DEVELOPMENT OF AN INSTRUMENT TO ASSESS HUMAN RESOURCE QUALITY (HRQ) AND MEASURING THE IMPACT OF TQM EFFORTS ON HRQ USING THE INSTRUMENT

Thesis submitted to the Cochin University of Science and Technology in partial fulfillment of the requirements for the Award of the Degree of Doctor of Philosophy in Management under the Faculty of Social Sciences

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Certified that this thesis, "**DEVELOPMENT OF AN INSTRUMENT TO ASSESS HUMAN RESOURCE QUALITY (HRQ) AND MESSURING THE IMPACT OF TQM EFFORTS ON HRQ USING THE INSTRUMENT**" submitted to the Cochin University of Science and Technology for the Award of the Degree of Doctor of Philosophy in management under the Faculty of Social Sciences is the record of bonafide research done by **Shri K.S.Divakaran Nair** under my supervision and guidance. This thesis has not previously formed basis for the award of any degree, diploma, associate ship, fellowship or other similar type of recognition.

Place - Kochi **Dr. M. Bhasi**

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ABSTRACT

Key words: Human Resource Quality Index (HRQI), Cultural Change Index (CCI), Quality of Work Life Index (QWLI), Employee's Satisfaction Index (ESI).

In this era of liberalization and globalization, Quality of products and services is the critical factor for success of any organization. Components of Quality may be visualized as Product Quality, Process Quality and Human Resource Quality. Product Quality and Process Quality can be ensured only if the organizations try to improve human quality. Organizations world over implement Total Quality Management (TQM) practices to enhance quality. Several approaches and tools are available for implementing TQM. Implementation of TQM leads to tangible and intangible benefits. The intangible benefits are mainly in the form of changes in Human Resource Quality (HRQ). There are several quantitative instruments available for measuring tangible benefits (product quality and process quality). But there is no instrument available for measurement of human resource quality (HRQ). Human Resource measurement instruments available are basically linked to organizational performance.

This research is aimed at developing an instrument for measuring human resource quality in organizations. The researcher has developed the instrument for measuring HRQ based on extensive literature survey and expert opinion. Statistical validity of the Instrument has also been established. This instrument was used to measure the changes in Human Resource Quality in selected organizations wherein quality management practices are being implemented. Data collected was analyzed and presented in this thesis. It has been found that there are significant changes in all the indicators of Human Resource Quality. There is improvement in Cultural Change Index (CCI), Quality of Work Life Index (QWLI) and Employee Satisfaction Index (ESI). The Human Resource Quality index has also increased significantly in all the organizations.

It has been observed from the study that implementation of TQM leads to significant changes in Human Resource Quality. This instrument is capable of measuring minor variations in each indicator of HRQ and can be used to identify areas of weakness and strength in the case of Human Resource Quality. The Instrument can further be modified by future research. This research work provided excellent opportunities for the researcher for self-development and has made him confident to undertake such activities for the benefit of the learning community.

CHAPTER I

TOTAL QUALITY MANAGEMENT AND HUMAN RESOURCE QUALITY-AN OVERVIEW

1.0 Introduction

Quality of product/service has become probably the most important element to keep the customers happy on a continuous basis. Customer's needs and wants do keep changing. To keep pace with the changing demands of customer's organizations have to develop a quality culture. Further, product/service quality directly depends on the human resource quality in any organization. Large number of organizations world over embrace TQM to become competitive in the ever changing business environment TQM efforts bring about changes not only in product and process quality but also in human quality. In this chapter, an overview of Total Quality Management (TQM) along with linkage of Human Resource Quality (HRQ) and TQM, the scope and objectives of this research are presented and discussed.

1.1 Total Quality Management (TQM)

The concept of Total Quality Management (TQM) was born almost two decades ago with the core ideas of W.Edwards Deming, Joseph Juran, Philip Crosby and Kaoru Ishikawa. Since then it has become an acceptable management philosophy, finding its way into every sector of business. In the increasingly competitive environment TQM is essential for not only success and growth but even for survival of organizations. Quality management has been defined as 'a philosophy or an approach made of a set of mutually reinforcing principles and techniques' (Brown, Hitchcock and Willard [1944]). The leaders of business and industry world over took quality seriously starting from 70's and introduced TQM principles in their organizations to gain competitive advantage.

1.2 TQM in India

Indian organizations, which for long enjoyed relatively stable environment, have been subjected to drastic changes due to new economic policies of government of India since 1991. Indian economy was opened up and with this new policy; the process of competition and globalization has been initiated. These drastic changes in external environment started forcing Indian organizations to have a paradigm shift in the way they manage organizations.

The economic liberalization in India has made available in the market global quality goods and services and this has shaken many an industry which has hither to been complacently existed with poor/shoddy quality products and services. On the yardstick of competitiveness, Indian industry performance has been more or less abysmal. Among the 59 countries, which were ranked by world competitiveness report 1999 (conducted by World Economic Form), India occupied a low 52nd place on overall competitiveness and 37th place on innovative capacity. The total cost of poor quality is as high as 25% of India's manufacturing sector turnover. In these days of mass customization (capacity to manufacture products in batches with out compromising on cost, speed or product standards), Indian corporates are increasingly finding it difficult to compete with foreign manufactures who can re-engineer their manufacturing processes to produce just what the customer wants. It is the quality factor that has emerged in the forefront. Today total quality is no longer a choice; it is a foregone conclusion. In the wake of globalization and emerging competitive scenario, many corporates in India have under taken quality practices.

1.3 Why TQM?

With the emerging knowledge based industries it is the knowledge base of employees that can ensure success. Apart from technology hard or soft, much of the knowledge is about quality. The paradigm of quality as a core competence has to be embraced by all types of Indian industries –large, medium and small. Philph Crosby one of the quality gurus, once said, "My recommended agenda for India would be quality leadership in government business and education".

Implementation of TQM brings changes in organization's culture and climate. Employees learn to accept changes, enjoy working in teams and develop a habit of

continuous improvement and quality orientation. TQM thus definitely brings in changes in the way the people think and act. People become innovative and proactive in facing challenges. If people practice quality, they take the concept with them wherever they go at home, in society. Success of TQM practices depends on these changes in human resource quality

1.4 Evolution of TQM

Quality management started with simple inspection based systems. Under this system, one or more characteristics of a product are examined, measured and tested and compared with specified requirements to assess its conformity (Kanji, Asher [1993]). This system is an after-the-fact process, which has no prevention components other than the possibility of identification of non-conforming products. The next stage, quality control stage, concentrates on product testing and documentation. Quality control measures led to greater process control and lower incidence of non-conformance .The third stage, the quality assurance stage comes with the change away from product quality towards system quality. This stage is marked by the organizations developing quality manuals, procedures, work instructions, quality planning and conducting quality audits. The basic difference observed in this case is that quality assurance is prevention based where as quality control is inspection based.

At Total Quality Management stage, quality management principles are applied to all aspects of the business. TQM is defined by ISO as "Total Quality Management is the management approach of an organization centered of quality, based on the participation of all its members and aiming at long term success through customer satisfaction, and benefits to all members of the organization and to society". Total Quality Forum of U.S.A defines TQM, as "TQM is a people focused management system that aims at continual increases in customer satisfaction at continuously lower cost. TQM is a total system approach (not a separate area or program) and an integral part of high-level strategy. It works horizontally across functions and departments involving all employees, top to bottom and extends backwards and forward to include the supply chain and the customer chain". TQM calls for the principles of quality management applied in every branch and every level of production in the organization. Organizations embracing the process of TQM

must have clear vision, superb supplier and customer relations and the vision that quality is not only just product /service quality but also the quality of the whole organization including sales, finance, human resource and all other functions. Quality gurus such as E.Deming, Crossby, Juran, Feigeubaum, Ishikawa, Taguchi and others have developed basic principles in the area of quality management. There is a broad agreement among the gurus that all aspects of quality management should focus on quality improvement.

1.5 Impact of TQM on Human Resource

TQM provides a historically unique approach to improving organization effectiveness that has a solid conceptual foundation and at the same time offer a strategy for improving organizational purposes that take into account how people and organization actually operate (Hackman &Wageman [1998]). According to Deming (1996) TQM is a dynamic process involving all levels in an organization to promote never-ending improvement in the effectiveness and efficiency of all eyelets of business. TQM has become the mantra for organization to survive in the environment of ever growing competition. According to Crossby [1989] 'quality as a key attribute that customers use to evaluate product and services, has emerged as a vital point of management focus in many parts of this world'. Many corporate enterprises have found that the key to competitive success lies in emphasizing product and service quality as a strategic issue when doing business (Pulat [1994]). TQM is a holistic concept involving all levels and function of the organization .To put it briefly it is "doing things right first time and every time". Organization supported by a leadership, which keeps in place policies and systems, can only achieve the total customer satisfaction. TQM is thus a way of thinking and working by the people in the organization and not merely a collection of tools. For TQM to succeed a cultural shift in the organization is called for with fundamental changes in values, structure, the way people work together and the way people feel about participation and involvement. Atkinson [1996] argues that cultural change is the secret in implementing TQM. TQM philosophy stresses three core principles, which underline the importance of human resource.

1. All employees can contribute effectively to improvement and the managers should provide all employees the opportunity to contribute. This requires provision for time, training, and access to information and teamwork.
2. Customer satisfaction is the ultimate goal of all organizations. Customer satisfaction will be possible only through employees in the organization-ensuring product and service quality through customer-oriented culture.
3. Process is important as results. Adherence to laid-down process and procedures is absolutely necessary in the context of TQM. This adherence can be achieved only through the human resource in the organization

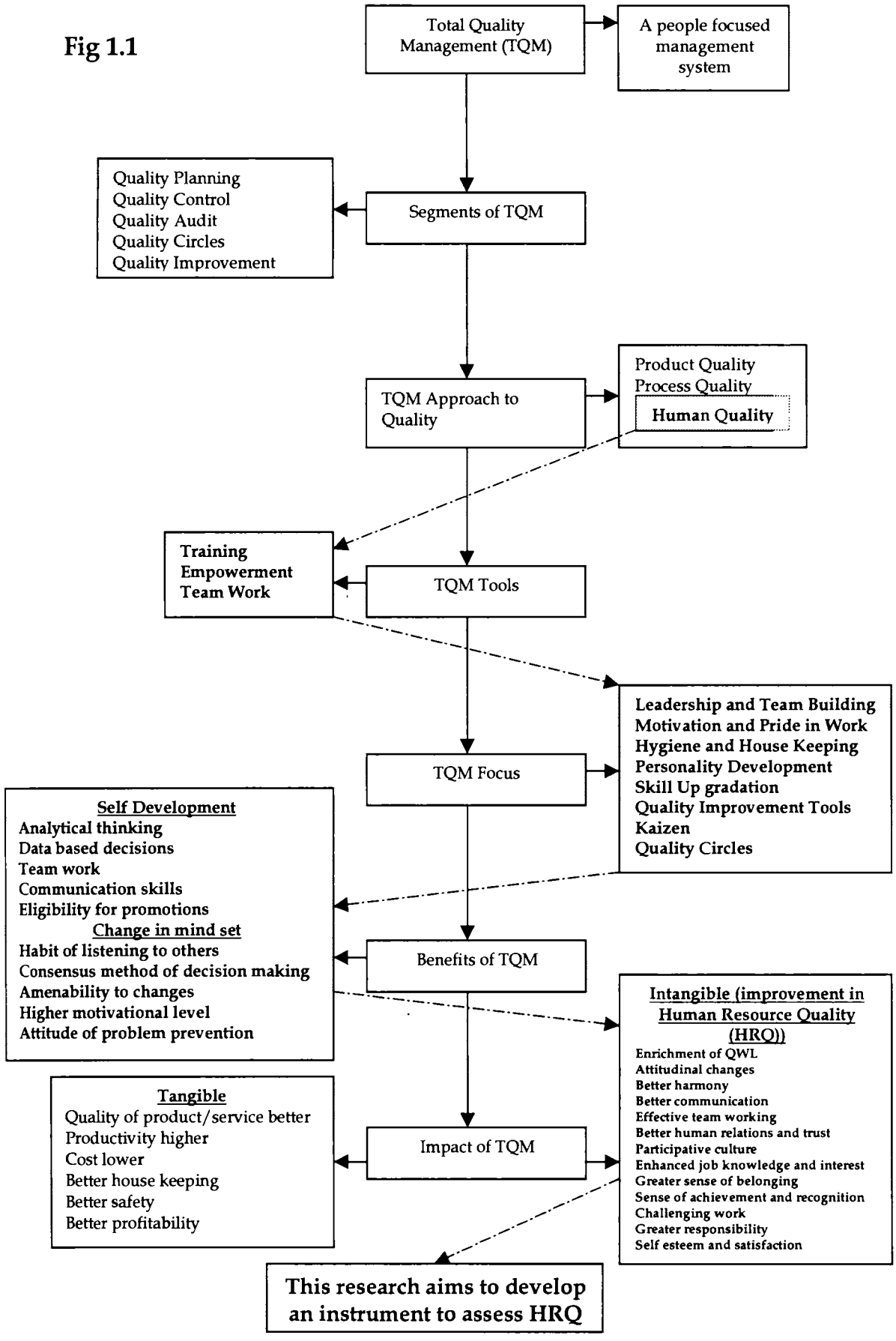
"People are the prime movers of an organization. Organizations are established operated and sustained by people. All corporate strengths are dependent on people". B.Godrej (Business Today January [1996]). Recent research and surveys from west indicate importance of human factor in successful organizations (Rao [1999]). TQM practices focus on cultural change, commitment of employee to quality and teamwork, which are seen as difficult to achieve. This is because of the incompatible culture, which may include values and norms oriented towards short-term production and quick fixes, discrete activities and pursuing departmental goals.

To transform the organizational culture to meet the changed environment, the only effective route is sincere and effective implementation of TQM which essentially is focused on people and systems .It is now an accepted fact that no matter how modern and sophisticated technology and machines that we have, one cannot achieve the optimum result until and unless the employees manning them are motivated to develop the sense of involvement and pride of workmanship.

Among the many segments of TQM such as quality planning, quality control, quality surveillance, quality audit, quality assurance etc, Quality Improvement Teams (QITs) and Quality Control Circles (QCCs) are participative group activities among employees at all levels. To bring in organization–wide shift for being able to face successfully emerging challenges, the strategy should be to practice TQM effectively and operate both QCCs and QITs.

TQM is managing company's business in all aspects using the principle of quality management. It becomes a way of life for the people. The impact of TQM efforts can be classified in three broad areas-company culture, QWL and employee satisfaction. A supportive company culture means that people with in the organization have customer focus, team approach, quality orientation and an attitude of continuous improvement. The teamwork and team spirit are very important for the success of TQM. TQM is a never ending journey. With changing environment and consumer demands one needs to constantly look for continuous improvement. Implementation of TQM leads to major changes in people, culture and processes resulting in a transformed organization. Top management commitment, widespread training, workers involvement, recognition of merit and teamwork are widely accepted as fundamental guideline for successful implementation of TQM (Dawson [1988]). Implementation of TQM activities naturally bring in qualitative changes in HR. The model/diagram shown below summarizes the efforts and impacts of TQM leading to tangible and intangible benefits. The intangible impacts specifically are pertaining to changes in Human Resource Quality (HRQ). The boxes in the diagram connected with dotted lines provide a comprehensive view on factors leading to changes in HRQ.

Fig 1.1


Total Quality Management (TQM)
A people focused management system
Quality Planning
Quality Control
Quality Audit
Quality Circles
Quality Improvement
Segments of TQM
TQM Approach to Quality
Product Quality
Process Quality
Human Quality
Training
Empowerment
Team Work
TQM Tools
Leadership and Team Building
Motivation and Pride in Work
Hygiene and House Keeping
Personality Development
Skill Up gradation
Quality Improvement Tools
Kaizen
Quality Circles
TQM Focus
Self Development
Analytical thinking
Data based decisions
Team work
Communication skills
Eligibility for promotions
Change in mind set
Habit of listening to others
Consensus method of decision making
Amenability to changes
Higher motivational level
Attitude of problem prevention
Benefits of TQM
Intangible (improvement in Human Resource Quality (HRQ))
Enrichment of QWL
Attitudinal changes
Better harmony
Better communication
Effective team working
Better human relations and trust
Participative culture
Enhanced job knowledge and interest
Greater sense of belonging
Sense of achievement and recognition
Challenging work
Greater responsibility
Self esteem and satisfaction
Tangible
Quality of product/service better
Productivity higher
Cost lower
Better house keeping
Better safety
Better profitability
Impact of TQM
This research aims to develop an instrument to assess HRQ

1.6 Scope and Objectives of the Study

There is a growing interest in the literature with regard to relationship between HRM and TQM as well as the relationship between these two approaches with business performance. Prior empirical research (see for an overview e.g. Delery and Doty [1996], Reed et al [1996], Guest 1997, Boselle eal [2001]) suggests significant effects of TQM and HRM on the performance of the organization. The majority of research in this area is focused on the effects of HRM/TQM at the organizational level (Arthur [1994], Huselid [1995], Macduffe [1995], Choi et al [1998], Wiele Valder [1998], Hendricks and Singhal [2001]). In practice, human resource manager or quality manager is asked to fill in a questionnaire, most often one list of questions representing the whole organization. The research on the perception of individual employees might give another new stimulus to the discussion of effectiveness of TQM /HRM in an organization (Guest [1999]).

Paauwe and Richardson [1997] not only gives an overview of prior research on the relationship between HRM and business performance, but also make a clear distinction between HRM results (satisfaction, motivation, absenteeism, retention, trust and involvement) and hard business performance indicators like profit and sales volume. In the TQM literature there seems to be general understanding regarding type of TQM activities that contribute to the development of business excellence. Dale [1999] enumerates the following practices relevant to organizational excellence from a TQM perspective: leadership, training, involvement, participation of employees, cooperation and customer focus. Most of these themes can be found also in current HRM literature. Various authors indicate explicitly so-called best practices that will deliver sustainable competitive advantage for the organization. Arthur [1994] focuses on decentralization, participative leadership and excellent wages. The business excellence models defined in relation to the international and national quality awards stimulated the development of best practices from a TQM point of view (Blackburn et al [1993], Puay et al [1998]). The first recognition of importance and value of human assets came about in the early 1990's. This was the time when major increases in employment; technology and other knowledge based sectors started. The critical success factor for any knowledge-based organization is its highly skilled intellectual work force. If two organizations have similar capital and

technology, it is only the employees who are the major differentiating factor. Therefore, the need for assessing the quality of human assets besides traditional accounting of tangible assets has become very significant. In an attempt to produce a tool that is psychometrically sufficient (valid, reliable, discriminative and useful), Smitt S [1990] emphasized the issue of behavior in assessing employee performance and devised the Behaviorally Anchored Rating Scales (BARS). BARS allow supervisors to rate employees on observable behavioral dimensions. In behavior based appraisal, employees are assessed on what they do in the job. Performance appraisal with in a quality driven environment/in TQM based organizations should be focused on behavior. There are several HR measurement approaches for valuing human resource based on behavior, HR cost, return on HR investment etc.

Fortunately the HR profession has made much progress with measurement and evaluation in recent years. There is no argument that human resource quality must be measured but to determine the right approach is a significant challenge. There are many approaches to assess the performance of human resource using a variety of tools and techniques. All these measurements are linked mainly to the performance of the organization. It often viewed that if the organization perform successfully, the people in the organizations also do well. TQM aims at people who are committed, flexible, willing and able to work in teams in a cooperative manner. Organization wide training and development programs undertaken while implementing TQM ensure cultural and attitudinal changes in HR. The diagram presented in section 1.5 clearly shows the details of tangible and intangible impact of TQM. The intangible impacts are mainly in the form of qualitative changes in HR. There are several scientific and quantitative methods to assess the tangible impacts of TQM. However from the literature survey and review of literatures, it is understood that there is no comprehensive instrument available for assessing the qualitative changes in human resource. Further this impact of total quality management on the human resource is rarely assessed. The present research is an attempt to bridge this gap. The objectives of this research are as follows.

1. To design and develop an instrument for assessing Human Resource Quality in different organizations and to find out the Human Resource Quality Index (HRQI).
2. To critically evaluate and assess the changes in organizational culture consequent on the implementation of TQM practices in selected organizations using the instrument.
3. To find out the impact of TQM practices in the quality of work life in selected organization.
4. To assess the impact of TQM efforts on employee satisfaction in selected organizations.
5. To assess the changes in HRQI in a few selected organizations.

The instrument/model was developed by extensive literature survey and was tested in ten organizations. An attempt to assess the changes in human resource quality, consequent on implementation of TQM practices has also been made using the model. It is planned to present the research work as detailed below

1.7 Thesis Plan

The second chapter of the thesis has been titled as "Review of Literature on TQM and HRQ" and in this chapter; a detailed literature survey is presented tracing the development of quality management practices world over beginning from the 70's. An attempt is made to present different human resource measurement practices chronologically. A review of latest research conducted linking TQM and HR will also be presented.

The third chapter is titled as "Human resource measurements and indicators of HRQ". In this chapter an attempt to review the existing approaches to measure human resource has been presented. This is basically aimed at identifying the gap existing as far as assessment of human resource quality is concerned. Finally the indicators of HRQ have been identified from literature survey and detailed discussion has been presented to illustrate the significance of these indicators.

The fourth chapter has been titled as "Organizational culture, quality of work life and employee satisfaction". This chapter consists of discussions on the impact of TQM on organizational culture, quality of work life and employee satisfaction. Further

the linkage of the indicators of HRQ with the above three variables has been established.

The fifth chapter has been titled as "Tool design and Methodology design for its use". In this chapter, the gap in research to assess the impact of TQM on HRQ has been discussed. Secondly the objectives of study are enumerated and the research methodology adopted has been discussed in detail in this chapter. Finally the HRQI model is presented along with the details of the instrument design (questionnaire design). Finally the sequential steps involved in this research have been presented with a help of a flow diagram.

The sixth chapter has the title as "Sample selection survey and results". The details of the sample units selected have been discussed. A brief profile in respect of each of the ten organizations in the sample is also upended. Discussions on the major findings of the research are also provided.

The seventh chapter is titled as "Data analysis and interpretation". In this chapter data has been analyzed and presented along with discussions on reliability of the instrument. The results of the significant test conducted are also presented. Finally the data has been analyzed organization wise and appropriate interpretations and conclusions have been presented.

The eighth chapter has the title as "Conclusions and Recommendations". In this chapter conclusions and recommendations based on the research findings have been presented. The scope for future research in improving the instrument along with limitations also has been provided.

References and appendices have been incorporated at the end of the thesis.

CHAPTER II

REVIEW OF LITERATURE ON TOTAL QUALITY MANAGEMENT AND HUMMAN RESOURCE QUALITY.

2.0 Introduction

In this chapter an attempt has been made to trace systematically the development of quality management and discussions on different definitions of TQM advocated by various quality gurus have been included. Further detailed analysis of quality management approaches has also been presented. A review of quality awards with various parameters used for assessing TQM along with different approaches for implementation of TQM is also given. Finally it is attempted to analyze the linkage between TQM and ISO and TQM and Human Resource Quality.

Many organizations have now embedded Quality Management (QM) practices into their normal operations. Many more of these practices are being stripped of their faddish connotations to the point that now a days, it is generally accepted that QM is here to stay. QM has been defined as a 'Philosophy or as an approach' made of a `set of mutually reinforcing principles and techniques' (Dean and Bowen, 1944). Hackmen and Wageman (1995) defined that QM exhibits convergent validity since there is substantial agreement among the movement's founders about the key principles and practices of QM. QM philosophy and practices can be ideally distinguished from other strategies for organizational improvement.

The development of quality management can be understood in four stages (Dale and Oakland, 1994); 1) Quality Inspection Stage, 2) Quality Control Stage, 3) Quality Assurance Stage and 4) Total Quality Management Stage.

2.1 Quality inspection stage

Quality management started with simple inspection-based systems. Under this system, one or more characteristics of a product are examined, measured and

tested and compared with specified requirements to assess its conformity (Kanji Asher 1993). Such systems are used to appraise incoming products, manufactured components and assemblies at appropriate points in the production process. There are staffs employed exclusively for this purpose. Products which do not confirm to specifications are generally scrapped, reworked or sold as lower quality items at a discount. This system is an after-the-fact process with no prevention component other than possibility of identification of supplier, or workers manufacturing non-confirming products. These inspection-based systems used to be a wholly in house programme and suppliers/customers were not involved directly into it.

2.2 Quality control stage

The quality control stage concentrates on product testing and documentation. Quality control ensures greater process control and reduces non-conformance. Screening inspection is the chief mechanism for identifying products outside the specification so that they are not shipped/supplied to customer. Quality control measures lead to greater process control and a lower-incidence of non-conformance.

2.3 Quality assurance stage

The quality assurance stage comes with the change away from product quality towards system quality. At this stage, organizations set up system for controlling what is being done and the system is audited to ensure that it is adequate both in design and use of both second party and third party to ensure the efficiency of system. This state is marked by the organization developing quality manuals, procedures, work instructions, quality planning and conducting quality audits. Here we may note the basic difference that the quality assurance is prevention-based where as quality control is inspection-based.

2.4 Total quality management stage

At total quality management stage, the applications of quality management principles are applied to all aspects of the business. TQM calls for the principles of quality management applied in every branch and every level of production in an

organization. Organizations embracing the process of TQM will have clear vision, superb supplier and customer relations and the vision that quality is not just product/service quality but also the quality of the whole organization, including sales, finance, personnel and all other functions.

2.5 Concept of TQM

An extensive review of literature was carried out and primary components vital for TQM are identified. Quality Gurus such as Deming, Corosby, Juran, Feigenbaum, Ishikawa, Taguchi and others have developed certain propositions in the area of quality management. The following sections present the main ideas proposed by these Gurus.

From 1950 quality became identified as an important business component for competitive advantage. Feigenbaum (1956) highlighted the centrality of quality in an article in Harvard Business Review which stated that "customers – both industrial and consumer – have been increasing their quality requirements very sharply in recent years. This tendency is likely to be greatly amplified by the intense competition that seems inevitable in the near future".

Feigenbaum (1961) further claims that improved quality systems would reduce costs in the long term and that everybody should be involved in the process of satisfying customer requirements, rather than quality being the responsibility of small group of specialists. Thus, the seeds for the concepts of TQM have been sown by this popular exponent of quality. Since this time, his ideas and those of other popular exponents of quality such as Deming (1981), Imai (1986), Ishikawa (1985), Juran(1988) and Taugchi(1986) have been adopted by several companies across the globe following the rise and dominance of Japanese manufacturing industry within world markets.

During the 1990s, increasing internationalization and globalization of markets have made it necessary for organizations to improve their effectiveness and to do so many have targeted the area of quality. Organizations are adopting the principles of Total Quality Management, with the expectation that this will help them to deliver better quality products and services and achieve greater customer satisfaction. Consequently TQM programmes have been attracting the attention of many organizations (Cowling & Karin, 1998). An important aspect of implementation of

TQM programme is that it often leads to major changes within an organization. The changes are mainly focused on the softer side of the organization (i.e. people and processes). TQM is seen as a programme encompassing such issues as leadership, zero defects, continuous improvements, mistake prevention, process and team work. TQM emphasizes that each step of the production or service process be seen as a relationship between a customer and a supplier (whether internal or external to the organization). Suppliers have to meet customer's agreed requirements, prescribed or inferred, at lowest cost, first time and every time.

Lee and Dale (1998) view the TQM is closely related to organizational process management. Waldman (1994) suggests that the main purpose of TQM is to continually improve organizational processes resulting in high quality products or services. Zain (1994) says that TQM is a corporate wide process and has to involve all levels of employees. This view is also supported by several authors such as hill and Collins (1998), Bal (1998), Almaraz (1994). TQM is a programme best suited to help the organization design organizational processes so that quality products and services are provided.

TQM also focuses on cultural change, concerning the commitment of employees to the idea of quality and teamwork, which is seen as difficult to achieve. This is because of incompatible culture, which may include values and norms oriented towards short-term production and quick fixes, discrete activities and pursuing departmental goals. Implementing TQM leads to major changes in people, culture and processes resulting in a transformed organization. Therefore, TQM is an approach that focuses entirely on change in processes. It is also opined that any company that is either operating in or contemplating operating in an international market place and is not committed to TQM will not be in business in five or ten years (Foley, 1987).

Today TQM is both a complete manufacturing philosophy and tool kit for implementing that philosophy in the work place. To apply the philosophy a company must operate by several principles. All functions inside the organization should apply quality control to improve their output. Each part of the company has to focus on meeting customer requirement and expectations the first time and every time. There should be continuous improvement in every part of organization. The entire workforce must be involved and must be empowered. Top management commitment, widespread training, workers' involvement, recognition of merit and

teamwork is widely accepted as fundamental guidelines for successful implementation of TQM (Dawson, 1998).

TQM is based on a general philosophy for involving employees in the pursuit of quality objectives. TQM programmes tend to place greater significance on techniques for achieving an increase in employee commitment and the development of high trust relationships. The non-tangible and cultural elements become the key stone to strategic change, and group problem solving forums being the method for gaining employee involvement (Dawson, 1998). Form the above discussions it can be understood that TQM practices are mainly aimed at bringing in improvements in organizational culture, quality of work life and employee satisfaction through the involvement and commitment of everyone.

2.5.1 Definition of TQM

Let us now look at the definitions of TQM given by the popular exponents of this philosophy. TQM provides a historically unique approach to improving organizational effectiveness one that has a solid conceptual foundation and at the same time offers a strategy for improving organizational performance that takes into account how people and organizations actually operate (Hackman & Wageman, 1995).

According to Deming (1986), "TQM is a dynamic process involving all levels in an organization to promote never ending improvement in the effectiveness and efficiency of all eyelets of business".

According to the Japanese Guru of quality Kaoru Ishikawa (1996), "Quality is a company wide issue and must be an all pervasive influence on the way every aspect of business is conducted. The quality function is the responsibility of all departments".

According to Juran (1969) quality control must be an integral part of management. Quality must be planned, it is no accident. Use problems as sources of improvement and there are no short cuts to quality. Juran is famous for developing the "Juran Trilogy" as a new model of strategic quality management. His trilogy states that managing for quality entails three quality oriented processes (1) quality planning and the annual quality programme; (2) quality control and the control

sequence; and (3) quality improvement and the breakthrough sequence. Juran (1991) identifies the following as strategies of world class quality.

- Adoption of the concept of big Q
- Creation of an infrastructure for improvement.
- Initiatives of Senior Management.
- Incorporation of quality goals into a business plan.
- Replacement of the Taylor system
- A great deal of work.

Philips B. Crosby says that quality is achieved through prevention and not appraisal. Quality is measured by price of non-conformance (Crosby 1989). The essence of Crosby's quality improvement process is embodied in what he calls the "Absolutes of Quality Management' and the "Basic elements of Improvement". The four absolutes of quality are:

- Quality means conformance to requirements.
- Quality comes from prevention.
- Quality performance standard is zero defects.
- Quality measurement is the price of non-conformance.

Dr. Nirdosh Reddy, the Indian born quality consultant in the US has a unique definition of TQM. According to him TQM is "Respect for human beings'. The issue is, "are we really using the full potential of ours and our suppliers and employees?" Or are we merely using them as a pair of hand? Most of the time, we are telling people to do as we tell them and instead of asking them to use their brains. The emphasis is on controlling people, using their hands rather than their brains. A lot of energy is wasted in inter-departmental squabbles and team work is rare. He further enunciates the following guiding principles of the new style of management, based on Deming's teachings. This new style of management is essential to become competitive gradually.

- Our salaries are paid by satisfied customers.
- Results come from process (the system)
- We must continually improve our process.
- Manage with facts
- Management must establish priorities.
- Involve everyone through team work (Reddy 2000)

The same view is expressed by Bhat (2002) in his definition, "TQM is a philosophy that involves everyone in an organization in a continual effort to improve and achieve customer satisfaction".

TABLE 2.1

A comparison of the principles of TQM enunciated by the Quality Gurus

	Crosby	Deming	Juran
Definition of quality	Conformance to requirements	A predictable degree of uniformity and dependability at low cost and suited to the market	Fitness for use
Degree of senior management responsibility	Responsible for quality	Responsible for 94 percent of the quality problems	Less than 20 per cent of quality problems are due to workers
Performance standard/Motivation	Zero defects	Quality has many "scales". Use statistics to measure performance in all areas critical of Zero defects	Avoid campaigns to "do perfect work"
General approach	Prevention, not inspection	Reduce variability by continuous improvements cease mass inspection	General management approach to quality, especially "human elements"
Structure	14 steps to quality improvement	14 points for management	Ten steps to quality improvement
Statistical process control (SPC)	Rejects statistically acceptable levels of quality	Statistical methods of quality control must be used	Recommends SPC but warns that it can lead to "tool-driven" approach
Improvement basis	A "process", not a programme improvement goals	Continuous efforts to reduce variation, eliminate goals without methods	Project-by-approach team approach set goals
Teamwork	Quality improvement teams quality councils	Employee participation in decision marking break down barriers between department	Team and quality circle approach
Cost of quality	Cost of non-conformance Quality is free	No optimum, continuous improvement	Quality is not free, there is an optimum
Vendor rating	Yes and buyers quality audits useless	No, critical of most systems	Yes, but to help supplier improve
Single sourcing of supply	No	Yes	No, can neglect to sharpen competitive edge

Oakland (1989)

The fundamental message of the quality gurus is essentially the same, although they might use different dialects (Oakland, 1989). In essence, the message is: attack the system for the delivery of defective products and services and do not attack the employee. Strip down the work processes whether it be in the manufacture of a product or the delivery of a service, identity your customer and delineate customer needs, find and eliminate the problems which prevent the continual satisfaction of customer need, eliminate waste, install pride in performance and teamwork, create an atmosphere of innovation and continuous quality improvement. The gurus assure us that a process that exhibits such features will lead to increased corporate competitiveness and profit.

From the above discussion it is evident that it is not easy to have one definition of TQM. It is a management philosophy, which is widely implemented in organizations and discussed in considerable detail in the academic literature and analysis of which indicates that most organizations and researchers have their own definition of the term. Several writers have tried to define the different dimensions that shape TQM such as Ahire et al (1996), Dale and Oakland (1994), Flynn et al (1994) and Saraph et al (1989). Some of the common dimensions are: top management support and commitment, customer and supplier relationships and employee involvement. However, researches agree that TQM is a philosophy that stresses a systematic, integrated and consistent effort involving everyone and everything in the organization.

Total Quality Management involves everyone in an organization and associated business process cooperating to furnish products and services that meet their customers' needs and expectation. It is said that there are many interpretations of TQM, but a number of common principles run through them:

- Everyone in the organization is involved in continually improving the process under his or her control and takes responsibility for his or her own quality assurance.
- Each person is committed to satisfying his or her customers (internal or external)
- Teamwork is practiced in a number of forms.
- There is a commitment to the development of employees through involvement.

- Participation by everyone in the business is positively encouraged and practiced.
- A formal programme of education and training is in place and this is viewed as an investment in developing people's ability and knowledge and helping them realize their potential.
- Suppliers and customers are integrated into the improvement process.
- Honesty, sincerity and care are an integral part of daily business life; and
- Simplicity in process, system, procedures and work instructions is pursued. (Dale & Cooper 2000).

2.5.2 Assumptions on which TQM is founded

There are several assumptions on which TQM is founded (Hackman and Wageman, 1995). They are mentioned briefly below.

- The first assumption is about quality, which is assumed to be less costly to an organization than poor workmanship. A fundamental premise of TQM is that the costs of poor quality (such as inspection, rework, lost customer, and so on) are far greater than the costs of developing processes that produce high-quality products and services. Organizations that produce quality goods will eventually do better even on traditional measures such as profitability than organizations that attempt to keep costs low by compromising quality. Producing quality products and services is not merely less costly but, in fact, is absolutely essential to long-term organizational survival.
- The second assumption is about people. Employees if provided with proper tools and training, will naturally care for and take initiative about quality. If the management cares for their ideas, they will not only come forward with ideas but also take personal responsibility for their implementation. Organizations must remove all organizational systems that create fear. Therefore, human resource becomes an important dimension of TQM.
- The third assumption is that organizations are systems of highly interdependent parts and the central problems they face invariably cross

functional lines. To produce high quality products efficiently, for example, product designers must address manufacturing challenges and trade-offs as part of the design process. There should be cross functional cooperation and team spirit crossing beyond the functional boundaries.

- The final assumption concerns senior management. Quality is viewed as ultimately and inescapably the responsibility of top management. Because senior managers create the organizational systems that determine how products and services are designed and produced. The quality improvement process must begin with management's own commitment to total quality (Hackman & Wageman 1995).

