropriate, the structure of individual major top management actions.

8-3-3 Structure of the framework:

The relationships between the critical quality factors require finding a constellation of underlying constructs to represent variables to provide a user-friendly structure of the framework (Black, 1993; Thiagarajan, 1996). The constructs are used by many writers and researchers (Creech, 1994; Kanji, 1990; Kano, 1993; Oakland, 1993 and 2000; Black and Porter, 1996; Saraph et. al.,
1989; Mann, 1992; Ahire et al, 1996; Rao et al., 1999; Zhang et al., 2000: Rao et al., 1996; Flyn et al., 1994) to identify central factors that an organisation planning to implement TQM should consider.

Thiagarajan (1996) used a judgemental processes grounded in the literature to group variables into four underlying factors. By doing this he followed the approach used by Mann (1992), who grouped variables into five underlying factors and accorded them recognisable labels. Whereas other researchers used statistical procedures of factor analysis to explore and identify the constructs (Black, 1993, Ahire et al, 1996, Rao et al., 1999; Zhang, 2000, Tamimi, 1998).

Replicating the study of Thiagarajan (1996) necessitates using the same methodology of a judgmental process grounded in the literature to group the variables of this study to distill constructs that have empirical validity and practical value within the implementation framework.

Referring to the critical quality factors identified in chapter 5, four separate but inter-related constructs can be identified.

8-3-4 The Constructs are:

1- Demonstrate top management commitment and involvement.

2- Ensure employee commitment and involvement.

3- Manage by customer-driven system and processes.

4- Create continuous improvement culture.

The constructs represent what Palestinian organisations must do to delight the customer by consistently meeting customer requirements, and then achieve a
reputation of excellence. This is supported by the findings of chapters 4, 5, 6 and 7 as continuous customer satisfaction is a value that most Palestinian organisation strive for.

TQM must be truly organisation-wide to be successful in achieving business efficiency and effectiveness. It must start at the top. The most senior directors and management must all demonstrate that they are serious about quality. This requires involving everyone in the organisation in quality improvement. Therefore management must enable all employees to participate in the preparation, implementation and evaluation of improvement activities.

This is important as middle management have a major role to play, since they must not only grasp the principles of TQM, but also they must go on to explain them to the people for whom they are responsible, and ensure that their commitment is communicated (Oakland, 2000).

For an organisation to be successful in the marketplace, each part of it must work properly together towards the same goals, recognising that each person and each activity affects and in turn is affected by others. This means focusing on business processes that add value to customer satisfaction. The continuous improvement of existing products, services and processes is fundamental for continuous customer satisfaction. A study by TBM Consulting Group Inc. indicated that manufactures with continuous improvement programmes had a 6.6 percent increase in productivity as compared to a 3-9 percent for other manufacturers (Sharma, 1996).
The inter-relationships between the various constructs are presented in figure 8-2. The figure reflects the soft-hard aspects of the model of TQM implementation. A more detailed description of the constructs and the critical quality factors (the components of the constructs is presented in figure 8-3).
Figure 8-2

Constructs of TQM Implementation Framework

![Diagram of TQM Implementation Framework]

- Business Excellence
- Customer Satisfaction
- Employee Commitment and Involvement
- Top Management Commitment and Involvement
- Hard Constructs
- Soft Constructs
**Figure 8-3**

Components of the TQM Implementation Framework

<table>
<thead>
<tr>
<th>Construct</th>
<th>Major top mgt actions</th>
<th>Critical quality factors</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Commitment and Involvement</td>
<td></td>
<td>Question Tier</td>
<td></td>
</tr>
<tr>
<td>Employee Commitment and Involvement</td>
<td></td>
<td>Q1</td>
<td>1</td>
</tr>
<tr>
<td>Customer-Driven System and Processes</td>
<td></td>
<td>Q7</td>
<td>1</td>
</tr>
<tr>
<td>Continuous Improvement Culture</td>
<td></td>
<td>Q2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Q3</td>
<td>1</td>
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<td></td>
<td></td>
<td>Q4</td>
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<td></td>
<td></td>
<td>Question Tier</td>
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<td></td>
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<td>Q9</td>
<td>1</td>
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<td></td>
<td></td>
<td>Q15</td>
<td>2</td>
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<td>Q6</td>
<td>2</td>
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<td>Q12</td>
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<td>Q16</td>
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<td>Question Tier</td>
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<td>Q27</td>
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<td>Q30</td>
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<td></td>
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<td>Q8</td>
<td>2</td>
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<tr>
<td></td>
<td></td>
<td>Q21</td>
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<tr>
<td></td>
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<td>Q19</td>
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<td></td>
<td></td>
<td>Q28</td>
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<td>Question Tier</td>
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<td></td>
<td></td>
<td>Q20</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Q31</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Q25</td>
<td>3</td>
</tr>
</tbody>
</table>

Question Tier: 1, 2, 3

Customer Satisfaction
8-4 Guidelines for TQM implementation:

Based on the empirical evidence derived from the analysis a logical and simple model for TQM implementation is provided including the major top management actions, the organisational activities and the guidelines for effective implementation.

8-4-1 Construct 1: Demonstrate top management commitment and involvement.

Top management must accept the responsibility for commitment to a quality policy that deals with the organisation for quality and the satisfaction of the customer needs. This commitment to quality and leadership must be demonstrated by developing and communicating the vision organisation-wide.

As evident from the findings in chapter 8, in the pre-launch stage commitment of top management is achieved when the rewards of implementing TQM are realised. That is, the tangible business and operating benefits of TQM must be realised by top management as a prerequisite for their serious commitment.

To manage the organisation's quality journey, a quality council led by the General Manager is set-up and a full time quality related manager is hired to provide support for the quality council. Whenever needed, an external consultant can be appointed to assist in the implementation process.

Senior managers who are members of the quality council are responsible for developing a comprehensive policy based on clear vision and mission statements,
including the quality goals deployed effectively at all levels of the organisation. This unites the efforts of all employees and determines the corporate expectations.

This comprehensive quality policy should be communicated effectively to ensure common understanding of the organisation’s expectations and direction to achieve organisation-wide commitment.

At the departmental level, quality committees headed by the department heads are established to implement the quality policy to achieve the organisation’s goals. These committees have direct reporting relationship with the quality council through committees’ heads.

**Implementation Guidelines:**

**Pre-launch stage:**

1- Develop a clear belief in the benefits that TQM can bring in to the organisation. This requires investing time and effort learning about TQM through:

   a- Reading about TQM.

   b- Attending training courses.

   c- Attending conferences.

   d- Consulting experts.

   e- Visiting other organisations for benchmarking purposes.

2- Ensure Consensus agreement of all senior managers. This involves that all-senior managers should believe in the tangible benefits that TQM can bring in
for the organisation. This leads to gain consensus agreement among senior managers concerning planning to implement TQM. This requires:

a- All senior managers serve at the quality council as members.
b- Attending training courses.
c- Attending conferences.
d- Reading about TQM.
e- Visiting other organisations for benchmarking purposes.

The Implementation Stage:

1- Establish a quality council:

The objectives of establishing the quality council are to:

a- Provide strategic direction on TQM for the organisation.
b- Establish plans for TQM implementation.
c- Review and revise quality plans for implementation.

Make sure that the council is headed by the general manager with all senior managers being members. Whenever possible, include some middle managers as members in the council.

2- Recruit a quality-related manager to provide support in the planning and implementation of TQM.

3- Demonstrate visibility of senior managers’ commitment to quality and customer satisfaction. This requires:

   Serving at the quality council.
   Participating in developing a comprehensive quality policy.
   Attending training courses with staff.
   Delivering training courses to staff.
Conducting face-to-face regular meetings with staff.

Communicating the vision and mission to staff.

Conducting benchmarking visits to other organisations.

Participating in celebrating successful quality achievements.

Participating in social gatherings and events.

Rewarding and recognising team successes.

Keeping regular contacts with customers.

Reviewing quality issues at management meetings.

Using quality techniques and tools in their daily activities.

4- Communicate the mission statement consistently.

Communicate the mission statement and the objectives defining the quality values, expectations and focus to all employees. An early implementation step must be the clear widespread communication of the mission. This requires to:

Demonstrate top management commitment and acceptance of the mission.