2.6 Approaches to quality management

In the following sections, brief analysis of different approaches to quality management of the quality gurus such as Deming, Crosby, Juran, Feigenbaum, Ishikawa and Taguchi have been presented. Even though there are certain differences exist in there approaches, all of them agree on the basic principles of quality management.

2.6.1 Deming's Quality Management Approach

Deming is acknowledged as the visionary who developed the path to quality in Japan. The pathway is rather simple, consists of readily available local technology, and relies on the common sense. Quality is defined by Deming as "satisfying the customer, not merely to meet his expectations, but to exceed them". Deming's philosophy thereby begins and ends with the customer.

How do we improve quality? The ability to control and manage systems and processes properly and the role of management responsibilities help in accomplishing this. Deming is associated with statistical process control and other problem-solving methods which aim to improve processes and reduce the inevitable variation which occurs from "common causes" and "special causes" in production. "Common causes" of variations are systemic and are shared by many operators, machines or products. These include poor product design, non-conforming incoming materials, poor working conditions and so on. These are the responsibilities of

management. "Special causes" relate to the lack of knowledge or skill or poor performance. These are the responsibilities of employees.

Deming stresses the responsibilities of top management to take the lead in changing processes and systems. Top management is accountable for many quality problems. Management should give employees clear standards on acceptable work, and provide the methods to achieve it. These methods include the appropriate working environment and climate to work-free of faultfinding, blame or fear. Beyond this Deming also advocates for employee participation. These are set out in his 14 points or guidelines for managers (Deming, 1986), which are listed below.

(1) Create a constancy of purpose to improve products and services - take a longer term view, and innovate;

(2) Adopt the new philosophy - accept the management style which promotes constant improvement;

(3) Cease dependence on mass inspection - concentrate on improving processes;

(4) End the practice of awarding business on the basis of price tag alone, build up relationships with suppliers to understand jointly specifications of and uses for materials and other inputs;

(5) Constantly and forever improve the system - search continually for problems in all processes. It is management's job to work on the system;

(6) Institute modern methods of training on the job - for all, to make the best use of every employee;

(7) Institute modern methods of supervision - managers to focus on quality not numbers;

(8) Drive out fear - so that people work more effectively;

(8) Break down barriers between departments – team working to tackle problems;

(9) Eliminate numerical goals for the workforce - eliminate slogans and exhortation, make reasonable requests of the workforce;

(10)Eliminate work standards and numerical quotas - focus on quality and provide support;

(12)Remove barriers that rob workers of pride in their work - for example, defective materials, poor tools, lack of management support;

(13)Institute a vigorous program of education and training - for continual updating and improvement;

(14)Create a top management structure to push everybody on the above 13 points. Top management commitment is where it begins and ends.

From Demings approach, it may be conclude that product/service quality varies due to common causes and special causes. It is observed that the special causes clearly aims at improvement in HRQ. Thus TQM approach according to Deming should lead to enhancement in HRQ.

2.6.2 Crosby's Quality Management Approach

Crosby defines quality as conformance to requirements. The requirements of a product need to be defined and specified clearly so that they are properly understood. His maxim is that higher quality reduces costs and raises profits. Quality cost is used as a tool to help achieve that goal. Quality is measured by the quality cost. His categories of quality costs are similar to those of Juran -prevention, appraisal and failure. The aim is zero defects, of getting it right first time. This requires an emphasis on prevention rather than after-the-fact inspection. Crosby also presents the quality management maturity grid which may be used by organizations to assess their quality management maturity. The five stages are uncertainty, awakening, enlightenment, wisdom, and certainty. These can be used to assess progress on a number of "measurement categories", such as management understanding and attitude, the status of quality in the organization, problem handling, cost of quality as a percentage of sales, quality improvement actions. The quality management maturity grid and the cost of quality measures are the two main tools for managers to assess the seriousness of their quality problems. Crosby provides 14 steps to quality improvement (Crosby, 1979, 1984). They are:

(1) Management commitment - to make clear where management stands on quality;

(2) Quality improvement team - to set up a high-level, cross-functional team to run the quality improvement program;

(3) Quality measurement - to provide a display/report of current and potential non-conformance problems in an objective manner;

(4) The cost of quality - to define the ingredients of the cost of quality and explain its use as a management tool;

(5) Quality awareness - to provide a method of raising the personal concern for quality felt by all employees;

(6) Corrective action - to provide a systematic method for resolving problems identified;

(6) Zero defects (ZD) action - preparatory activities for ZD program-launching;

(7) Employee education - define the type and extent of supervisor training;

(9) ZD day - popularize ZD philosophy and raise quality consciousness;

(10)Goal setting - goals and commitments are set by employees for themselves and their groups;

(11)Error-cause removal - develop a method for employees to communicate with the management regarding error-cause removal;

(12)Recognition of good work in the quality process-to appreciates employees with superior performance.

(13)Quality councils - brings together the professional quality staff for a planned communication on a regular basis;

(14)Do it over again - emphasize that quality improvement never ends and is a constant effort.

Crosby (1980) asserts that "Mistakes are caused by two factors: lack of knowledge and lack of attention". Education and training can eliminate the first cause, and a personal commitment to excellence (zero defects) and attention to detail will cure the second.

2.6.3 Juran's Quality Management Approach

Juran considers quality management as three basic processes (Juran Trilogy): quality planning, quality control, and quality improvement (Juran and Gryna, 1993). Juran defines "Quality is customer satisfaction" or "Fitness for use". In his view, the approach to managing quality consists of:

(1) The sporadic problem is detected and acted upon by the process of *quality control*;

(2) The chronic problem requires a different process, namely, *quality improvement*;

(3) Such chronic problems are traceable to an inadequate *quality planning* process.

Like Deming, Juran also believes that most of the quality problems occur due to management, not employees. He submits that the distinction between chronic and sporadic problems is essential because there are two different approaches to handling the problems. Chronic problems require the principle of "breakthrough", while sporadic problems require the principle of "control" (Juran and Gryna, 1970).

He further elaborates the sequence of activities required for "breakthrough" and "control". These are respectively as follows:

"Breakthrough" activities (quality improvement) (Juran and Gryna, 1970) include:

(1) Breakthrough in attitudes - convincing those responsible that a change in quality level is desirable and feasible;

(2) Discovery of the vital few projects - determining which quality problem areas are important;

(3) Organizing for breakthrough in knowledge - defining the organizational mechanism for obtaining the knowledge for achieving a breakthrough;

(4) Creation of a steering arm - defining and staffing a mechanism for directing the investigation for quality improvement;

(5) Creation of a diagnostic arm - defining and staffing a mechanism for executing the technical investigation;

(6) Diagnosis - collecting and analyzing the facts required and recommending the action needed;

(7) Breakthrough in cultural pattern - determining the effect of a proposed change on the people involved and finding ways to overcome resistance to change;

(8) Breakthrough in performance - obtaining agreement to take action;

(9) Transition to the new level - implement the change.

"Control" activities (Juran and Gryna, 1993) include:

(1) Choosing the control subject: i.e., choosing what we intend to regulate;

(2) Choosing a unit of measure;

(3) Setting a goal for the control subject;

(4) Creating a sensor which can measure the control subject in terms of the unit of measure;

(5) Measuring actual performance;

(6) Interpreting the difference between actual performance and the goal;

(7) Taking action (if any) on the difference.

"Planning" activities (Juran and Gryna, 1993) include:

(1) Establish the quality goal;
(2) Identify customers;
(3) Discover customer needs;
(4) Develop product features;
(5) Develop process features;
(6) Establish process controls and transfer to operations.

2.6.4 Feigenbaum's Quality Management Approach

Feigenbaum defines quality as the "total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product and service in use will meet the expectations of the customer" (Feigenbaum, 1986). He states that total quality management covers the full scope of the product and service "life cycle" from product conception through production and customer service. The quality chain, he argues, starts with the identification of all customers' requirements and ends only when the product or service is delivered to the customer who remains satisfied. Thus, all functional activities, such as marketing, design, engineering, purchasing, manufacturing, inspection, shipping, accounting, installation, and service, etc., are involved in and influence the attainment of quality. Effective total quality control requires, therefore, a high degree of functional integration. Furthermore, it guides the coordinated actions of people, machines and information to achieve quality goals. He stresses a system approach to quality. The total quality control consists, he claims, of four main stages. They are described as follows.

(1) Setting quality standards;
(2) Appraising conformance to these standards;
(3) Acting when standards are not met;
(4) Planning for improvement in these standards.

The emphasis is on the prevention of poor quality rather than detecting it after the event. He argues that quality is an integral part of the day-to-day work of the line, staff and operatives of an organization. It cannot be effectively separated from other activities undertaken by employees and any attempt to do so would likely result in substandard quality. He, like most other gurus, considers effective staff training and education as an essential component of TQM. He states that education and training

should address the three vital areas of quality attitudes, quality knowledge, and quality skills. Here again it may be observed that TQM essentially aims at improvement in quality of HR by emphasizing knowledge quality, quality skills and quality attitudes.

2.6.5 Ishikawa's Quality Management Approach

Ishikawa defines quality as the "development, design, production and service of a product that is most economical, most useful, and always satisfactory to the consumer". He argues that quality control extends beyond the product and encompasses after-sales service, the quality of management, the quality of individuals and the company itself. Employee participation, he finds, as the key to successful implementation of TQM. An important mode to achieve this is Quality Circles. Ishikawa emphasizes the importance of education. He states that quality begins and ends with education. He has been associated with the development and advocacy of universal education in the seven QC tools (Ishikawa, 1985). These tools are: 1) Process flow chart; 2) Check sheet; 3) Histogram; 4) Pareto chart; 5) Cause-effect diagram (Ishikawa diagram); 6) Scatter diagram and 7) Control chart.

Ishikawa's concept of total quality control contains six fundamental principles: 1) Quality first-not short-term profits first; 2) Customer orientation-not producer orientation; 3) The next step is your customer-breaking down the barrier of sectionalism; 4) Using facts and data to make presentations - utilization of statistical methods; 5) Respect for humanity as a management philosophy, full participatory management and 6) Cross - functional management.

A critical review of Ishikawa's approach shows that the success of TQM is mainly due to improvement in HRQ.

2.6.6 Taguchi's Quality Management Approach

Taguchi comprehends an engineering approach to quality. He defines quality as the "loss imparted to the society from the time a product is shipped". Failure to reach ideal performance, failure to meet the customer's requirements, breakdowns, and harmful side-effects caused by products (Taguchi, 1986) are examples of loss. Thus the smaller the loss, the more desirable will be the product. The key elements of Taguchi's quality concepts are briefly stated below.

(1) Quality improvement should concentrate on reducing the variation of the product's key performance characteristics with regard to their target values;

(2) The loss suffered by a customer due to a product's performance variation is often approximately proportional to the square of the deviation of the performance characteristics from its target value;

(3) The final quality and cost of manufactured products are determined to a large extent by the engineering design of the product and the manufacturing process;

(4) A product's or process's performance variation can be reduced by exploiting the non-linear effects of the product or process parameters on the performance characteristics;

(5) Statistically planned experiments can be used to identify the settings of product/process parameters that reduce performance variation.

2.6.7 Conclusions from Quality Gurus

Although each guru on quality management has his own distinctive approach, there is convergence in certain areas.

(1) It is the top management who is responsible for quality, not the employees. It is the management's responsibility to provide commitment, leadership, and appropriate support to technical and human processes. It is imperative that management has a clear perception of the process.

(2) Top management determines the climate and framework of operations within an organization. It is imperative that management fosters the participation of the employees in quality improvement, and develops a quality culture by changing perception and attitudes towards quality.

(3) The importance of education and training is emphasized in changing employees' beliefs, behavior and attitudes and enhancing their competencies in carrying out their assigned tasks.

(4) It is very important to control the process and not the product. The emphasis is on prevention of product defects, not inspection after the event, and on the reduction of the costs of quality to improve competitiveness.

(5) There is a broad agreement that all aspects of activities should be looked at for quality improvement, as these all contribute towards quality. Functional integration is considered to be an important ingredient of TQM. Quality is a

company-wide activity. The quality management approaches proposed by the quality gurus also have shortcomings and limitations. Some researchers have commented on various gaps in these suggestions about quality management. These include the lack of a conceptual framework and of a sound instructional methodology to help organizations of different types examine quality management, in particular, to identify which aspects of quality management matter, how much is needed, and how to establish customers' needs satisfactorily. However, these gurus have very little to offer and guide on the immediate and direct value or relevance to organizations. It is difficult to connect the general quality concepts and ideas to these specific circumstances of an organization - to its markets, management practices, and human resource management. It is important that organizations do not rigidly apply the methods proposed by the gurus. Organizations need to examine the suggestions and match them to the specific requirements (Ghobadian and Speller, 1994; Garvin, 1987; Chase and Aquilano, 1989). However all these approaches conclusively agree on the fact that quality management practices bring about improvements in attitudes, knowledge and skills of the employees.

2.7 National Quality Awards and the parameters used for assessing TQM

There have been many recent developments in research for TQM standards or frameworks against which organizations may be assessed or measure themselves. Several national and regional quality awards have been established to promote quality and serve as models of TQM. They have been established to promote quality and serve as models for TQM by offering a continually changing blueprint for organizational self-analysis, by providing motivation for continuous improvement, and by focusing attention on the strategic implications of quality. The most important of these awards are (Puay, et al, 1998): The Deming Prize of Japan, The Malcolm Baldrige National Quality Award of USA, and The Rajiv Gandhi National Award for Quality of India and The European Quality Award

The Quality awards are based on the following management philosophies and principles (Ghobadian & Woo, 1996)

- Everyone in the organization is responsible for quality but it is top management's function to create the necessary environment for driving quality forward.
- Only top management can influence and alter the system, thus its role (in setting goals and quality policies, establishing targets for the design of systems and procedures, promoting quality awareness, and providing role models by displaying quality behavior), is crucial to the development of a total quality environment.
- External focus and customer-oriented quality programmes – it is necessary for a company managed in a total quality fashion to benchmark itself against its competitors and have processes and procedures in place to enable it to understand the needs of its customers and manage its customers relationship.
- High level of participation by employees and teamwork-attainment of consistent quality levels and performance targets requires a well motivated and cohesive labour force.
- Education and training designed to develop the organization's human resources is considered by all of the awards to be one of the pillars of total quality.
- Emphasis on management by fact rather than by instinct or feel, which requires the design of an information system encompassing a set of measurable and objective indicators relevant to the way the company provides value to customers.
- A clear understanding of internal process - self-assessment against fixed and arguably universal criterion is a key emphasis of the awards reviews. This required the development of a through and systematic understanding of all internal processes.
- Importance of managing supplier relationship and quality

2.7.1 Purposes served by these awards

- increase awareness of the importance of the 'quality of offerings' and interest in 'quality management' because of their important contribution to superior competitiveness

- Encourage systematic self-assessment against established criteria and market awareness simultaneously.
- Prompt co-operation between organizations on a wide range of non-commercially sensitive issues.
- Stimulate sharing and dissemination of information on successfully deployed quality strategies and on benefits derived from implementing these strategies.
- Promote understanding of the requirements for the attainment of 'quality excellence' and successful deployment of 'quality managements.
- Stimulate organizations to introduce 'quality management' improvement process.

Each award is based on a perceived model of total quality management. They do not focus solely on either product or service perfection or traditional quality control methods, but consider a wide range of management activities, behaviours and processes which influence the quality of the final offerings. The models underpinning the awards implicitly recognize that quality of the final offerings is the end result of complex and integrated processes and employees' efforts. They provide a useful audit framework against which organizations can evaluate their quality management methods, the deployment of these methods, and the end results. These awards are given after evaluating the organizations against an exhaustive list of dimension. Most of the dimensions are common and differences are subtle to suit to the county requirements and culture. The dimensions cover every important aspect of the organization and give considerable weight age to the HR areas (Ghobadian & Woo, 1996):

Each of the awards has the following Human resources related dimensions in common:

- Human resource planning and management
- Employee involvement
- Employee education and training
- Employee performance and recognition
- Employee well being and satisfaction

The weight age given to HR dimensions in each of the award is as follow:

Malcolm Baldrige	Rajiv Gandhi	European Qlty
15%	10%	18%

The weight age allotted ranges from 10% to 15% in the total criteria for the award. The criteria for the awards indicate that the HR related dimensions and HR involvement are necessary for a TQM programme. The award-wise details are given below.

2.7.2 The Deming Prize

The Deming Prize was the first to be established way back in 1951. It was set up by the union of Japanese Scientists and Engineers to commemorate Dr Deming's contribution to Japanese industry and to promote further the continued development of quality control in Japan. The Deming prize has a total of five categories, namely: the Deming Prize for individuals (DPI) the Deming Application Prize (DP) the Deming Application Prize for small Companies (DAPSC) the Deming Application Prize for Divisions (DAPD) and the Quality Control Award for Factories (QCAF). Non-Japanese companies have been allowed to apply for and receive DP since 1984. The aim of the examination is to find out how well a company implements total quality control (TQC) by assessing its quality assurance policies and activities, the implementation of company-wide quality control (CWQC) practices, and the results achieved (quality improvement, productivity improvement, cost reduction, expanded sales, increased profits, etc) through application of statistical techniques and quality circles. The DP is given to companies that have achieved distinctive performance through the application of CWQC. The company's performance on the application of CWQC is evaluated through two examinations, the document examination and the on-site examination. The examination results are scored. Each of the ten examination items carries ten points. The main dimensions on which assessment is done are:

1. Policy & Planning
2. Administration:
    * Authority & responsibility
    * Coordination between functional departments
    * Cross functional teams
3. Education:
    * Education activities of the company
    * Use of quality control and statistical methods
    * QC circles
    * Suggestion systems.
4. Communication Process
5. Standardization
6. Control systems for quality, cost and quantity
7. Contribution of quality circles
8. Feedback Systems
9. Future Plans: (a) Long range plans, (b) Plans for current problems
10. Evaluation: Methods of evaluation of results

2.7.3 Malcolm Baldrige National Quality Awawd (MBNQA)

The Malcolm Baldrige is an annual, national, US quality award established in 1987. Its purpose is to promote quality awareness and understanding of the requirements for quality excellence, to recognize quality achievements of US companies, and to publicize successful quality strategies. The award has three eligibility categories, namely manufacturing and service companies or their subsidiaries and small business. Up to two awards may be given in each category each year. Winning companies are allowed to publicize and advertise their awards and are expected to share with other organizations information about their successful quality strategies. The award assessment is based on a set of examination criteria outlined in the written application that each applicant ought to submit and includes information and data on the company's quality processes and quality improvement results. A total of 1,000 points is allocated to these seven categories. Each category is subdivided into a total of 28 examination items. Each examination item emphasizes a major quality system requirement and includes a set

of specific areas to address. Each area illustrates the type and amount of information the applicant should provide. The dimensions on which assessment is done are; 1) Leadership (3 sub-dimensions), 2) Information and Analysis (3 Sub-dimensions), 3) Strategic Quality planning (2 Sub-dimensions) 4) HRD and Management (5 sub-dimensions) 5) Management of process Quality (5 sub-dimensions), 6) Quality and Operational results (4 sub-dimensions) and 7) Customer Focus and Satisfaction (6 sub-dimensions).

2.7.4 Rajiv Gandhi National Quality Award

This award was instituted by the Bureau of Indian Standards in 1991, with a view to encourage Indian manufacturing and service organization to strive for excellence and giving special recognition to those who are considered to be the leaders of quality movement in India. This award is intended to generate interest and involvement of Indian Industry in quality programmes, drive the products and services to higher levels of quality and equip the industry to meet the challenges of domestic and international markets. The award has been designed in line with similar in other developed countries, like Malcolm Baldrige National Quality Award in USA, Deming prize in Japan and European Quality Award. The assessment will be made on the basis of nine parameters, namely, 1) Leadership, 2) Policies, Objectives and Strategies, 3) Human Resource Management, 4) Resources, 5) Processes , 6) Customer focused results, 7) Employees' Satisfaction, 8) Impact on environment and society and 9) Business results. The major HR related dimensions taken into account for assessment are 1) Human resource Planning and Management, 2) Employee involvement, 3) Employee education and training, 4) Employee performance and recognition and 5) Employee well being and satisfaction (internet site of BIS)

2.7.5 European Quality Award

The European Foundation for Quality Management (EFQM) was founded by 14 of the leading Western European Businesses in 1988 when many of the major companies in Europe had realized that their only way of surviving in business was to pay greater attention to quality. In recognition of achievement as a feature of the

policy of the EFQM, the European Quality Award (EQA) was established in 1991 with the support of the European organization for Quality (EOQ) and European Commission (EC). The aim of the EQA is to enhance the position of Western European companies in the world market by accelerating the acceptance of quality as a strategy for global competitive advantage and by stimulating and assisting the development of quality improvement activities. The European Quality Award has two categories; the European Quality Prize (EQP), which is awarded to companies which demonstrate excellence in the management of quality as their fundamental process for continuous improvement and the EQA which is awarded to the most successful exponent of TQM in Western Europe. Most businesses may apply for the award as long as they are eligible Western European companies. Non-eligible are all government agencies, not-for-profit organizations, trade associations and professional societies. The examination process consists of three main sections namely initial assessment, site visits, and final review and decision. The award assessment criteria have nine categories. They are 1) Leadership, 2) Policy and Strategy, 3) People Management, 4) Resources, 5) Processes, 6) Customer Satisfaction, 7) People Satisfaction, 8) Impact on Society and 9) Business Results.

The first five criteria are enablers and the last four are results. In other words, the award assesses how the customer and people satisfaction, impact on society, and the business results are being achieved through leadership, people management, policy and strategy, resources and processes. A maximum total of up to 1,000points is allocated to these nine award criteria. Each criterion carries a different number of points in accordance with its relative value within the award.

2.7.6 Review of Quality Awards

World-wide, there are several Quality Awards offered, such as the Deming Prize in Japan, the European Quality Award in Europe, and the Malcolm Baldrige National Quality Award in the United States of America. The broad aims of these awards are described as follows (Ghobadian and Woo, 1996).

(1) Increase awareness of the importance of quality management because of its important contribution to superior competitiveness;

(2) Encourage systematic self-assessment against established criteria and market awareness simultaneously;

(3) Stimulate sharing and dissemination of information on successfully deployed quality strategies and on benefits derived from implementing these strategies;

(4) Promote understanding of the requirements for the attainment of quality excellence and successful deployment of quality management;

(5) Stimulate organizations to introduce a quality management improvement process. Each award is based on a perceived model of total quality management. They do not focus solely on either product or service perfection or traditional quality management methods, but consider a wide range of management activities, behavior and processes which influence the quality of the final offerings. They provide a useful audit framework against which organizations can evaluate their quality management methods, the deployment of these methods, and the end results.

The models of quality awards mentioned provide a universal framework for evaluating aspects of quality management practices in any organization. They also provide a framework for identifying a range of intangible and tangible processes which influence the organization's total quality management and the end results. Although each award has its own unique categories and emphasis, there are certain common areas such as: 1) Leadership; 2) People management; 3) Processes; 4) Policy and strategy; 5) Supplier relations; 6) Customer focus; 7) Education and training; and 8) Employee participation.

The quality award models provide the organizations with a means to measure their position against a set of universal criteria, and to identify their strengths and weaknesses in the areas of quality practices and business results. However, the award models do not seek to assess the overall management excellence; they are concerned with factors which affect total quality management; they provide "what to do" and do not provide "how to do" to reach the targets; they do not address a specific organization's characteristics which may affect the implementation of TQM; they do not provide detailed guidelines for the organizations to use in improving quality management practices; they do not provide all kinds of quality management methods to be used for overcoming the weaknesses of the organizations. Thus, there remain some difficulties for the organizations in applying the quality award models effectively to improve their quality management practices. In addition, it is also unclear what kinds of quality management methods can be used to improve an organization's quality performance.

2.7.7 The common dimensions in these awards are:

- *Leadership*: This category consists of: This category consists of :
  - * *Leadership's involvement in TQM*
  - * *Leadership's roles and commitment.*
- *Human resource management:* This category consists of five examination items to be compared:
- *Human resource planning and management.*
- Employee involvement
- Employee education and training
- *Employee performance and recognition*
- *Employees' wellbeing and satisfaction.*
- Customer management and satisfaction.
- *Customer management*
- *Customer satisfaction*

Winning the award will help to raise the profile of the organization as well as creating publicity for it. Gaining market advantage and publicity is not a sole reason for applying. There are also internal reasons.

- genuine recognition that a company will benefit from the process of self-assessment necessary in preparing a submission and going through the rigorous examination procedure
- Quality improvement is a long-term process and involves a great deal of effort by everyone in the organization, the award is a form of recognition for this effort, and improves staff morale and motivation.
- Continuous self-appraisal helps the organization to identity its strengths, weaknesses and plan to remedy the latter.

The awards help organizations to establish a benchmark from which all future progress can be measured. First, for many companies taking part is more important than winning. Thousand of businesses and business units are increasingly using the criteria propagated by these awards to benchmark their quality programmes and quality efforts. Many organizations use the model for self-appraisal. The feedback from experts is valued and sought after. These companies can expect feedback

from experts concerning their current performance, what is expected of them and, most importantly, how they can improve. (Ghohadiam & Woo, 1996).

Juran (1991) stated that, within a few years, Baldrige award winners have achieved major breakthroughs in key areas of business. For example, they have achieved a significant reduction in customer service response time leading to an improved perception of quality, and two-fold increase in productivity. Many of the past winners of the Baldrige Award are into 'stretch goal' setting, such as 50 percent reduction in the product development cycle time within 12 months. Moreover, many of the past winners have reached a position of stable but continuous cycles of quality improvement. This has led to improved productivity, reduction in costs, expanded sales and, ultimately, increased profits. The awards provide a framework for identifying a range of intangible and tangible processes, which influence the organization's total quality and the end results. In addition, they provide the organizations with a mean to measure their position against a set of universal criteria, and to identity their strengths and weaknesses in the key areas of business. The award models attempt to catalogue the principles of total quality management in a clear and accessible fashion. Each award has its unique characteristics. However, they all attempt to propagate quality management practices. They share a set of fundamental philosophies. These include, acceptance of responsibility for quality by the top management, customer orientation, high level of employee participation, open and effective communication, fact-based management and strategic quality planning, continuous improvement and learning. All these important dimensions such as employee involvement, training and orientation, employee motivation, employee well being, communication effectiveness, employee satisfaction etc. have been taken up by the investigator for designing the instrument for assessing HRQ.

2.8 Implementation of TQM – The approaches

TQM authorities specify four principles that should guide any organizational interventions intended to improve quality. The first is to focus on work processes. The quality of products and services depends most of all on the processes by which they are designed and produced. It is not sufficient to provide clear direction. In addition management must train and coach employees to assess analyze and

improve work processes. They should also institutionalize systems whereby processes that can ensure quality are in place. ISO 9000 implementation becomes very handy in this respect. The second principle is analysis of variability. Uncontrolled variance in processes or outcomes is the primary cause of quality problems and must be analyzed and controlled by those who perform an organization's front line work. Only then the root causes of variability can be identified and employees are in a position to take appropriate steps to improve work process. The third principle is management by fact. TQM calls for the use of systematically collected data of every point in a problem-solving cycle from determining high-priority problem, through analyzing their causes, to selecting and testing solution. The fourth principle is learning and continuous improvement. The quality improvement should be regarded as a never ending quest. Opportunity to develop better methods of work always exists and a commitment to continuous improvement ensures that people will never stop learning about the work (Hackman and Wageman 1995).

Broadly TQM interventions are:

- Explicit identification and measurement of customer requirements. To achieve quality, it is essential to know what customers want and to provide products or service that meets their requirements (Ishikawa 1985). It is necessary, therefore, for organizational members, to asses directly customer requirements such as durability, reliability and speed of service (Juran, 1974 Deming 1986). The customer could be either external or internal.
- Use of cross-functional teams to identify and solve quality problems. Their main purpose is to identify and analyse the "vital few" problems of organization. Cross-functional teams are also created to diagnose the cause of problem that has been identified by the steering arm and to develop and test possible solutions to them.
- Use of scientific methods to monitor performance and to identify points of high leverage for performance improvement. The three TQM authorities are of one voice in advocating the use of statistical tools to monitor and analyse work processes (Juran, 1974; Ishikawa 1985; Demin 1986). A

wide variety of statistical tools are available to identify the points of highest leverages for quality improvement to evaluate alternative solutions to identify problems and to document the results of process changes. The widely prevalent statistical process control tools are; Scatter diagram, Stratification, Control chart, Histogram, Data collection, Graphs, Pareto diagram, Flow diagram, Brain storming and Cause and effect diagram.

The above techniques help quality teams use their collective knowledge effectively in identifying and analyzing opportunities to improve quality. Three of the most commonly used devices are flowcharts, brainstorming and cause-and-effect diagrams (Hackman & Wageman 1995).

A recent survey reports that the single most commonly used TQM technique is formation of short-term problem solving teams with the overall objective of simplifying and streamlining work practices (Conference Board, 1991). Nearly all manufacturing firms using TQM have these problem solving teams. The second most commonly used practice is training. Organizations that implement TQM invest heavily in formal training for a large proportion of their employees. According to the Conference Board (1991), 92 percent of manufacturing companies and 75 percent of service companies implementing TQM use some form of training as part of their change effort. The third practice is top down implementation, in keeping with the TQM authorities' view that quality is ultimately the responsibility of top management. Most TQM programs begin with the training of top managers in the quality philosophy, followed by the articulation of an organization-wide quality and communication of that vision throughout the organization. The fourth practice is developing relationship with suppliers. At least 50 percent of TQM organizations collaborate with their suppliers in some way to increase the quality of component part often by sending "quality action teams" to consult the major suppliers. The fifth practice is obtaining data about customer. All case studies of TQM companies include description of the means such organizations use to obtain customer date. (Conference Board 1991).

Two additional interventions competitive benchmarking and employee involvement have become strongly associated with TQM. These activities are generally consistent with the ideas of TQM founders. Benchmarking involves gathering information about best practices from other organizations. Benchmarking serves multiple functions consistent with TQM philosophy; (1) determining what

customer can expect to get from the competition, as part of assessing customer requirements (2) learning alternative work processes and (3) in some cases, guiding the establishment of quality improvement goals. The ambitious quality goals of many TQM program, such as zero 'defects', cutting defects by 90 percent in two years or reducing cycle time by 50 percent may be more likely to be accepted by organization members once competitive benchmarking demonstrates that other organizations achieve them (Qlian and Rynes 1991).

According to the Conference Board (1991), 65 percent TQM organizations create employee suggestion systems, and 70 percent have quality meeting between managers and employees and or focus groups to solicit ideas about quality. The widespread use of 'quality days' and other celebrations of quality-related events and achievement s further reinforce the efforts, to involve every member in quality improvement processes. Such celebrations moreover are consistent with Demings view that social approval and public recognition are important sources of human motivation (Deming, 1986). Finally some TQM organizations create self-managing teams to perform the regular work of the enterprises thereby further expanding the involvement of all members.

A large majority of organizations using TQM modify their performance measurement and reward systems so that achievement of specific quality goals can be assessed and rewarded. According to the 1991 Conference Board survey, 85 percent of TQM organizations have developed programs to reward individuals and teams for quality achievements (Conference Board, 1991).

2.8.1 Key Requirements for TQM

McKinsey AND Company's (1989) survey of the CEO of the top 500 European corporations found the following in relation to the key requirements for success in TQM:

- Top management attention 95 percent
- People development 85 percent
- Corporate team spirit 82 percent
- Quality performance information 73 percent
- Top management capability building 70 percent
- Sense of urgency 60 percent

The CEO is the primary internal change agent for quality improvement, and in this capacity he/she has two key roles; shaping organizational value, and establishing a managerial infrastructure to actually bring about change. The need is to create and promote a quality culture in which, for example.

- People can work together as team
- Teams work with teams;
- Mistakes are freely admitted without discriminations;
- People are involved in the business through decision-making
- Ideas are actively sought from everyone
- Development of people is a priority
- Permanent solutions are found to problems
- Departmental boundaries between functions are non-existent.

Only the CEO can persuade and encourage everyone in the organization to change their behavior and attitude to accept that mistakes, when admitted, are an opportunity to improve on a continuous basis the processes under their control; and direct their attention to identifying, satisfying and delighting and winning over customers, whether internal or external. The 'stick and carrot' approach to getting people to do things has, in recent years become increasingly less effective. Further CEO and senior managers must demonstrate that they really care about product and service quality. This can be done by, for example;

- Identify the major quality issues facing the organization and becoming personally involved in investigating them, ideally as a leader, member or foster parent.
- establishing quality improvement teams, problem elimination teams or the like
- setting up a TQM steering committee or quality council;
- Being involved in quality planning and improvement meetings and housekeeping.
- Instigating and carrying out regular audits and diagnoses of the state of the art of TQM and quality improvement.
- Dealing with customer complaints and visiting customers and suppliers;
- conducting customer workshops and panel discussions

- Regularly visiting all areas and functions of the business, and discussing quality improvement issues; and
- Communicate TQM and quality improvement issues.

The CEO and senior management need to commit resources to TQM for example, release people for improvement activities and ensure that key decision-makers are made available to spend time on TQM issues. The CEO need to delegate responsibility for product and service quality improvement. For this to be effective, the CEO must have a good understanding of TQM and the process of quality improvement. The CEO needs to develop an infrastructure to support the quality improvement activities in terms of;

- monitoring and reporting the results
- providing a focus on the people to make it happen
- developing improvement objectives and target
- involving people from non-manufacturing areas (Date and Cooper 2000)

One of the keys to the success of TQM is the involvement of middle managers, who can be an impervious layer. Senior managers understand because they are involved in the planning of the process, employees lower down the organizational hierarchy can quickly appreciate that TQM offers them an opportunity to demonstrate that they are intelligent thinking human being. Middle managers may initially see TQM as more work bolted on to existing tasks. Leadership and problem-solving training linked to involvement in quality cost analysis can help to break down these barriers (Hackman & Wagenan 1995). In the present study the responded sample consist of majority from the middle level.

TQM cannot be implemented merely as a fashion statement. It takes hard work and commitment from everyone in the company. TQM is risky venture, and the failure to implement it correctly can leave a company much worse off, than it was before. A company must first have a vision and a clear strategic direction. TQM is one of the tools to achieve the goals arising from this vision. Sink (1991) has suggested the following approach to the design, development and implementation of TQM.

- Understanding the organizational system
- Developing a strategic plan for the TQM effort
- Planning assumptions.

- Specifying strategic objectives
- Specifying tactical objectives
- Implementation planning
- Project management
- Measurement and evaluation
- Evaluation, accountability, ensuring effective implementation.

Oakland (1993) proposed 13 steps for TQM implementation:

- Understanding of quality
- Commitment to quality
- Policy on quality
- Organization for quality
- Measurement of cost of quality
- Planning for quality
- Design for quality
- System for quality
- Control of quality
- Teamwork for quality
- Capability for quality
- Training for quality
- Implementation of TQM

Endosomwan and Savage-Moore (1991) propose a four state model to help organizations understand their TQM postures for the Malcolm Baldrige National Quality Award criteria and the TQM improvement process as;

- Current organizational environment assessment
- Development of quality improvement strategy.
- Assessment of education and training needs
- Implementation of quality strategy

The Indian researchers (Lakhe & Mohanty, 1994) suggest the following Framework for implementing TQM particularly in development nations;

- Identity the degree of commitment and key interests and list the long term changes required.
- Define the objectives of TQM

- Identify resources available and develop understanding of organizational system with quality system
- Specify top management commitment through quality policies, procedures and process
- Create company wide awareness and participative work environment by emphasizing customer-oriented values. Encourage quality and commitment.
- Design action plans and develop specifics about future.
- Identify key issues and constraints on implementation and develop strategies to implementation.
- Identify and allocate resources, execute plans and build momentum for change
- Implement and monitor
- Measure benefits in terms of increased customer satisfaction
- Review and reward

To start with the organization can do an internal analysis to find out where they stand in respect of the following.

- Can TQM techniques be applied to the work
- What are the responses from different departments
- Do people see management as committed to TQM
- How is TQM perceived
- What perception exists about customer satisfaction in the company
- What are the quality costs
- What are the results of partial quality improvement efforts (Lakhe & Mohanty, 1994)

2.9 Hard and Soft Factors in TQM

The review of the literature suggests that the key components that affect TQM implementation are a synergetic blend of 'hard' and 'soft' quality factors. Systems and tools and techniques such as those that impact on internal efficiency (e.g. quality management systems, cost of quality, statistical process control (SPC) and external effectiveness, are examples of hard quality factors. Soft quality factors are intangible

and difficult-to-measure issues and are primarily related to leadership and employee involvement. They are issues having impact on maximizing organization-wide support and involvement in attaining the quality goals of an organization. They may be seen as 'internal marketing' issues. 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 organization.
- 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 and
- Training and education

It is evident from the list that 'soft' factors are long-term issues, something that cannot be switched on an off, and therefore, must be emphasized and addressed accordingly in an organization's TQM implementation plan. All these factors are related to HR. Majority of them can be brought out by making changes in HR policies of the organization. There is a good chance that the TQM process will end up in failure if there is insufficient attention to 'soft' factors. It would be expected that 'soft' factors would rate highly in terms of criticality and influence in the TQM implementation process. The effective manipulation of the 'soft' factors is essential to the attainment of the quality goals of the organization.

Implementing TQM involves defining and deploying several key elements of factors. They include both the so-called 'soft' aspects of management such a leadership, employee empowerment and culture and the 'hard' aspects such as systems and improvement tools and techniques. Four separate but interrelated and mutually supportive categories can be identified; institute leadership, maximize internal stakeholders' involvement, manage by customer-driven processes, and adopt continuous improvement. As these categories are 'distilled' from the critical quality factors, they put into perspective the broad critical areas that an organization planning to implement TQM should aim to create (Nwabueze 2001). Leadership and corporate quality strategy means a united management team which is committed to

customer satisfaction and communicating the 'vision' in such a way as to mobilize all employees towards its attainment. The leadership functions in the context of TQM are:

- Senior executives assume active responsibility for evaluation and improvement of management system, and leading the quality drive.
- Visibility of senior executive commitment to quality and customer satisfaction.
- Comprehensive policy development and effective deployment of goals
- Clear, consistent communication of mission statement and objectives defining quality values, expectations and focus.
- Elements of quality management structure in place to manage the organization's quality journey.
- Develop a clear belief in the tangible business and operating benefits of TQM to generate the energy to start and sustain the transformation
- Ensure that the entire workforce understands and is committed to the vision, values, and quality goals of the organization.
- Ensure that the supervisors, unit heads and divisional managers assume active roles as facilitators of continuous improvement, coaches of new methods, and mentors and leaders of empowered employees.
- Ensure training for employees in problem identification and solving skills, quality improvement skills and other technical skills.
- Systems for recognition and appreciation of quality effort and success of individuals and teams are designed and made operation.
- Ensure that the entire organization understands that each process has internal customers and suppliers.
- Systematic review and analysis of key process measures that have a direct or indirect impact on value addition to customers' satisfaction.
- Put in place a team approach to problem solving and continuous improvement
- Use customer surveys and feedback process, and tracking of other key measures to assess customer satisfaction
- Competitive benchmarking against primary competitors.

- Cost of quality to track rework, waste, rejects and to facilitate continuous improvement.
- Information benchmarking and other forms of information sharing with organizations in different sectors and industries to identify best practices for improvements and opportunities (Thiagarajan, et al 2001)

These activities of the leadership bring about changes in people attitude and work, thus improving the human quality.

2.10 Improvement strategies employed by organizations in order to achieve Total Quality Management.

The following list of strategies may not be exhaustive but it includes most of the successful strategies employed by well-known Fortune 500 firms in their attempts to remain or become more competitive in their respective industries;

- Solicit ideas for improvement from employees.
- Encourage and develop teams to identify and solve problems
- Encourage team development for performing operations and service activities result in participative leadership
- Benchmark every major activity in the organization to ensure that it is done in the most efficient and effective way
- Utilize process management techniques to improve customer service and reduce cycle time
- Develop and train staff to be entrepreneurial and innovative so as to find ways to improve customer service.
- Maintain continuous contact with customers to understand and anticipate their needs
- Develop loyal customers by not only pleasing them but by exceeding their expectations
- Work closely with suppliers to improve their product/service quality and productivity
- Utilize information and communication technology to improve customer service

- Develop organization into manageable and focused units in order to improve performance
- Utilize concurrent or simultaneous engineering
- Encourage, support and develop employee training and education programmes
- Focus on quality, productivity and profitability
- Focus on quality, timeliness and flexibility (Pegels, 1994)

Failure to effect a drastic change in people's attitudes and behaviors to work, whilst implementing TQM, would amount only to a rearrangement of functional units and not to a concerted effort to change the way work gets done. Thus it can be concluded that TQM efforts succeed only if it contributes to significant improvement in human quality.

2.11 Interrelation of TQM and ISO 9000

ISO 9000 refers to a series of standards for quality management system. Its core module ISO 9001 provides quality systems for design, development, production, installation and services. It is a comprehensive model of quality system. A global survey (Ho 1997) in 80 countries reveals that the number of ISO 9000 certificates in 1996 (160,000) more than double the number in 1994 (70,157). Many people believe that in the future, ISO 9000 will be necessary to stay in business. It is held that quality management system based on ISO 9000 standard is a necessary foundation for other quality methods under TQM. Mo and Chan (1997) claim that a number of variables in ISO 9000 are related to TQM. Ho(1994) says that ISO 9000 certainly belongs to the TQM process.

Surveys found that ISO 9000 certificate is related to TQM enablers. In companies with ISO 9000 certificate, the availability of quality information, quality assurance of product, quality of processes and cooperation with customers are significantly higher than those companies without ISO 9000. It is also found that the companies with ISO 9000 perform better in reduction of bad products and customer complaints and improve profitability and productivity. However, it can be concluded that ISO 9000 certificate can be the starting point for the TQM programme (HO, 1994). In this context it may not be out of place to state that the investigator has conducted the surveys using the instrument developed by him to assess HRQ mainly

in ISO certified companies with intention to ensure that the companies practice quality management efforts on a continuous basis.

2.11.1 History of ISO 9000

Hakes (1991) find that after the Second World War pressure for quality came from the military. As a result 05 series of MPD quality standards and Allied Quality Assurance Publication series of NATO standards were born. Major companies in the automotive industry began to establish their own quality system standards and assess their suppliers. In order to control the increase of different types of quality system standards and to reduce the multiple assessments, the British Standards Institution eventually developed the military standards into BS575-series. Since then they have been used as the source for the ISO 9000 series.

2.11.2 The Purpose of ISO 9000 Series

In clause 0 of ISO 9000 (guidelines for selection and use), it states that: Most organizations–industrial, commercial or governmental–produce a product or service intending to satisfy a user's needs or requirements. Such requirements are often incorporated in 'specifications. However, technical specifications may not in themselves guarantee that a customer's requirements will be consistently met. For example, there may be deficiencies in the specifications or in the organizational system to design and produce the product or service. Consequently this has led to the development of quality system standards and guidelines that complement relevant product or service requirements given in the technical specification.

The contents of ISO 9000 series: ISO 9000 comes with four parts as follows;

- ISO 9001: This is applicable in contractual situations whereby the supplier is capable of demonstration of his ability in design, development, production, installation and servicing.
- ISO 9002: this is applicable for contractual usage, and product conformance can be achieved through production and installation.
- ISO 9003: This is applicable for quality assurance in final inspections and tests with the aim of detecting and controlling the disposition of any product nonconformity.

- ISO 9004: This serves as a guideline in developing and implementing a quality management system.

The quality System Requirement (Section 54) of ISO 9001 has 20 clauses which stipulate the essential elements for a good quality management system. They are: 1) Management responsibility, 2) Quality system, 3) Contract review, 4) Design control, 5) Document control, 6) Purchasing, 7) Purchaser supplied product, 8) Product identification and traceability, 9) Process control, 10) Inspection and testing, 11) Inspection, measuring and test equipment, 12) Inspection and test status, 13) Control of nonconforming product, 14) Corrective action, 15) Handling, storage, packaging and delivery, 16) Quality records, 17) Internal quality audits, 18) Training, 19) Servicing and 20) Statistical techniques.

Thus ISO 9000 stipulations are a combination of both hard (system processes) and soft (people) issues of the organization calling for instituting a discipline of systems orientation, with the objective of ensuring continuous quality. (Ho, 1994)

2.11.3 Importance of ISO 9000

Irveine (1991) points out that many companies are now seeking registration to demonstrate that they are in control of their business. Going for ISO 9000 registration is a good way of measuring progress and monitoring maintenance of that status. It can be regarded as the beginning of a continuous improvement process (which is a requirement for TQM). Bodinson (1991) makes a very strong comment that if one did not implement ISO 9000 series standards, in some cases it would be virtually impossible to sell one's products to the European Community after 1992. This is simply because these standards will be applied to a number of products made or imported by the EC. According to van der Weile et al (1997) continuous improvement only makes sense if an organization knows what is going in relation to the processes which are underlying the things which need to be improved. The ISO 9000 series forces an organization to describe the key processes and make them more transparent.

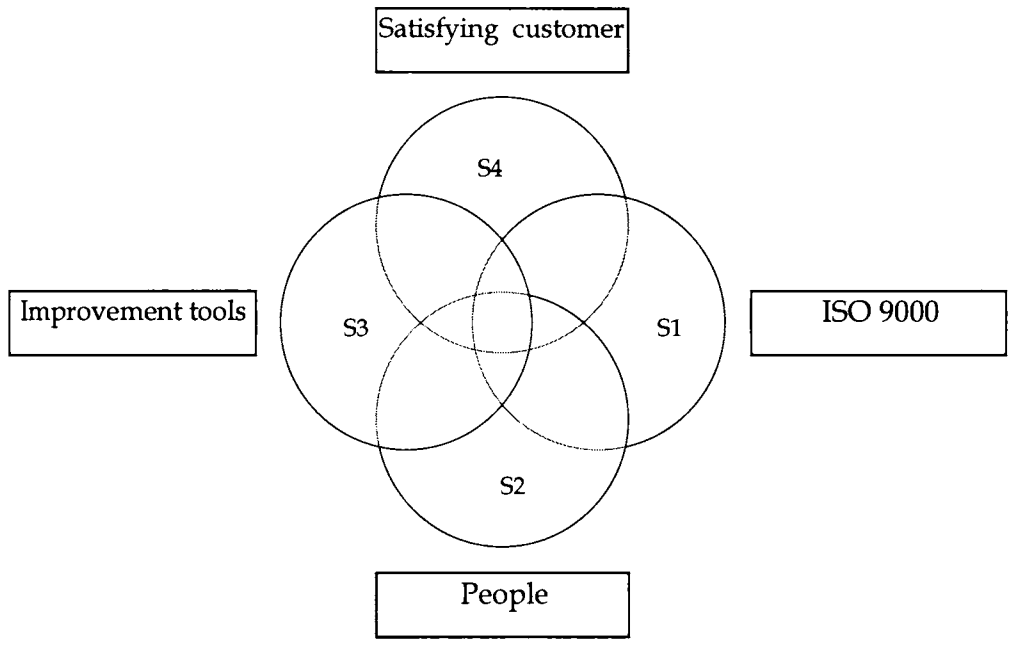


Fig 2.1 Venn Diagram showing similarities and difference between TQM and ISO 9000

The Venn diagram in Fig 2.1 explains the similarities and difference between TQM and ISO 9000, (Ho, 1994). The interpretation of sub-sets 1-4 are as follows;

- S1: ISO 9000 – For many firms, the first step in creating a total quality environment is likely to be the establishment of a quality management system such as ISO 9000 series. Establishing such a system is the initial building block.
- S2: People – it is vital in a total quality organization to capture the hearts and minds of everybody within the organization, starting at the top and permeating, via chain of customer-supplier relationships throughout the whole organization and beyond. Therefore, management commitment, training, teamwork, leadership, motivation, etc. would each have a vital and complementary role to play in establishing a total quality environment.
- S3: Improvement tools – There is no enterprise that cannot be improved. A vital part in creating a total quality environment is to recognize the need for continuous improvement programmes.

- S4: Satisfying customer – TQM is not just to meet customer requirements. It concerns how to gain satisfaction; customer requirements may include availability, delivery, reliability, maintainability and cost effectiveness, among many other features. If we are dealing with a supplier-customer relationship crossing two organizations, then the supplier must establish a 'marketing' activity charged with these tasks. The marketers must, of course, understand not only the needs of the customers, but also the ability of their own organization to meet customers' demands. Within organizations, between internal customers and suppliers, the transfer of information regarding requirements is frequently poor or totally absent. The essence of quality is to the continual examination of the requirements and the ability to meet them. This will lead to a 'continuing improvement' philosophy a requirement for TQM. The starting point for instituting such a philosophy is ISO 9000.

2.11.4 Reasons for Implementing ISO 9000 Standards

There are numerous reasons why many companies are now developing their quality systems to the requirements of the standard. Owen (1986) of Lankro Chemicals provides four reasons why their company implemented Quality System Standard. They are to: (1) reduce failure (2) reduce the costs of customer claims (3) get things right the first time (4) improve service to the customer and to increase competitiveness. All these reasons are related to TQM also. Melville and Murphy (1989) of GEC Plessey Telecommunication Ltd. state that their company chose ISO 9000 as a part of the Total Quality Improvement Programme because they want to move away from the traditional role of chasing failures, towards an attitude of prevention and for every individual to be responsible for producing good quality products and services. This statement reflects the total integration between ISO 9000 and TQM. The EC Council Resolution on a global approach to conformity assessment (Dept. of Trade & Industry, UK, 1990) provides three reasons why companies should implement a quality system based on ISO 9000. These are:

- To improve awareness of quality and have the standard products.

- To reduce the need for customer-supplier demonstrations of quality assurance procedures by introducing a third-party quality assurance certification.
- To open markets outside the UK by ensuring that ISO 9000 is compatible with EEC and US quality procedures.

Whittington (1998) discovered four different reasons for implementing ISO 9000 by the organization: They are:

- Pressure from large customers
- To maintain contracts with existing customers
- To use the constraints of the standards to prevent scrap
- To reduce auditing of quality system by customers.
- Top Management Commitment:

Some of the claimed benefits from implementing ISO 9000 standards are:

- Customers are much less likely to act on their own special assessments thus saving everyone's time and money.
- The company will improve its quality performance and as quality rises, so will company morale.
- Better quality performance will improve customer satisfaction and lead to increased sales, competitiveness and profitability.
- Confidence comes from knowing that your quality system is under independent surveillance (Ho, 1994).

2.12 ISO 9000 as a route to implementing TQM

ISO 9000 is seen as a route to TQM since they are complementary to one another. If companies are planning towards TQM, they can use ISO 9000 as a vehicle. Some of the important points are:

- Use ISO 9000 as a route to TQM – Develop a Quality Manual for ISO 9000 that is suitable to the company and the customers. Fully implement it and then go for continuous improvement. This will lead the company towards TQM in a systematic way.

- ISO 9000 needs TQM – Even with ISO 9000 certification in hand, it would not guarantee that the products and services are of high quality. In order to produce quality products and services, the system needs TQM to lift it up to expectations.

Over 70 percent of the companies would like to move beyond their existing status after ISO 9000 certifications. TQM is most important quality management concept to many ISO 9000 certified companies. A total of 27 percent of the ISO 9000 certified companies were planning for TQM and 21 percent actually practicing (Lee, et al, 1999).

If the Malcom Baldrige National Quality Award (MBNQA) criteria are compared with ISO 9000 requirements, one can see clearly the common features and difference between them. Of course, the requirements of ISO 9001 are simpler than the corresponding criteria of MBNQA. ISO 9001 is basically a process management model emphasizing the meeting of the defined requirements. MBNQA criteria on the other hand, pay more attention to the business success of a company (Lee et al, 1999).

2.12.1 Developing TQM on the basis of ISO 9000

As Kanji (1998) and Askey and Dale (1994) point out, that a large proportion of ISO 9000 certified companies would like to continue on the quality journey. With this the starting point of moving towards TQM on the ISO 9000 basis, commences. The steps to be taken by ISO 9000 certified companies to embark on a meaningful quality journey are:

- Step 1: Identify essential quality aspects: Benchmarking with competitors and business partners is the method widely used by companies to identity their strategic quality aspects. The benchmarking results are used to identify areas for improvement. The most convenient way to start with is to look at the existing operations and identity the bottlenecks as areas of immediate concern. These may include delivery time, rejects and downtime.
- Step 2: Collect field data for the identified quality aspects: Most ISO 9000 certified companies will have to maintain some kind of records. Customer satisfaction surveys are widely used to capture the feedback of customers

on the product or service they have purchase. Internal customers' feedback can also be obtained using the survey method.

- Step 3: Compare the current data with past date, competitors' performance, or the company's set objectives.
- Step 4: Use PDCA to institute improvement. After an area for improvement is identified, the corrective/preventive action should be implemented using PDCA (Plan, do, check and act technique (Walton 1991). The performance improvement process can be summarized as: use statistical data to identify performance, gauge performance through comparing with previous performance, stated objectives or benchmarked, identify area for improvement and use PDCA to institute improvement, use statistical data to confirm effectiveness of improvement measures (Lee et al, 1999).

Despite the differing emphasis by various authors, the above discussion clearly suggests that for organizations considering to move towards TQM, implementing ISO 9000 can hardly be ignored. Hill et al (2001) studied five organizations. According to them, the five organizations may be divided into two categories:

- Those which appeared to adopt a purely instrumental view of the Standard, regarding it primarily as a 'badge of competence'. Such companies had not progressed further along the continuous improvement route.
- Companies which seemed to conceptualize ISO 9000 accreditation as one milestone along the road ultimately leading towards business excellence. Companies in this category had an improvement focus, and for them ISO 9000 certification clearly proved a significant learning exercise. For this reason, only those organizations that have achieved ISO 9000 certification have been included in the sample.

2.13 Benefits of ISO

The benefits of ISO 9000 can be broadly categorized into internal and external benefits. The internal benefits are related to the processes and structure of the organization. These are, for example, increase in productivity, improvement in

efficiency, reduction in costs and waste, better management control, clearly-defined organizational task structure and responsibilities, improved co-ordination structure, support in decision making, and increase in personnel motivation. External benefits are benefits concerning the organization in relation to environment. Examples of external benefits are: competitive advantage, increase in sales and market share, possibility for entering new markets, keeping customer relations, finding new customers, increased customer satisfaction, increase in company reliability and reputation which can result in better possibilities for establishing partnerships and mergers (Singles et al, 2001).

ISO 9000 is found to have a positive contribution in respect of five performance indicators.

(a) **Production process.** ISO certification is supposed to lead to advantages in the processes of organizations, the production process being an important one of these processes. With this indicator the benefits referred are improvement in time, increased technical flexibility, and improvement of co-ordination of activities, improvement in product specifications, increase in internal and external delivery performance and improvement in efficiency.

(b) **Company result:** ISO certification also leads to an improvement of an organization's results. This improvement is gained though matters such as cost savings, sales increase, increase of market share, and an increase of net margin profit.

(c) **Customer satisfaction:** Customer satisfaction is a benefit of ISO certification. It is an improvement in the interaction with buyers or customers of an organization, and a reduction in the amount of complaints. These two result in an increase in customer satisfaction.

(d) **Personnel motivation:** ISO certification has a positive influence on the employees of an organization in different respects. It contains matters such as; increase of personnel qualifications, increase in involvement or motivation, and an increase in multi-skill ness of the members of an organization (Singles et al, 2001)

ISO 9000 companies would like to move beyond their existing status after certification. This is a necessity, as companies cannot be just satisfied by having a quality system in place. The forces of the external environment are compelling these

companies to move forward on the quality journey. Though the company may have an option to stop at ISO 9000 certification, but in reality it cannot have the certification as an end. Therefore, the companies are being pushed to move further on the quality journey beyond ISO 9000 and the next goad is only TQM. ISO 9000 becomes the starting point for the organization to move towards TQM. Hence in the Quality Policy of several ISO 9000 certified companies, invariably a mention is made about TQM or achieving total customer satisfaction. The main approach for achieving Total Customer Satisfaction is by institution TQM. Thus in the present study, the sample consists of ISO 9000 companies and the presumption is that they are on the onward journey of TQM.

2.14 The Benefits and Outcomes on TQM and ISO 9000

What are the benefits to total quality management? Some of the important benefits from TQM are:

- The aim of TQM is to add value to all stake holders in every activity. It must of necessity make a company more efficient. (Nelson, 1993).
- Date & Copper (1997) report the positive effects of TQM on the aspects such as:
  - Enhanced job 'ownership' by employees.
  - Increased employee awareness of the importance of their function to the overall company performance.
  - Willingness (indeed eagemess) of individual and groups of employees proactively to identify quality improvement and waste elimination opportunities.
  - Enhanced employee commitment to achieving projected benefits from quality improvement projects.
  - Clear identification of internal 'customers and suppliers' leading to improved mutual respect between departments.
  - Growing belief that management will listen to, and value ideas from all levels, from top to bottom, of the organization.
  - Internal and external projection of 'Pride in our quality'
  - Problem-solving training at all levels has reduced the previous tendency of individuals to 'quick fix' problem, which invariably meant

treating effects and not the cause of problems. This has also resulted in causes being identified quickly both at an individual and group level. The time saved is available to add more value to the company's business.

- The introduction of quality circles into departments like customer services, telemarketing, office services, Purchase Ledger and Warehouse demonstrated very quickly that personnel at all levels can make a very positive contribution to business; this was massive untapped resource which previously had no means of expressing itself. Some of the more skeptical managers also discovered they did not have monopoly on good ideas.
- Conducting a quality cost analysis has helped to identify where waste is occurring, and quantified the monetary loss. Clear opportunities for improvement have been identified and addressed by individuals, project teams or quality circles, depending on the level of complexity of the opportunity (Dale and Cooper, 1997).

Review of the benefits out of TQM/ISO implementation illustrates that such activities bring about changes in the quality of human resource. The researcher has developed the instrument to assess HRQ taking into consideration all these aspects

The research findings of Sohol and Morrision (1995) indicate that a TQM initiative may only be considered successful if a new work environment is created, in which people are able to learn, share knowledge and make worthwhile contributions. Organizational learning should be the most compelling reason for undertaking a TQM effort', thus, learning agendas must be consciously incorporated into continuous improvement initiatives. (Hill ET all 2001). The finding of Sohol and Morrision presented above also demonstrates that TQM efforts essentially should lead to enhancement of human resource quality.

2.15 Inter relationship between TQM and human resource quality.

John E Condon, immediate past Chairman of the board, ASQC said it succinctly 'People really do make quality happen". (Bowen & Lawler 1992). As per Cowling and Newman (1999) the evidence from the 52 companies with structured

HR departments indicates that in some firms HR departments are heavily involved at all stages of the total quality programme and in some instances were taking primary responsibility for championing this programme. There were also indications that quality programmes were changing the role of the HR function within organizations, with more involvement in strategic decision making and a move away from traditional personnel approaches. However, at the other end of the spectrum, some HR departments were excluded from the process and little impact was felt. This finding therefore confirms (IPM, 1993) different types of roles for the HR function in quality programmes and indicate that quality programmes can change and redefine the role that the HR function plays and result in one that is more strategic (Wilkinson and Witcher, 1992). This finding also raises questions about the long-term viability of some HR departments if they are excluded from such major changes; will the department simply be relegated to the sidelines and omitted from all major organizational developments? The survey provided mixed evidence in relation to the issue of involvement. Certainly there existed a belief in some organizations that there was a focus on participation and involvement resulting from the quality initiatives and there was evidence that measures had been introduced to encourage team working and communications. A 1993 report by the Institute of personnel Management (IPM) provides the results of a study which considered the role of HR function in the successful implementation and maintenance of quality management programmes. The research identified four roles that HR function may play. These ranges from strategic, high profile, 'change agent' to operational, low profile, 'facilitator' activities and encompass a large number of very different types of contributions to all stages of the quality programme. The report argues that 'HR participation is not optional – it is an essential component if quality management is to reach its full potential', but also suggests that 'quality management can result in changes in the human resource. There is the possibility of the HR function gaining a more strategic role as a result of involvement in quality initiatives, and a strongly held view that 'the implementation of a TQM strategy cannot happen without HR's leadership' (Hart and Schlesinger, 1991). There is also the difficulty that conventional HRM practices may be at odds with TQM's demands (Schonberger, 1994) and HR departments should be prepared to cope with these types of changes. Thus HRM has an important role as a facilitator in the process of TQM.

Both TQM and HRM are underwritten by an organization-wide approach. HRM proponents suggest that individual policies and practices should be linked to overall management strategy (Guest, 1999 Schuler, 1987). The same is true of TQM (Deming, 1986) all the quality awards have 'people' as one of their categories and lists a range of people-related practices. The links between HR and TQM can also be seen in the model of TQM provided by Shadur and Preston (1995) and in the work of Wilkinson (1992). In particular, HR practices are implicit in attention to internal customers, teams and through training in quality skills. Without, compromising this internal focus, TQM also requires that organizational behavior ultimately serves the interests of its external customers. When asked to rate the relative effectiveness of 8 different methods for improving quality, the participants gave top weight to employee motivation, change in corporate culture followed by employee education.

Human resource utilization (Bowen & Lawler, 1992) is one of the award's (MBNQA) of the seven examination categories and is weighted with 150 points of the total 1000. It states 'This category examines the effectiveness of company's efforts to develop and realise the full potential of the workforce, including management and to maintain an environment conducive to full participation, quality leadership and personal and organization growth'.

The following HR related dimensions are prescribed by Deming (1986) in his 14 points:

- institute training on the job
- break down barriers between departments
- drive fear out of the work place
- eliminate quotas on the shop floor
- create conditions that all employees to have pride in the workmanship
- institute a programme of education and self improvement

For successful implementation of TQM, one integrated programme that stresses employee involvement and total quality management is suggested. In this programme, the HR needs (I) to be reoriented so that the people practice quality management and (II) to institute practices that support TQM effectiveness through out the organization.

In recent years, there has been growing recognition of the contribution of HR strategies to meeting organizational goals. In most accounts, this involves a call for

organizations to adopt a strategic approach to managing their human resources. HRM is no longer to be seen simply as a staff function, concerned solely with people-management issues and separate from business management. As Walker (1992) puts it:

- The challenge of managing human resources in to-day's context is to ensure that all activities are focused on business needs. All human resource activities should fit together as a system and be aligned with human resource strategies. These strategies, in turn, should be aligned with business strategies.

Schuler and Jackson (1987) explain that the three generic business strategies of innovation, quality enhancement and cost reduction each require quite different employee 'role behaviors', which in turn require particular HRM policies.

The above discussion brings out that TQM needs changes in HR if it is to be implemented successfully. The implementation of TQM is usually couched in terms of a need to manage the organization's culture. Williams et al. (1993) suggest that five main methods are commonly used by management in attempts at cultural change, which are all people related:

- Changing the people in the organization, through selective recruitment and redundancy programmes, with a greater emphasis on selecting people with the desired attitudes, as well as technical skills and experience.
- Moving people into new jobs to break up old sub-culture
- Providing employees with training and management role models appropriate to the desired culture.
- Training employees in new skills, thus influencing their job attitude.
- Changing the work environment, HR policies and management style.

They suggest that attempts to manage culture are likely to be more successful where change is preceded by a 'precipitating crisis', which helps to convince people of the need for change, such as when the organizations are losing customers and competition threatening the very existence of the organization. The key activity here is to 'unfreeze' existing attitudes in order to facilitate attitudinal and behavioral change, before 'refreezing' as the new attitudes are internalized by organizational members (Schein, 1985). This finding is very relevant that TQM efforts lead to cultural change.

Oliver (1990) characterized TQM as involving a shift from management strategies of 'direct control' to 'responsible autonomy', based on self-control and high levels of commitment. He suggests that attempts to develop employee commitment to TQM must go beyond the exhortation approach of many programmes by changing the context within which work is carried out. Organizations have to restructure the work environment accordingly, for example by introducing explicit performance indicators in order to clarify accountabilities, removing quality control inspection to increase feelings of responsibility, and involving and empowering employees to increase their sense of volition. Others have emphasized the importance of job design. It is argued that employees are only likely to show commitment when jobs are meaningful, involve significant responsibility and where the employee is able to get direct feedback on performance form the job itself. This requires jobs which utilize a variety of skills, result in an identifiable and significant outcome, and involve a significant degree of autonomy and discretion. Juran (1988) argues for semi-autonomous work groups, in order to align responsibility with the authority to act.

The above discussions highlights that TQM practices bring about change in human resource quality, management style, work culture and quality of work life.

- **Role of HR policies and practices in TQM**: The bid to develop a quality culture must begin by recruiting and selecting employees with the required attitudinal and behavioral characteristics and inducting them into the quality culture. There is some evidence that organizations practicing TQM are realizing the key role of selection, with more widespread use of psychometric testing and assessment centers, for example, Juguar's use of tests in the selection of foremen and hourly-paid workers, to measure such dimensions as 'independence of thought', 'team working' and 'cooperativeness' (Snape et al, 1995).

Changing culture through the utilization of a human resource within organizations has received much attention recently. Indeed, the achievement of TQM objectives requires the management of the organization's value system (culture), which needs skilful implementation. As a result, there has been increased recognition that TQM practices reinforce and change organizational culture. Change in structure, performance appraisal, performance related pay, training programmes

and counseling are all activities needed during implementation of TQM. TQM implementation demands changes in

- Organization and job design,
- Policy formulation and implementation/management of change,
- Recruitment, selection and socialization,
- Appraisal, training and development,
- Manpower flows – though, up and out of the organization and
- Reward systems.

Planning and staffing: Human resource plans need to be developed in the context of the organizational strategy of TQM. The aim is to take a strategic view of the future HR needs of the firm across all activities from recruitment to training, career development, and succession planning and employee exit. In the context of TQM, Human resource planning has an important role. Recruitment and selection must provide the enterprise with employees who understand the goals and values of TQM and can work effectively towards these goals and values. Team working is an integral element in the TQM process and exercises to determine how effectively people work in teams. This will ensure that employees are suited to working within a team environment. In some organizations that are strongly committed to the team concept, team members are given the final say on the recruitment of new members, thus increasing the possibility of high-performing team (Simmon et al, 1995).

Performance appraisal: Some proponents of TQM explicitly argue against the adoption of performance appraisals. According to Deming (1986) there are many negative aspects of performance appraisal:

- It nourishes short-term performance, annihilates long-term planning, builds fear, demolishes teamwork, nourishes rivalry and polices.
- It leaves people bitter, crushed, bruised, battered, desolate, despondent, dejected, feeling inferior, some even depressed, unfit for work for weeks after a receipt of an (unsatisfactory) rating, unable to comprehend why they are inferior.

However, most large organizations have some form of performance appraisal and there is evidence supporting the positive effects of performance appraisals on productivity and quality (Spector et al., 1994). It is argued that a well designed appraisal system that is compatible with TQM would contain the following elements;

- Identify and recognize the quality of inputs and processes and not just outputs.
- Focus on the achievements of individual, team and the enterprise
- Improve future performance through performance planning, coaching and counseling
- Reward personal improvement and not just rating performance relative to peers
- Provide qualitative feedback to employees (Simmon, et al, 1995)

Training and development play an important role in providing employees and managers with sufficient skills. Advocates of TQM contend that its introduction will increase the role and responsibilities of lower tier employees as problem solvers and decision makers. At one level, TQM uses data-driven problem analysis as a method for improvement. This is a specific training need for enabling employee participation in the improvement process. TQM requires alterations in the required skills of employees and managers. In the context of teams and greater functional integration, employees must be provided with a broad base of skills that cover several different jobs. The devolution of authority is placing demands on supervisors and middle managers as they find themselves in the role of facilitator and coach. The transition to this role may place increased stress on mid-level managers. Leadership and management training should be provided to these managers to ease the transition (Simmon et al, 1995).

Reward System: A key element in TQM is to retain and motivate employees through the rewards system. The retention of high quality employees will require an innovative approach to rewards. Single-status terms and conditions can help to break down 'us and them' attitudes and promote a sense of shared responsibility for continuous improvement, while incentives may also have a role to play. However, incentive pay has been a controversial issue in the quality management literature. There is general agreement that output-related payment-by-results systems can undermine employee commitment to quality, but some of the quality gurus have gone even further. Deming (1986) is opposed to pay incentives, seeing them as inconsistent with the behaviors necessary for continuous improvement. He argues that recognition rather than reward is important, advocating award schemes as a way of recognizing outstanding performance or achievements. Such schemes may

involve either tokens or prizes of significant financial value, but in either case the aim is to provide public recognition.

Job Design: TQM emphasises on team-based work organization and flexible work practices. TQM proponents also value teams and flexibility but focus on workflow analysis and measuring precisely all aspects of the work process. In TQM, work organization needs to be re-designed. Job design should serve the purpose of providing long-term benefits to a range of beneficiaries. Likewise, it also involves a future orientation to job analysis. Future oriented job analysis requires gathering information regarding jobs so that decision makers can be better informed on how work will be arranged in the future. This process is essentially the same as process analysis with TQM. The aim is to scrutinise job content and work systems to identify where improvements can be made. It has also been suggested that TQM may require a move away from detailed, fixed job descriptions (Bowen and Lawler, 1992). This reflects the need to encourage flexibility, teamwork and a broadening of skills among the workforce. Therefore, there is a strong need in TQM for multi-skilling and development of employees.

Employee involvement: In TQM employees need to understand the process of continuous improvement and must be actively involved. TQM includes three elements of employee involvement. First, briefings, videos, posters and newsletters are used to launch and sustain the TQM message. Second, participative structures such as quality circles, improvement and action teams may be established to provide an institutional focus for problem-solving activity. Third, TQM may be associated with changes in the organization of work, including a reduction in inspection, more teamwork, a shift towards cell organization and the establishment of semi-autonomous work groups. Again, the emphasis is on greater autonomy and self-control, with management delegating responsibility for quality and improvement, rather than seeking simply to blame employees for mistakes. There are two key underlying assumptions in all this. First, the emphasis on commitment, self-control and trust assumes that workers will respond in a highly committed and motivated way if given autonomy and responsibility. TQM thus presents positive, hopeful message, offering opportunities for self-actualization in a challenging but satisfying work environment. Second, TQM contains an implicit message, assuming that everyone in the organization shares common interests and values, with management's right to manage being automatically accepted as legitimate. The

customer-defined goals of TQM are unquestioned and management commits in maximizing customer satisfaction. Employee involvement is fitted into this agenda. Under TQM, involvement focuses on the task, rather than on broader issues of business strategy, investment or staffing (Snape et al, 1995).

The Japanese-style HR Model oriented towards Total Quality Management: Shimada and MacDuffie (1987) developed a 'human ware' model of Japanese production and HRM system which, they argue, are highly dependent on team-oriented human resource policies. Krafcik (1988) writes that, the new production system is 'fragile' in that it is too structurally informal and requires the help and interaction of all members of the organization through the applications of work teams. Krafcik finds that advanced machines and robots are of little use if they are not supported by the active participation of all members of the organization. Characteristics of this HRM model are:

- Use lay-offs as the last resort
- Develop a broad job structure
- Emphasize on-the-job training
- Total employee participation
- Job rotation and multi-skills
- Extensive use of work teams

Each of this aspect is discussed in detail below:

- **Use lay-offs as the last resort**: Top management has deep commitment to employees and personnel issues. Management views human resource as important as financial assets. Management recognizes that superior product quality and high productivity are dependent on the skill and commitment of employees. It is essential for management to develop stable employment policies and use lay-off as the last resort even under severe economic conditions. Job security reduces costs associated with turnover, such as recruitment and training.
- **Development a broad job structure:** the emphasis on total quality management requires coordination of production activities across functional divisions. Since workers are hired not for their functional skills, but for their knowledge in coping with key product and quality

issues, hiring criteria emphasize workers attitudes and the ability to learn multifunctional skills. Job positions are broadly defined.

- **Emphasize on-the-job training**: The Japanese production technology and total quality management emphasize flexibility and cross-functional activities, which require intensive and continuous on-the-job training. The sole purpose of establishing broader job classification, flexible job assignments and job rotation across functions in Japanese plants is to enable workers to learn a wide range of different skills and 'facilitates knowledge sharing among workers' which is the key to product quality. The knowledge possessed by a single worker extends beyond a particular job jurisdiction, so that there is considerable overlap in the knowledge of individual workers of different status on the shop floor. Japanese managerial policies such as long-term employment and on the-job training contribute to the multi-skilling of workers and lay the foundation through learning by doing which is essential for TQM to be successful.
- **Extensive use of work teams**: The emphasis on total quality management is highly dependent on teamwork and quality circles. Through small group activities, members of the firm contribute their ideas to improving quality and building quality into the product. While individualism is discouraged, teams make full use of the talents of every member of the organization. Japanese firms emphasize the capability of work teams to 'cope with local emergencies autonomously'. This ability is developed through 'learning by doing and sharing knowledge on the shop floor'. This sharing of knowledge is the key of process-based quality control.
- **Total employee participation**: To improve continuously the process of quality control, Japanese firms have developed various forms of organizational learning mechanisms such as the suggestion system. In above 40 years, for instance, Toyota has received some 20 million ideas for improvement through the employee suggestion programme (Zhao, 1991). New ideas and suggestions not only provide inputs and benefits for producing good quality products, but also motivate workers and keep them highly committed.