Use face-to-face communication by conducting meetings with all employees. If not possible, meet with groups of 50-60 each time. If not possible, use a cascade approach.

Conduct questions/answers sessions with employees.

Encourage open discussions.

Reinforce face-to-face communication of the mission by other communication modes such as Posters.
5- Develop a comprehensive quality policy and effective deployment of goals.

Develop a quality policy that reflects the organisation's mission including corporate values, expectations and focus. This requires to:

Consider the various sources of information in developing the quality policy. This includes the information from customers, employees, suppliers, competitors, society and shareholders.

Develop the mission into its critical success factors to coerce and move it forward. That is to develop goals and methods for achieving them.

Define the key performance indicators as being the quantifiable indicators of success.

Define targets associated to the key performance indicators.

Ensure that appropriate data is collected and recorded.

Monitor progress towards achieving the critical success factors (key performance indicators and targets) on a regular basis.

Review and modify the key performance indicators and targets where appropriate.

For effective goal deployment, Set goals and targets at individual and process level. Empower employees by participating them in the process whenever possible, provide appropriate training and necessary resources for effective implementation.

6- Establish departmental quality committees.

Establish quality committees at departmental or divisional levels to implement and manage the quality processes at these levels. The department/ division head, who reports directly to the quality council, heads these committees.
8-4-2 Construct 2: Ensure Employee commitment and involvement:

In order to ensure the commitment and involvement of everyone in the organisation in the quality improvement, top management must enable all employees in the preparation, implementation and evaluation of improvement activities.

Practical assistance, training, recognition and participation should be given to ensure that all employees to attain the quality goals of the organisation acquire the relevant knowledge and experience.

The issue of employee commitment and involvement as a critical quality factor for successful TQM implementation is addressed by unanimous writers (see for example (Creech, 1994; Zairi, 1999a; Blackburn et al, 1993; Kanji, 1990, 1995,1996 and 1998a; Oakland, 1993 and 2000; Rao et al., 1996; Rao et al., 1999; Zhang et al., 2000, Mak, 2000; Sun, 2000).

As employees become committed and involved and the entire workforce understands, and is committed to the vision, values and quality goals of the organisation, empowerment becomes a necessity. Employees need to be aware of the TQM concepts, trained to improve interactive skills, problem identification and solving skills, and technical skills. Employees need to be informed about the quality initiative and participate in the improvement activities and through top-down and bottom-up communication. Teamwork skills are needed to have employees work together and review of the reward and recognition schemes is
another important factor to ensure and reinforce employee commitment and involvement.

**Implementation Guidelines:**

**At the pre-launch stage:**

At this stage, as senior managers become committed and involved in preparing the plan for TQM implementation, they start to:

1- Point out the benefits of TQM for the organisation in their meetings with middle managers and in their memos to them.

2- Nominate key middle managers to attend seminars, conferences and workshops addressing quality issues

**At the implementation stage:**

1- Ensure that the entire workforce understands and is committed to the vision, values and quality goals of the organisation.

Communicate the vision, values and quality goals to all employees emphasising the need for a management system that is based on total quality management. This requires:

1- Gathering all employees to attend a face-to-face meeting to announce the need for the quality management system. If not possible to gather all employees, meet employees by groups of 50-60, if not possible use the cascade approach.

2- Gather all employees to attend a face-to-face meeting to communicate the vision, mission, values, expectations and the quality goals of the organisation. This, of course, can be done in the same meeting to announce the need for the quality system. If not possible to meet with all employees,
meet with employees in groups of 50-60, if not possible, use the cascade approach.

3- Provide TQM awareness workshops in the concepts and philosophies of TQM.

2- Provide training for employees in interactive skills.

Manage the training programme to provide systematic training for employees to improve their communication skills, effective meeting skills and empowerment and leading skills.

3- Keep employees informed and get their feedback.

Establish top-down and bottom-up communication modes to keep employees informed (about the progress being made and successes of quality initiatives achieved by individuals and teams), and to get feedback (using employee survey, face-to-face meetings, workshops or suggestion schemes).

This requires the use of variety of communication modes emphasising face-to-face communication:

Briefings made by the general manager and senior managers.

Face-to-face meetings.

Question answer sessions

Postes.

In-house news bulletin.

Training and workshops.

Memos.

Employee Surveys.
Suggestion schemes.

This might require establishing a committee to review the communication modes and strategies and make recommendations for improvements accordingly.

4- Ensure middle management buy-in:

Ensure that supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement. Coaches of new methods, mentors and leaders of empowered employees. Middle managers may see TQM as another burden without any benefits, and may perceive a vested interest in the status quo.

This requires:

- Increasing direct interaction between senior managers and middle managers to provide guidance and support particularly in the early years of implementation.
- Organising benchmarking visits to other organisations to feel the benefits that TQM can bring to the organisation.
- Providing comprehensive training in the philosophy and concepts of teamwork and the techniques and applications of statistical process control to assume new roles as facilitators of continuous improvement, coaches of new methods and mentors and leaders of empowered employees.
- Participating, whenever possible, in the quality council as members.
- Reinforcing the behaviors of middle managers needed for their new roles by rewards and recognition.

5- Provide training for employees in problem identification and solving skills, quality improvement skills and other technical skills.
Provide training in problem identification and solving skills, teamwork and decision making to foster continuous improvement. This requires the establishment of systematic approach to quality training which ensures that training for quality should have an appreciation of the personal responsibility for meeting the customer requirements by everyone from the most senior manager to the most junior employee. This demands reviewing the effectiveness of quality training programmes on a continuous basis and to establish and maintain procedures for the identification of the training needs and the provision of the actual training itself.

8-4-3 Construct 3: Manage by customer-driven system and processes:

Managing by quality management system will enable the objectives set out in the quality policy to be achieved. In this regard the ISO 9000:2000 series set out methods by which a system can be implemented to ensure that the specified customer requirements are met. The quality management system should apply to and interact with processes in the organisation. Therefore, managing by customer-driven systems and processes requires deploying the human and other resources along the processes to add values for customer satisfaction.

This approach of managing by customer-driven systems and processes is associated with the concept of internal customer-supplier relationship. Throughout all organisations there are a series of internal suppliers and customers. These form the quality chain, which is considered as the core of company-wide quality improvement (Oakland, 2000). The internal customer-supplier relationships must
be managed to add value to customer satisfaction, which makes measurement of capability vital.

Many TQM writers have pointed out the importance to focus on system processes and internal customer-supplier relationships and their management. They emphasised that TQM is centered on the effective management of processes and continuous customer satisfaction (Creech, 1994; Kanji, 1995; Zairi, 1994; Oakland, 2000, Born, 1994; Braganza and Mayers, 1997, British Standards Institute, 1998; Sinclair, 1994).

An early stage in the implementation process is to seek certification of a formal documented quality system to determine the assembly of components, such as the organisational structure, responsibilities, processes and resources for implementing total quality management.

This requires also a comprehensive identification of customers and customer needs and the alignment of processes to satisfy the needs. The effort involves promoting internal customer-supplier relationships in the quality chain recognising that each person and each activity affects and in turn is affected by others to deliver values for the customer. In this regard, it is very important to understand the core processes and gain process sponsorship to ensure that appropriate resources are made available to map investigate and improve the process. Moreover, it is important to breakdown the core processes into subprocesses, activities and tasks. This requires understanding customer needs at each level.
Quality has to be managed—it will not just happen (Oakland, 2000). This means that it must involve everyone in the process and be applied throughout the organisation. Many people in the support functions of organisations never see, experience or touch the products or services that their organisations buy or provide, but they do handle or produce things like purchase orders or invoices. If every fourth invoice carries at least one error, what image of quality is transmitted? (Oakland, 2000). This makes the application of total quality approach to the management of support services and business processes important.

Setup performance measurement procedures to track performance of the processes and for their continuous improvement is a vital component of this construct.

Clearly suppliers need to be evaluated and selected on their ability to supply the product or service in accordance with the organisation's requirement.