- **Encourage job rotation and cross-functional skills:** The emphasis on coordination and cooperation across department makes it imperative for firms to encourage multifunctional skills so that workers will be able to learn cross-functional skills and share these with one another to accomplish organizational goals. Job rotation across functional departments is done systematically and regularly. Job rotation contributes to strong and effective work teams, which are the key for better product quality. The pursuit of worker versatility calls for extensive job enlargement, frequent reassignments and rigorous discipline. The hiring and retention of versatile workers are the central functions of the Japanese employment system. (Yang, 1994)

2.16 CONCLUSION

Total Quality Management appears to be a concept, which is not easy to summarize in brief definitions. From an extensive review of total quality management literature from quality gurus, quality award models and other quality management results, it is realized that the success of TQM in an organization lies in the function of effective human resource. Controlling resources–physical, organizational, information and human – give the company competitive advantage. TQM is an overall organizational strategy formulated at the top level and then implemented through out the entire organization. Organization and companies succeed or fail based on the quality and effectiveness of their employees. Today's successful firms recognize that to compete in global markets, they must have world class Human Resource. Whether it is reengineering or complementary TQM programme, HR plays a central role.

The literature review brings out clearly that TQM efforts bring about changes in Human Resource Quality. Thus the present study becomes important in understanding the changes in human resource quality for TQM to be in place effectively. The rhetoric of the quality movement, with its focus on communications, leadership, involvement and team working, continuous learning and improvement implies that HR/employees are not the same as those which operate within organizations structured on Taylorist principles. Central to this restructuring of work arrangements is the notion of employee involvement which is found in many guises

throughout the quality literature. There is an emphasis on teamwork and a focus on initiatives such as suggestion schemes, continuous learning programmes, training, development oriented appraisal, team-briefing, pro active human resource practices which aim to keep employees informed, interested and involved. These initiatives generally lead to a change in the type of work that employees are required to do and in the responsibilities they are expected to shoulder. There are therefore, likely to be changes in the way in which employees are recruited and trained. Given these factors, there are strong links between TQM and HRQ. Further TQM entails changes in roles. People find themselves trained, evaluated, recognized, rewarded, grouped, titled and managed differently. In conclusion, it can be said that to be fully successful and self-sustaining, TQM efforts bring about extensive changes in human resource quality.

In this chapter an attempt has been made to present a detailed review of TQM from its origin to its present stage of implementation. The requirements of national and international awards for organization perusing the path of total quality management have been discussed. A critical analysis has also been done to understand the relationship between TQM and human resource quality. From the discussion it has been convincingly concluded that TQM efforts lead to changes in human resource quality.

CHAPTER III

HUMAN RESOURCE MEASUREMENTS AND INDICATORS OF HUMAN RESOURCE QUALITY

3.0 Introduction

In the pervious chapter, the linkage between Human Resource Quality and TQM has been analyzed. It has also been established that there has to be a proper mechanism to assess the changes in HRQ due to the implementation of TQM. Such assessments will enable the organization to identify the weak points and step up its efforts for improving HRQ. In this chapter, a brief review of different methods available for HR measurements has been presented along with discussions on various indicators of HRQ.

3.1 Background Note

The assets of an organization could be broadly classified into tangible assets and intangible assets. Tangible assets include all the physical assets which could be plant and machinery, investments in securities, inventories, cash, cash equivalents and bank balance, marketable securities, accounts and notes receivables, finance receivables, equipment on operating lease, etc. Intangible assets include the goodwill, brand value and human assets of a company. The human assets involve the capabilities, knowledge, skills and talents of employees in an organization.

Hitherto organizations did not give much importance to value their human assets. Moreover it was considered a difficult task, as there were not any defined parameters of valuation. Further, organizations did not think proper to value human resources, as these were never treated as an asset. It was felt that all investments related to employees, including salary as well as recruitment and training costs were only expenditure. In addition, stake holders of the company, it was perceived might not accept the concept of placing a monetary value on human resources.

The first recognition of importance and value of human assets came about in the early 1990s. This was the time when there was major increase in employment, technology and other knowledge-based sectors. In the firms in these sectors, the intangible assets, especially human resources, contributed significantly to the building of shareholder value. The critical success factor for any knowledge-based organization was its highly skilled intellectual workforce.

Soon after, the manufacturing industry also seemed to realize the importance of its people and started perceiving the employees as strategic assets. For instance, if two manufacturing companies have similar capital and use similar technology, it is only their employees who are the major differentiating factor. Therefore, the need for valuing human assets besides traditional accounting of tangible assets becomes highly significant.

3.2 Approaches to HR Measurements

Recently, the HR profession has made great progress with measurement and evaluation. Fig 3.1 illustrates the approximate time frame for the use of particular measurement approaches. Human resource must be measured. But what is the right approach? There is no unique answer to this question. A brief review of HR measurement approaches have been presented in the following sections. Although each one is presented separately, the techniques, processes, and focus of some of the approaches overlap very often. The early approaches include those tried-and-true approaches. Some of these approaches are still being tried by many organizations. A brief description for all this approaches has been presented in the following sections.

Fig 3.1

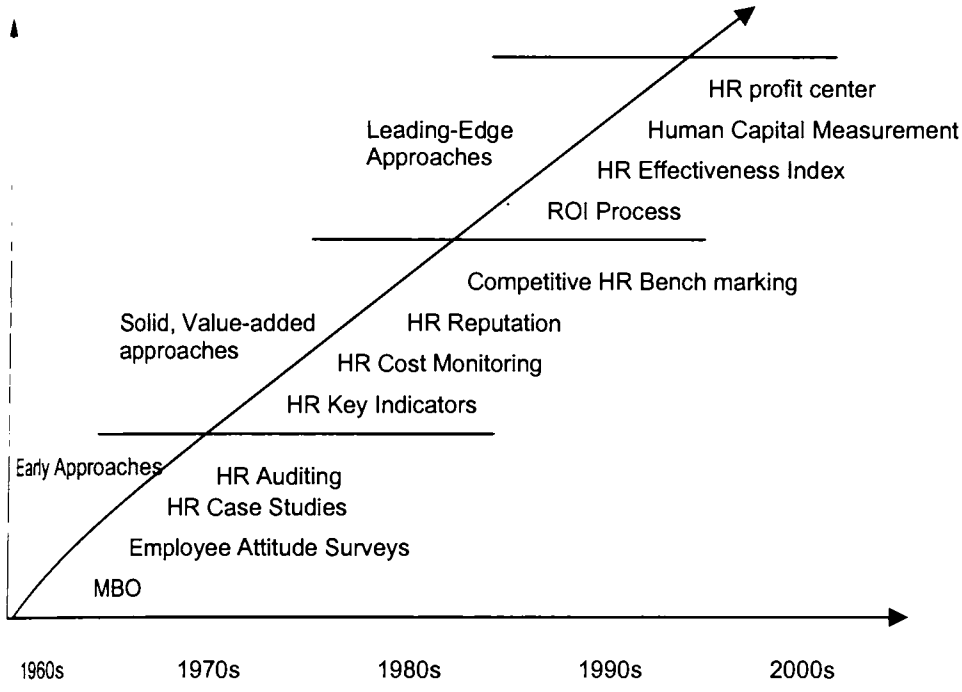


Fig 3.1 – shows different HR measurement approaches starting from 1960s

3.2.1 HR Management by Objectives (MBO)

The evaluation process of measuring progress toward HR performance objectives gained popularity in the 1960s because of the widespread use of MBO. The HR department develops specific objectives and evaluates performance against those objectives. Objectives are based on what management wants accomplished or on what is perceived to be necessary to achieve the stipulated level of performance. Measures of turnover, absenteeism, job satisfaction, employee health, and compensation expenses are quantifiable and are considered objectives for many HR functions. Whatever measures are determined, they must be related to organization performance in order to represent meaningful approaches to reflecting the contribution HR makes to the organization.

3.2.2 Employee Attitude Surveys

Many organizations still use employee attitude surveys to evaluate the effectiveness of their HR departments. These surveys attempt to link employee

attitudes to organization performance. The organizations reporting as more profitable than most of the industries, were high users of employee surveys. On the other hand, those organizations describing themselves as less profitable rarely used surveys. Other studies of organizations using employee surveys have proven positive relationships between organization performance and the attitudes of employees. Although this is one method to collect information regarding organization performance, it is often used in relation with other methodologies.

3.2.3 HR Case Studies.

Presenting results in a case study format to selected audiences is yet another approach. For example, an organization may report the success of a labour-management program in a case study report to all employees. These case studies have significant value and can be presented with little cost. They are developed using data about HR performance, reaction from individuals, or interviews with participants involved in HR programs or services.

However, the HR case study approach has some weaknesses. It does not represent a balanced measure of the performance of the HR function. It only provides some evidence that certain programs are successful. It usually does not represent an ongoing evaluation of any particular program or the overall function on a one-shot examination. It is very often criticized as subjectively based, and a program's success is usually judged by those providing the data that is to be included in the case study. Finally, quantitative data are not always a part of these studies. With all these weaknesses, the case study approach of evaluation is an important part of an organization's overall measurement and evaluation programme.

3.2.4 HR Auditing

A human resource audit is an investigative, analytical, and comparative process that attempts to reflect the effectiveness of the HR function. It undertakes a systematic search that gathers, compiles, and analyses data in depth for an extended period, usually one year, instead of with daily formal and informal reports. The use of HR audits has increased significantly. One reason for this is a commitment to moving the HR function from service to the strategic arena.

HR auditing is an extension of traditional auditing, which until recent years was limited to the financial practices of the organization. There has been a tremendous expansion in the extent, scope, and types of information being audited. In addition to auditing has now moved into production, operations, sales, quality, data processing and engineering beyond its traditional human resource area. It has become a critical analytical tool to assess how well – or how poorly—an activity is performed. HR auditing provides the necessary baseline data so that actions can be taken to improve HR performance. HR auditing is a vital modus operandi that can help improve the efficiency of the HR function; it does.

3.2.5 HR Key Indicators

In some HR evaluation efforts, key measures are developed that reflect the major efforts of the HR function. In some cases, these measures are linked to organizational performance. The best-known and established method of HR evaluation is the key indicates approach. It uses a set of quantitative measures such as accident frequency rate, absenteeism rate, turnover rate, and average time to fill requisitions. Key indicators come from areas such as; Employment, Compensation administration, Diversity, Employee benefits, Learning and development, Work environment/safety, Performance, Labour relations, Careers and Overall effectiveness, etc.

Although this approach of tying key measures to organizational performance seems sound, there is little empirical evidence to show this direct connection. This area requires additional support, further research, and study.

3.2.6 HR Cost Monitoring.

Although most executives are aware of the total cost of payroll and benefits, they do not realize that change in HR practices can result in huge increase in costs. One approach to evaluating HR performance is to develop HR costs and use them in comparison with cost standards. Some organizations compare these costs with other internal costs; these comparisons, however, could possibly reinforce complacency. Comparisons with other similar organizations may be more effective. Examples of HR costs monitored by organizations include:

- Employment
  - cost per hire
  - orientation cost
- Learning and development
  - cost per employee
  - total costs as a percent of payroll
- Benefits
  - costs as a percent of payroll
  - Healthcare costs per employee
- Compensation
  - compensation expense as a percent of operating expense
  - total compensation costs
- fair employment
  - cost per complaint
  - cost of litigation
- labour relations
  - cost per grievance
  - cost of work stoppages
- safety and health
  - accident costs
  - costs of citations/fines
- overall HR
  - HR costs as a percent of operating expenses
  - Turnover costs

Tracking costs alone is not a guarantee of a direct link to organizational performance. Even though costs comparisons are helpful, standard HR cost data are yet not available. From a practical approach, HR costs monitoring is necessary as input for other approaches to evaluation. For example, in the benefit/cost analysis, HR cost data is required for comparisons.

3.2.7 HR Reputation

Some HR professionals believe that HR function effectiveness should be judged by receiving feedback from those it is designed for often referred to as clients

y constituencies. Constituencies depend on, or exert control over, the HR function. Proponents of this approach argue that effectiveness is a value judgment. Even objective criteria are only one step removed from subjectivity. Someone has to determine what level is considered ineffective. For these proponents, it is more important to measure the perception of the function in the mind of constituents.

It is important that the HR function is perceived as effective and its clients and users are satisfied. However, there is not much evidence of a relationship between levels of satisfaction among constituencies and overall organizational performance. This process ignores HR outcomes that may direct impact on the bottom line.

3.2.8 Competitive HR Benchmarking

A few organizations have developed key measures that represent the output of the HR function. The measures are compared with measures from other organizations regarded as having best practices within a given industry. This process, known a competitive benchmarking, began as an important development in the American quality movement. Even though there is keenness to know the process, few companies understand what they are doing when they undertake a benchmarking study. Some see the process as merely a comparison of processes, which ensures functional similarity with other companies. Others feel the process as seriously as possible and view it as a learning strategy that can improve overall HR effectiveness. Although benchmarking has proven successful in quality and other areas, it is slow in developing within the human resources function. There is only a slow progress.

3.2.9 Return On Investment (ROI)

Arguably the most convincing approach to HR evaluation is to compare the cost of HR programs with the benefits derived from them. In most cases, the cost of HR programs can be developed or monitored. Although, there is confusion concerning ways to allocate specific costs, overall program costs can usually be pinpointed. The difficulty lies in determining program benefits. In many cases, expert input is used to assign monetary values to benefits derived from programs, particularly for intangible benefits. Consequently, this approach is sometimes avoided as an evaluation tool.

The ROI process is experiencing success in the HR field and even more so in training and development, quality, technology and change management. This approach to measurement and evaluation is used in the private and public sectors around the world. The process is built around the basic financial equation, earnings divided by investment, or net benefits divided by costs.

There have been deliberations on measuring the return on investment (ROI) in human resources (HR). Some individuals characterize ROI as inappropriate. Others vehemently attribute ROI as the answer to their accountability concerns. The truth lies somewhere between the two extreme views. Understanding the drivers for the ROI process and the inherent weaknesses and advantages of ROI makes it possible to take a rational approach to the issue and implement an appropriate mix of evaluation strategies within the HR function.

3.2.10 HR Effectiveness Index

A few organizations have attempted to develop a single composite index of effectiveness for the HR function. One such examples of use of an index was developed and used by the General Electric in the 1950s. This Employee Relation Index (ERI) was based on eight indicators selected from a detailed study of employee behavior. Among the indicators were absenteeism, initial dispensary visits, terminations, grievances, and work stoppages.

Another index attempt was the Human Resource Performance Index (HRPI), which uses massive data banks made available by human resources systems. According to its developer, the HRPI has been successfully used to evaluate HR functions such as selection, compensation, development, and retention. No attempt was made to validate this index against organizational performance.

The most comprehensive study about this issue was conducted to develop and test a Human Resources Effectiveness Index (HREI). The study, involving seventy-one organizations from eight industry segments, provided additional empirical evidence of the relationship between HR performance and organization's effectiveness. Six measures of HR dependent performance were identified for use in the study:

- HR expense/total operating expenses
- Total compensation/total operating expenses

- Total cost of benefits/total operating expenses
- Training and development expenses/total employees
- Absence rate
- Turnover rate

The HREI represented a composite of the six measures, and significant correlations were developed with revenue/employees, assets/employee costs, operating income/employee costs, and operating income/stockholders' equity (ROE).

This index is appealing because it is simple to compute and easy to understand. It is also useful for comparing one organization with another and can be used for interval control and goal setting.

3.2.11 Human Capital Measurement.

In the early 1960s and 1970s a novel approach to evaluation was taken: human resources accounting (HRA). Interest in this approach diminished in the early 1980s. However, the approach has recently been recharged. This concept, currently labeled human capital measurement, attempts to place a value on employees as assets in an organization and to measure improvements or changes in these values using standard accounting principles. It is an extension of the accounting principles of matching cost and revenues and of organizing data to communicate relevant information in financial terms. Human resources are viewed as assets or investments of the organization and methods of measuring these assets are similar to those for measuring other assets.

Although the concept of measuring human capital has regained popularity, it is not without criticism. The concept developed slowly, mainly due to the controversies surrounding three important issues: (1) if human beings are indeed assets, (2) what costs should be capitalized, and (3) what methods are most appropriate for establishing a value for employees with the eventual allocation of such value to expense. There are legitimate problems concerning the concept that employees can be owned or controlled by an organization, which is prerequisite for defining them as assets. Even with these concerns, however, promising signs indicate many corporations will begin listing the financial value of their human assets on the balance sheet. This action can lead to benefits that greatly outweigh the cost of implementing an accounting system to measure human capital.

3.2.12 HR Profit Centre.

According to some researches and practitioners, the ultimate approach to evaluation is the profit-centre approach. This concept requires shift from the traditional view of the HR department as an expense centre in which costs are accumulated, to view HR as an investment that can achieve a bottom-line contribution and, in some cases actually operate as a profit centre. Increases in the investment in HR through additional staff, programs, and resources are expected to improve the performance of the organization. This is an important shift in the perception of the HR function.

The underlying premise of this approach is that user departments such as production, operations, sales, and engineering are charged for the services of the HR department and, in some cases, have the option of using external services in lieu of those offered by the HR function. In effect, the HR department makes a profit, break-even, or experiences a loss. Assuming the services are priced on a competitive basis, the profit represents a financial return on the investment allocated to the HR function.

Adoption of this approach requires the HR department to become client-oriented and quality conscious in delivering services and programs. Some organizations have expanded this concept to include selling HR services to outside clients, thus generating additional income for the organization. Although the profit-centre approach has made some progress and is generating considerable interest, some legitimate barriers exist in its implementation. The profit centre represents a significant departure from the rational HR management practices, and because of this, it may never be fully implemented in most organizations.

In the above sections an attempt has been made to present a review on HR measurements comprising of early approaches, value added approaches and leading edge approaches. In the following section, some approaches which are not included in Fig 3.1 have been discussed. In these approaches, the major thrust is to assess HR based on cost and related considerations.

3.2.13 Historical Cost Method (HCM)

According to this method, the costs, which were incurred on the development of human resources, were with an intention to obtain future benefits. Therefore, these costs were not to be treated as expenditure, but as investments, future revenues or assets. The expenditure incurred by an organization on recruiting, selecting, training and developing the employees has to be capitalized and shown in the balance sheet as assets, as the humans possess some skills, knowledge and experience which could be turned into value for the organization. Nevertheless, some critics argued that costs did not reflect value and true value could be known only by the difference between real performance and the total cost incurred, associated with the human resources of the organization. This model was implemented by RG Barry Corporation in the US during 1968 to 1974.

3.2.14 Replacement Cost Method (RCM)

RCM was put forward by the Flamboltz and was known as the Flamholtz method. According to this method, the cost incurred by an organization on replacing the earlier employees and strengthening the organization has to reflect the human resources value of both-the employees and the organization. Replacement could mean personal replacement of the employee with another employee or replacing the particular skills of an employee with those of another. Critics argued that it was difficult to assess the replacement cost of the employees, as the value which they generated over a period of time and their contribution to the organization was difficult to measure in relation to the cost incurred to employ them. It was also felt that replacement cost was applicable and valid only for key employees in an organization. It was also thought that the availability of multiple alternatives for replacement might make the assessment and choice of the best alternative very difficult.

3.2.15 Opportunity Cost Method (OCM) or the Competitive Bidding Model

Hekimian and Jones proposed OCM. It was also knows as the competitive bidding model. According to this model, the potential monetary value to be generated by an employee was to be estimated by allocating the employee to an

activity in which he/she is best suitable. In other words, the opportunity cost of key employees in the organization was assessed in relation to their performance and in accordance with the organizational goals. The investment managers used to bid for the employees and the highest bid for an employee was considered his price, which was to be reflected in the balance sheet. The bid price was a measure of the employees' competence and experience, and the value that he would generate for the organization. Critics argued that competitive bidding involved assessing the future contribution of an employee to the organization's goals and may force more individuals to dissociate themselves from the bidding process, thereby making it difficult for the organization to make adequate assessment and measure their value. They further argued that the bid price placed on an employee may be based on the perception of the bidder, which may not give a correct estimation of the employee's true value. The value to be generated by an employee was relative and hence the measurement may be ineffective.

3.2.16 Standard Cost Method (SCM)

According to SCM model, the costs of recruiting, selecting, training and developing a particular class or grade of employees were standardized. These costs were determined and evaluated over the years to get the total value of the human resources in an organization.

3.2.17 Goodwill Method

This model was developed by Harmonson and was also called the Harmonson model. According to this model, the additional profits earned by an organization during a particular period of time were compared to the industry's average rate. The HR value was measured by the following formula:

$$\text{HR Value} = \text{Goodwill} \times \frac{\text{Amount invested in HR}}{\text{Total Investment}}$$

The critics on various grounds questioned this model. The additional profits or revenues generated by an organization during a particular period may be influenced by other external variables and could not be linked to human resources

were The amount invested in securing the customers, suppliers and the people's good image may not be a measure of the goodwill of the organization. They further argued that a limitation to this model was its invalidity in the case of the organization's profits or revenues being less than the industry average. Also, this model could not be used unless all the variables and relationships that affected the company's goodwill were correctly defined.

3.2.18 Behavioral Model

Rensis Likert developed this model. This model envisaged a set of factors through which the psychological and sociological conditions of the employees in the organization determined their productivity. These conditions are to decide the performance of the organization in the long run. The investments in human resources are integrated that socio-psychological factors or conditions could not measure the value of HR as an asset to the organization. Moreover, according to critics, the various relationships in the organization could not be correlated to its performance, as it was difficult to establish a relationship for every organizational performance. When there was no valid relationship, the true HR value would not be reflected by the HR performance.

3.2.19 Economic Model

The economic model was the most popular and widely followed. The model was comparatively easy to use. This model was also known as the Ley & Schwartz model. According to this model, the present value of the future earning capacity of an employee, from the time of joining the organization till retirement, was estimated. Limitations to this model included a possibility of an employee leaving he organization or dying before the end of his/her scheduled tenure. In such cases, the computation of the employees' future earning capacity became very complex.

3.2.20 Jaggi & Lau Method

According to this method, the value placed on an employee was arrived at by taking into account the employees' past performance in relation to the future i.e., retirement, death and service performances. The present value of the future

services of an employee was taken as the value generated by the employee this method was criticized on the ground that past performance was not an indicator of the future. It was argued that in a technological industry, the past performance did not necessarily reflect the future potential. This model did not consider or evaluate the range of services provided by the employees.

3.2.21 Mayers & Flowers Method

This model argues that an employee's attitude and general outlook determined his productivity in the organization. The value of the human asset was arrived at using the following formula;

Employee's Value = Employee' attitude index X wages payable to the employee

According to this method, the attitude of an individual employee was more important than the overall attitude of a group, since it was the individual employees who together made a group. This model received criticism on the ground that several factors other than attitude influenced the behaviour of the employees. Moreover, it was felt that measuring the attitudes of individual employees was a complex issue.

3.2.22 Research Evidence for Measuring HR

Macduffie and Krafcik (1992) studied 70 automotive assembly plans representing 24 companies in 17 countries world wide. This study indicated that manufacturing facilities with lean production systems are much higher in terms of both quality and productivity than those with mass production systems. The HR strategy of mass production system was to create highly specialized and deskilled work force, while that of lean system was to create a skilled, motivated and flexible work force that could continuously solve problems. The study concluded that the success depends on commitment of employees, decentralization of the responsibilities, multiskilling and employee security.

Ostroff (1995) develop an overall HR index based on the aggregate ratings of all HR activities of a firm. On the basis of this index, firms where grouped in these categories. The firms that scored higher in HR index consistently out performed than

those with a lower index on four financial measures: market/book value ratio, productivity ratio, market value and sales.

Macudeffie (1999) observed from his studies that innovative HR practices are likely to contribute to improve economic performance only when 1) employees possess knowledge and skills managers lack 2) employees are motivated to apply the skill and knowledge.

Huselid (1995) used two scales – 1) to measure employee skills and organizational performance and 2) to measure employee motivation. The first scale involved a broad range of practices indented to enhance employee knowledge, skills and abilities and provide mechanism to use those for performing the roles. The second scale measured how well the appraisal systems were and linked to compensation and merit.

Well borne and Andrews (1996) studied the survival rate of 136 non-financial companies. They developed and used a scale to measure the value the firm placed on human resources. A second scale developed by them measures how the organization rewarded its people.

"A number of studies spanning different organization operating in various service industries provide evidence for a positive relationship between employee attitude, customer service and satisfaction and profits" (Pfeffer 1998). Schneider and Bowen (1985) reported in a study of bank branches that when the banks had sufficient numbers of quality people to perform its task, customers reported receiving higher levels of service.

A study by Johnson, Ryan and Schmit (1994) at the Ford Motor Credit reviled that attitude concerning work load, team work, training and development, satisfaction with the job were all related to customer satisfaction. Schmit and Allscheid (1995) found that customer satisfaction and perception of service quality were significantly related to measures of employee attitude, employee welfare, open and participative work environment.

Although there are many approaches to bring accountability to the HR function, making use of a variety of tools and based on a variety of assumptions, HR departments still have difficulty achieving success with current approaches. Unfortunately, there are few success stories about comprehensive HR evaluation programs that show the contribution of the function. Many researchers question the quantitative approach to evaluation, suggesting that a return on investment in

employees must be approached cautiously and judiciously, and that any such return may be the result of activities initiated by others rather than the HR staff. Some professionals even question the requirement of bottom-line results from HR programs by arguing that it is not possible to isolate monetary benefits an organization may receive from an HR program. Although there is an important trend toward HR accountability, a major problem is that evaluation approaches have been unable to deliver what top management and even HR practitioners want them to receive objective data showing the contribution of the HR function to organizational effectiveness.

From the review of research evidence presented above it is observed that all these studies try to assess partially/or to some extent the contribution of human resource (employees) to the organization. However there is no approach essentially targeted towards assessing the impact on the quality of human resource in the organization due to the on-going TQM efforts. The present research is an attempt to bridge this gap and to develop an instrument to measure human resource quality. The literature survey has enabled the investigator to identify the various indicators of human resource quality. In the following sections detailed discussions are presented on HRQ and its indicators.

3.3 Human Resource Quality (HRQ)

Human resource is the most important resource in the running of any industry or corporate house. Human resource of an organisation includes different types of staff members from top to bottom in the organisational hierarchy. It is a must to improve the quality of human resource of an organisation to make the staff members suitable to the changing needs of organisation. Human development is the expression used for describing such activities. Human development envisages a qualitative change in the life style of work force, in their attitude, in their mind set and in the total out put of the organisation or corporate house in question. There are several definitions for Human Development.

The basic purpose of development is to enlarge people's choices. In principle, these choices can be infinite and can change over time. People often value achievements that do not show up at all, or not immediately, in income or growth figure. In the wider sense, these choices include greater access to knowledge, better

:utrition and health services, more secure livelihoods, security against crime :hysical violence, satisfying leisure home, political and cultural freedom and sense of :articipation in community activities. The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives. (Maubus Jhaq).

There is a wrong notion that development is directly co-related to increasing :ational income. ``Human development is about much more than the rise or fall of :ational income. It is about creating an environment in which people can develop :heir full potential and lead productive, creative lives in accordance with their needs and intensity" (UNDP: Human development report 2003). Development is thus about expanding the choices people have to lead lives that they value. And it is thus much more than economic growth, a means of enlarging peoples' choices (Ibid). The most basic capabilities for human development are to lead long and healthy lives, to be knowledgeable, to have access to the resource, needed for a decent standard of living and to be able to participate in the life of the community.

Since the developed countries in the west have given much more importance to the above parameters, they are ranked in the top of the ladder of Human Development Index. Canada has been described by UNDP as the best country to live in for seven consecutive years. This is not because the GDP of Canada is the highest in the world. If we consider the GDP and per capita income as the major parameters to measure development, Canada would have not been there in the first place of HDI. That place would have been given to Kuwait or Sweden. But Canada was described as the best place to live in by UNDP only because UNDP has had a long list of parameters to reach in to such conclusion.

It is a fact the HDI of developing countries is very low because of the increasing population. Several developing countries are unable to provide their people better living condition. People's negative approach is also an important factor for the lower rank of developing countries in human development ladder. When one thinks of the human development index in an organisation, it can be observed that it is based on the quality and effectiveness of the employees and efforts of management to improve working climate and to infuse motivation and belongingness among them. Even at the organisational level, human development should be compensated with human freedom and human right. It is in a democratic set up, people and employees can think freely. It can be seen that how quality and

effectiveness of human resource available in an organisation is useful for improving organisational performance.

3.3.1 Quality

Organisations and companies succeed or fail based on the quality and effectiveness of their employees. The revolution in information technology has affected the functioning of all organisations. Naturally the changing trends make it absolutely necessary for the employees to adopt with the new scenario. Such impacts demand (1) the need for every one in the organisation (including organisational development professionals) to continually develop and update skill, 2) development of technical problem solving and decision making abilities through out the organisation and (3) speed, directness and immediacy of information exchange both within the organisation at all levels. (William M Lindsay and Joseph A Petrik TQ and OD 1997)

Quality is an attitude of mind and a way of life where `excellence is a journey, not a destination' (Murthy, D.B.N 2001). Quality can also be defined as the reflection of what value a customer expects in the product/service being offered to him. It is a fact that the organisation and companies succeed or fail based on the quality and effectiveness of their employees. Today's successful firms recognise that to compete in global market, they must have world class human resource/employees who are active participants in strategic and operational decision. (Dr. Shrif A Mazen and Conceptual design for a strategic human resources quality management system)

Human resource quality of an organisation is directly related to development of organisation itself. Organisation's development can be defined as an attempt to achieve corporate excellence by integrating the desires of individuals for growth and development with organisation goals. (Development by W.M.Lindsay P.4)

It can be seen that there are several factors that are involved in the improvement of Human quality in an organisation. They are; 1) Workmanship Value (WV), 2) Management Attitude (MA), 3) Employee Motivation (EM), 4) Ability and Skill Attainment (ASA), 5) Cohesive Work Force (CWF), 6) Motivational Programme (MP), 7) Orientation and Training (OT), 8) Communication Effectiveness (CE), 9) Employee Responsibility (ER), 10) Employee Involvement (EI), 11) Attitude towards

Change (AC), 12) Grievance Rate (GR), 13) Accident Rate (AR) and 14) Defect Rate (DR).

Above factors have been identified by a detailed review on the linkage between TQM and HRQ. These factors can be grouped under (1) Organizational culture (2) Quality of work life and (3) Employee satisfaction. In the following paragraphs all these indicators of the human resource quality have been discussed.

3.3.2 Workmanship Value

Values are acquired from societal institutions (family, economic and political systems) and cultural contexts. They are initially learned in isolation, in an obsolete fashion. As an individual matures, he/she integrates them to there value system, also based in part on personality factors (Rokeach 1973). A relatively small number of value dimensions seem to generalise across national cultures (Hofstede 1980). Thus the role of values is pivotal in understanding cultural differences in organisational behaviour.

Because of values are learned early in life and occupy a central position in cognitive structure, they are difficult to change during adulthood (p 598).
Values represent a sound system's effort to encourage its members to behave in ways that foster the systems welfare. As such values are enduring beliefs about how an individual ought to behave (Rokeach 1973). The type of value and their specificity depend on the particular social system. The subset of values that are relevant to the work and workmanship can be called as workmanship value.

These values are achievement, concern for others, honesty, working hard, positive outlook, helping others and fairness (Ravlen and Meglino, 1987). Because values describe socially desirable behaviour, one's choice of behaviour depends on the centrality (i.e., relative importance) of his or her specific values. Values are therefore holding hierarchical form (Rokeach 1973).

These values can characterise individuals as well as social systems such as organisation. An organisation's system of values is said to underlie its organisational culture. An organisation imports their values on individuals through avenues that include organisational socialisation (The Blackwell Encyclopaedia of Management Vol.IX Human Resource Management p.395).

Today, employees are asked to be the point of contact for the customer, to be the team players and to provide effective and efficient customer service. Unless quality is internalized at the personal level, it will not become rooted in the culture of an organization. Quality should begin at individual level. Employees who embrace quality as a personal value often go beyond what they are expected to do or they provide extraordinary service. They also innovate the process and become creative in making continuous improvement. TQM practices should be able to bring about this change in attitude and develop a habit of total quality in their performance. This value may be termed as workmanship value. Values are the building block of culture and improvement. Values bring about change in culture. The only way to improve workmanship value is through extensive education of all employees and exemplary leadership at all levels of management.

3.3.3 Management Attitude

What is meant by attitude? Attitude is a state of mind. But in management context, this definition will be very limited. There are three elements underlying the concept of attitude. These are emotion, belief and behaviour. These factors are basically based on the psychological approach. The dominant approach characterising the structure of an attitude is in turn of the three components. The effective component of an attitude is an emotion, feeling or sentiment, the person has toward something. The second component of an attitude is, the cognitive component, is the actual belief or knowledge the individual persons to have about something. Finally, the behavioural intention component of attitude reflects how the individual intends to behave toward something. These components are not discrete phenomenon that are formed sequentially but instead interact among themselves and are manifested in variety of forms and mechanism (The Blackwell, Encyclopaedia of Management).

An alternative view of attitude is called situation model of attitudes. (Salankik and Pfeffer 1997). This suggests that attitude represent socially customised relations based on social information available in the work place. Any given persons attitude are seen as being a function of social cues about the object of the attitude that are provided by `significant others` in the workplace. (Blackwell Encyclopaedia, p-20).

Attitudes are of interest in an organisational setup because of their presumed connection with workplace behaviour. Commonsense suggest that attitude will affect behaviours. In reality, this relationship is not straight forward. Only specific attitudes actually predict specific behaviours. For example, a strong attitude about one's pay being too low may cause that person to resign for a position with higher pay (p-20, Blackwell Encyclopaedia of Management, Vol.I). Several research studies have established that employee's satisfaction is an important element in the successful running of an organisation. Management should take into account this factor and should evolve a strategy to keep its employees satisfied. In the era of globalisation, there is cut throat competition among national and multi-national corporate houses and there are plenty of chances of migration of quality labourers from one corporate house to another. Thus management attitude should be positive, supporting and it should take parental care of employees, who might be in dilemmas and troubles, due to the socio- cultural and economic factors prevailing in the society.

Modern management has taken up this issue seriously and there are several strategies even to discover employees' unrest and unhappiness. Thus it is observed that there is a paradigm shift in the management attitude to employees from the earlier concept of master-slave system to parents-children approach.

TQM culture can be built only by an enlightened top management – all those decision makers and event makers in the organization. Management includes owners, board of directors, unit heads, heads of department, sectional heads, office bearers of unions and association. All these functionaries have the capability to influence the culture in the organizations. They do it through the roles they perform and their style of functioning has a longer impact on culture creation. The management should necessarily follow an attitude of employee development. The style of management should be more developmental than critical. Benevolent style of managers may contribute to good work culture but is short lived to the extent that the particular manager exists in the organization. Critical attitude of the management creates moral problems and motivational issues. Top management should have developmental attitude to employees. Such managers believe in empowering the subordinates to such an extent that they become autonomous and independent in working out their growth and competence. These managers consider their main job as building competencies of work force. They are system oriented and professional.

They allow employees to learn from their mistakes and solve problems themselves leading to TQM culture.

3.3.4 Employee Motivation

"If companies are to survive, they will have to change from management by movement to management by motivation". Frederick Hergbey.

"If you treat people well and they have the responsibility and authority, they will produce. People should be interested and excited about what they are doing and they will perform well", Alan G Hassenfld, CEOP, Hasbro Corporation.

As a manager or worker, every employee should understand how to motivate others, how others are trying to motivate you or enable you to participate effectively in the organization's activities. Every employee has physiological, security, social and psychological needs. Needs are also called motives because they motivate us to act. Motivation means the various drives within or the environmental forces surrounding, the individuals that stimulate them to behave in a specific manner.

The job of a manager in the organisation is to get things done through employees. To do this the manager should be able to motivate employees. But the problem is how to motivate employees. Because employees are human beings and in order to motivate them, we should appreciate and understand the human nature of employees. It can be seen that motivation is a skill which can be and must be learnt. This is essential for any business to survive and succeed. Work motivation can be considered as a process to energise employees to the work goal through a specific path.