**Implementation Guidelines:**

**Pre-launch Stage:**

Seek certification of a formal documented quality management system to ensure that specified customer requirements are met. Ensure that the quality management system apply to and interact with all processes in the organisation. Ensure that the quality management is determined by the nature of the process carried out to add value to the customer satisfaction.
Implementation Stage:

1- Identify customer and customer needs.

Identify customers in terms of internal and external customers. This requires that everyone understands the concept of internal customer. Ensure that the requirements of the external customer are identified. This requires using various sources of information:

- Sales people and marketing personal provide inputs.
- Customer surveys.
- Customer complaints.
- Focus groups.

Ensure that everyone in the organisation knows his internal customer. This requires each person to interrogate every interface as follows:

- Who are my immediate customers?
- What are their true requirements?
- Do I have the necessary capability to meet the requirements? (If not, then what must change to improve the capability?)
- Who are my immediate suppliers?
- What are my true requirements?
- Do my suppliers have the capability to meet my requirements?

2- Ensure that everyone understands the concept of quality chain of internal customer-supplier relationship.
Introduce the concept of internal customer-supplier at the early stages of implementation so that the entire organisation understands that each individual and each process has internal customers and suppliers. Ensure that this concept is used to add value to customer satisfaction.

3- Apply total quality approach to the management of support services and business processes.

Ensure that everyone understands that quality management requires the involvement of everyone in the process and is applied throughout the organisation. Emphasise that failure to meet customer requirements in one part of the system creates multiple problems elsewhere.

4- Identify the core processes and the subprocesses.

Understand the core processes and break down the core processes into subprocesses. This requires top management to:

Define the most critical processes that impact the ability of the organisation to meet customer requirements. This requires providing training in process mapping for senior managers and middle managers, involvement of employees performing the process; process documentation including internal customers and suppliers and their requirements.

Assign a sponsor for each core process, preferably a member of the management team. The task of the process sponsor is to:
1- Ensure that appropriate resources are made available to map, investigate and improve the process.

2- Assist in selecting the process improvement team leader and members.

3- Create an appropriate work environment for teams' progress.

4- Report progress to top management.

Break down the core processes into subprocesses, activities and tasks. Develop the skills of people so that they can understand how the new process structure will be analysed and made to work.

Establish performance measurement of the processes and subprocesses. Establish performance measurement to monitor the performance of processes and to identify opportunities for continuous improvement. Ensure that measuring performance is meaningful in terms of inputs and outputs of the processes, and in terms of the customers and suppliers to the process. This should reflect the needs and wants of customers and the process capability.

5- Rely on reasonable suppliers:

Evaluate and select suppliers on their ability to supply the product or service in accordance with the organisation's requirement. Consider supplier audit records and evidence of previously demonstrated ability. Determine the type and extent of supervision applicable to the purchased materials/services.
8-4-4 Construct 4: Create continuous improvement culture.

Continuous or never-ending improvement is a powerful concept related to the pursuit of never-ending improvement in meeting external and internal customer needs. This concept must be firmly tied to a continuous assessment of customer needs and depends on a flow of ideas on how to make improvements, reduce variation and generate greater customer satisfaction. It also requires a high level of commitment and a sense of personal responsibility in those operating the processes (Oakland, 2000).

Continuous improvement requires management by facts (Kanji; 1995; 1998a), and commitment of all employees with emphasis on teamwork to promote a bottom-up thrust for quality improvement (Oakland, 2000).

Tools and techniques such as cost of quality should be used to identify continuous improvement opportunities.

Implementation Guidelines:

No major top management actions are needed at the pre-launch stage.

At implementation stage:

1- Ensure that continuous improvement and problem solving are based on facts and systematic review.

Rely on facts in making decision concerning continuous process improvement.

Review documentation to identify improvement opportunities.

Provide necessary training for problem identification and solving skills based on the use of facts.
2- Promote teamwork:
Promote teamwork as one of the organisation’s guiding values. Form various
types of teams to work on continuous improvement projects. Reinforce teamwork
by rewarding and recognising successes.

3- Measure customer satisfaction:
Use various tools to get feedback from customers to measure their satisfaction.
Collect data using customer surveys; and review of internal data related to sales
records, delivery time and customer complaints to measure customer satisfaction.
Use these data sources to identify gaps for improvement.

4- Use tools and techniques:
Use tools and techniques to identify performance gaps for continuous
improvement. Use cost of quality and self-assessment tool developed in this study
to identify opportunities for continuous improvement.

Analyse the costs of quality and classify them using the PAF model. Conduct self-
assessment exercise in the early years of implementation using the tool developed
in this study.

At later stages, use National Quality Awards Criteria to conduct self-assessment.
Use benchmarking whenever possible.
Provide training for key personal on how to use the various tools and techniques.
Table 8-1 provides a checklist of the critical quality factors associated with each quality construct.

### Table 8-1

**Critical Quality Factors Checklist**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Critical Quality Factor</th>
<th>Tier</th>
<th>In place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct 1: Demonstrate top management commitment and involvement</td>
<td>Senior executives assume active responsibility for evaluation and improvement of management system, and leading quality drive.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elements of quality management structure in place to manage the organisation’s quality journey.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visibility of senior executives commitment to quality and customer satisfaction.</td>
<td>1</td>
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</tr>
<tr>
<td></td>
<td>Clear and consistent communication of mission statement and objectives defining quality values, expectations and focus.</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Comprehensive policy development and effective deployment of goals.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Construct 2: Ensure Employee commitment and involvement</td>
<td>The entire workforce understands, and is committed to the vision, values and quality goals of the organisation.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training for employees to improve interactive skills (such as communication skills, effective meeting skills, empowerment and leading skills).</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effective top-down and bottom-up communication.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement, coaches of new methods and leaders of empowered employees.</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
### Construct 3: Manage by customer-driven system and processes

<table>
<thead>
<tr>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training for employees in problem identification and solving skills, quality improvement skills and other technical skills.</td>
<td>2</td>
</tr>
<tr>
<td>A formal documented quality management system in place.</td>
<td>1</td>
</tr>
<tr>
<td>Comprehensive identification of customers and customer needs and alignment of processes to satisfy the needs.</td>
<td>1</td>
</tr>
<tr>
<td>The entire organisation understands that each individual and each process has internal customer and supplier.</td>
<td>2</td>
</tr>
<tr>
<td>Application of total quality approach to the management of support services and business processes.</td>
<td>2</td>
</tr>
<tr>
<td>Systematic review and analysis of key process measures that have a direct and indirect impact on value-addition to customer satisfaction.</td>
<td>2</td>
</tr>
<tr>
<td>Reliance on reasonable suppliers who are evaluated and selected based on their capability and commitment to product and service quality, and value for money</td>
<td>3</td>
</tr>
</tbody>
</table>

### Construct 4: Create continuous improvement culture

<table>
<thead>
<tr>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem solving and continuous improvement process based on facts and systematic analysis.</td>
<td>1</td>
</tr>
<tr>
<td>The use of the customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction.</td>
<td>2</td>
</tr>
<tr>
<td>Cost of quality process to track rework, waste rejects and for continuous improvement.</td>
<td>3</td>
</tr>
</tbody>
</table>

8-6 Towards a self-assessment tool:

A self-assessment tool is needed to help Palestinian organisations in the implementation process is proposed. This tool can be used in two ways. Firstly to assess TQM understanding within organisations and secondly to assess or benchmark perceived TQM performance. The former is of importance in training, the latter in TQM programme appraisal.
For performance assessment the organisation needs to determine its performance in each critical quality factor and therefore the overall performance in the programme as a whole. Critical factor scores enable a diagnosis of areas of weakness in the programme to be investigated. Therefore, the tool should be a simple and practical to be used with ease and little time.

The problems associated with obtaining National Awards assessment usually concern the time, effort and cost associated with collecting and analysing the data. There is also the need for an examiner (assessor) who has sound overall knowledge of the subject in order to objectively assess the organisational performance.

The aim is to obtain an assessment of a TQM programme that is close to the "truth" at the cost of a significant amount of effort (Black, 1993). Therefore, the selection of measurement scale must be considered for both respondents and those who administer the tool. Features like ease of completion and scoring are important to respondents, while ease in mathematical manipulation (interpretation) is important to the assessor.