3.3.5 Ability and skill attainment

In a competitive business environment, managers should have several abilities to lead the team of his staff members as a unit to motivate them to keep the flock together and to visualize the future trends. They should have skills and abilities to manage people, to build constructive relationships with their fellow members and strategic partners and to think and act strategically. The important management skills are: 1) Leadership skills, 2) Motivation skills, 3) Relationship building skills, 4) Strategic management skills, 5) Critical concentration skills and 6) Problem solving skills.

Managers can prepare an inventory of their competencies and consciously work on improving their areas of weakness. Managers' ability to motivate staff comes from their power to administer rewards and punishment. Poor managers tend to depend more on punishment to get results. They may create more problems than it solves. Next, managers should develop relationship-building skills. They have to pick up the skills needed to communicate with their peers, customers and to contribute as equal team members.

Another requirement of the change-ready manager is the ability to make strategic decisions. Managers spend much of their time making discussions regarding the projects that their team will work and the clients and stake holders that they will serve.

Managers need to have adequate problem solving skill. In the organisational climate, problem will crop at any moment and the manager should be able to solve them. The ability to perform at high levels, making timely decisions without losing sight of the bigger picture and/or long term objectives is becoming increasingly critical for managers. Perhaps, the most significant challenges facing most global organisations are basically centred on identification, selection, and development of individuals who are capable of performing at the middle and senior managers at higher level.

For a TQM culture to set in, employees (both management and workers) require the proper knowledge tools and skills. People being the most important asset, developing ability and skill in employees is the responsibility of the management. Most firms view training as a requirement for only the newly hired employees. The need for continuous learning can not be undermined as the changes required in the organization are also continuous and never ending. All employees should be trained in statistical tools for solving problems. Training results in improvement in quality of service/workmanship and adds to workers' morale. It also removes barriers between workers and supervisors.

Companies committed to total quality, heavily invest in education and training of the staff, so that they attain the ability and skill to match with the changing needs. When employees are creative and empowered the need for new knowledge and skill arise. The ability of the employees to update the skills depending upon the changing work, definitely contribute to changes in work culture.

3.3.6 Cohesive Workforce

Cohesive workforce means the unity of work force. Workmen need to have unity so as to make collective bargaining positive. Even though, the modern management does not believe in master-slave relationship, there can be incidents of extreme exploitation. Employees should have unity to organise a trade union, which should represent whole employees in all discussion with the management.

International Labour Organisation has stated that the organisation of workers and employers on an occupational basis is one of the most significant features of modern industrial societies. The Indian Trade Union Act of 1926 defines a trade union as any combination whether temporary or permanent formed primarily for the purpose of regulating relations between workman and employers and not for imposing restrictive conditions on the conduct of any trade or business and includes any federation of two or more trade unions.

There are three fundamental principals for trade unions.

1. Unity is strength,
2. Equal pay for equal work or for the same job.
3. Security of service.

Trade unions have two functions, (1) Negotiation and (2) Representation. Negotiation is a powerful tool being used in resolving many important issues like salary, bonus and all other benefits and privileges of the worker. Secondly the trade unions are the representatives of their members before the management. They represent the common issues as well as individual member issue for redressal. If any employee feels that he is not being treated fairly or is deprived of equal justice, he can seek the help of the union as a bonafide member.

A cohesive work force is a must for the welfare of employees as well as for organisational health. It can be seen that united workforce is a boon for an organisation, if it is lead by good leaders. In India, especially in few states; trade unionism became a curse to the industry. This is because of the inability and vested interest of leaders.

In order to make trade unions a catalyst for better employee - employer relationship, there is a necessity of leaders who can infuse duties and responsibilities in employers. In such a situation, cohesive workforce could be a capital for the organisation concerned.

TQM is a company wide effort through full involvement of the entire workforce and focuses on continuous improvement to achieve customer satisfaction. According to Feigenbaum, TQM is "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 marketing, engineering, production and service at most economical levels which allow total customer satisfaction. The core principles of TQM are;

1. A focus on the customer,
2. Participation and team work,
3. Employee involvement and empowerment and
4. Continuous improvement and learning.

These principles highlight the importance of the workforce and their involvement. Quality improvement can be achieved only if one can use the knowledge and creativity of the entire workforce. This presupposes building of a cohesive workforce which will strive to achieve continuous and quantum improvement. Managers give freedom and encouragement to employees enabling them to contribute individually and in teams. By training employees to be creative and rewarding good suggestions, managers can develop employees' loyalty, mutual trust and thus a cohesive workforce. The systems and procedures formulated and established should ensure participation in groups/teams. A cohesive workforce may be defined as the workforce who contributes positively to the organization in teams with mutual trust. Individual differences sink naturally while team spirit and loyalty prevails in the entire organization. One should be able to notice a participative work culture. Such participative work culture and cohesive work force can be developed in an organization, if the systems established by management facilitate

1. Recognition of teams and individual accomplishment,
2. Sharing success stories throughout the organizations,
3. Encouraging formation of employee involvement teams, and
4. Providing financial and technical support to develop employees' ideas.

Encouraging team work among the employees encourages the involvement of the total work force in attacking systemic problem such as cross functional barriers. Today, the use of self-directed and self-managed teams is growing. This team spirit contributes to cohesive work force and change the organizational culture.

3.3.7 Motivational Programmes

Quality of work life (QWLI) is related to employee productivity and motivation. There are a number of measures and programmes that can be used to make the work environment more conducive to worker motivation and productivity.

Robbins (1993) refers to a set of motivational theories as the task characteristic theories. Included in this group are the requisite task attributes theory, the job characteristics model and the social information-processing model. These theories suggest that an environment with a set of task attributes such as variety, autonomy, responsibility, knowledge and skills, required social interaction and optional social interaction will bring about a high degree of motivation to the people. The task characteristic theories support that QWL and motivation are interlinked.

Motivation and human behavior are major elements in human resource development and management. The system, with in which employees work, can seriously affect motivation. In the total quality environment, managers need to take on new roles as coaches and facilitators and their skills in motivating employees become crucial. Motivation is defined as the art of creating conditions that allow every one to get the work done at their peak level of efficiency. Motivation is also defined as an individual's response to felt the need. Motivating factors such as achievement recognition and responsibility lead to personal satisfaction and sustained motivation for continuous improvement and sustainable QWL.

3.3.8 Orientation and Training (OT)

Training may be defined as a planned programme designed to improve performance and to bring about measurable changes in knowledge, skills, attitude and social behaviour of employees for doing a particular job. Now-a-days, training has an additional purpose of facilitating change. And management training is basically to equip managers with such knowledge. Skills and techniques are relevant to managerial task and functions.

When learning events are planned in a systematic fashion and are related to events in work environments, they are called training programmes. From this point of view, the training process is defined as the systematic acquisition of skills, rules, concepts or attitudes that result in improved performance in the work environment

Goldsteins 1993). Training programmes can be planned to result in effective supervision or consistent technicalities.

Orientation is a process of acquainting new employees with the existing culture and practices of the organisation. It includes activities of introducing a new employee to the organisation and the work unit. The focus of the orientation is to make the induction process smooth and in breaking initial anxieties of the new recruits. This involves a gamut of activities like, familiarising the new members with the organisations objectives, history, philosophy procedures and rules etc.

Orientating a person with a system process, and culture of the organisation is the most difficult proposition, reason being one need to unlearn many experiences and change the mindset of the participants to prepare them to learn the new things. Orientation as a process has three stages,

- a general orientation,
- a departmental orientation,
- A specific job orientation.

Training and education of employees at all levels is a pre-requisite and a vital component for the success of TQM. Lack of well planned training programmes result in inadequate knowledge. Employees with insufficient training and education fail to respond to changes and lead to poor implementation of TQM and hence poor QWL. Investment in people is fundamental to the development of QWL. It means actively facilitating growth and development of individuals. An extensive capability and commitment to training must be an integral part of the organization's business strategy.

Training policy should be;

1. to establish continuous training as the norm,
2. such that training will be a life-long process,
3. to update existing skills, replace redundant skills and train new skills, and
4. Provide for multi-skill ness to cope with change.

For the success of TQM and to build an effective QWL, the organization should direct its efforts to create career plans which encompass not only training proposals but also areas of work experience, job goals and personal development. The above policy would formalize the human resource development programme. In the context of TQM, training function has the objective of improving the competencies, attitudes and also enables use of TQM tools. Training, to be effective

and give desired results, should be need based, well-planned/ evaluated and monitored. The dimensions of training in the context of TQM depicted by Muhlemeyer and Clarke (1997) are as follows;

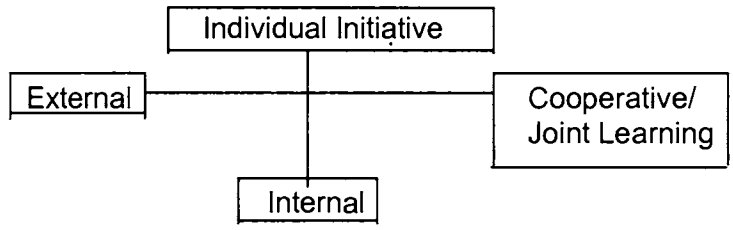


Fig 3.2 Dimensions of training in the context of TQM

All the four dimensions are important in a TQM oriented company and the organizational environment should facilitate cooperative/fast learning through individual initiative to promote QWL.

3.3.9 Communication Effectiveness (CE)

There is a need to provide accurate and timely information for decision-making at all levels in the organization and also for receiving speedy feedback on the work situation and performance in order to create awareness, generate understanding, acceptance and commitment to change. Creating effective communication channels is the most important factor in creating a healthy work environment. Employees will be able to understand and appreciate the problems of others only if proper communication network exist. Quality problem or poor quality of work life arises because of the absence of communication networks between the departments, customers and the employees and the suppliers. Employees may need to communicate with the suppliers to reduce their own difficulties and ensure quality. A visit of the employees to the suppliers' work place will be helpful to understand the problem and develop strategies to work out changes to meet the requirements. The lack of effective communication prohibits the progress of TQM efforts and leads to poor QWL. Well known communication vehicles include company news papers, briefs, bulletins, videos, briefings, meetings, management by walking about. Computer networks also provide a channel for immediate organization–wide information.

3.3.10 Employee Responsibility

Employees should have responsibilities to the institution. They are there in an institution only as the institution exists. If an institution is closed, its employees are becoming shelter less. They are losing their livelihood. Employees should act in a responsible way so as to improve the goodwill of an institution. Here we can also think about employee's loyalty and commitment. But it is noticed that employees may not show interest in the making of the organisation, if they are not informed of institution's activities. We have to infuse belongingness among them. This can also generate positive feeling in employees towards organisation.

Research indicates that the following can influence employee's positive feelings;

1. Participation in goal setting.
2. performance feed back
3. Supportive communication with immediate supervision and upper management.
4. Justice in performance appraisals.
5. Objective measures of performance.
6. sufficiency of pay, benefits and rewards,
7. quality of supervisory relationship,
8. Favourable development opportunities.
9. Clearly stated guidelines defining appropriate work behaviour and job demands.

If employees are motivated and are kept informed about company's plans, they would definitely show responsibility to organisation.

In this context, it can be mentioned that the key to the success of the Japanese industries, especially car industry is the empowered workforce and team work involved. Employees were given the responsibility and authority to stop a process if the quality failed to meet the standard specified. This system was later adopted by Ford who has to face challenges from Japanese car manufacturers.

There can be several obstacles when company try to shift from a traditional style to participative one. These obstacles are;

1. resistance to change,
2. miss-trust of the management's motives among the workers,

3. lack of clean expectations from workers,
4. lack of participative skills among employees
5. Lack of executive commitment.

We have to try to minimise these barriers.Tools and techniques are important n TQM, but the primary requirements to achieve total quality is more an attitude of mind, based on pride in his job, in the self, in the organization and requires a total commitment from every employee at all levels. Every employee should be esponsible for quality products and services. A well-trained and properly motivated employee who considers the job as his primary concern certainly will be responsible o give a quality output.

3.3.11 Employee Involvement

The shrinking global market has led to stiff completion in the business and ndustrial arena. The entry of a number of new companies, both local and global into arious markets has given the customer a wide array of product choices. Many of hese new companies are able to produce the same or similar products at almost the same or lower costs. Thus customers today have a wide range of products to choose from. These products not only meet their specifications closely but also their budgets. Competition has extended far beyond the manufacturing or private sector. Today, the service, government and non-profit sectors also face stiff competition.

The need to grow and succeed in an increasingly competitive market has seen the implementation of various quality initiatives in different organisations. Problem-solving and process improvements are two vital aspects of the quality nitiates, and proactive actions are being taken to prevent problems. Total quality management (TQM) is a continuous process that strives to increase customer satisfaction, lower costs, and minimise defects and variations in every aspect and every process of the business.

TQM involves a number of catchwords like Just-In-Time, quality circles, employee involvement, continuous process improvement, empowerment, Kaizen, self-directed work groups and world-class quality. Basically, the philosophy of TQM s to involve every employee in the organisation along with its suppliers and distributors to improve product quality and enhance customer satisfaction.

One of the important concepts of TQM is employee involvement. This is a relatively new method, which is in contrast to conventional management practices, wherein management takes all decisions and workers just follow them to accomplish their jobs. This top-down management styles is slow and inflexible with little room for competition. Survival in today's time-starved, customer driven market requires rapid response times from manufacturers and other businesses to the ever-changing customer needs.

Employee's involvement is a system wherein employees are encouraged to use their expertise and knowledge to suggest methods for improvements in their work areas. These suggestions could pertain to improvements in the job, the product, the work atmosphere or the company as a whole. Many companies have ventured into a participative style of management by involving employees in the problem solving and decision making process.

When Ford faced continuous threat of competition for Japanese car manufacturers, it ventured to study how the Japanese were excelling in their performance efficiency. It established a task force to study the Japanese manufacturing process. Results showed that the key to Japanese performance and efficiency was their empowered workforce and the teamwork involved. Some of the most successful companies are those that have achieved a close relationship between workers and the managers. The policies in these companies fostered teamwork, participation, continuous learning and flexibility. However, the change from conventional management practices to the new style was not achieved overnight. Learning and implementing participative management requires a lot of effort and time. Implementation of employee involvement systems requires many changes in the existing company practices.

While change of any kind is difficult for the workers, when suddenly asked for inputs, they tend to doubt the motives of the management. Similarly, they are unsure of the extent of inputs required and the importance placed by the management on these inputs. Poor experience in participative activities is also a hindrance. Above all it is vital for the management to remain continuously committed to the cause of TQM and employee involvement.

3.3.12 Attitude Towards Change

Change is the essence of universe and there is no organization that is not affected by change. Change is an inevitable part of organizational life and recently a crucial concern for all organization. Any kind of change inevitably boils down to change in the mind set and behaviour of the people. This is more so in the context of TQM. Global and social changes are both pervasive and persisting. Change entails two major activities – one becoming aware and sensitive to change, and the other to create strategies and implement them to cope with the change. Organizations are no exception to this universal phenomenon of change. Successful organizations are making major changes by adopting total quality management programmes in there business process. TQM efforts succeed only if the people have the right attitude towards change. Conversely implementation of TQM necessarily brings about a positive attitude towards change. This positive attitude of human resource is absolutely necessary to meet the challenges of ever changing business environment.

Khandwalla (1988) defines an organization as a particular pattern of tasks, techniques, structure and people. Tasks mean goals and the whole hierarchy of goals and sub task required to secure them. Techniques are systematic procedure for converting inputs into outputs. Structure is the network of roles. In people are included particularly the skills and attitude of the member of the organization. Organizational change means any one or more of the task, the techniques, the structure and the people of the organization. Implementation of TQM leads to major changes in people, culture and process resulting in a transformed organization. Thus the human resource (people) in the organization should have continuously positive attitude towards change.

3.3.13 Grievance Rate

Broadly speaking grievance means, any real or imaginary feeling of dissatisfaction and injustice which an employee has about his employment relationship. According to Dale B G (1999) "grievance is any dissatisfaction or feeling or injustice in connection with once employment situation that is brought to the attention of management". According to Michald J Jucious, "a grievance is any

discontent or dissatisfaction, whether exposed, expressed are not whether valid or not, arising out of anything connected with the company that an employee thinks, believes or even feels is unfair, unjust, inequitable".

Thus a grievance reflects dissatisfaction and discontent or a feeling of injustice.

There are four causes of grievances.

1. Grievance arising out of working condition
2. Grievance arising out of management policy
3. Grievance arising out of alleged violation of;
    a. Collective bargaining agreement,
    b. Company rules and regulations.
    c. Central or State laws,
    d. Responsibilities of management.
4. Grievance arising out of personal maladjustments.

The best way to approach for the redressal of grievances is to understand the grievances of the employees itself. This is possible by methods such as: 1) Exit interview, 2) Opinion survey, 3) Gripe boxes, 4) Open transparent policy Gupta C B (2003)

Management has to establish methods by which an aggrieved employee can express his feelings of dissatisfaction with his job, working conditions or with the management and a means of ensuring that there are some measures of promptness in the handling of the grievance.

Every organisation requires proper procedure for handling employee's grievances. Grievances handling procedure is a formal process of settling grievance and it usually consists of a number of steps arranged in a hierarchy. The number of steps arranged in a hierarchy, a typical grievances procedure is shown below.

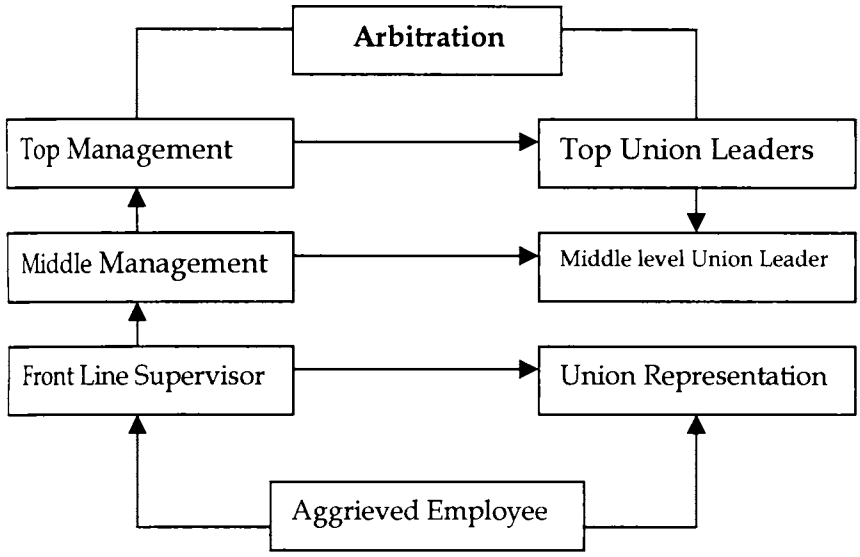


Fig 3.3 Grievance Redressal Procedure.

(Source: Gupta C.B, 2003)

There are several advantages for the above grievance redressal procedure. They are;

i) A systematic grievance redressal procedure will bring grievances into the open, so that the management can know them and take necessary action to settle them.

ii) It helps in preventing grievances from assuming dangerous proposition.

iii) It provides the workforce a formal opportunity to express their fears, anxiety and dissatisfaction. Such release of emotion helps improve the morale and productivity of employees.

According to Michall Amstrong, a well designed and properly structured grievance redressal procedure provides;

a. A channel or a vehicle by which any aggrieved employee may present his grievance.

b. A procedure which ensures that there will be a systematic handling of every grievance.

It is evident that systematic grievance redressal channel will enhance the satisfaction level of employees.

3.3.14 Accident Rate

Workers spend a great deal of time in industrial settings. They are exposed to various hazardous situations. In several occasions, they are prone to accidents. Such hazardous situations will have telling effect on the employee satisfaction as well as on employee productivity. Similarly workers are exposed to different types of accidents. "Due to rapid industrialization, mechanical, chemical, electrical and radiation hazards have increased. Every year lakhs of employees are injured in factories, mines, ports, railways etc. leading to partial or total disablement" (Gupta, C.B 2003). Because of these reasons, industrial safety has been given much importance in modern management. "Safety measures prevent accidents and ensure regular flow of work. Safety also helps to improve the morale and productivity of workers. It contributes to team work and sense of belongingness among the employees". (Ibid. p-6.11)

Industrial accidents cause a great loss to both the employer and the employees. These losses are mainly due to,

a) Cost of compensation to be required for employees.

b) Cost of medical aid

c) Cost of training a new worker

d) Cost of lost time when work stops due to an accident.

e) Cost of investigation in to the accident.

f) Cost of supervision and inspections.

g) Cost to the Government in terms of factory inspectors and public health services.

h) Cost of spoilage at materials.

I) Cost of damage to the machinery

j) Cost of wages payable during injury.

k) Cost of loss of morale

L) cost of lost to the worker and his family

There are three main causes for industrial accidents. They are;

1. Un-safe conditions
2. un-safe Acts
3. Miscellaneous causes.

Unsafe conditions include work related or technical causes. These are the biggest causes at accidents in industry.

Unsafe Acts occur due to lack of knowledge and skills, bodily effects and faulty attitudes. Some examples are:

1. Operating without authority
2. Failure to listen to warning
3. Using unsafe speeds

Miscellaneous causes: Young, un-trained and in-experienced workers cause more accidents than old, trained and experienced workers. Alcoholic and drug addicted workers are more accident-prone.

The employees are accident-prone and if the manager's attitude towards the affected employees is un-sympathetic, it will reduce the satisfaction level of employees. Employees would feel that Management is not at all bothered about them and employees will lose balance.

3.3.15 Defect rate

Crosby under the "Absolutes of quality management" states that there quality performance standard is zero defects. A fundamental premise is that poor workmanship is the first issue to be addressed to improve quality. Crosby (1984) asserts that "mistakes are caused by two factors, lack of knowledge and lack of attention". Education and training can eliminate the first cause and a personal commitment to excellence (zero defects) and attention to details will cure the second. Defect rate of product/service is an important indicator of quality. Defect rate may be judged by the extent of sales return and defective parts/complaints from customers. If an employee receives the feedback that the product/service for which has been a contributor is defective, the employee feels unhappy and as a result employee satisfaction level decreases. Thus the defect rate may be considered as an important indicator of employee satisfaction.

3.4 Conclusion

In this chapter, the different approaches that exist for human resource measurement have been discussed. A critical review of the existing human resource measurement approaches lead to the conclusion that there is a necessity for evolution of a unique instrument to assess the changes in human resource quality consequent upon implementation of TQM. A detail review of indicators of the human resource quality has been provided in this chapter. The above reviews of literature and discussions with experts in the field have finally enabled the investigator to propose a model for measuring human resource quality in organizations.

CHAPTER IV

ORGANIZATIONAL CULTURE, QUALITY OF WORK LIFE AND EMPLOYEE SATISFACTION

4.0 Introduction

In the previous chapter, various indicators of human resource quality (HRQ) were analyzed. These indicators of HRQ have been grouped under the variables organizational culture, quality of work life and employee satisfaction. This chapter discusses in detail the impact of TQM on organizational culture, quantity of work life and employee satisfaction.

4.1 Corporate culture and TQM

Organizations, which practice Total Quality Management (TQM), are easy to spot, even on a casual visit. Their house keeping is likely to be of a high order. It can be observed that people at all levels are involved with their work and they make improvement. People exhibit happiness and pride in their accomplishments. The organization is visibly oriented to the needs of its customers. People in TQM organization speak a common language. There will be vibrant and optimistic culture throughout the organization. Such a culture cannot be created accidentally. It has to be directed systematically through powerful leadership. It also needs intensive efforts on continuing education and training for everyone, at all level. TQM is rational and humanistic. It integrates a powerful set of principles, work habits, methods and tools and techniques with a profoundly human approach, which respect people and alter the work culture.

4.1.1 Organizational Culture

Organizational culture is represented by a set of values that guide the decisions of an organization's staff as they work to achieve its objectives. Corporate culture develops from the basic philosophies embedded in the management of the company coupled with management behavior. Organizational culture is defined as

the way the majority of employees in a company act when dealing with their customers and suppliers as well as the way they behave towards one another' (Bhat 2002). Culture is a pattern of shared basic assumptions that the people learn as they solve their problems of external and internal integration. Generally, "corporate culture refers to the prevailing implicit values, attitudes and ways of doing things in an organization. It often reflects the personality, philosophy and the ethnic-cultural background of the founder. Organizational culture dictates how the company is run and how people are promoted. (HRM Review August 2003).

From the above definition one may understand that culture is the pattern of shared belief and values that provides the members of organization rules of behavior or accepted norms for conducting operations. It is the philosophies, ideologies, values, assumptions, beliefs, expectations, attitudes and norms that knit an organization together and are shared by employees.

4.1.2 TQM Defined in the context of organizational culture

TQM has been defined in different ways as a search for excellence, creating right attitude and controls to prevent defects and maximize customer satisfaction. TQM has been described by Oakland (1989) in the following definition. "Total quality management is an approach to improving the effectiveness and flexibility of business as a whole. It is essentially a way of organizing and involving the whole organization, every department, every activity, every single person at every level". The definition highlights the nature of TQM and its current significance particularly in changing work culture.

Zaire and Simintiras (1991) defined TQM "as a combination of socio-technical process towards doing the right things, (externally) every thing right (internally), first time and all the time with economic viability considered at each stage of each process". This definition takes a dynamic system view of TQM, once again illustrating the need for change in culture.

Pfau (1989) states that TQM is an approach for continuously improving the quality of goods and services delivered though the participation of all levels and functions of all organizations. Tobin (1990) views TQM as the totally integrated efforts for gaining competitive advantage by continuously improving every facet of

organizational culture. Organizations are dynamic entities and undergo changes in structure, culture, values, systems and beliefs continuously. TQM plays a major role in bringing such changes and hence TQM may be defined as a pragmatic long term systems approach initiated and driven by the top management to bring about a total change culture and interlink everyone, every function, every process and every activity of the organization through involvement, participation and cross-functional management to meet the dynamic needs of the customer and to create a loyal but at the same time a diversified customer base.

4.1.3 Organizational Culture and TQM-The linkage

For most organizations, a strategy based on TQM requires a significant change in the way people think. According to Jack Welch, the CEO of General Electrical, "Cultural change must be sweeping". The quality experts and gurus agree on the need for a cultural or value system transformation.

TQM is described by Logothetics as a culture; inherent in this culture is a total commitment to quality and attitude expressed by everybody's involvement in the process of continuous improvement of products and services, through the use of innovative scientific methods.

Deming calls for a transformation of management styles, Fiegenbaum suggests for a pervasive improvement throughout the organization. Crosby states – Quality is the result of a carefully constructed culture, it has to be the fabric of the organization. Leaders and managers need to understand how different types of corporate culture may either facilitate or inhibit organizational efforts to improve performance and increase productivity. They should have the necessary competency to foster corporate cultural change. Cameron and Quinn pointed out the importance of transforming organizational culture in order to adapt to changing times. A change in corporate culture is an integral part of improving quality.

Total quality is a people focused management system that aims at continued increase in customer satisfaction. TQM is a total system approach and an integral part of high-level strategy. It works horizontally across functions and departments, involves all employees, top to bottom, and extends backwards and forward. Total quality (TQ) stresses learning and adoption to continual change as key to organizational success. TQ is anchored in values that stress the dignity of the

ndividual and the power of community action. The concise definition of TQ used by Procter & Gamble is "Total quality is the unyielding and continually improving effort by everyone in an organization to understand, meet and exceed the expectations of customers".

The term Total Quality Management (TQM) has been commonly used to denote the system of managing for total quality. TQM is a total company wide effort through full involvement of the entire workforce and a focus on continuous improvement. According to Feigenbaum, Total Quality Management is an effective system of integrating the quality development, quality maintenance and quality improvement efforts of the various groups in an organization so as to achieve total customer satisfaction.

Total Quality Management is a philosophy that involves every one in an organization in a continual effort to improve quality and achieve customer satisfaction. Employee involvement in quality management is crucial in achieving and sustaining high level of quality. Employees may have to be empowered to take preventive and if necessary corrective actions without management approval. Employees must be involved in quality management by encouraging them to use quality control tools and techniques to track performance and identity areas needing improvement.

Continuous improvement is a never-ending process and is driven by knowledge and problem solving. TQM efforts definitely lead to change in value/culture and people adapt to a culture of continuous improvement.

TQM programme failures are mainly due to;

1. Lack of commitment from the top management.
2. Lack of system focus.
3. Not obtaining employee commitment.
4. Programmme stops with training.

The success of TQM efforts depends on the performance of the worker/employers of the organization. All managers ideally starting with CEO must act as the organizations' leaders for quality. Their task is to create clear quality values and high expectations and build these into the organization's operational strategies. Systems and methods for achieving excellence are created through initiation and support of management. Senior management personnel must personally and regularly involve themselves in the activities such as planning,

reviewing company quality performance, serving on quality improvement teams, interacting with customers and recognizing and rewarding employees for quality achievements. This serves as a model for reinforcing the values and encouraging leadership at all levels. By committing to quality, senior management provides broad perspectives, vision, encouragement and recognition.

In most-focused companies, the middle level management personnel serve as a quality councilors to set quality policy, guide the deployment of quality initiatives and review performances whereas the top-management personnel act as leaders to encourage exemplary ethical conduct and good community citizenship.

Meeting the company's quality and performance goals requires a fully committed, well-trained workforce, which is fully involved. To achieve these, there should be programmes for:

1. Appropriate education and training of employees.
2. Rewards and recognition system to provide reinforcement and motivations for achieving company objectives.
3. Safety, health, well being and high morale of employees to motivate them for continuous improvement.

4.1.4 Quality Culture

It is one thing for the top management to have a commitment to quality but quite another for this commitment to be accepted or embedded in the organization. The basic vehicle for embedding an organizational culture is a process in which desired behaviors and activities are learnt through experience, symbol and explicit behavior. The component of the total quality system provides the vehicle for the change. Following exhibits show these components as well as other mechanism of cultural change.

CULTURAL CHANGE MECHANISMS:

FOCUS	FROM TRADITIONAL	TO QUALITY CULTURE
Plan	Short-range budgets	Future strategic issues
Organise	Hierarchy, chain of command	Participation/empowerment
Control	variance reporting	quality measures and information for self-control
Communication	Top down	Top down and bottom up
Decisions	Adhoc/Crisis Management	Planned change
Financial Management	Parochial, Competitive	Cross-functional Integrative
Quality	Fixing/one-shot	Preventive/continuous involvement of all
Management	manufacturing	functions and processes

Source: K. Shridher Bhat: "Total Quality Management Text & Cases" 2002, Himalaya Publishing House, New Delhi).

Commitment by the top management is essential to stimulate a culture throughout the organization that continually views quality as a primary goal. Quality culture is defined as the pattern of human habits, beliefs and behavior concerning quality. Cultural issues apply to all levels of management-top middle and junior levels and also the supervisors, technical specialists, business specialists and workforce. A culture of creativity flexibility, teamwork, participation, continuous improvement and leadership are critical to the success of TQM.

Many traditional Indian companies portray the old culture, which is not exactly geared up to TQM. This is indicated by symptoms such as poor-lay out design, untidy manufacturing areas, uncared service facilities, poor lighting and environmental conditions. In addition, the managerial behavior may be erratic with focus on achieving short-term results. For managers, ends are more important than

-eans. Such negative cultures get changed when TQM is implemented ;ystematically.

A TQM culture can be created if the management of an organization starts eaming the values of its people. TQM culture promotes the right value system; -anagers treat employees as their own family members. Management values workers as human beings, values people as people not merely as workers.

The cultural changes on implementation of TQM practices.

Traditional Culture	TQM culture
Hierarchical style	Participation style
Top down information flow	Top down, horizontal and Upward information flow
Inward quality focus	customer defined quality Focus
Short-term planning	A Vision for the future
Functional Focus	Process focus
Episodic improvements	Comprehensive/continuous Improvement.
Top-down initiatives	All staff involved and engaged
Manage and delegate	Lead and coach
Direct	Empower
Counsel	Ownership and participation
Functional and narrow scope of jobs	Integrated functions
Enforcement	Promoting mutual trust
Fire fighting with few individuals/ or group	Team initiatives for group focusing continuous improvement.

Source: K. Shridhera Bhat – "Total Quality Management Text & Cases", 2002. Himalaya Publishing House, New Delhi).

Creating an awareness of quality, evidence of top management leadership, self-development and empowerment, participation, recognition and rewards are the routes in TQM in providing a quality culture. These points are given in details below.

1. Create and maintain awareness of quality. The efforts by management to create and disseminate information on quality leads to change in culture.
2. Efforts in providing evidence of management commitment to total quality by the top management alone are not enough. Top management needs to exhibit leadership on quality and show

evidence to prove the same. This inspires the employees to change their attitude leading to quality culture in the organization. The management normally performs following tasks as evidence to establish commitment.

1. Establish and serve in quality council.
2. Establish quality policies.
3. Establish and deploy quality goals.
4. Provides necessary resources.
5. Provides problem-oriented training.
6. Serves on top management quality improvement teams.
7. Stimulates improvement
8. Provides for reward and recognition.

When top management spends time on these activities, it provides the evidence of leadership and inspires others to follow, leading to gradual change in work culture.

3. TQM provides for self-development and empowerment. Inspiring people to take positive steps on quality is greatly influenced by the nature of the work performed by the people. The activities in any organization can be viewed as a set of inter-dependent functions that produce goods/service. The roles played by the people in an organization are supplier, processor and customer. These roles are executed by individuals at each stage of a process. The management provides knowledge of what the people are supposed to do, feedback on their performance and the means of regulating their work. People are enabled to a state of self-control and self-motivated. This leads to change in work culture. TQM provides for redesign of jobs so that are meaningful and satisfying to workers. Job redesign leads to job enlargement and makes the workers responsible for tasks.

   TQM necessarily provides for delegating decision-making authority to lower levels within an organization. Workers are empowered to take initiative and broaden their scope by delegating authority and providing additional training to them. When employees are empowered in their work, they get the feeling of ownership and responsibility. The act of empowerment provides evidence of management's trust in employees.

In addition to empowering the employees, management may also share confidential business information with employers which clearly contributes to change in culture. The concept of empowerment is applicable to both individuals and to groups of workers.

4. Providing participation and a means of inspiring action: TQM efforts provide employees to participate in quality activities, people acquire new knowledge; see the benefit of the quality discipline. The participation leads to changes in behavior leading to improvement in corporate culture.

5. Provide recognition and rewards: Recognition is defined as public acknowledgement of superior performance of specific activity. Rewards are benefit (such as salary increases, bonuses and promotions), which are conferred for generally superior performance against goals. Recognitions and records play an important role in inspiring people on quality. People develop positive feeling internally when their job contributes to self-development and also when they are given opportunities to participate in planning and decision -making. This tells employees that their skills, their judgment and their integrity are trusted by the management. Change from independent inspection to self-inspection and recognition of superior performance of individuals and teams in any organization brings in a change in organizational culture.

The CII/EXIM award for Business Excellence (which was the same model as the one designed by the European Foundation for Quality Management – EFQM) assessed aspects such as how behavior and actions of the executive team and all other leaders inspire, support and promote a culture of TQM. The model requires evidence to show how 'leaders visibly demonstrate their commitment to a culture of TQM'. Almost all experts agree that top management commitment and involvement are indispensable for introducing TQM.

The CII/EXIM model requires evidence of how leaders recognize and appreciate peoples' efforts and achievement. Leaders must learn to value people as they are, and not blame them for the problems of the organization. The purpose of TQM is not TQM itself; it is the creation of a competitive world-class organization capable of making continuous and quantum improvements.

There are many models for managing change in organizational culture. The TQM way of changing culture begins at the top. If a management blames its workers or its conditions, then it is unlikely to go far with its TQM efforts. Once the top is truly convinced, their involving everyone begins. TQM is a management method based on everyone's participation. Thus there is bottom-up as well as top-down transaction. If the top leadership grasps TQM well and has a compelling urge to get ahead, then cultural change will take place.

A quality culture/TQM culture has several characteristics, which are readily noticeable.

1. Widespread clarity on the mission, vision and the goals of company. The purpose of embarking on TQM journey will be clear to all.
2. Win/Win is a concept that is practiced. All stakeholders will be satisfied.
3. People understand customer needs and its paramount importance in quality creation through which market share and sales can be increased.
4. People are respected, everyone participates. There are many teams and QC circles.
5. Everyone speaks a common language, using phraseology that is meaningful and well understood.
6. People work with facts and data and grasp the principles of variation and how to use the right tools and techniques.
7. People are process-oriented.
8. People make continuous improvements at all levels.
9. The methods of working would have undergone change.
10. The capabilities of the organization are high and the people have the confidence to take on the world.
11. Top managers are in touch with the workplace and are close to reality, they listen.
12. Great results have been achieved and improvement is likely to be sustained.

TQM is practiced world wide as it promises to provide a competitive edge in the complex and dynamic market and give better economic dividends to the organizations. The discussion in pre-pages lead to the conclusion that efforts in implementing TQM change the cooperate culture. In other words TQM practices contribute to the building of the quality culture in the organization. TQM efforts will be

successful only if cultural changes take place in the organization. Cultural change may be defined as the sum total of the values behavior and norms of the organization towards healthy working condition to achieve the required quality. The factors that bring about cultural change include workmanship value, management attitude, employee motivation, ability and skill attainment and cohesive work force. Detailed discussions were presented about these factors in the previous chapter.

4.2 Quality of Work Life and TQM

Today's workforce has attained higher levels of education than at any time in the history of organizations. Consequent upon higher levels of education, the expectation of the employees has also increased. The quality of jobs declines if position offered to the employees are not challenging. The challenges come from needs, motivations and shifting trends in the job. The success of any organization depends on improved levels of effectiveness and this can be possible by further developing the contribution of people in organizations. This requires the development of more rewarding, satisfying jobs and work environments. Employees are the greatest assets of any organization. If organization regards the well being of employees as important, efforts should be made to structure workplace in such a way to encourage and motivate the employees to contribute their best. A happy and motivating work life will definitely lead to satisfying personal life. A satisfied worker will be proud of his organization. People expect work to be meaningful, challenging and developmental. The quality in work life should be of very high order to keep the people happy. According to system theory, people cannot compartmentalize their lives. Their work lives (quality of work life – QWL) and private lives (quality of life – QOL) cannot be separate. Both are interdependent. Effective adoption and diffusion of Total Quality Management (TQM) in organizations has been identified as one of the methods to improve the quality of work life (QWL).

4.2.1 QWL Defined

QWL has been defined differently by different scholars. Hillard (1990) stated that QWL for a worker could mean fair remuneration, a safe work environment and fair supervision. And for lower and middle level managers, it could be participation in

decision making opportunities for career advancement and a proper career path. From this definition, it is evident that assessment of work environment depends on individual needs. Schrender and Flowers (1992) defined QWL as the degree to which a job or a position can meet the career needs of individuals at various stages of carrier development. The concept of career anchors was suggested by Schein (1990) as; 1) Technical/functional competence, 2) General managerial competence, 3) Autonomy/independence, 4) Scrutiny/stability, 5) Entrepreneurial creativity, 6) Sense of service and dedication, 7) Pure challenge, and 8) Life style.

A career anchor is the complete structure of talents, motives and values that guide a person's career (Schoor –1998). Career anchors may be individual based and hence they fit into certain jobs than others.

Coster (1992) suggested a formula to determine QWL for each individual.

QWL = (OxS) (2)

Where `O' is the degree to which an individual is satisfied of a particular domain of the work situation. `S' is a personal, subjective standard for the domain. I is the importance attached to the domain by the individual. If the `S' - personal subjective standard is assumed as 100% then the formula can be simplified as QWL= (O) x (I). Sum of all the individual domain ratings will determine an overall QWL score. This method can lead to assessment of all the individual QWL index of the department. The analysis of the domain ratings will enable us to identify problem areas and to design remedial measures to correct this.

Delamotte and Takezewe (1984) defined QWL as "a set of new labour problems and their counter measures which have gained recognition as important determinants of worker satisfaction and productivity in many societies during the period of their sustained economic growth". This definition of QWL places importance on sustained economic growth which changes the conditions for workers. The growth in economic conditions gives rise to changing needs and demands and greater participation of management to fulfill personal goals.

From these definitions of QWL it is difficult to converge on a single definition. However, it is evident that QWL refers to domains of work situations which will satisfy the needs of the worker and motivate him to increase his efforts and productivity. Need satisfaction is individualistic and the workplace values may differ from person to person. The managers, therefore, should get to know the employees and their personalities, only then they will know how to motivate the employees. But

some common features tend to directly influence the QWL in organizations. Hillard (1990) identifies the following elements that will determine QWL of the organizations.

- ✓ Sufficient and fair compensations
- ✓ Safe and healthy work conditions
- ✓ Security and continued growth
- ✓ Social interaction and integration in the workplace that makes the employee fit into the culture of the organization
- ✓ Legalized labour relations
- ✓ Balance between private and work lives
- ✓ Social relevance of the job
- ✓ Participation in the structuring of work environment though involvement in problem solving
- ✓ Goal congruence between those of the person and those of the organizations
- ✓ The generation of feelings of pride, satisfaction and accomplishment in tasks performed
- ✓ A climate of respect, fairness and cooperation

Lehrer (1982) states that;

"Each organization should assess approaches to productivity and quality of work life enhancement that relate to making the most effective use of its own work setting. There is no universal and sure way to success. If one has conviction that success can be achieved, various experimental approaches will be tried, evaluated and refined and success will be achieved"

4.2.2 TQM and QWL – The Linkage

Today's business environment is increasingly characterized by rapid change and fierce competition. Organizations must adapt to their environment if they have to survive and prosper. Due to the onset of global economy, global market and global competition, the products and services produced have to maintain international quality. To become globally competitive, organizations are adopting several strategies and most sought after management philosophy is Quality Management. According to Oakland (1995), total quality management can only take root and flourish in a culture of quality. The quality of work life of organizations

should be conducive to develop a culture of total quality. James (1992) stated that QWL is the foundation on which TQM can be developed. TQM practices should develop a work place that will meet the needs of the employees and provide the necessary motivation. Effectiveness of TQM can be judged only by the improvement of QWL. These two concepts, TQM and QWL are intimately intertwined.

TQM is a holistic concept involving all levels and functions of the organization. To put it briefly it is "doing it right first time and every time". How could this state be achieved and who can achieve it? It is the people of the organization supported by a leadership which keeps in place proper policies and systems. TQM is a way of thinking by the people in the organization. The hands-on leadership is important for TQM to succeed because when TQM is implemented, a cultural shift takes place leading to fundamental change in values, structure, the way people work together and the way people feel about participation and involvement. The change in the system due to TQM efforts leads to improvement in QWL. TQM requires wholesale organizational change and re-examination of production methods, working practices and industrial relations. These changes naturally lead to improvement in QWL. Most versions of the TQM philosophy stress three core principles that bring about a change in QWL

- All employees can contribute effectively to improvement. It follows from this, that managers have both an economic incentive and even a moral imperative to provide all employees the opportunity to contribute their best. This requires the provision of time, training, access to information and most importantly, the possibility of implementation. Team work must be in the primary mode of management, because the cooperation of every one is essential to share information and to implement improvements.
- The ultimate goal of TQM efforts is customer satisfaction. Even profit is understood to be mostly a function of and therefore, subordinate to the requirement to delight customers, with the products and services. Managers are expected to put customers' interests first in all situations even when they may appear to conflict with other business objectives. Customer satisfaction can be possible through the people in the organization. People ensure product and service quality only if the

QWL improves and satisfies the needs and aspirations of the internal customer, the employees.

- Process is equally important as results. Results depend on processes. Adherence to laid down procedures is absolutely necessary in the context of TQM. This adherence can be achieved through people. The people can stick to laid down procedures only if the QWL also matches with the expectations.

Employees are the prime movers of organization. Deming emphasized that no organization can survive without good people, people who are improving. Businesses have understood that to satisfy customers, they must first satisfy employees. The human resource is only one that competitors cannot copy and the only one that can synergies. QWL may be viewed in two ways. One way equates QWL with a set of objectives, organizational conditions and practices (promotions from within policies, democratic supervision, employ involvement, safe working conditions). The other way equates QWL with employee's perceptions that they are safe, relatively well satisfied and able to grow and develop as human beings. This way relates QWL to the degree to which the full range of human needs is met.

QWL is simple; it involves giving workers the opportunity to make decisions about their jobs, design their work place and what they need to do to make quality products or to deliver services most effectively. It requires managers to treat workers with dignity. Its focus is on employees and management operating the business together. QWL suggests that the work place will meet the needs of the employee and provide the necessary motivation. TQM suggests that employee will look after the needs of the customer. These two concepts are intimately interconnected such that TQM practices lead to proper QWL and if the QWL is conducive TQM become successful. Efforts in TQM such as structured training programmes, empowerment of people, team-work approach to solve problems, recognition of employees and welfare activities will create a culture of trust and participation and enhance the quality of work life.

QWL highlights the approaches required in TQM to create conditions to improve the work environment so that each worker feels proud of his or her ability and skills. The feeling about the job promotes meaningful recognition for the worker as an individual. QWL index can be assessed by the level of motivational and involvement programmes such as quality circles, employee suggestion programme,

ientation and training programme and better communication (Mohanty and Lakhe 998).

4.3 Employee Satisfaction

Employee's satisfaction is an important factor in the overall functioning of an organisation. An employee, who is satisfied with the working conditions of his institution and organisational climate, is an asset to that organisation. This is because a satisfied employee performs well. There are several measures to keep employee satisfied. These include offering incentive, increments, promotion, functional freedom etc.

Several organisations have started to realise this importance of this issue and they conduct regular survey to know about the levels of satisfactions. Sanjay Mandlik, country champion of HR and TQM at ENP says `the purpose of the survey is to understand the organisational climate. The contents vary widely and they include almost all the important aspects of the organisation such as structure, communication, leadership, conflict, reward systems in the personal relationship, organisational effectiveness, responsibility and so forth. Mandalik has listed the other factors.

- To address the concerned areas that the organisation needs and to works out a developmental plan for the company.
- To bench mark key human issues.
- To build employee involvement in the process.
- To validate the various initiatives taken by the organisation
- Build greater transparency in the organisation (quoted in Suipta Dev).

ICICI InfoTech conducts employee satisfaction surveys twice a year. Employee's satisfaction surveys are a valuable tool for assessing job satisfaction, overall workplace productivity and work culture. It gives an insight into employee's perceptions and attitude towards the job as well as organisation.

Similar surveys are conducted in Emerson Network Power. Here employee satisfaction surveys are done annually. The purpose of such surveys is to understand the organisational climate. The contents vary widely and they include almost all the important aspects of the organisation, such as structure, communication, leadership conflict, reward systems inter personal relationships,

organisational effectiveness, responsibility and so forth. It can be seen that the issue of employee satisfaction should address to the following major issues.

1. Employee involvement.
2. Attitude towards change.
3. Grievances rate.
4. Accident rate.
5. Defect rate

Employees' satisfaction can be measured using the above parameters and Employee Satisfaction Index (ESI) can be visualised as an addictive model of the five factors.

4.4 Conclusion

TQM efforts bring about changes in organization culture quality of work life and satisfaction level of employees in the organization. In this chapter an attempt has been made to illustrate the linkage of TQM with organizational culture, quality of work life and employee satisfaction. In this context, it may be recalled that in chapter II, detailed discussions on the indicators of Organization Culture, Quality of Work Life and Employee Satisfaction were included. From the deliberation in these two chapters and also supplemented by expert opinion, the investigator has designed and developed the instrument to measure human resource quality (HRQ).

CHAPTER V

TOOL DESIGN AND METHODOLOGY FOR ITS USE

5.0 Introduction

As a strategy to cope up with the new requirements of becoming competitive globally, organizations have been embracing TQM philosophy world over. TQM is the most appropriate strategy for the Indian industries because quality is one of the critical features for competing in the world market. TQM has two sides, one side comprises of tools, techniques and systems called the hard side and the other, the soft side that is the people side where new attitudes and behaviors are called for. TQM aims at bringing in significant changes in the people side of the organization. In this chapter, the research problem and the research methodology employed for assessing HRQ have been discussed.

5.1 Problem

TQM requires the involvement of every one, particularly of the employees (HR) of the organization. For involvement of employees they need to be trained in the concepts, tools and instructed on their role in the TQM movement. They need to be empowered to bring improvements in the process they carry out and then recognized for having done the right thing. TQM practices in an organization aimed at achieving the above bring about significant changes in human resource. Although there are many approaches to assess the accountability of HR function, making use of a variety of tools and assumptions, HR departments still have difficulty in achieving success with current approaches. (Different approaches for measurements of human resource have been discussed in chapter III) Unfortunately, there are only a few success stories about a comprehensive HR evaluation program. Many researchers question the quantitative approach to evaluation, suggesting that a return on investment in employees must be approached cautiously and judicially and that any such return may be the result of activities of the employees. The literature survey conducted has not been able to identify a comprehensive method to assess

:e human resource quality in the organization. As has already been discussed in :e earlier section, TQM aims at people who are committed, flexible, willing and able :o work in teams in cooperative manner. Organization wide training and development :rograms are under taken while implementing TQM practices to ensure cultural and attitudinal changes in human resource. The measurement approaches mentioned in :e literature survey mainly aims at assessing the impact of HR function on business performance. Further there is a widespread disagreement on these approaches. Hence it is abundantly clear that there is a need for development of an instrument to measure the human resource quality. Such an instrument incorporating the ndicators of Human Resource Quality (HRQ) would definitely be able to assess the changes in quality of human resource due to efforts of TQM. In this research, an nstrument for assessing the human resource quality has been designed and developed and this instrument has been used to measure the impact of TQM efforts on HRQ. TQM efforts conclusively contribute to the changes in the soft side leading :o changes in human resource quality (HRQ). Much of TQM research has been highlighting the success stories and positive impacts. Further the data has been collected in these researches mainly through interviews of the top people and are based on documented interventions in the organizations. In this study the nvestigator has taken a totally different approach and attempted to assess the perceptions of the employees of the organization on the different indicators of HRQ.

5.2 Objectives of the Research

This thesis has been titled as "Development of an Instrument to Assess Human Resource Quality (HRQ) and measuring the Impact of TQM efforts on HRQ using the Instrument". The major objective of the research is to develop an nstrument to assess HRQ. The findings from the study will yield right insights of the different dimensions of human quality and methods to improve the same. The study undertaken by the researcher can make substantial contribution to understand the level of each indicator of human resource quality and thus identify dimensions on which the organization has to concentrate to enhance HRQ.

(1) To design and develop an instrument for assessing Human Resource Quality in different organizations and to find out the Human Resource Quality Index (HRQI).

(2) To critically evaluate and assess the changes in organizational culture consequent on the implementation of TQM practices in selected organizations using the instrument.

(3) To find out the impact of TQM practices in the quality of work life in selected organization.

(4) To assess the impact of TQM efforts on employee satisfaction in selected organizations.

(5) To assess the changes in HRQI in a few selected organizations.

5.3 Research Methodology

Total quality forum of USA defines TQM as "TQM is a people focused management system that aims at continual increases in customer satisfaction at continuously lower cost. TQM is a total systems approach (not a separate area or program) and an integral part of high level strategy. It works horizontally across functions and department involving all employees, top to bottom and exceeds backwards and forward to include the supply chain and the customer chain". Thus TQM is a people focused management system. TQM approach to quality emphasizes three areas of quality,

a) Product quality

b) Process quality

c) Human quality

Implementation of TQM practices leads to tangible and intangible benefits. Tangible benefits such as improvement in quality of products and service, higher productivity, lower cost, better house-keeping, reduction in waste, improved safety and increase in profitability are bound to occur. The impacts of TQM on human quality in terms of intangible benefits are as follows

a) Enrichment of quality of work life

b) Attitudinal changes

c) Better harmony

d) Better communication

e) Effective team working

f) Better human relations/trust

g) Participative culture

h) enhanced job knowledge

i) greater sense of belonging

j) sense of achievement and recognition

k) challenging work

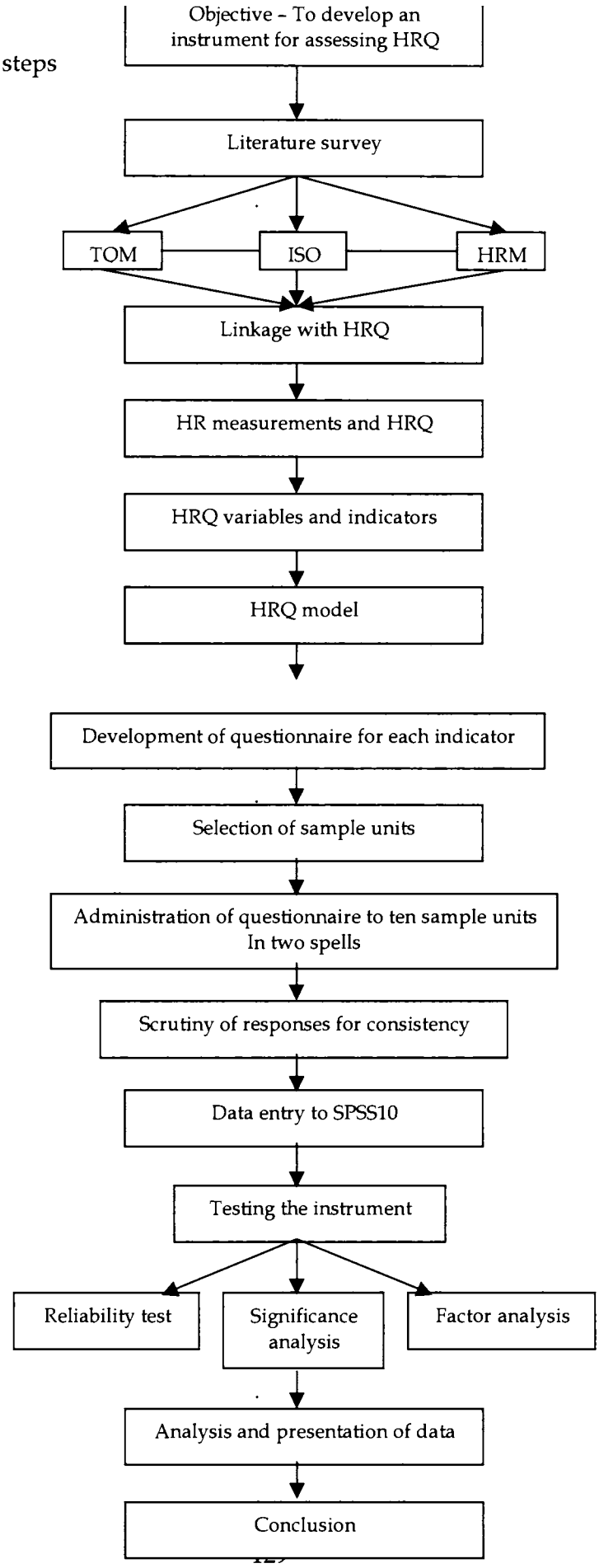
l) greater responsibility

m) self esteem and satisfaction

n) change in mind set and self development

Critical analysis on the impact of TQM on HRQ leading to changes as listed above highlights the need for development of an instrument to assess HRQ periodically and systematically. Literature survey, expert opinion and logical reasoning have enabled us to identify the variables of human resource quality. They are mainly organizational culture, quality of work life and employee satisfaction. TQM efforts bring out significant changes in these variables. The major indicators of the above three variables were identified and finally an instrument was developed for assessing the human resource quality. The following flow chart clearly illustrates the various steps adopted by the investigator for developing the instrument for assessing human resource quality. It is also evident form the flow chart that having developed the instrument the researcher has tested its reliability. Factor analysis has also been done to verify weather number of statements in respect of each indicator can be further reduced.

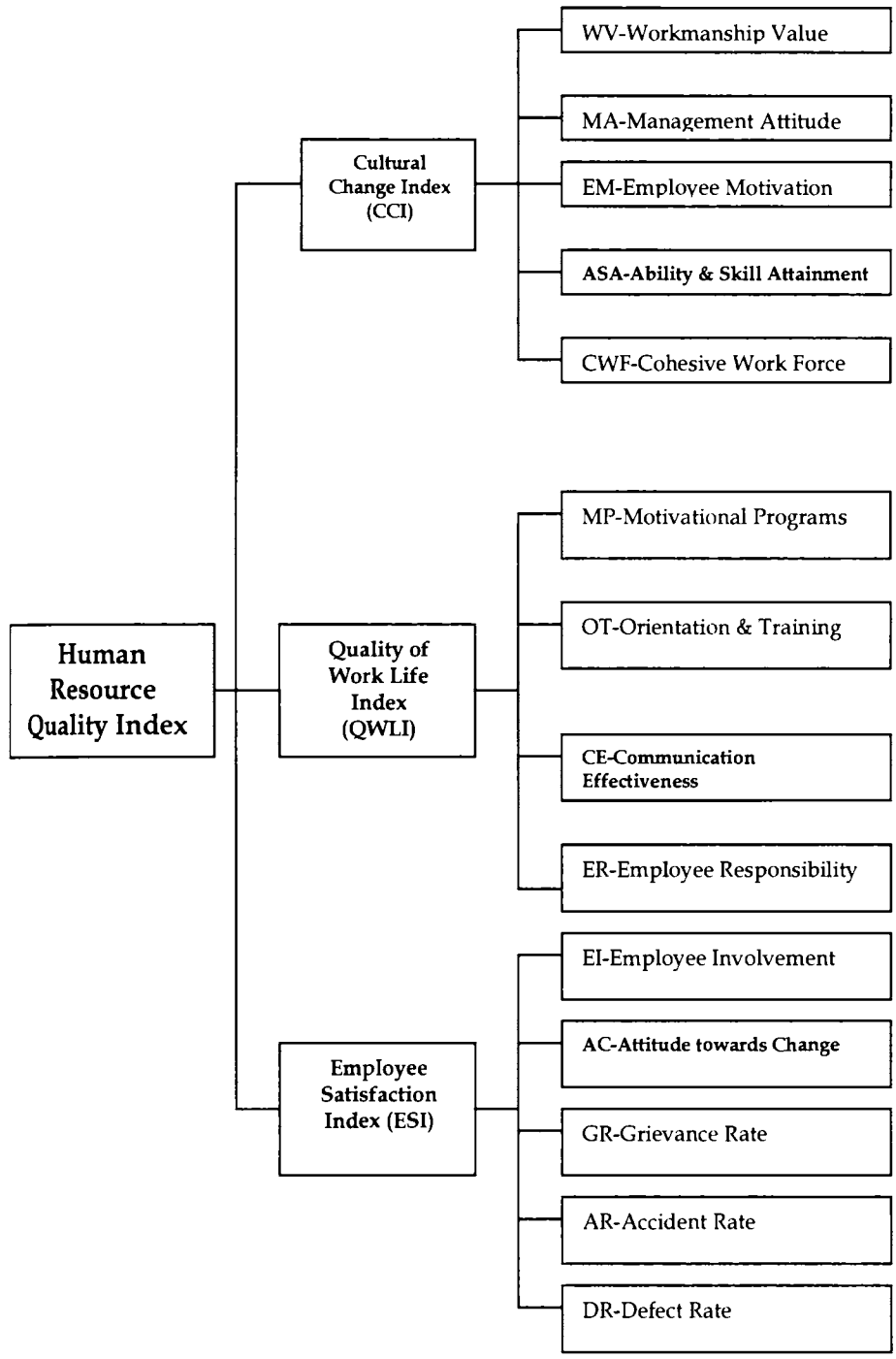
Fig 5.1
Procedural steps



5.3.1 The instrument

For TQM to be in place on a continuous basis, an environment of quality in all aspects of organizational life has to be developed. The review of literature reveals that TQM efforts bring about changes in human resource quality. The instrument developed based on the extensive literature survey and expert opinion is schematically represented below. Detailed discussion and relevant research reviews were presented in chapters II, III and IV.

Fig 5.2 Human Resource Quality Index (HRQI)

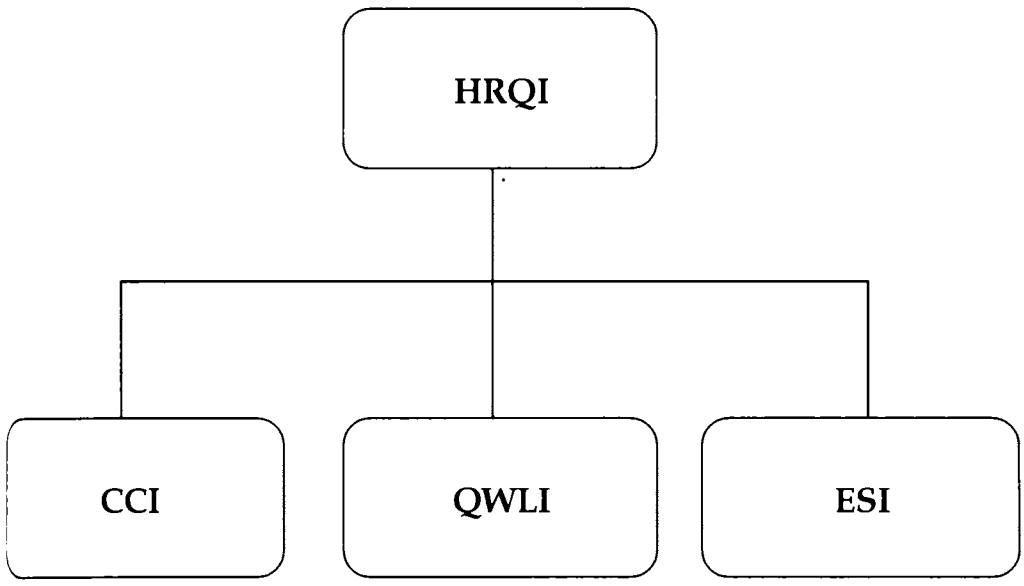


The human resource quality index has been visualized as the combination of Cultural Change Index (CCI), Quality of Work Life Index (QWLI) and Employee Satisfaction Index (ESI). These variables in the additive model of HRQI were studied

carefully and questionnaires/statements to assess the level of each indicator of these three variables were developed. The cultural change index (CCI) has five indicators namely Workmanship Value, Management Attitude, Employee Motivation, Ability and Skill Attainment and Cohesive Work Force. Quality of Work Life Index (QWLI) depends on Motivational Programs, Orientation and Training, Communication Effectiveness and Employee Responsibility. Similarly Employee Satisfaction Index can be assessed by the indicators namely Employee Involvement, Attitude towards Change, Grievance Rate, Accident Rate and Defect Rate. Statements/questionnaires were developed for assessing the level of each of the 14 indicators independently and these measures can be combined to arrive at the Human Resource Quality Index. From the literature survey it has been established that implementation of TQM practices bring about changes/improvements in the quality of human resource.

5.3.2 HUMAN RESOURCE QUALITY INDEX

HRQI = CCI + QWLI + ESI



CCI = *CULTURAL CHANGE INDEX*

CCI = WV +MA+ EM +ASA +CWF

WV = Workmanship Value

MA = Management Attitude

EM = Employee Motivation

ASA = Ability and Skill Attainment

CWF = Cohesive Work Force

QWLI= Quality of Work Life Index

IQWL= MP + OT + CE + ER

MP = Motivational Program

OT = Orientation and Training

CE = Communication Effectiveness

ER = Employee Responsibility

ESI = Employee Satisfaction Index

ESI = EI+AC+GR+AR+DR

EI = Employee Involvement

AC = Attitude towards Change

GR = Grievance Rate

AR = Accident Rate

DR = Defect Rate

5.3.3 Evolution of the instrument

The researcher designed and developed the questionnaire manual with the help of extensive literature survey. Questionnaire has been so designed as to assess the changes in each indicator in the model. Having designed the questionnaire pre-testing was done in two organizations. Based on the analysis and comments the statements have been redrafted and reworded. Attempts have also been made to incorporate sufficient statements to fully capture all the human quality related

:mensions affected by the implementation of TQM. The final questionnaire consists :f 279 statements as detailed below covering all the variables and indicators of ·uman resource quality. The questionnaire is a unique product and confirms to the statistical requirements (The questionnaire manual is presented in appendix II). A ·ve point Likert rating scale with always almost true (5) to not at all true (1) was used ·r marking the statements. Some of the statements have been deliberately made ·egative to ensure the consistency in responding.

Distribution of statements in the instrument along with maximum score for each ndicator is given in the following tables 5.1 to 5.4.

Table 5.1

Distribution of statements under CCI

CULTURAL CHANGE INDEX						
Variables	WV	MA	EM	ASA	CWF	CCI
No. of statements	27	18	22	17	30	**114**
Maximum score	125	75	100	75	125	**500**

Table 5.2

Distribution of statements under QWIL

QUALITY OF WORK LIFE INDEX					
Variables	MP	OT	CE	ER	QWLI
No. of statements	17	20	22	18	**77**
Maximum score	75	100	100	75	**350**

Table 5.3

Distribution of statements under ESI

EMPLOYEE SATISFACTION INDEX						
Variables	EI	AC	GR	AR	DR	ESI
No. of statements	28	24	14	11	11	**88**
Maximum score	125	100	. 50	50	50	**375**

Table 5.4

Distribution of statements under HRQI

HR QUALITY INDEX				
Variables	CCI	QWLI	ESI	HRQI
No. of statements	114	77	88	**279**
Maximum score	500	350	375	**1225**

A close scrutiny of the distribution of statements highlights that there are 279 statements distributed over CCI, QWLI and ESI. The total number of statements under CCI is 114, out of which 14 statements are meant for testing the consistency of the responses. Similarly it can be observed that there are 77 and 88 statements distributed under QWLI and ESI respectively. Here again 7 statements under QWLI and 13 statements under ESI are aimed at testing consistency. As has already been mentioned the statements are scored on Likert scale. The maximum score for CCI is 500, for QWLI 350 and ESI it is 375. The maximum sore for HRQI is 1225.

Surveys were conducted in ten organizations (listed in appendix) comprising of public and private sector organizations in Kerala and Tamil Nadu in two spells in September 2002 and October 2003. All the ten organizations have been ISO certified and are in the process of practicing TQM. Visiting each organization and

meeting the respondents in groups, responses to the questionnaires were collected. The respondents were mainly from the supervisory level. The surveys were conducted in two spells with in a gap of one year so as to assess the changes/improvement in each indicator.

These organizations were continuously monitored during the intervening period between the two spells of surveys. This was with the objective of identifying the factors other than TQM efforts, which would have affected the human resource quality. The performance of these organizations did not show any sudden or drastic variations during the period under observation. The normal rate of fluctuations did exist. The government polices remained stable. The management/leadership of these organizations did not change. There were only some routine interdepartmental transfers, promotions and posting. During the period under observation, there were no strikes or confrontations in these organizations. Further these organizations did not undertake any acquisition, merger or expansion programs during the period of surveys. As such it may be concluded that there were no significant factors or incidents, which could have affected the human resource quality other than TQM practices in these organizations.

A review of TQM efforts undertaken in these organizations during the period of the study is given below.

Table 5.5

Review of TQM efforts

S.No	TQM Activities	KRL	CPT	HOC	HIN	MIL	DV	SY	FU	GU	PV
1	Steering committee meetings	4	2	6	5	6	5	6	6	3	4
2	Quality circle meetings	15	-	9	16	18	24	8	12	8	6
3	Review of TQM teams	2	-	6	8	10	12	5	8	2	-
4	Awareness programs on quality mission, quality polices, quality standards	√	√	√	√	√	√	√	√	√	√
5	Review of kaizen activities	√	√	√	√	√	√	√	√	√	√
6	**Training and education** In-house training programs by experts and task force Of the job training	15	2	5	6	4	6	3	2	1	8
7	Quality audit	√	√	√	√	√	√	√	√	√	√
8	**Transfers and job rotation**	√	√	√	√	√	√	√	√	√	√
9	Orientations and seminars	7	2	6	2	1	1	2	3	2	2
10	Recognition, rewards and celebrations	√	√	√	√	√	√	√	√	√	√
11	Review of suggestion system	√	√	√	√	√	√	√	√	√	√
12	Review of work environment (safety and health aspects)	√	√	√	√	√	√	√	√	√	√

From the table 5.5 above, it is clear that during the period between the two spells of survey, all the ten organizations have undertaken sufficient activities in the route of TQM. However, the activities undertaken are not uniform. Since the surveys were conducted during the period September 2002 to October 2003 the investigator wanted only to ensure that these organizations are implementing activities aimed at TQM and it was not possible to assess to what extent each organization has traveled ahead in the process of TQM. Certain organizations were at the early stages and others have gone far ahead in the journey of TQM.

5.4 Questionnaire Validity

The validity of a questionnaire relies first and foremost on reliability. If questionnaire cannot be shown to be reliable, there is no discussion of validity (www.decpoint.com/validity.html). The instrument developed by the researcher was tested for reliability using SPSS 10 package (Table 7.1, 7.2). Validity is not a characteristic of a particular instrument, attached to it in a way that ensures it will always produce accurate information no matter were it is used. If you want validity you have to demonstrate validity in your situation, it is not built into the instrument (www.decpoint.com/validity.html). The researcher has administered the instrument in two spells in ten organizations and analyzed the data and established that the instrument developed by him measures what it is indented to. "We say an instrument is valid for specific purpose with a specific group of people. Validity is specific to appropriateness of the interpretation we wish to make with the scores". (www.delsiegle.com). In present research, the scholar has used the instrument for a specific purpose of assessing HRQ.

5.4.1 Content-Related Evidence (face validity)

Specialists in the content measured by the instrument were asked to judge the appropriateness of the item on the instrument. If the content of an instrument matches an actual job or situation that is being studied, then the instrument has content validity (www.decpoint.com). In the case of content or face validity, the evidence is subjective and logical. The instrument in this research has been developed on the basis of detailed review and analysis of literature and has been subjected to extensive review by experts in the field. The experts have been requested to scrutinize the relevance and content and give suggestions for improvement. They were also requested to suggest modifications if any with regard to coverage, redundancy and consistency. Based on their suggestions the instrument has been modified and the researcher has ensured content/face validity in the instrument.

5.4.2 Predicative Validity

If an instrument is prepared to measure some future performance, predicative validity should be investigated (www.delsiegle.com). In the present case the instrument is aimed at measuring different attributes of HRQI and it is not indented for any predictive purpose

5.4.3 Concurrent Validity

Concurrent validity compares the scores on an instrument with current performance. The concurrent validity of an instrument can be verified by administering the instrument to two groups those are known to differ on the trait being measured by the instrument. One would have support for concurrent validity, if the scores of the two groups are very different. The instrument under consideration has been administered in ten different organizations and there exist significant differences in the attributes measured. Hence the instrument has concurrent validity.

5.5 Reliability

As has already been mentioned, the validity of an instrument lies in first and foremost in its reliability. An instrument is reliable to the extent that whatever it measures, it measures it consistently. There are three major categories of measures for most instruments: test-retest, equivalent form and internal consistency. Each measures consistency a bit differently and a given instrument need not meet the requirements of each (www.delsiegle.com). Test-retest measures consistency from one time to the next. Equivalent form measures consistency between two versions of the instrument. Internal consistency measures consistency within the instrument (consistency among the statements). Generally speaking the longer the test instrument is the more reliable it tents to be. For research purposes a minimum reliability of 0.7 is required. A reliability of 0.7 represents indicated 70% in the scores that are produced by the instruments. In. the present instrument the researcher has employed there test-retest method and the reliability of the instrument was assessed using SPSS 10 package (Table 7.1, 7.2). The reliability of the instrument in both the

spells of measurement in respect of every attribute has been well above 0.7 and hence the instrument is highly reliable for the purpose for which it is designed.

The internal consistency method measures consistency with in the instruments in three different ways a) split half- used for dichotomously scored variable b) Kuder-Richardson formula (K-R 20 and K-R 21) – used when variables are dichotomously scored and c) Cornbach's alpha. When the items on an instrument are not scored right verses wrong Cornbach's alpha is used to measure the internal consistency. This is often used with attitude measuring instruments that use the Likeret scale. In the present instrument the researcher has calculated Cornbach's alpha in respect of every attribute of the model during both the spells of survey and presented in table 7.1 and 7.2. The value of Cornbach's alpha is well above 0.7 and in most cases it is above 0.9. It may be concluded that the instrument is reliable and valid.

5.6 Conclusion

The researcher has continuously monitored the quality management efforts undertaken by all the organization in the sample. There have been systematic and continuous activities in all these organizations aiming at enhancing process quality and product quality. This is evident from the review presented in table 5.5. The instrument developed by the investigator has been administered in the sample units in two spells in September 2002 and October 2003. The responses collected in these surveys were entered in to SPSS 10 software. The next chapter presents the details of sample selection, survey details and major results.

CHAPTER VI

SAMPLE SELECTION, SURVEY AND RESULTS

6.0 Introduction

In this chapter details of sample selected along with survey details and major findings have been presented. The investigator having developed the instrument for assessing human resource quality based on extensive literature review has identified ten organizations for conducting survey. The following considerations were kept in mind while selecting the sample units

1. The sample should consist of both private and public sector organizations.
2. It should also have organizations from manufacturing and service sectors.
3. The sample should include units from large medium and small organizations.
4. The sample units should be organizations practicing quality management principles.
5. It is also a pre condition that the sample units should be ISO certified.
6. Proximity of the sample units was yet anther criteria considered.