8-6-1 A Tool for Assessing TQM understanding:

For an assessment of TQM understanding, the survey questionnaire used in this study could be applied.
This assessment is concerned with measuring individual’s understanding of the relative importance of the critical quality factor. Thus, the questionnaire survey needs minor modification to be used for this purpose. Minor modification includes: the exclusion of non critical quality factors, that is, emphasising the 19 critical quality factors; and addition of other data such as:

- Data on department, position and immediate superiors and subordinates.
- TQM training received.
- Major internal-external customers and suppliers.
- Length of employment in the organisation.

This data could be used to identify individuals who need training, plus key players, departments or supply chains that might need special consideration (Black, 1993).

The format of the survey questionnaire used in this study could be applied. The measurement scales using critical, important and of minor importance is simple and easy to complete by respondents. It is also easy to analyse and interpret the results by those administer the instrument.

At the very least, however, the modified questionnaire will be of use for an assessment of understanding in an organisation that is well into its TQM programme. If it is applied in the early stages of implementation, many employees are likely to have very little understanding, awareness and experience of many of the concepts involved. Therefore, any critical quality factor returned as not critical by each respondent indicates an area of concern. This helps identifying the training needs of each individual, or a group of individuals.
To allow objective prioritisation of training needs related to TQM understanding within an organisation, a different approach than the criticality gap analysis proposed by Thiagarajan (1996) is suggested. Thiagarajan (1996) suggested an approach that involves measuring the gap between the responses of an individual or group of individuals using the comparative criticality index (see section 8-6-2) as a benchmark.

Using the criticality order, he suggests, comparing individual responses of criticality score over 100 for each critical quality factor against the comparative criticality index value. This indicates the gaps and prioritisation of training needs is based on the criticality of the quality factor and the size of the gap.

Although this sounds as an objective prioritisation approach, it can not be applied as:

This approach assumes that all respondents have returned the critical quality factors as critical quality factors. What about those who return the critical quality factor as an important factor. Besides it is difficult to identify training needs per individual using this approach. This is due to rating and scoring problems, as different respondents might give different ratings, although all of them have a rating less than the comparative critically index.

This argument suggests a more simple and appropriate approach for prioritisation of the training needs related to TQM understanding within an organisation. The objective prioritisation is based on the criticality of the critical quality factor and
the percentage of respondents returning the critical quality factor is critical and the highest the percentage is, the highest the priority is. Management could use such objective information to plan, and design training programmes and allocating resources accordingly.

8-6-2 A Tool for Organisational Performance Assessment:

A different instrument needs to be designed for assessing organisational performance.

The method of measurement would be the degree of implementation of each of the 19 critical quality factors. This can be determined using the major top management actions as guides for assessment. Data concerning the degree of implementation can be gathered through observation, interviews with employees from different organisational levels and review of appropriate documents. Alternatively, senior manager in the organisation or some individuals in a department could make their own separate ratings of the degree of implementation of each critical quality factor (Thiagarajan, 1996). Moreover, the assessment process could involve all employees in the organisation, where the method of measurement would be individual’s perceptions of the degree of organisational practice of each of the 19 critical quality factor.

The degree of implementation could be measured as a rating of extent of implementation from “not implemented at all” to “fully implemented”.

This can be expressed by a certain point scale or continuous likert scale. The certain point scale is criticised on the basis of being limiting and causes
respondents frustrations, which results in ambiguous responses. The continuous likert scale is also criticised. It is time consuming, since each response would have to be measured and coded by the researcher (Black, 1993).

An easier alternative might be to ask for respondents to rate the degree of implementation as a score out of a maximum of 100. A score of 100 represents the organisation implementing to full extent the critical quality factor.

This is a practical and tested alternative for performance assessment and in accordance with the scoring approaches used for quality awards.

A maximum of 100 is ideal, as it is neither limiting nor awkwardly large to score and sum (Thiagarajan, 1996; Black 1993).

According to Thiagarajan (1996) a useful analysis to perform is benchmarking using the comparative criticality index (CCI). The information gathered from benchmarking analysis could be used as the basis to prioritise areas for improvement.

For this purpose, the comparative criticality index (CCI) generated in chapter 5 is used as the standard against which the assessed degree of implementation is compared. This benchmarking analysis identifies the gaps in the implementation. A simple and practical gap analysis is performed on the gap analysis chart presented in figure 8-3. Critical quality factors in order of their criticality measured by the comparative criticality index are listed on the Y- axis from top the bottom. The CCI values represent the benchmark scores is incorporated on the
chart using horizontal lines. Implementation scores of the respective critical quality factors are presented in the same manner using horizontal lines. These scores are modified to represent the percentage of being not implemented.

That is deducting the percentage of implementation degree from 100 percent. This is because the CCI is calculated based on the index of diversity (see chapter 5), where small value of CCI indicates high criticality of the quality factor while large value of CCI indicates low criticality of the quality factor. In the context of this analysis, small value of CCI can be interpreted as a big degree of implementation, and a big value of CCI can be interpreted as low degree of implementation.

The difference is, then, plotted on the gap analysis chart for each critical factor. The modified implementation scores that are less than the benchmark scores are negative gaps that need to be addressed. Positive gaps occur when the modified implementation scores are greater than the benchmark scores. This can be illustrated on the Gap Analysis Chart.

The gap analysis could be used as the basis to prioritise improvement or implementation actions. The prioritisation of actions is performed according to the criticality order of the quality factors presented in the Gap Analysis Chart (Figure 8-4).

Benchmarking analysis could also be conducted between the various departments in the organisation. Moreover, benchmarking analysis could be done organisation-wide. That is, assessing organisational performance by involving all employees
with this large sample of respondents the mean scores of performance for each critical quality factor can be compared to the CCI scores using the same approach described in this section.
Figure 8.4 Comparative Criticality Index
8-7 Summary:

A framework for TQM implementation in the Palestinian context has been derived based on the discussion of the findings of the investigations of the practices of Palestinian TQM organisations and the knowledge of literature. The discussion involved the interpretation of the key findings of the quantitative and qualitative research. The quantitative research involved assessing the level of TQM awareness in the Palestinian context. A list of twenty-two factors generated by Ramirez and Loney (1993) was used to survey Palestinian managers’ perception and level of understanding. The survey proved to be a very useful tool for checking applicability, order of critically and relevance of TQM in the Palestinian context.

Benchmarking the twenty-two factors across countries and industry sectors using the results of various studies conducted in USA, UK, Malaysia and Singapore and some Middle Eastern countries was a useful vehicle to assess the level of awareness and understanding of TQM implementation in the Palestinian context.

This empirical study proved that factors related to top management commitment and their involvement in the strategic quality planning process focusing on customer satisfaction, and continuous learning through education and training are more emphasised than other factors. These factors are classified as tier 1 factors, which are very critical to successful TQM implementation. Moreover, the
benchmarking process revealed that the level of awareness and understanding is low compared to the responses of the original study's sample, the mean average score of all studies and the mean average score of the Middle Eastern countries.

The quantitative research also involved gathering information from the total population of the Palestinian ISO 9000 certified organisations. The survey questionnaire aimed at identifying and stratifying the critical quality factors as perceived by respondents from various organisations of different size, maturity level of TQM implementation, and business category. The results of this survey questionnaire were analysed. The analysis revealed that 19 quality factors are perceived as critical and absolutely essential for the successful implementation of TQM. These factors were identified using and stratified into three tiers of criticality where nine of them are found fundamental to be addressed in the early stages of the implementation process.

The qualitative research involved two levels of investigations. Using semi-structured interviews, more insights concerning the tactics and techniques to implement the critical quality factors were presented based on discussing the experiences of 18 case study organisations. The discussion identified the important prerequisites to successful implementation of the critical quality factors. These formed the important tactics and techniques to effective implementation of the critical quality factors.

The second level of qualitative research involved identifying the foundation elements of TQM implementation using the case study approach. The discussion
of the finding of five case study companies revealed that in the pre-launch of TQM implementation companies’ top management realised the tangible benefits of TQM implementation, invested time and effort in training and education, demonstrated active commitment and involvement, and gained internal stakeholders (company-wide) commitment and involvement.

From these cases, the foundation elements of TQM implementation support addressing tier 1 critical quality factors as fundamental factors in the TQM model of implementation. These factors are:

1- Top management commitment and involvement
2- Middle managers and employee commitment and involvement
3- Communication
4- Training and Education
5- Quality Infrastructure
6- Formal documented quality management system

The implications derived from the discussion emphasise top management commitment, employee commitment and involvement, customer-driven processes and continuous improvement culture for effective TQM implementation.

The result of this discussion provides the landmarks to construct the TQM implementation framework for Palestinian organisations.
The framework illustrates the relative criticality of the critical quality factors and their interrelationships while the framework is constructed using inputs from the TQM Palestinian organisations to offer Palestinian management guidelines for decision making for TQM implementation in a relevant manner, it is not intended to be prescriptive.

The literature is clear that models and frameworks cannot take the responsibility from management as how to implement TQM. Therefore, the framework represents a guide for organisations starting their TQM journey.

The framework can be applied to organisations from the various sectors as it is constructed based on findings from heterogeneous organisations.

It was shown that the critical quality factors that form the main components of the framework are generalisable, this makes the framework appropriate to Palestinian business environment and available resources.

The tool offered for TQM programme assessment offers a simple and time efficient approach, which can provide management with an insight into performance improvement or implementation in their total quality management programme. This tool is useful in the early years of implementation to accompany the framework that should be useful at least up to the first two years of implementation.
Most of the critical quality factors identified and used in the construction of this framework are used in other current frameworks of implementation provided by researchers, experts and consultants, and national quality awards such as MBNQA and EQA. It is, however, quite possible that a single model of TQM is not possible. The changes that occur in organisations’ TQM programme over time and in different circumstances (company culture, size etc) may prevent a single model from adequately explaining the phenomena that arise (Black, 1993).

It is, therefore, recommended that organisations complement the implementation guidelines by continually seeking out and studying best implementation practices to understand how others are achieving success in implementing and sustaining TQM (Thiagarajan, 1996). This is evident in the continuous evolution of implementation approaches such as MBNQA, and EFQM.
Chapter Nine
Conclusions and Recommendations

9-1 Introduction:

This research represents an exploratory study of TQM implementation in the Palestinian context as presented in the various chapters of this research project. Chapter one presents the background of the study and the significance of investigating the impact of TQM on Palestinian organisations. Chapters two and three review the literature thoroughly emphasising the concepts, evolution and the critical quality factors reported by researchers, consultants and experts, and business excellence models offered by national quality awards like the Malcolm Baldrige National Quality Award and the European Quality Award. Chapter four addresses the research design and methodology, which is based on a systematic study of the literature findings (chapter 2) to permit the achievement of the primary aim of the research. That is the construction of a generic framework to assist in the TQM implementation in the Palestinian context. Extensive data collection, analysis and interpretation to validate the literature findings are carried out through chapters 4, 5, 6, and 7.

The results of the study are discussed in light of the research objectives set in chapter one, the contributions and implications of the study, and suggestions for further research. The last section of this chapter provides summary and concluding remarks.
9-2 Evaluation of Research Objectives Achievement:

The research objectives of the study are concerned with establishing a generic model of TQM to assist Palestinian organisations in the implementation process.

A practical and simple step by step implementation framework is constructed and presented as a tool for Palestinian organisation planning to implement TQM.

The core components of the framework are the 19 critical quality factors identified in chapter 6. These critical quality factors are stratified in three hierarchical tiers of implementation priorities, when implemented, increase the chances of successful TQM implementation.

Foundation elements that must be addressed by top management in the pre-launch stage (identified in chapter 7) are incorporated to enhance the applicability of the framework by Palestinian organisations. The framework provides implementation guidelines of the major top management actions that need to be taken when addressing the foundation elements and the core components (critical quality factors).

These implementation guidelines are based on the understanding of how critical quality factors are manipulated and implemented by Palestinian TQM organisations (chapters 6 and 7) and best organisations world-wide (chapters 2).

Based on the findings presented in chapters 5, 6 and 7 and defined by the research objectives, the implementation guidelines are presented as quality levers based on
the most critical first and least critical last. This systematic presentation of the implementation guidelines reflects the hierarchical structure of the 19 critical quality factors as stratified into the three tiers developed in chapter 6 and the prerequisites of the implementation stages, that is, the pre-launch stage and the implementation stage (chapter 7). The tools and techniques (chapter 6) to be considered by top management in the two stages are incorporated in the implementation guidelines whenever appropriate.

The framework is structured around four recognisable labels that represent the critical quality factors. These recognisable labels are defined as constructs in the structure of the framework. These four constructs are:

1- Demonstrate top management commitment and involvement.
2- Ensure employees commitment and involvement.
3- Manage by customer-driven system and processes.
4- Create continuous improvement culture.

These constructs are in common with the published literature to date. This is true as TQM must start at the top. The most senior managers must all demonstrate that they are serious about quality. Top management must accept the responsibility for commitment to a quality policy that deals with the organisation for quality and for the satisfaction of the customer needs. This commitment to quality and leadership must be demonstrated by developing and communicating the vision and mission organisation-wide.
The tangible business and operating benefits of TQM must be realised by top management as a prerequisite for their serious commitment and involvement. This involves managing the organisation’s quality journey through a quality council led by the general manager, and a full-time quality-related manager is recruited to provide support for the quality council.

All senior managers who are members of the quality council are responsible for developing a comprehensive policy based on the inputs of the various organisation’s stakeholders. This policy including the quality goals must be deployed effectively at all levels of the organisation through effective communication to ensure common understanding of the organisation’s expectations and direction to achieve organisation-wide commitment.

This early initiative of building consensus and setting the strategy’s direction on TQM helps to develop a comprehensive view at the top on what TQM really means to the organisation.

In order to ensure commitment and involvement of everyone in the organisation in the quality improvement top management’s commitment and involvement must be visible by promoting TQM and applying its concepts, philosophies, processes and tools.

Top management should enable all employees in the preparation, implementation and evaluation of improvement activities. Practical assistance, training, recognition and participation should be given to ensure that the relevant
knowledge and experience are acquired by all employees to attain the quality goals of the organisation.

Employees need to be informed about the quality initiative and participate in the improvement activities through top-down and bottom-up communication. Senior managers should provide support for middle managers by working closely with them in the early stages to assume the new roles. Teamwork skills are needed to have employees work together and review of the reward and recognition schemes is another factor to ensure and reinforce employee commitment and involvement.

To be successful in the marketplace, each part of the organisation must work properly together towards the same goals, recognising that each person and each activity affects and in turn is affected by others. This means focusing on business systems and processes that add value to customer satisfaction.

Managing quality management system will enable the objectives set out in the quality policy to be achieved. The ISO 9000:2000 series set out methods by which a system can be implemented to ensure that the specified customer requirements are met. The quality management system should apply to and interact with processes in the organisation. Therefore, managing by customer-driven system and processes requires deploying the human and other resources along the processes to add value for customer satisfaction. This is associated with the concept of internal customer-supplier relationship.

An early stage in the implementation process is to seek certification of a formal quality system to determine the assembly of components (organisation structure,
responsibilities, processes and resources) for implementing TQM. This requires comprehensive identification of customers and customer needs and the alignment of processes to satisfy the needs. This involves promoting internal customer-supplier relationship in the quality chain. Understanding the core processes and gaining process sponsorship and ownership are critical to ensure that appropriate resources are made available to map, investigate and improve the process.

Breaking down the core processes into sub-processes to understand the customer needs at each level is also critical to change the traditional organisation structure to the competitive structure of customer-focused processes.

Continuous improvement is related to never-ending pursuit in meeting external and internal customer needs. The continuous improvement of existing products, services and processes is fundamental for continuous customer satisfaction. The concept is firmly tied to a continuous assessment of customer needs and depends on a flow of ideas on how to make improvement, reduce variation and generate greater customer satisfaction.