6.1 SAMPLE

Keeping in mind, the conditions mentioned above, the investigator has identified the following organization. Frequent visits were made to these organizations to continuously monitor the events in these units.

1. Kochi Refineries Ltd., Ambalammughal,Kochi (KRL).
2. Cochin Port Trust, Willington Island, Cochin (CPT).
3. Hindustan Organic Chemicals Ltd. Ambalammughal, Cochin (HOC).
4. Hiwin Technologies, Coimbatore (HIWIN).
5. MIL Controls Ltd. Meladur Mala, Trichur (MIL).
6. Dressor Valve India Pvt Ltd. Coimbatore (DVIPL).

7. Synthite Industrial Chemicals Ltd., Kadayiruppu, PO:Kolenchery, Ernakulem (SYNTHITE).
8. Futura Medical Products Pvt. Ltd, Plot No.7, Cochin Special Economic Zone, Kakkanad, Kochi (FUTURA).
9. Guardian Controls Ltd. Vengalloor, Thodupuzha (GUARDIAN).
10. Popular Vehicles and Services, Ernakulam (PVS).

The above ten organizations consist of three public sector and seven private sector units. The primary criteria for the selection of sample units has been that the organizations are ISO certified, the first step towards TQM as discussed in the introduction and literature survey. Out of the ten organizations eight are in the manufacturing sector and two in service sector. These organizations are located in Kerala and Tamil Nadu. The sample consists of large, medium and small scale units. It has been observed in several research surveys that a sample size of ten is used.

The ISO certification and proximity of the sample units have been the most important criteria for the selection of sample units. This has been basically to ensure that quality efforts are been undertaken on a continuous basis and the investigator could monitor the activities of the organization on a regular basis through interaction and personal discussion with the people in charge of TQM implementation. The following diagrams (Fig 6.1 and 6.2) illustrate the structure of the sample.

Fig 6.1

SAMPLE STRUCTURE (public and private sector units)

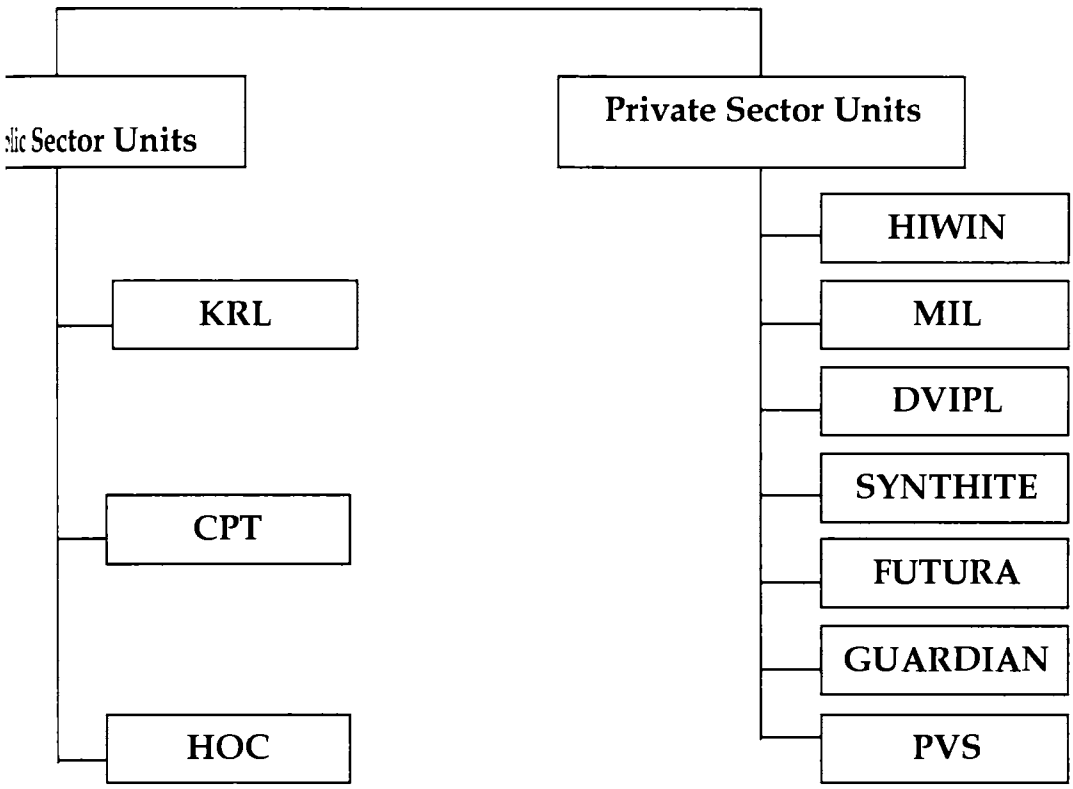
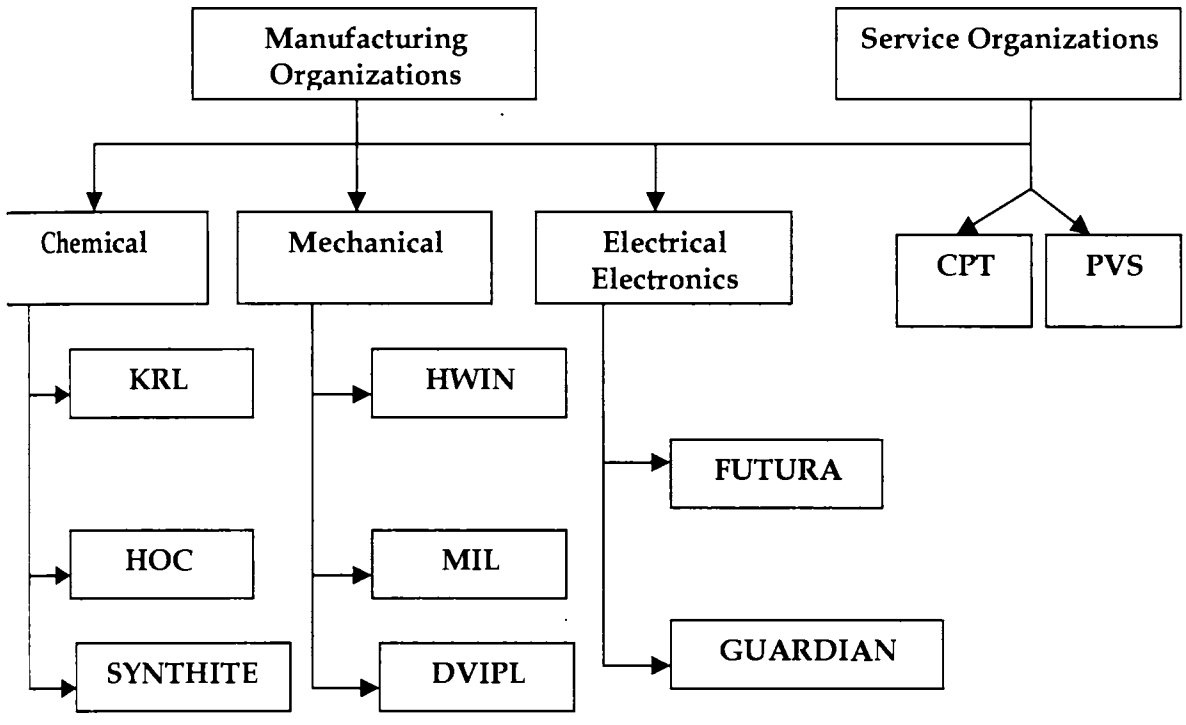


Fig 6.2
Manufacturing and service organizations



6.2 Profile of the organizations

In the following paragraphs, brief profile of each organization in the sample has been presented. However it is brought to the notice that the investigator has not attempted to present a detailed study on these organizations as the purpose of the research is only to test the utility of the instrument.

6.2.1 Kochi Refineries Ltd. (KRL)

KRL took the road of quality and responsibility, which paid rich dividends of goodwill and progress. It was 35 years back that KRL, formerly known as Cochin Refineries Limited, started as a refinery with a capacity of 2.5 million metric tons per annum. Now they have a capacity of 7.5 million metric tones per annum. Bharat Petroleum Corporation Limited acquired the Government of India's share in KRL in March 2001, and with this KRL has become a subsidiary of BPCL. The mission statement of the company emphasizes recognition of employees as the most valuable assets of the organization and development of a culture of participation and innovation of employee's growth and contribution. KRL has been graded level 7 in the international Safety Rating System by Det Norske Veritas (DNV). DNV international safety rating system is a comprehensive audit of management system and performance.

KRL was accorded the ISO 14001 certification in 2002 by the International agency Buerau Veritas Quality International (BVQI). KRL embarked on a mission to align its quality management system (QMS) in line with the ISO 9001 standard.

6.2.2 Cochin Port Trust (CPT)

Cochin Port Trust, a veteran of 60 years and instrumental in growth of Kerala state, is a natural all weather port. The CPT has been able to handle an all time record quantum of cargo of 135.72 MT in 2003-04. The Port has been trying constantly to provide better level of services to its costumers by improving methods and systems for handling cargo. As a part of providing quality service to the

customers, the Cochin Port Trust has been awarded ISO 9002 (1992) certification for providing sea port facilities.

6.2.3 Hindustan Organic Chemicals Ltd. (HOCL)

The company under consideration was set-up in 1960 as public sector unit with the objective of attaining self-reliance in basic organic chemicals. Today, this company has acquired status of a multi unit company. The company has achieved a turnover of about Rs.4100 million in 2001-02. Company is ISO 9001-2000 Certified. Its objective is to enhance customer satisfaction by providing consistent quality product and to achieve continuous improvement through business reviews and customer focus. This policy is communicated to all its employees. Employees are being identified as the most important asset and Human Resource Development (HRD) is given special emphasis. The objectives of HOCL are aimed at;

1. competence of individuals
2. Dynamism of the teams/groups.
3. effectiveness of the organization,
4. development of right kind of organizational and work culture and
5. Achieving higher results by strategic planning, continuous monitoring, updating of skill, knowledge and information.

Based on skill and training needs, identified by heads of divisions and sections and supervisors, various training inputs are planned and implemented to achieve the above objectives. They include in-house training through internal/external faculty, external specialized training courses, customer/client training in new systems/processes etc. and foreign training under Colombo Plan, UNDP etc.

The products of this company confirms to international standards. Its quality management system has been recognized with ISO 9001-2000 certificate by Bureau Veritas Quality International (BVQI). This unit has also received ISO 9001-1996 Certificate in Environmental Management System.

6.2.4 HIWIN Technologies.

HIWIN Technologies started its operations at Peelamedu, Coimbatore. This company is engaged in manufacturing precision engineering and automobile components. The promoters of this company have strong engineering background and possess more than 15 years experience in the area of core competence such as CNC programming, CNC machine assembly, maintenance etc. Presently the company is catering to valves, automobiles, textiles and general engineering industry with a focus on export.

6.2.5 MIL Controls Limited

MIL controls Ltd (formerly known as Masoneilan Ltd.) started its operation in 1983. Since 1995 the company has been operating independently under the name MIL controls ensuring quality service to the customers. MIL Controls Ltd, a KSB group company has been the pioneer in manufacturer of control valves, level instruments and accessories for nearly 2 decades. MIL is backed by the time-tested business model of M/s KSB AG Germany, pioneers in fluid handling systems.

MIL controls among the elite group of control valve manufacturers authorized to design, manufacture and supply to the European Union process plants. MIL is the first control valve manufacturer in India having awarded the prestigious CE marking by RWTDV for quality systems. This company has also secured ISO 9000 certification.

6.2.6 Dressor Valve India Pvt. Ltd (DVIPL).

Dressor valve India Pvt. Ltd was incorporated in the year 1995 with its registered office in Mumbai. DVPIL is the India unit of Dressor Inc.USA. DVIPL manufactures and supplies Masoneilan series of control valves, level instruments and accessories. The facility established in India has a capacity to manufacture 3000 valves and 400 liquid level transmitters per annum. The factory is equipped with Advanced Integrated Manufacturing System (AIMS) which enables to monitor and trace orders right from receipt to delivery point.

6.2.7 Synthite Industrial Chemical Ltd (SYNTHITE).

Synthite Industrial Chemical Ltd., ranks today as the market leader in India's spice oleoresin industry. The companies commenced its operation in 1972 and within a short span of time developed into a global player with over 500 products covering spice oleoresin, essential oils, natural food colours, micro encapsulated products, spray dried botanical extracts, health and fractional food ingredients, floral concentrates, absolutes and resinoids. Uncompromising system quality management enabled the company to obtain ISO 9001 and HACLP accreditation from BSI, UK. The quality of the products confirm to EU/EEC Food Regulations, UK Food Act 1990 and German Regulations for use in flavors and foods. The in-house center for research and quality assurance has been recognized by the Department of Science and Technology, Govt. of India.

6.2.8 Futura Medical Products Pvt. Ltd (FUTURA).

Futura Medical Product Pvt. Ltd formerly known as LUKENS Medical Products Pvt. Ltd is a subsidiary of Futura Medical Cooperation, USA (A Medisys Group Co) and is located in the Cochin Special Economic Zone. Company's mission is to be a leading world wide provider of diagnostics systems and medical safety products enabling rapid, cost effective, on-site delivery of health care solutions.

6.2.9 Guardian Controls Limited

Guardian Controls Ltd established in 1985 has its corporate office in Cochin and manufacturing facility at Thodupuzha. The company is ISO 9002 certified by KPMG for the manufacture of electro mechanical relays. Several products are approved by the Ministry of Defense, Department of Telecommunication and Centre for Development of Telematics. Guardian is the largest supplier of telecom relays in India and their products are well accepted throughout Automotive Test equipments, power electronics, industrial controls, House hold appliances and other industries. At the Cochin special economic zone, CII-Guardian International Ltd-a joint venture of Guardian with CII Technologies of USA, manufactures very high reliability hermitically sealed relays for aerospace applications. CII-Guardian is the larges exporters of the relays in India.

6.2.10 Popular Vehicles and Services Pvt. Ltd (PVS)

Popular vehicles and service Ltd established in 1983 is the first Maruti Udyog dealer in kerala. First dealership started at Trivandrum and subsequently in 1985, PVS started its Maruti dealership at Cochin and Kohzhikode. PVS also started its Maruti dealership in Chennai 2003. PVS is the only car dealer in India to have ISO 9002 certification. PVS sells more than 12,000 Maruti cars per annum and services approximately 1, 20,000 cars per year. PVS is the number one Maruti dealer in India and is also known for its innovative sales strategies like "Unlimited Car Care Package (UCCP)" which provides a Maruti customer, life long care for his car.

6.3 Procedural steps of the study

Following procedural steps were adopted for the completion of the research

Step 1-Intensive literature survey/study for conceptual and functional understanding for design and development of the instrument

Step 2-Discussions with experts for the design of the questionnaire

Step 3-Construction of the questionnaire

Step 4-Selection of sample

Step 5-Collection of data

The investigator has personally visited all the organization in the sample, held discussions with department heads and with the management periodically to collect first hand information on activities specifically aimed at quality management. The questionnaire was administered mainly to the middle management/supervisory staff. The number of respondents varied form 5 to 20 depending on the size of the organizations. The surveys were conducted in two spells, in September 2002 and October 2003 in all the selected organizations to capture the variations in each indicator of HRQ. The rate of return of filled in questionnaire had been almost 100% as the responses were collected personally by the investigator.

Table 6.1

Number of responses for the survey

SNo	Organization	No of Respondents in 1st spell	No of Respondents in 2nd spell
1	KRL	20	18
2	CPT	15	17
3	HOC	15	18
4	HIWIN	10	9
5	MIL	9	10
6	DVIPL	7	8
7	SYNTHITE	8	8
8	FUTURA	10	9
9	GUARDIAN	8	7
10	PVS	10	11

Step 6-Tabulation of data

The data collected using the instrument were entered into the computer by using SPSS package

Step 7-Analysis and interpretation of data

For analysis of data, the following statistical tests were undertaken with the help of SPSS package

1) Cornbach's alpha for reliability

2) Significant analysis (hypothesis testing)

3) Factor analysis

4) Central tendency and graphical presentation

Step 8-Preparation of report

6.4 Conclusion

Some of the major findings of the survey are listed below

1. Even though the duration between the two spells of survey was only one year, the changes in each indicators of HRQ have been significant.

2. The instrument developed is reliable to assess the changes in the ndicators of HRQ and the reliability of the instrument is well above 0.7 indicator wise and above 0.9 group wise and collectively

3. The indicators in the model were grouped under three variables namely cultural change index, quality of work life index and employee satisfaction index. This study has conclusively established that TQM efforts bring about changes in organizational culture, quality of work life and employee satisfaction. These changes ultimately reflect as improvement in human resource quality. Such changes are mandatory for TQM to succeed.

4. The instrument consists of 279 statements to assess the perceptions of employees in respect of 14 indicators of HRQ. The instrument appears lengthy and the same has been opinioned by the respondents. However the organizations to have specific information on each indicator have to depend on such lengthy instruments. The findings, arrived at using the instrument, enable the organizations to design and develop programs aiming at improvements in specific areas. But for a quick assessment, the instrument can be modified with less number of statements for each indicator. Factor analysis has been done on the data to identify whether the number of statements can be reduced or not. However it was observed that the reliability of the instrument comes down significantly when the numbers of statements are reduced. Hence all the statements in the original instrument have retained so that the measurement using this instrument will give comprehensive and conclusive evidence in respect of the variation in each of the indicators.

CHAPTER VII

DATA ANALYSIS AND INTERPRETATION

7.0 Introduction

This chapter gives the details of reliability of the instrument and significance analysis conducted. The details of factor analysis on each indicator are also included in this chapter. For each organization, indicator-wise significant analysis has been attempted. The analysis on the instrument conclusively proves that the instrument is reliable and can be used for assessing HRQ. Subsequently in this chapter, organization-wise analysis has been done to project the variation of HRQ during the period between the two spells of survey.

7.1 Reliability Test

The test was performed using SPSS software. From the table below it is clear that the reliability of the questionnaire used for each indicator is above 0.7 for both the years. It can be concluded that the instrument is consistent and reliable. The indicators have been grouped in three areas namely cultural change index, quality of work life index and employee satisfaction index. As discussed earlier, these three taken together gives the human resource quality index. The following table shows the indicator wise reliability coefficient alpha for both the spells of survey.

From the table 7.1 it is evident that the reliability of the instrument is well above 0.7 in respect of each indicator of HRQ in both the spells of survey. In the first spell in case of grievance rate, the reliability is 0.583 but the same in the year 2003 it is 0.7859. For all practical purposes it may be concluded that the instrument is reliable to assess the level of each indicator of HRQ. Of course, further research can be undertaken for improvement of the instrument.

TABLE – 7.1
RELIABILITY TEST - INDICATORS
(Reliability coefficient - ALPHA)

INDICATORS	2002	2003
WV	0.8765	0.8764
MA	0.8319	0.8526
EM	0.8786	0.8733
ASA	0.8692	0.8554
CWF	0.8761	0.9173
MP	0.8333	0.8332
OT	0.91	0.9173
CE	0.8565	0.9078
ER	0.8721	0.8752
EI	0.9312	0.9412
AC	0.8572	0.8666
GR	0.583	0.7859
AR	0.707	0.7859
DR	0.866	0.9232

TABLE – 7.2

Group wise reliability coefficient – ALPHA

	2002	2003
GROUP 1 - CCI	0.9638	0.9715
GROUP 2 - QWLI	0.9588	0.9653
GROUP 3 - ESI	0.955	0.9728
TOTAL - HRQI	**0.986**	**0.987**

Here in table 7.2 it can be observed that the reliability coefficient alpha is above 0.9 and it means that the instrument is reliable in assessing the variables CCI, QWLI, ESI and finally HRQI of any organization.

7.2 Significance Test (T-Test)

Statistically significant simply means that an outcome had a low probability of occurring simply due to chance. A statistical significance level or alpha level is normally at 0.05 or 0.5%. The most commonly used parameter test is the T-test

when there are only two groups. In the present study, there are only two sets of data. That is data in respect of both the spells of survey. Hence, T-test is conducted for establishing the fact that there are significant differences in the values of variables from first spell to the second spell. For the analysis of significance, the procedure of hypothesis testing is adopted.

Ho – Null hypothesis: Data in two years (2002 and 2003) are not significantly different.

Hi – **Alternate hypothesis:** Data in the two years (2002–2003) are significantly different.

T-test was performed at 95% confidence interval for computing the test statistic for each of the 14 variables in respect of every organization in the sample.

The following table 7.3 gives the details of significance analysis conducted in case of each indicator in respect of all the organizations in the sample.

TABLE – 7.3

Significance analysis of data in respect of both spells of survey

Org	Indicator	WV	MA	EM	ASA	CWF	MP	OT	CE	ER	EI	AC	GR	AR	DR
GRL	Mean	3.34	3.02	3.19	3.08	3.05	3.40	3.34	3.24	3.22	3.25	3.26	3.01	3.43	3.51
JYT	Mean	3.24	3.02	3.02	3.01	3.02	3.12	3.02	3.02	3.03	3.1	3.14	2.95	3.21	3.14
CC	Mean	3.27	3.04	3.08	2.96	3.02	3.25	3.01	3.07	3.2	3.16	3.13	3.03	3.31	3.50
MN	Mean	3.48	3.24	3.20	3.23	3.38	3.43	3.29	3.30	3.43	3.50	3.43	3.14	3.50	3.65
L	Mean	3.09	3.29	3.27	3.48	3.25	3.61	3.14	3.33	3.24	3.04	3.37	3.13	3.13	3.09
PL	Mean	3.38	3.03	3.11	3.10	3.19	3.38	3.15	3.21	3.27	3.32	3.28	3.90	3.28	3.45
HITE	Mean	3.72	3.55	3.61	3.54	3.43	3.78	3.63	3.58	3.57	3.69	3.57	3.15	3.54	3.71
URA	Mean	3.44	3.10	3.18	3.10	3.33	3.36	3.29	3.28	3.50	3.44	3.43	3.85	3.53	3.45
DIAN	Mean	3.41	3.09	3.18	3.04	3.27	3.22	3.13	3.23	3.35	3.59	3.49	3.03	3.57	3.58
S	Mean	3.49	3.16	3.25	3.11	3.31	3.31	3.23	3.31	3.62	3.89	3.69	3.03	3.60	3.95
ark	Since the test statistic value > 1.8, in each organization, the null hypothesis is rejected and alternate hypotheses accepted														

As the value of the test statistic exceeds the table value, the null hypothesis rejected and an alternate hypothesis is accepted. From the above table it can be concluded that the changes in each indicator is significant in the case of every organization. It also highlights the fact that instrument for assessing the variation in each indicator is capable to capture the impact of TQM practices. It has already been stated in the earlier chapter that the investigator has been continuously monitoring all the organizations in the sample to physically verify whether there were any factors

other than TQM efforts in enhancing/changing the level of each indicator of HRQ and concluded that the variations occurred during the one year period of survey have been only due to the TQM efforts. In chapter V in table 5.5 a review of TQM activities undertaken during this period have been presented. From this table it is also evident that the organizations under study have been continuously involving in activities aimed at quality management.

7.3 Factor analysis

The main applications of factor analysis technique are 1) to reduce the number of variables and 2) to detect structure relationship between variables (to classify variables). Hence factor analysis is applied as a factor reduction method. The principle components analysis or factor analysis is essentially an attempt to identify the components which contribute maximum to the variations. In this method as one goes on extracting consecutive factors they account for less and less variability. The decision of when to stop extracting factors basically depends on when there is only little random variability left. How many factors to be retained? By its nature this is an arbitrary decision. According to the Kaiser Criterion, retain only components with Eigen values greater than 1. This criterion was proposed by Kaiser (1960) and is probably the one most widely used. Hence in the present study, the factor analysis done using SPSS 10 package has been presented in table 7.4 to 7.7.

TABLE-7.4

Number of statements with Eigen value > 1 and % variation explained in respect of each indicator - Year 2002

Indicator	WV	MA	EM	ASA	CWF	MP	OT	CE	ER	EI	AC	GR	AR	DR
Numberof statements	27	18	22	17	30	17	20	22	18	28	24	14	11	11
Number of items having Eigen value>1	8	6	6	4	7	6	4	6	4	6	5	5	3	3
Cumulative % variation	74.6	73.4	73.4	66.8	74.9	74.2	69.1	74	74.6	73.2	68.8	76.9	63.8	68.9

TABLE-7.5
Number of statements with Eigen value > 1 and % variation explained in respect of each indicator - Year 2003

Indicator	WV	MA	EM	ASA	CWF	MP	OT	CE	ER	EI	AC	GR	AR	DR
Numberof statements	27	18	22	17	30	17	20	22	18	28	24	14	11	11
Number of items having Eigen value>1	9	5	7	5	7	5	5	6	4	5	7	4	4	1
Cumulative % variation	74.6	67.7	74	68.6	71.8	67.1	70.2	71.6	64.1	70.4	73.5	65.5	69.7	59.4

TABLE-7.6
Number of statements with Eigen value > 1 and % variation explained in respect of CCI, QWLI and ESI - Year 2002

Indicator	CCI	QWLI	ESI
Number of statements	114	77	88
Number of items having Eigen value>1	24	16	18
Cumulative % variation	89.9	84.3	87.7

TABLE-7.7
Number of statements with Eigen value > 1 and % variation explained in respect of CCI, QWLI and ESI - Year 2003

Indicator	CCI	QWLI	ESI
Number of statements	114	77	88
Number of items having Eigen value>1	28	17	20
Cumulative % variation	87.5	80.8	84.2

Factor analysis has been performed taking all the statements under each indicator/variable in respect of both the spells of survey. This has been done to verify the possibility of identifying the statements which contribute the major portion of variation in the indicator. From the tables 7.4 to 7.7 it is evident that there is possibility that the number of statements under each variable can be further reduced.

owever the researcher has not attempted to do the same as the reliability of the strument comes down significantly if the statements are reduced. Further the bjective of the research is to develop a comprehensive instrument which would apture even minor variations in the indicators of human resource quality. It is suggested that future research can be carried out for reducing the number of statements under each indicator and can develop an instrument which may be used for a quick assessment of the impact of TQM and HRQI.

7.4 Mean Comparison

In table 7.8a the mean values of each indicator for the year 2002 in respect of all the ten organizations have been presented. Similarly the table 7.8b shows the mean values of each indicator in respect of all the organization for the year 2003.

TABLE – 7.8a

MEAN COMPARISON SEP 2002

ORGANIZATION	WV	MA	EM	ASA	CWF	MP	OT
KRL	88.4	53.33333	69.13333	49.93333	90.13333	59.26667	64.33333
CPT	87.86667	50.66667	65.33333	47.4	87.53333	50.46667	57.4
HOC	88.6	50.4	65.33333	47.8	89.33333	53.6	56.53333
HIWIN	85.8	51.3	62.9	49.9	92	52.5	58.3
MIL	92	59.3	70.1	53.2	93.1	60	68.4
DVIPL	88.2	51.2	63.8	48.9	94	55.8	57.8
SYNTHITE	97.1	64.7	79.7	60.4	100.3	63.7	71.7
FUTURA	94.2	55.3	69.5	50.9	101.1	56.5	65.2
GUARDIAN	89.5	53.7	68.2	48.7	96.8	53.4	59.7
PVS	93.4	56	72.36364	53.90909	95.63636	57.45455	68

ORGANIZATION	CE	ER	EI	AC	GR	AR	DR
KRL	71.4	54.06667	86.06667	76.33333	41.4	36.13333	36.4
CPT	64.13333	54.8	85.93333	76.06667	40.53333	32.66667	32.8
HOC	63.2	56.8	86.26667	72.66667	39.33333	35.86667	38.06667
HIWIN	65.8	54.7	87.7	75.6	39.9	33.7	35.7
MIL	73.1	57.2	90.1	78	37.6	35.4	34.7
DVIPL	69.3	57.7	88	75.4	40	31.3	33.7
SYNTHITE	77.4	63.2	102.8	84.3	42	40.3	41.6
FUTURA	72.9	61.9	93.4	81	41.6	36.4	36.1
GUARDIAN	69.3	55.5	92.1	79	40.9	35.5	35.2
PVS	68.72727	64.54545	103.4545	82.36364	39.90909	38.36364	42.18182

TABLE – 7.8b

MEAN COMPARISON OCT 2003

ORGANIZATION	WV	MA	EM	ASA	CWF	MP	OT
KRL	92	55.4	71.06667	54.86667	93.2	56.46667	69.4
CPT	86.73333	52.8	65.33333	48.66667	87.93333	55.73333	59.13333
HOC	87.8	56.26667	69.46667	52.8	89.93333	57.06667	63.4
HIWIN	102.3	65.4	78	60	110.7	64	73.4
MIL	93.8	62.7	75.6	57.2	96.1	61.5	69.5
DVIPL	94.2	58	72.4	56.4	97.2	59	68.1
SYNTHITE	103.2	63.2	79	59.8	105.2	64.8	73.5
FUTURA	91.2	56.4	69.9	54.4	98.5	57.9	66.2
GUARDIAN	94.1	56.7	71.4	52.8	99.4	56.2	64.7
PVS	97.1	54.6	73.3	55.1	98.8	58.2	64.2

ORGANIZATION	CE	ER	EI	AC	GR	AR	DR
KRL	71.4	61.93333	96.13333	80.26667	42.46667	39.26667	40.46667
CPT	68.53333	54.4	87.33333	74.86667	42.33333	37.66667	36.2
HOC	72	58.2	90.53333	76.86667	39.4	36.86667	38.8
HIWIN	79	68.9	107.7	88.5	47.9	43.1	45.6
MIL	73.8	60.3	97.2	80.1	39.6	39.6	41
DVIPL	71.8	59.9	97	81.5	40.7	40.7	42.1
SYNTHITE	79.9	64.7	103.6	87.1	45.8	37.3	40
FUTURA	71.6	63.8	99.4	83.6	38	40.9	39.8
GUARDIAN	72.8	65.2	108.9	88.7	41	42.9	43.5
PVS	69.3	61.1	99.6	82.7	46.5	36.6	40.1

Form these tables it can be concluded that there has been significant improvements in every indicator expect in one or two organizations where in certain indicators have shown marginal decline. This aspect has been analyzed in detail in

subsequent pages while discussing the changes in HRQ of each organization. Such marginal changes are bound to happen depending on the extent of importance given to the different dimensions of the HRQ while implementing TQM. Further, such micro-level information is of great significance for the organization to initiate corrective/preventive measures.

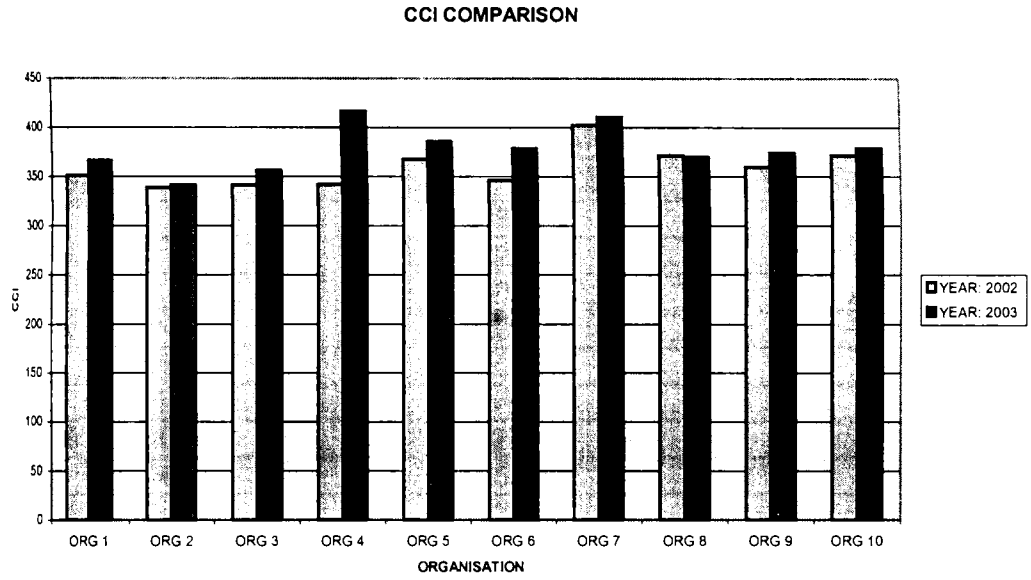
7.5 Cultural Change Index (CCI) comparison

A strong organizational culture can have a lasting effect and provide sustenance to the organization. It gives a sense of pride and identity to individual and teams. The instruments of cultural building include TQM interventions such as value clarification exercises, vision-mission workshops, organizational renewal exercises and various other OD interventions. The implementation of TQM leads to changes in competencies, commitment and culture. TQM ensures a high level of motivation for employees and build culture building sub-systems. The CCI has been calculated by adding the scores on workmanship value, management attitude, employee motivation, ability and skill attainment and cohesive work force.

TABLE – 7.9

CCI COMPARISON		
ORGANIZATION	**YEAR 2002**	**YEAR 2003**
KRL	350.933	366.533
CPT	338.8	341.466
HOC	341.466	356.266
HIWIN	341.9	416.4
MIL	367.7	385.4
DVIPL	346.1	378.2
SYNTHITE	402.2	410.4
FUTURA	371	370.4
GUARDIAN	359.8	374.4
PVS	371.309	378.9

Fig 7.1



In table 7.9 combined mean value of cultural change index in respect of all the ten organizations for both the spells of survey have been presented. Fig 7.1 represents the same in graphical format. From these representations we notice that the CCI has increased significantly due to the on going TQM activities. However the rate of change in CCI from organization to organization is different. This once again substantiates the fact that the extent of care and caution taken in implementation of TQM principles varies from one organization to anther. It may also be noticed that organization two (CPT) shows the least score on CCI and has a very low rate of change in CCI. Detailed analysis to compare the CCI sector-wise (privet/public), based on size of organization is deliberately not attempted. The major objective of study is to develop an instrument to assess HRQ. However it is abundantly clear that the instrument is able to assess even marginal changes in micro level qualitative aspects of HRQ.

7.6 Quality of Work Life Index (QWLI) comparison

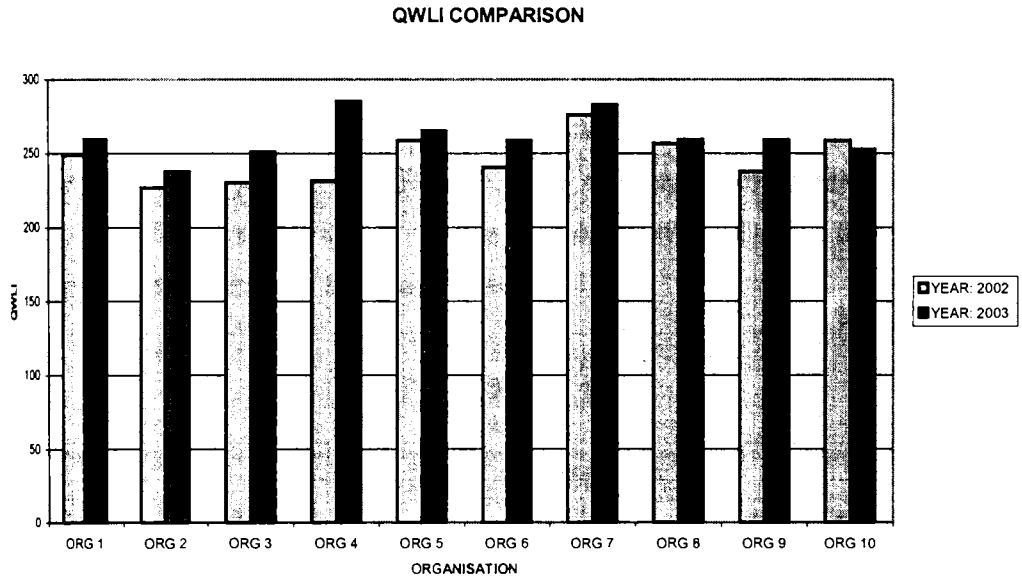
Employees expect more from a job than just providing a means of support. They expect the work to be meaningful, challenging and growth oriented. From the perception of employees the quality of work life relates to the degree to which full range of needs is met. QWL is an important variable in the implementation of TQM. QWL depends on the feeling about the job and the recognition of the worker as an

individual. Improvement in QWL can be assessed by the impact of motivational and involvement programs such as quality circles, employee suggestion systems, orientation and training, communication effectiveness and employee responsibility.