To sustain the focus on continuous customer satisfaction, management should rely on management by facts and commitment of all employees with emphasis on teamwork to promote a bottom-up thrust for quality improvement. Tools and techniques such as cost of quality should be used to identify continuous improvement opportunities.
The framework is constructed based on inputs from TQM Palestinian organisation to offer guidelines for TQM implementation for organisations starting their TQM journey. It is quite possible that a single model of TQM is not possible. The changes that occur in organisation's TQM programme over time and in different circumstances (organisation culture, size...) may prevent a single model from adequately explaining the phenomena that arise. The framework is, therefore, presented as guide for organisations embarking a quality initiative. It is recommended that organisations complement the implementation guidelines by seeking out and studying best implementation practices continuously to understand how others are succeeding in implementing and sustaining their TQM programmes.

The framework is applicable to organisations in various sectors emphasising top-down deployment and bottom-up participation as an implementation approach to achieve continuous customer satisfaction.

9-3 Contribution of the Study:

9-3-1 Literature Review:

The literature was reviewed extensively in order to reveal current gaps in knowledge. Analysis of recent doctoral theses in quality management revealed that little research had been directed which considers the TQM system as a whole. This is reflected in the wider published literature where few researchers produced empirical studies in the field. This study, however, adds to the available literature an empirical research which consider the TQM system as a whole.
9-3-2 Investigation of TQM practice in Palestine:

The exploratory investigation into TQM practice in the Palestinian context described in chapters 4, 5, 6 and 7 is the first and the only one to date of this nature to investigate the TQM implementation practices in Palestine. The study targeted the whole population of ISO 9000 certified organisations which makes the findings adequately represent the nature of TQM found in Palestinian organisations.

9-3-3 A Framework of TQM implementation:

A framework of TQM implementation has been derived from the findings of the fieldwork and the knowledge of the literature. This framework illustrates the relative importance of the identified critical factors, which are justified by the results of the research.

Such a framework contributes a lot to the Palestinian context, Particularly with the absence of any implementation framework and any national quality award model.

9-3-4 Validation of the methodology used by the Original Study conducted by Thiagarajan (1996):

Replicating the study conducted by Thiagarajan (1996) applying the same methodology revealed similar results and validated various issues. This include:
1- Triangulation as a TQM research methodology:

The evidence in this research agrees with the evidence in the original study. This supports those social scientists who advocate that triangulation strategy of combining qualitative and quantitative approaches enriches our understanding of the subject by allowing for new and deeper dimensions to emerge, to which single methods would be blind. The usefulness of combining qualitative and quantitative approaches in this study, validates the suggestion of the original study that triangulation is a fresh research methodology option within the field of TQM. That offers a synergistic approach by eliciting data from differed dimensions of TQM implementation and suggesting conclusions pertinent to the objectives of the research.

2- Blue print for identifying critical factors of TQM:

The methodology used by Thiagarajan (1996) is based on a scaling technique employed in the survey questionnaire. The scaling technique asked survey respondents to explicitly identify a specific quality factor as critical or not. Data analysis techniques objectively identified whether critical is the most typical response amongst respondents.

The advantages of the scaling methodology employed in the survey instrument is that each individual quality factor is assessed and identified as critical independent of other quality factors. This feature means that new items can be added to the set without upsetting the earlier findings. It also permits future researchers to continually identify critical factors from even a few new items in a
robust manner. This is particularly important in a field such as TQM where the subject domain is constantly being updated.

Replicating this methodology in the Palestinian context provided a blueprint for identifying critical quality factors of TQM in the Palestinian context, which validates the methodology of Thiagarajan (1996).

3- Identification of the critical quality factors of TQM using the same methodology of Thiagarajan (1996), quality factors absolutely essential to the success of TQM implementation in the Palestinian context were scientifically identified and a three tiers hierarchical structure of critical quality factors built. This hierarchical structure offered empirical evidence for the TQM implementation framework and the relative criticality of the factors. The identified critical quality factors are in tandem with the information in the literature.

9-3-5 Confirmation of TQM generic and transferable nature:

The findings of the survey questionnaire used to measure awareness and understanding of TQM in the Palestinian context (chapter 4) proved that TQM is a generic philosophy of management. This is supported by the findings of first level inquiry (chapter 5) where all the quality factors identified as important by TQM organisations in the West were returned as critical or important except one factor (the role of labour unions, see chapter 5) by Palestinian TQM organisation.

It is evident that TQM organisation aim to excel in certain areas, regardless of their place of incorporation.
This supports Juran (1993) when he says that the culture does not influence the approaches to TQM implementation. However, this study confirms that there are differences in the order and degree of emphasis of the quality factors. This is evident by comparing the identified critical quality factors in this study and those of the original study. Although some factors were returned as critical in both studies, the degree of emphasis of the quality factors varies (see chapter 5).

The heterogeneous mixture of the survey questionnaire respondents (chapter 5) examined the generalisability of the critical quality factors across the different industry background factors is independent of the business sector (manufacturing, service), organisation size (measured by number of employees) and maturity level (measured by period of implementation). This evidence confirms that TQM is a generic philosophy applicable across all types of organisations regardless size, maturity or business sector.

9-3-6 The index of comparative criticality:

The index of comparative criticality of the 19 critical quality factors (chapter 5) can be used as a benchmark by Palestinian organisations by comparing their TQM practice against other TQM organisations in Palestine. It is also used to identify gaps when the results of the self-assessment are compared to the index as explained in chapter 8.

This index was calculated using the same approach used by Thiagarajan (1996) who developed the index by dividing the variation ratio of each quality factor by
the maximal value (0.667). However, the very small difference between the criticality of the factors creates a problem when it comes to ordering the critical factors in the three tiers hierarchical structure. This happens when two or more critical factors have the same variation ratio value. The suggested improvement is to base the calculation of the index values on the index of diversity rather than the variation ratio as it provides a more accurate measure of the criticality of the critical quality factor (for more details please see chapter 5).

9-3-7 The soft and hard elements of TQM:

The constructed framework for TQM implementation was based on the findings of the investigations carried out through the study. These findings were integrated into four main constructs of TQM as broad critical areas that organisations planning to implement TQM should address. These constructs (demonstrate top management commitment and involvement, ensure employees commitment and involvement, manage by customer-driven system and processes, and create continuous improvement culture) reflect the soft-hard divide of the absolutely essentials of TQM implementation.

9-3-8 A mean average score to benchmark TQM awareness:

Using the list of twenty-two critical quality factors developed by Ramirez and Loney (1993), several studies have been conducted across various industry sectors and countries. A mean average score of 1116 respondents from various countries is calculated using the weighted average approach and a mean average score of 854 respondents from Middle Eastern countries is calculated in the same way.
These mean average scores can be used by other researchers using the survey questionnaire developed by Ramirez and Loney (1993) to benchmark the awareness of TQM implementation of their respondents.

9-4 Direction for Future Research:

9-4-1 Validation and improvement of the TQM implementation framework:
The framework constructed in chapter 8 offers step-wise practical guidelines in planning for TQM implementation. The framework is based on the implementation of the 19 critical quality factors ordered according to their criticality. An examination of its applicability in practice would be a research focus. Validating and strengthening some aspects of the framework could be achieved through further research.

9-4-2 Benchmarking of company profiles:
Performance profiles using the self-assessment tool from a number of different organisations could be compared with each other. Other benchmark comparisons could be made for performance profile in different industry sectors. This sort of research might yield important information on the differences between TQM initiatives.

9-4-3 Consideration of other sources of information:
The study assessed information only from the perspective of the participating organisations. Consequently, it offers a self-reported, one-dimensional focus. For the purpose of the study, this approach was deemed appropriate. However, the
success of a business practice like TQM depends on its ability to satisfy the interests of multiple stakeholders.

It may, therefore, be appropriate to consider gathering information from various stakeholders such as customers, employees, competitors and suppliers in the future research.

9-4-4 Cross-cultural comparative analysis:
Another expected research topic would be the cross cultural analysis of TQM implementation between countries. As globalisation of world markets have accelerated, cross-cultural management problem is one of the important issues to be addressed. Therefore, replicating this study under different cultural conditions will be helpful in assessing the impact of culture on TQM programmes and the process of implementation. On the other hand, replicating this study in other countries of similar culture (e.g. Arab countries) will be helpful in validating the framework, or validating specific parts of it, particularly the critical quality factors.

Exposing the survey questionnaire to a larger sample or a sample of individuals from Western countries would enhance the reliability of the methodology allowing for comparative analysis as a research focus in the future.

9-4-5 Tracking changes in organisational perception:
It is possible that the relative criticality of the quality factors will change as the organisation progresses in its TQM programme. A future research focus is to track
these changes. The tool for assessing TQM understanding developed in chapter 7, provides a means to pursue such a study. Snapshot profiles of organisational perceptions of the criticality of factor could be taken at various stages in the programme and compared (6 month, 12 month, 18-month etc.)

The scaling methodology used in this study allows the researcher to add new factors if it is considered necessary. This means that if in the future new factors are considered to be valid additions to the research domain, then they may be added without affecting the results on the existing factors.

9-4-6 Longitudinal study:
Replication of this study in the Palestinian context would build significantly on the findings. It is, however, recommended that such study to be replicated after some period of time so that a new sample is found. Another alternative would be to use longitudinal approach to focus on a few organisations and study their implementation process with great details to be gathered over a period of time. However, this type of research is subject to the organisation's willingness to participate in the study.

9-4-7 Impact of environmental factors:
This study considered micro organisational issues as a focus of research in isolation of environmental issues that influence the implementation of TQM.

These external environmental factors could accelerate or, on the other extreme, prevent the implementation of TQM.
The role of government, general health of the economy, education system, availability of experts, industries' background, political stability are examples of obvious focus of future studies.

9-4-8 Cultural factors:

In the critical quality factors identification, the organisational factors were only considered. Future research should expand the investigation, using the same methodology, to include some cultural factors to identify the impact of culture, if any, on the implementation process of TQM.

9-5 Key Lessons:

Several fundamental lessons were learned from the investigations carried out in this study from Palestinian organisation’s quality programmes. These key lessons are generic to any organisation as they are in tandem with the information in the literature.

TQM is a top management responsibility. Top management should believe that TQM could achieve tangible business and operational benefits to the organisation. This belief should be the driving force for top management commitment and involvement.

Demonstrating top management commitment and involvement is critical for organisation-wide commitment and involvement to successful implementation.
Demonstrating management commitment should be through the development of a comprehensive quality policy and goal setting. Quality is a strategic issue managed at the top level that requires effective deployment of the quality goals for organisation-wide achievement.

This is evident in this study and is reflected in the generic framework as the major construct of the framework.

TQM calls for employee commitment and involvement:

Maximising employee involvement requires empowering employees by providing training, effective communication and rewards and recognition schemes. TQM relies on employees working together in teams to achieve the quality improvement goals.

TQM is not about doing the bare minimum through using simple tools and techniques. These hard factors may be misplaced if the supporting management foundation and employee involvement (the soft factors) is not sound.

TQM is a long-term process:

TQM requires several years of implementation to achieve tangible business and operational benefit.
TQM involves continuous customer satisfaction:

Managing by customer-driven system and processes is the only way to achieve continuous customer satisfaction.

9-6 Concluding Remarks:

The increasing acceptance of TQM as a management philosophy for improving organisational competitiveness and effectiveness left the development of empirical research behind. The problem is much more apparent in the developing countries where knowledge of TQM is in the very early stages. This research attempted to make the distance between the existing body of literature and approaches of effective TQM in a newly established Palestine shorter.

The nature of the research topic and the objectives of research require combining quantitative (questionnaire survey) and qualitative (case study interviews) methodologies.

Several methodologies that have been used by researchers in the field of TQM were considered. The general shortcomings of these methodologies necessitated replicating Thiagarajan’s methodology adopting an exploratory approach.

Based on the list of the twenty-two factors generated by Ramirez and Loney (1993), Palestinian manager’s perception and level of understanding were surveyed. Benchmarking the 22 factors across countries and industry sectors using
the results of various studies conducted in USA, UK, Malaysia and Singapore and some Middle Eastern countries was a useful vehicle to assess the level of awareness and understanding of TQM implementation in the Palestine context. This empirical study proved that factors related to top management commitment and involvement in the strategic quality planning process focusing on customer satisfaction, and continuous learning-through education and training are more emphasised than other factors. However, the benchmarking process revealed that the level of awareness and understanding is low compared to the responses of the original study’s sample, the mean average score of all studies and the mean average score of the Middle Eastern countries.

A step further was taken towards identifying the critical quality factors for successful implementation of TQM. Replicating the methodology of Thiagarajan (1996), investigation of the implementation experiences of all Palestinian ISO 9000 certified organisations, identified 19 critical quality factors as absolutely essential to the successful TQM implementation. The 19 critical quality factors were stratified in a three tier hierarchical structure reflecting their criticality as an essential input to the development of the implementation framework. Based on the three tiers critical quality factors and the findings of the case studies, an implementation framework was constructed with the support of the knowledge acquired from the literature review. A simple and practical step by step with implementation guidelines framework aiming at assisting Palestinian organisations in planning on effective implementation of TQM was constructed.
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APPENDIX A
QUESTIONNAIRE
Appendix A
Survey Questionnaire

Part I:

Please rate the following quality-related factors as to their level of importance to the successful implementation of the quality management process in your organisation, by circling the appropriate column – “1”, “2” or “3” – as follows:

1- CRITICAL:

Factors that you feel are critical and absolutely essential. The process stands a good chance of ending in failure if these factors are not part of the quality management process.

2- IMPORTANT:

Factors that you feel are important but not absolutely essential. The process will survive if these are not implemented, but the organisation will experience some unnecessary delays to its quality management process until these factors are eventually addressed.

3- MINOR IMPORTANCE:

Factors that you feel are of minor importance. These factors will not seriously affect the success or failure of the quality management process.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>7</td>
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</tbody>
</table>

- 1.  Senior executive assume active responsibility evaluation and improvement of management system, and leading quality drive.
- 3.  Clear, consistent communication of mission statement and objectives defining quality values expectations and focus.
- 4.  Comprehensive policy development and effective deployment of goals.
- 5.  Top management push decision-making to the lowest practical level.
- 6.  Effective top-down and bottom-up communication.
- 7.  Elements of quality management structure are in place to manage the organisation’s quality journey.
8. 1 2 3 The entire organisation understands that each individual and each process has internal customer and suppliers.

9. 1 2 3 The entire workforce understands, and is committed to the vision, values, and quality goals of the organisation.

10. 1 2 3 The use of employee surveys and tracking of other key measures to assess employee support of, and involvement in the quality initiative.

11. 1 2 3 Employee suggestion scheme in place, with target time scales for management response.

12. 1 2 3 Supervisors, unit heads and divisional managers assume active roles as facilities of continuous improvement, coaches of new methods, mentors and leaders of empowered employees.

13. 1 2 3 Employees' union support of the organisation's quality initiative.

14. 1 2 3 System for recognition and appreciation of quality efforts and success of individuals and teams.

15. 1 2 3 Training for employees to improve interactive skills (such as communication skills, effective meeting skills, empowerment and leadership skills).

16. 1 2 3 Training for employees in problem identification and solving skills, quality improvement skills and other technical skills.

17. 1 2 3 Informal benchmarking and other forms of information acquisition and sharing with organisations in different sectors and industries to identify best practices for improvements and opportunities.

18. 1 2 3 Competitive benchmarking made against primary competitors.

19. 1 2 3 Systematic review and analysis of key process measures that have a direct impact on value-addition to customer satisfaction.

20. 1 2 3 Problem-solving and continuous improvement processes based on facts and systematic analysis.

21. 1 2 3 Application of total quality approach to the management of support services & business processes.
The use of self-assessment tools and other mechanisms to track and improve performance gaps in the implementation and effectiveness of systems, processes and practices.

A team approach (such as quality circles, cross-functional teams) to problem solving and continuous improvement.

The use of SPC (statistical process control) to control variability and improve processes.

Cost of quality process to track rework, waste, rejects, and for continuous improvement.

Zero defects as the quality performance standards.

A formal documented quality management system in place.

Reliance on reasonably few dependable suppliers who are evaluated & selected based on their capability and commitment to product and service quality, and value for money.

Long term relationship and working partnership with key suppliers.

Comprehensive identification of customers and customer needs and alignment of processes of satisfy the needs.

The use of customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction.

Please write down in the space below any additional factors or activities that you feel may be missing from the above list.

________________________

________________________

________________________
Part II:

Now, tell us about the quality management process in your organization.

Please circle the appropriate number in response to each of the following questions.

35. When was TQM implemented?

<table>
<thead>
<tr>
<th></th>
<th>Less than a year ago</th>
<th>2. More than a year ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>More than 2 years ago</td>
<td>4. More than 3 years ago</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>More than 4 years ago</td>
<td>6. More than 5 years ago</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

36. What was the single most important reason which influenced your organisation to adopt TQM?

<table>
<thead>
<tr>
<th></th>
<th>To stay in business/competition/to be considered for tenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>To anticipate customer requirements in the future</td>
</tr>
<tr>
<td>4</td>
<td>To help improve customer satisfaction</td>
</tr>
<tr>
<td>5</td>
<td>To maintain/increase market share</td>
</tr>
<tr>
<td>6</td>
<td>To improve organisation efficiency/reduce wastage</td>
</tr>
<tr>
<td>7</td>
<td>To compete in international markets</td>
</tr>
<tr>
<td>8</td>
<td>For marketing/public relations/advertising benefits</td>
</tr>
<tr>
<td>9</td>
<td>To improve staff retention/motivation</td>
</tr>
<tr>
<td>10</td>
<td>Other (please state)</td>
</tr>
</tbody>
</table>

Part III

To help us classify your responses statistically, may we ask you a few questions about yourself and your organization.

Please circle the appropriate number in response to each of the following questions.

About Yourself

37. Number of years of your personal involvement in quality management?

<table>
<thead>
<tr>
<th></th>
<th>Less than a year</th>
<th>2. 1 to 3 + years</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>4 to 6 + years</td>
<td>4. 7 to 9 + years</td>
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<tr>
<td>4</td>
<td></td>
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<tr>
<td>5</td>
<td>more than 10 years</td>
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</tbody>
</table>

504
38. Your current position?

<table>
<thead>
<tr>
<th></th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality Director</td>
</tr>
<tr>
<td>2</td>
<td>General Manager</td>
</tr>
<tr>
<td>3</td>
<td>TQM Manager</td>
</tr>
<tr>
<td>4</td>
<td>Quality Manager</td>
</tr>
<tr>
<td>5</td>
<td>Consultant</td>
</tr>
<tr>
<td>6</td>
<td>Quality Engineer/Executive</td>
</tr>
<tr>
<td>7</td>
<td>Other (Please state)</td>
</tr>
</tbody>
</table>

About Your Organisation

39. Size (no. of employees)?

<table>
<thead>
<tr>
<th></th>
<th>Size of Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>less than 200</td>
</tr>
<tr>
<td>2</td>
<td>200 to 499</td>
</tr>
<tr>
<td>3</td>
<td>500 to 999</td>
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<tr>
<td>4</td>
<td>1,000 to 4,999</td>
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<tr>
<td>5</td>
<td>5,000 to 10,000</td>
</tr>
<tr>
<td>6</td>
<td>more than 10,000</td>
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</tbody>
</table>

40. Business Category?

<table>
<thead>
<tr>
<th></th>
<th>Business Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Producer</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturer</td>
</tr>
<tr>
<td>3</td>
<td>Service</td>
</tr>
<tr>
<td>4</td>
<td>Government</td>
</tr>
<tr>
<td>5</td>
<td>Consultancy</td>
</tr>
</tbody>
</table>

42. Turnover (Sales: approx. NIS per year)? NIS _________________

Thank you for your cooperation in filling up this questionnaire.

If you would like a summarized abstract of our research findings, you can receive them by returning your business card with your questionnaire.
APPENDIX B
QUESTIONNAIRE SURVEY RESPONSES
APPENDIX B:
Questionnaire survey responses

<table>
<thead>
<tr>
<th>Quality Factor</th>
<th>1-critical</th>
<th>2- important</th>
<th>3- minor importance</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 Senior executives assume active responsibility for evaluation and improvement</td>
<td>1</td>
<td>77</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>of management system, and leading quality drive.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Q2 Visibility of senior executive commitment to quality and customer satisfaction</td>
<td></td>
<td>62</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Q3 Clear, consistent communication of mission statement and objectives defining</td>
<td>54</td>
<td>24</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>quality values, expectations and focus.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q4 Comprehensive policy development and effective deployment of goals.</td>
<td>54</td>
<td>24</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Q5 Top management push decision-making to the lowest practical level.</td>
<td>21</td>
<td>16</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Q6 Effective top-down and bottom-up communication.</td>
<td>50</td>
<td>25</td>
<td>3</td>
<td></td>
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<tr>
<td>Q7 Elements of quality management structure in place to manage the organization’s</td>
<td>65</td>
<td>13</td>
<td>0</td>
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<tr>
<td>quality journey.</td>
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<tr>
<td>Q8 The entire organization understands that each individual and each process has</td>
<td>43</td>
<td>30</td>
<td>5</td>
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<tr>
<td>internal customers and suppliers.</td>
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<tr>
<td>Q9 The entire workforce understands, and is committed to the vision, values, and</td>
<td>51</td>
<td>27</td>
<td>0</td>
<td></td>
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<tr>
<td>quality goals of the organization.</td>
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<tr>
<td>Q10 The use of employee surveys and tracking of other key measure to assess</td>
<td>16</td>
<td>48</td>
<td>14</td>
<td></td>
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<tr>
<td>employee support of, and involvement in the quality initiatives.</td>
<td></td>
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<tr>
<td>Q11 Employee suggestion scheme in place, with target time scales for</td>
<td>18</td>
<td>44</td>
<td>16</td>
<td></td>
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<tr>
<td>management response.</td>
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<tr>
<td>Q12 Supervisors, unit heads and divisional managers assume active roles as</td>
<td>47</td>
<td>30</td>
<td>1</td>
<td></td>
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<tr>
<td>facilitators of continuous</td>
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improvement, coaches of new methods, mentors and leaders of empowered employees.

Q13 Employees’ union support of the organisation’s quality initiatives.  3 17 58

Q14 System for recognition and appreciation of quality efforts and success of individuals and teams.  31 39 8

Q15 Training for employees to improve interactive skills (such as communication skills, effective meeting skills, empowerment and leadership skills).  50 27 1

Q16 Training for employees in problem identification and solving skills, quality improvement skills and other technical skills.  44 32 2

Q17 Informal benchmarking and other forms of information acquisition and sharing with organisations in different sectors and industries to identify best practices for improvement.  15 48 15

Q18 Competitive benchmarking made against primary competitors.  21 45 12

Q19 Systematic review and analysis of key process measures that have a direct or indirect impact on value-addition to customer satisfaction.  39 35 4

Q20 Problem-solving and continuous improvement processes based on facts and systematic analysis.  54 24 0

Q21 Application of total quality approach to the management of support services & business processes.  42 31 5

Q22 The use of self-assessment tools and other mechanisms to track and improve performance gaps in the implementation and effectiveness of systems processes and practices.  25 46 7

Q23 A team approach (such as quality circles, cross-functional teams) in problem solving and continuous improvement.  31 37 10

Q24 The use of SPC (Statistical process control) to control variability and improve processes.  27 38 13
<table>
<thead>
<tr>
<th>Q25</th>
<th>Cost of quality process to track rework, waste, reject, and for continuous improvement.</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Q26</td>
<td>Zero defects as the quality performance standard.</td>
</tr>
<tr>
<td>Q27</td>
<td>A formal documented quality management system in place.</td>
</tr>
<tr>
<td>Q28</td>
<td>Reliance on reasonably few dependable suppliers who are evaluated &amp; selected based on their capability and commitment to product and service quality, and value for money.</td>
</tr>
<tr>
<td>Q29</td>
<td>Long term relationship and working partnership with key suppliers.</td>
</tr>
<tr>
<td>Q30</td>
<td>Comprehensive identification of customers and customer needs and alignment of processes to satisfy the needs.</td>
</tr>
<tr>
<td>Q31</td>
<td>The use of customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction.</td>
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