TABLE – 7.10

QWLI COMPARISON		
ORGANIZATION	**YEAR 2002**	**YEAR 2003**
KRL	249.066	259.2
CPT	226.8	237.8
HOC	230.133	250.666
HIWIN	231.3	285.3
MIL	258.7	265.1
DVIPL	240.6	258.8
SYNTHITE	276	282.9
FUTURA	256.5	259.5
GUARDIAN	237.9	258.9
PVS	258.727	252.8

Fig 7.2



The table 7.10 and Fig 7.2 illustrate the change in QWLI from year 2002 to 2003 in respect of the ten organizations under study. In all these organizations there have been significant improvement in QWLI expect in organization ten (PVS). However it may be noticed that the enhancement in QWLI is not uniform. For example organization four HIWIN shows the largest change in QWLI while organization eight FUTURA shows the least.

7.7 Employee Satisfaction Index (ESI) comparison

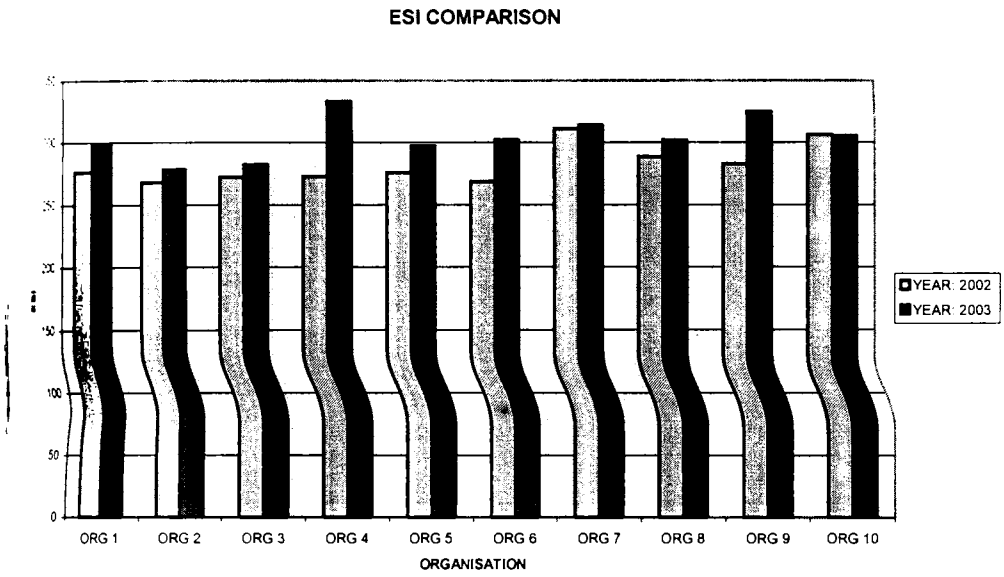
TQM aims not just to meet requirements but also to achieve customer satisfaction. To achieve "market-in" rather than product-out, it is first of all necessary to understand the customer. Most employees think that the customers are those people who ultimately purchase and use a company product. This view of customer as someone outside is not unified. Every employee in the company has a customer-the next process, whoever receives the work that is done by him. "The next process as customer" was proposed by Kaoru Ishikawa. Thus every employee becomes a customer in an organization, the internal customer.

If an organization remembers that its customers include its employee and the public, then it consciously maintain the work environment conducive to the well being and growth of all employees. In addition to the training and job related education, quality improvement activities should include health, safety and ergonomics. To satisfy the internal customers, firms offer special services such as counseling, recreational and cultural activities, non-work related education, day care, flexible work hours etc. These activities generate the satisfactory environment for the employees. The employee satisfaction level is an important indicator of the quality of HR. Continually satisfied employees develop themselves their potential and contribute creatively to the organization. The employee satisfaction level can be assessed by the extent of employee involvement, attitude towards change, grievance rate, accident rate and defect rate.

TABLE – 7.11

ESI COMP		
ORGANIZATION	YEAR 2002	YEAR 2003
KRL	276.333	298.6
CPT	268	278.4
HOC	272.2	282.466
HIWIN	272.6	332.8
MIL	275.8	297.5
DVIPL	268.4	302
SYNTHITE	311	313.8
FUTURA	288.5	301.7
GUARDIAN	282.7	325
PVS	306.272	305.5

Fig 7.3



The ESI in respect of all the units in the sample for the two spells of survey have been presented and illustrated in table 7.11 and Fig 7.3. Here again it can be observed that there have been significant increases in ESI in respect of all the organizations. Further it may also be noticed that the rate of change is not uniform and there is marginal/negligible reduction in ESI in case of organization ten- PVS.

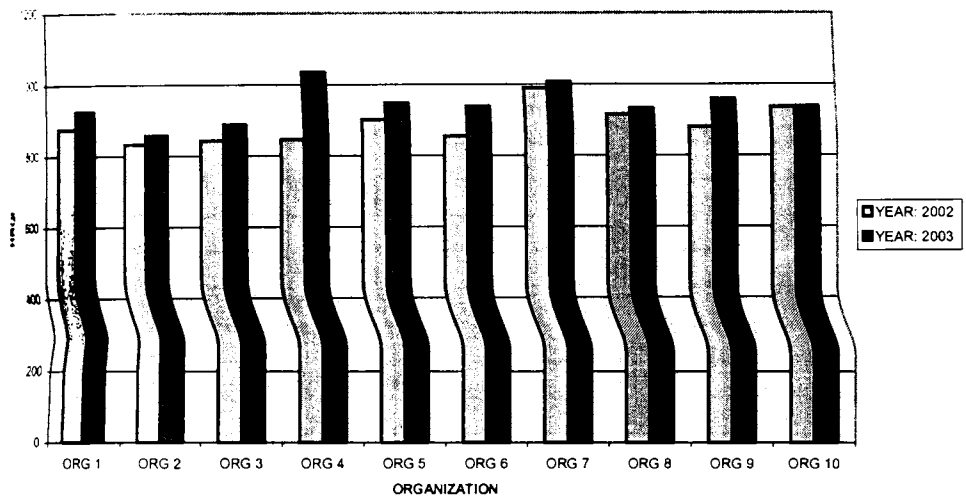
7.8 Human Resource Quality Index (HRQI) comparison

TABLE – 7.12

HRQI COMP		
ORGANIZATION	**YEAR 2002**	**YEAR 2003**
KRL	876.333	924.333
CPT	833.6	857.666
HOC	843.8	889.4
HIWIN	845.8	1034.5
MIL	902.2	948
DVIPL	855.1	939
SYNTHITE	989.2	1007.1
FUTURA	916	931.6
GUARDIAN	880.4	958.3
PVS	936.309	937.2

Fig 7.4

HRQI COMPARISON



Form the table 7.12 and Fig 7.4 it can be observed that HRQI of each organization has increased during the period 2002 – 2003. The enhancement can be attributed to the on going TQM efforts as there had been no other factors contributing to these variations. This research has the major aim to assess HRQ. From the above illustration it is evident that the instrument is able to assess HRQ and also arrive at a HRQI score which may be used to bench mark organizations.

7.9 Indicator-wise Analysis

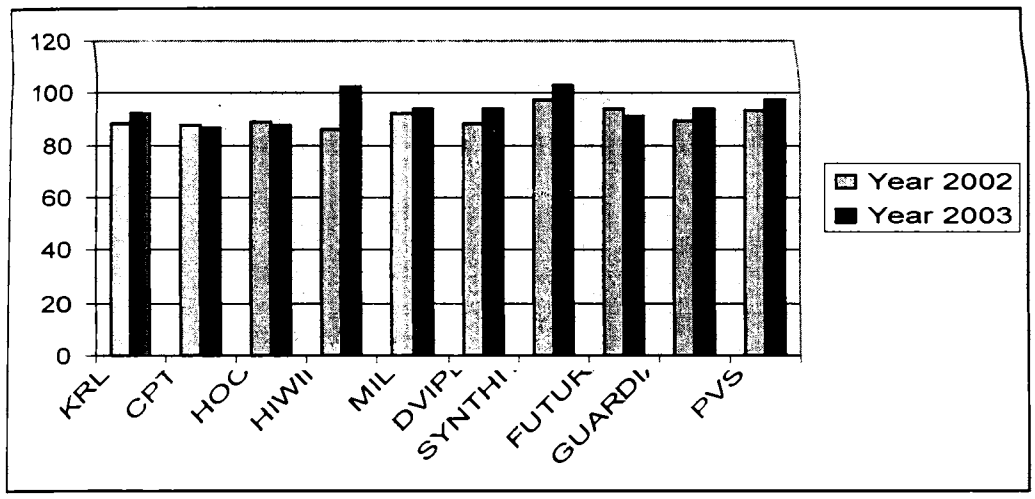
In the following sections, indicator wise analysis has been presented in respect of all the ten organizations. The mean value of each indicator has been compared for both the surveys. This analysis highlights that there have been increases in all indicators on an average. However in few organizations, certain indicators have not shown enhancement. Such information can be of great significances for the organizations to revamp there efforts.

TABLE – 7.13

Comparison -workmanship value (WV)

S.No	Organization	Year 2002	Year 2003
1	KRL	88.4	92
2	CPT	87.86667	86.7333
3	HOC	88.6	87.8
4	HIWIN	85.8	102.3
5	MIL	92	93.8
6	DVIPL	88.2	94.2
7	SYNTHITE	97.1	103.2
8	FUTURA	94.2	91.2
9	GUARDIAN	89.5	94.1
10	PVS	93.4	97.1

Fig 7.5



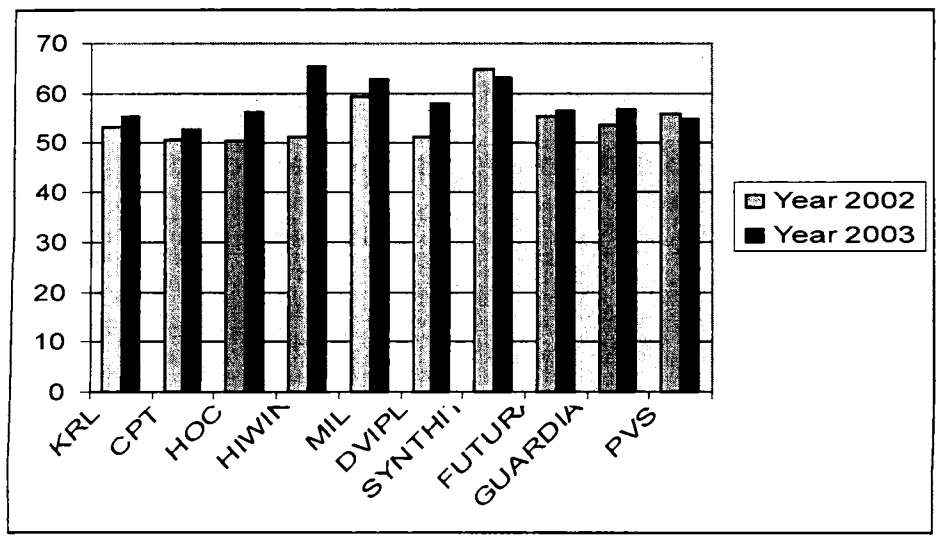
In the above table, the mean of workmanship value for both the surveys in respect of all the sample units has been presented. Form the chart above it may be noticed that WV has shown enhancement in all organizations except CPT and HOC. Both these organizations are public sector units and score for workmanship value has shown a marginal decline. The specific reason for such a reduction can be investigated and appropriate action taken. However when such information is given to the management, they will be able to develop remedial measures.

TABLE – 7.14

Comparison-Management attitude (MA)

S.No	Organization	Year 2002	Year 2003
1	KRL	53.333	55.4
2	CPT	50.66	52.8
3	HOC	50.4	56.266
4	HIWIN	51.3	65.4
5	MIL	59.3	62.7
6	DVIPL	51.2	58.0
7	SYNTHITE	64.7	63.2
8	FUTURA	55.3	56.4
9	GUARDIAN	53.7	56.7
10	PVS	56.0	54.6

Fig 7.6



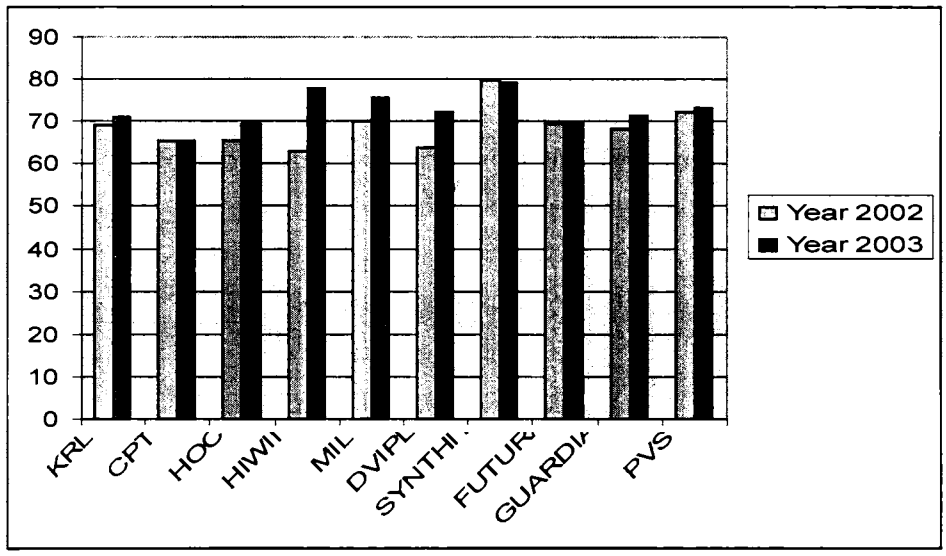
In the above table, the mean of MA for both the surveys in respect of all the sample units has been presented. Form the chart above it can be observed that MA has shown enhancement in all organizations except SYNTHITE and PVS. These organizations are private sector units and the management attitude towards employees in these organizations generally is not of the type-caring and sharing. In the route to TQM, management has to consider these aspects seriously and bring about positive perception about the leadership among the employees for the successful implementation of TQM.

TABLE – 7.15

Comparison -Employee Motivation (EM)

S.No	Organization	Year 2002	Year 2003
1	KRL	69.133	71.066
2	CPT	65.333	65.33
3	HOC	65.333	69.466
4	HIWIN	62.9	78
5	MIL	70.1	75.6
6	DVIPL	63.8	72.4
7	SYNTHITE	79.7	79.0
8	FUTURA	69.5	69.9
9	GUARDIAN	68.2	71.4
10	PVS	72.3636	73.3

Fig 7.7



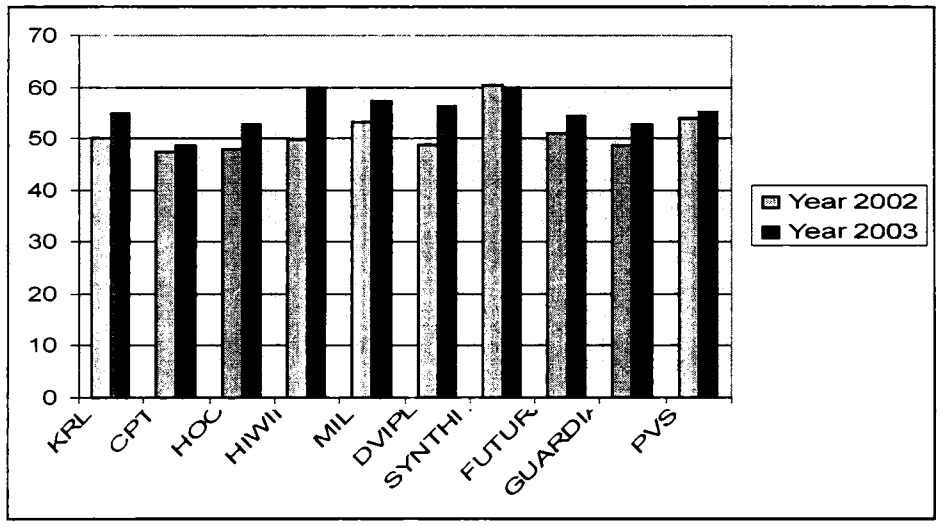
In the above table, the mean of EM for both the surveys in respect of all the sample units has been presented. Form the chart above it is seen that EM has shown enhancement in all organizations except SYNTHITE. It is absolutely essential to have highly committed and motivated employees to bring about quality in process and product. SYNTHITE has to analyze the situation and identify those road blocks against employee motivation.

TABLE – 7.16

Comparison -Ability and Skill Attainment (ASA)

S.No	Organization	Year 2002	Year 2003
1	KRL	49.933	54.866
2	CPT	47.4	48.66
3	HOC	47.8	52.8
4	HIWIN	49.9	60.0
5	MIL	53.2	57.2
6	DVIPL	48.9	56.4
7	SYNTHITE	60.4	59.8
8	FUTURA	50.9	54.4
9	GUARDIAN	48.7	52.8
10	PVS	53.9090	55.1

Fig 7.8



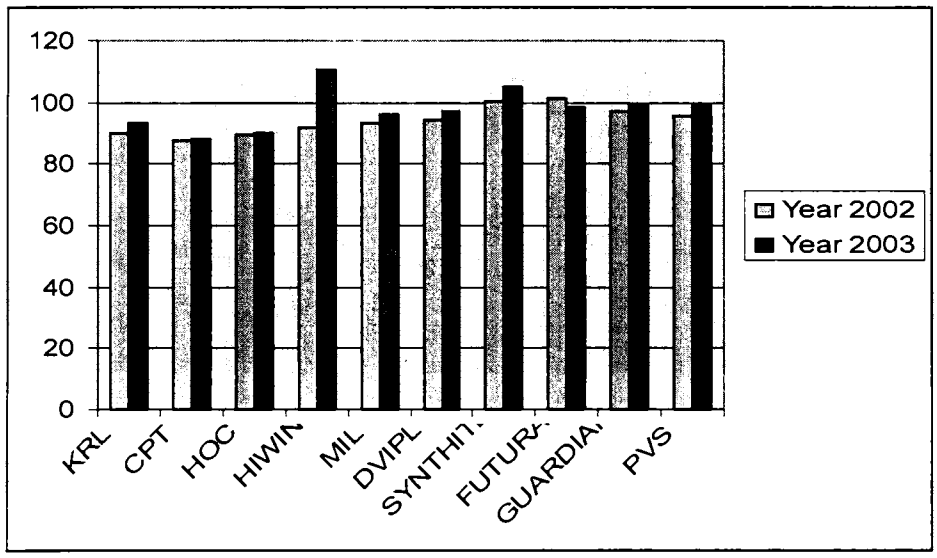
In the above table, the mean of ASA for both the surveys in respect of all the sample units has been presented. Form the chart above it is noticed that ASA has shown enhancement in all organizations except SYNTHITE. Here again m/s SYNTHITE has to improve its efforts in enabling the employees in updating there skills by instituting appropriate training and development programs.

TABLE – 7.17

Comparison -Cohesive Work Force (CWF)

S.No	Organization	Year 2002	Year 2003
1	KRL	90.133	93.2
2	CPT	87.533	87.9333
3	HOC	89.33	89.933
4	HIWIN	92.0	110.7
5	MIL	93.1	96.1
6	DVIPL	94.0	97.2
7	SYNTHITE	100.3	105.2
8	FUTURA	101.1	98.5
9	GUARDIAN	96.8	99.4
10	PVS	95.6363	98.8

Fig 7.9



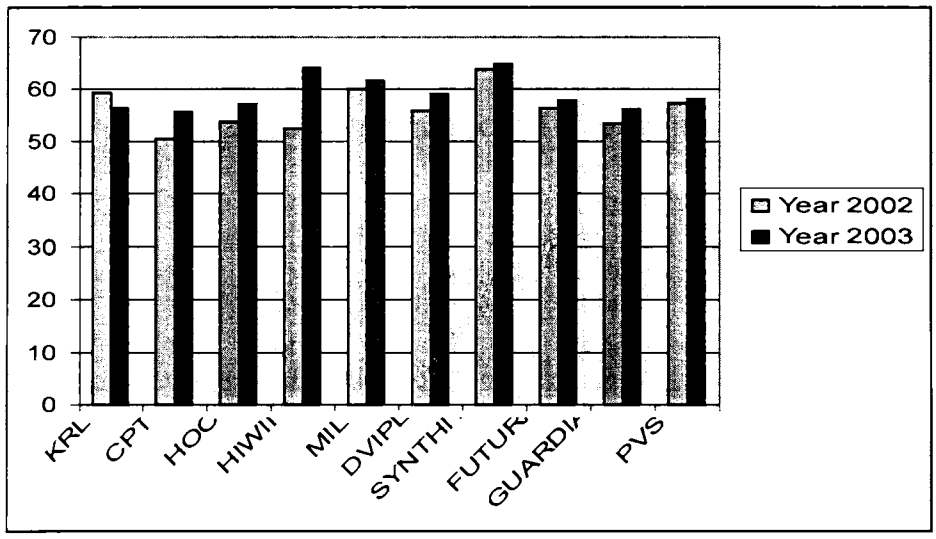
In the above table, the mean of CWF for both the surveys in respect of all the sample units has been presented. Form the chart above it is observed that CWF has shown enhancement in all organizations except FUTURA. FUTURA being a small private organization has to concentrate in developing the spirit of working in teams among the employees and team building efforts have to be initiated.

TABLE – 7.18

Comparison -Motivational Programs (MP)

S.No	Organization	Year 2002	Year 2003
1	KRL	59.2666	56.4646
2	CPT	50.466	55.733
3	HOC	53.6	57.066
4	HIWIN	52.5	64.0
5	MIL	60.0	61.5
6	DVIPL	55.8	59.0
7	SYNTHITE	63.7	64.8
8	FUTURA	56.5	57.9
9	GUARDIAN	53.4	56.2
10	PVS	57.4545	58.2

Fig 7.10



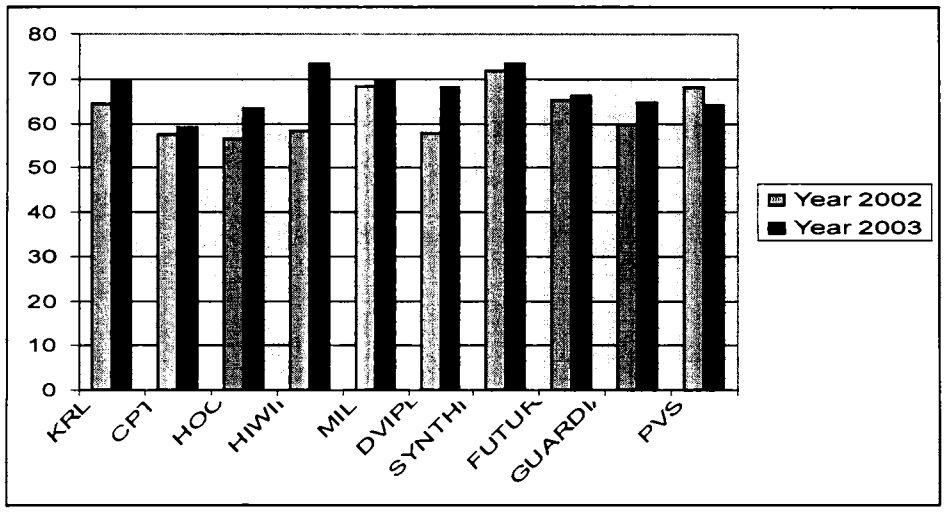
In the above table, the mean of MP for both the surveys in respect of all the sample units has been presented. Form the chart above one can see that MP has shown enhancement in all organizations except KRL. KRL is one of the largest public sector units in the state of Kerala. Here we notice that motivational programs undertaken by KRL are not adequate to generate a positive perception among the employees. The top management should concentrate on redesigning the programs aimed at improving commitment and involvement of employees.

TABLE – 7.19

Comparison -Orientation and Training (OT)

S.No	Organization	Year 2002	Year 2003
1	KRL	64.33	69.4
2	CPT	57.4	59.1333
3	HOC	56.533	63.4
4	HIWIN	58.3	73.4
5	MIL	68.4	69.5
6	DVIPL	57.8	68.1
7	SYNTHITE	71.7	73.5
8	FUTURA	65.2	66.2
9	GUARDIAN	59.7	64.7
10	PVS	68.0	64.2

Fig 7.11



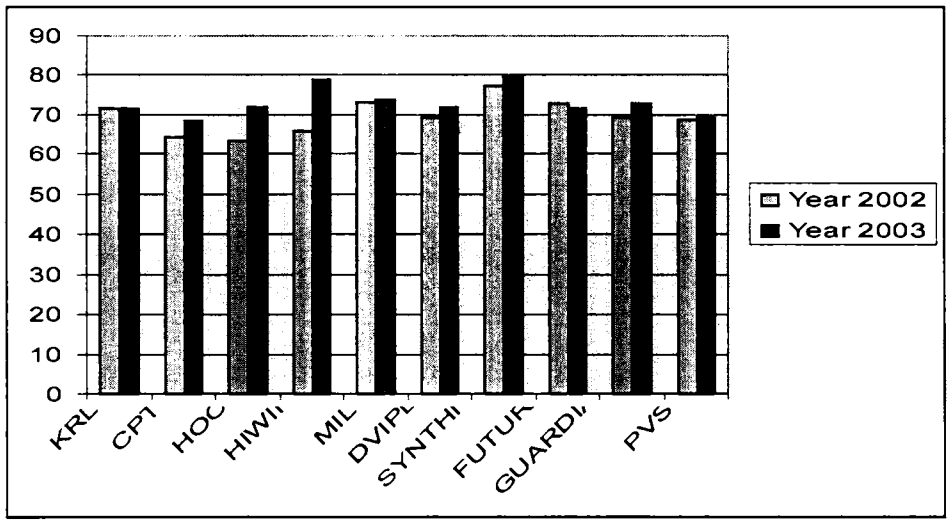
In the above table, the mean of OT for both the surveys in respect of all the sample units has been presented. Form the chart above it is observed that OT has shown enhancement in all organizations except PVS. Popular Vehicles and Services has to redesign their orientation and training programs and provide ample opportunity for all employees to update there skills.

TABLE – 7.20

Comparison -Communication Effectiveness (CE)

S.No	Organization	Year 2002	Year 2003
1	KRL	71.4	71.4
2	CPT	64.1333	68.5333
3	HOC	63.2	72.0
4	HIWIN	65.8	79.0
5	MIL	73.1	73.8
6	DVIPL	69.3	71.8
7	SYNTHITE	77.4	79.9
8	FUTURA	72.9	71.6
9	GUARDIAN	69.3	72.8
10	PVS	68.7272	69.2

Fig 7.12



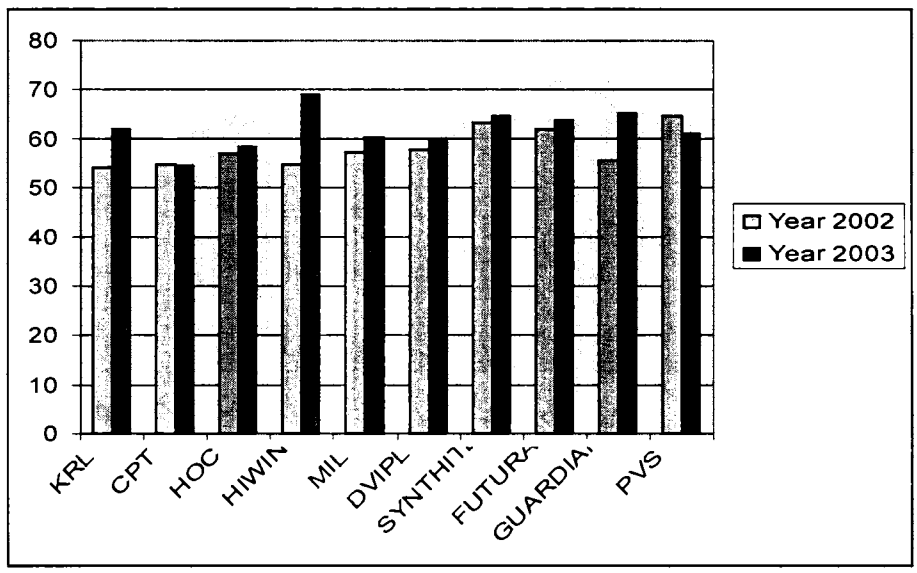
In the above table, the mean of CE for both the surveys in respect of all the sample units has been presented. Form the chart above it is evident that CE has shown enhancement in all organizations except FUTURA. Once again m/s FUTURA shows a negative trend in effective communication. The strategies followed by this organization to communicate with employees on aspects of its achievements, targets and objectives should be revamped to make it transparent, covering all departments and sections.

TABLE – 7.21

Comparison -Employee Responsibility (ER)

S.No	Organization	Year 2002	Year 2003
1	KRL	54.066	61.933
2	CPT	54.8	54.4
3	HOC	56.8	58.2
4	HIWIN	54.7	68.9
5	MIL	57.2	60.3
6	DVIPL	57.7	59.9
7	SYNTHITE	63.2	64.7
8	FUTURA	61.9	63.8
9	GUARDIAN	55.5	65.2
10	PVS	64.5454	61.1

Fig 7.13



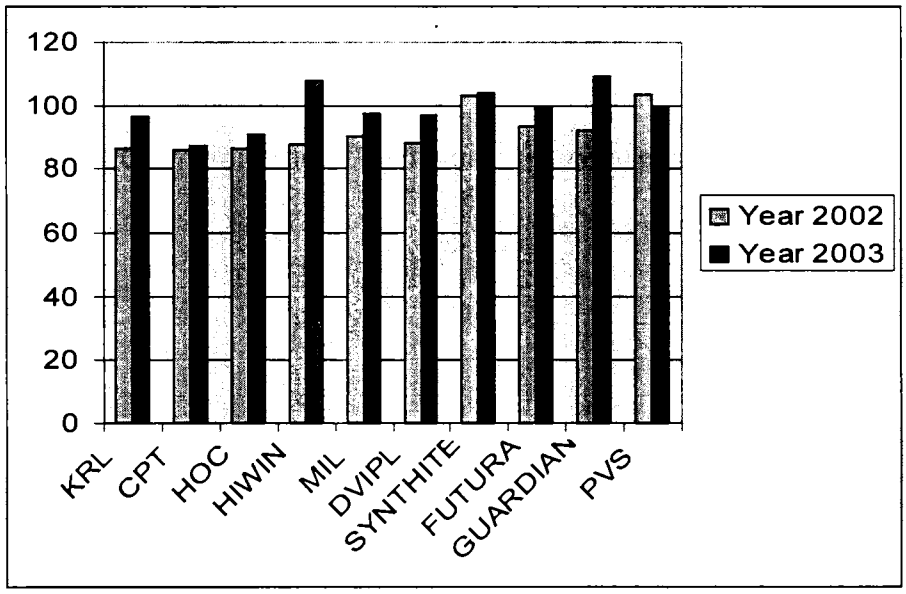
In the above table, the mean of ER for both the surveys in respect of all the sample units has been presented. Form the chart above it is noticed that ER has shown enhancement in all organizations except PVS and CPT. Both CPT and PVS are basically service organizations. It is seen that the employee responsibility in these organizations has shown a downward trend. This information should be viewed as an opportunity to reassess the situation and educate its employees on their duties and responsibility.

TABLE – 7.22

Comparison -Employee Involvement (EI)

S.No	Organization	Year 2002	Year 2003
1	KRL	86.066	96.1333
2	CPT	85.933	87.33
3	HOC	86.266	90.5333
4	HIWIN	87.7	107.7
5	MIL	90.1	97.2
6	DVIPL	88.0	97.0
7	SYNTHITE	102.8	103.6
8	FUTURA	93.4	99.4
9	GUARDIAN	92.1	108.9
10	PVS	103.4545	99.6

Fig 7.14



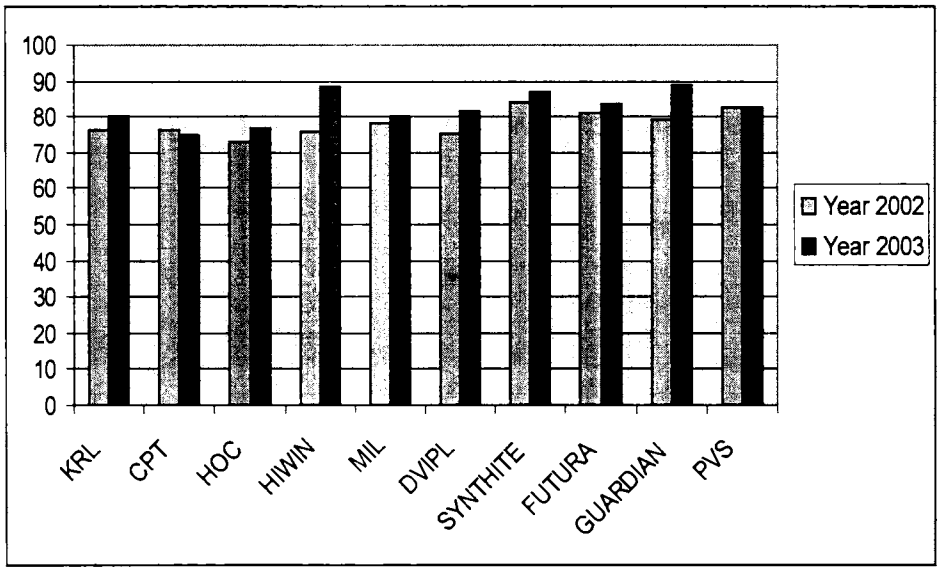
In the above table, the mean of EI for both the surveys in respect of all the sample units has been presented. Form the chart above it can be observed that EI has shown enhancement in all organizations except PVS. The success of quality efforts depends to a great extent on employee involvement. PVS has to ensure total commitment and involvement from all its employees by proper orientation, communication and training so that TQM efforts will be effective.

TABLE – 7.23

Comparison -Attitude towards Change (AC)

S.No	Organization	Year 2002	Year 2003
1	KRL	76.33	80.266
2	CPT	76.066	74.866
3	HOC	72.666	76.866
4	HIWIN	75.6	88.5
5	MIL	78.0	80.1
6	DVIPL	75.4	81.5
7	SYNTHITE	84.2	87.1
8	FUTURA	81.0	83.6
9	GUARDIAN	79.0	88.7
10	PVS	82.3636	82.7

Fig 7.15



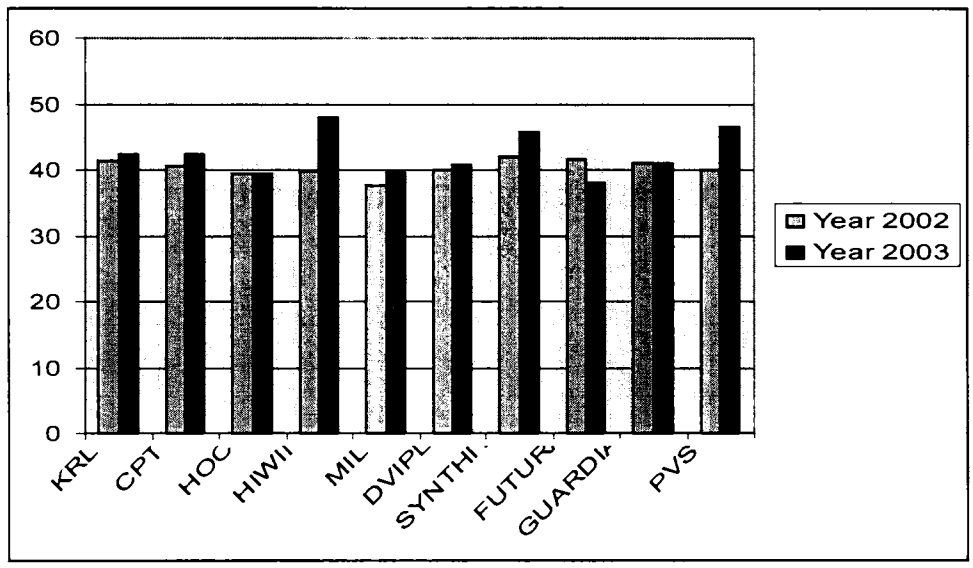
In the above table, the mean of AC for both the surveys in respect of all the sample units has been presented. Form the chart above it is seen that AC has shown enhancement in all organizations except CPT. Cochin Port Trust is one of the mile stones in the development of the state of Kerala. This organization during the course of its existence became highly unionized. It is natural that the majority of the employees have a low rate of acceptance of change and change is often resisted. This is one area, the leaders/managers of CPT have to concentrate and educate the people to accept change as a means for development.

TABLE – 7.24

Comparison -Grievance Rate (GR)

S.No	Organization	Year 2002	Year 2003
1	KRL	41.4	42.4666
2	CPT	40.5333	42.333
3	HOC	39.33	39.4
4	HIWIN	39.9	47.9
5	MIL	37.6	39.6
6	DVIPL	40.0	40.7
7	SYNTHITE	42.0	45.8
8	FUTURA	41.6	38.0
9	GUARDIAN	40.9	41.0
10	PVS	39.9090	46.5

Fig 7.16



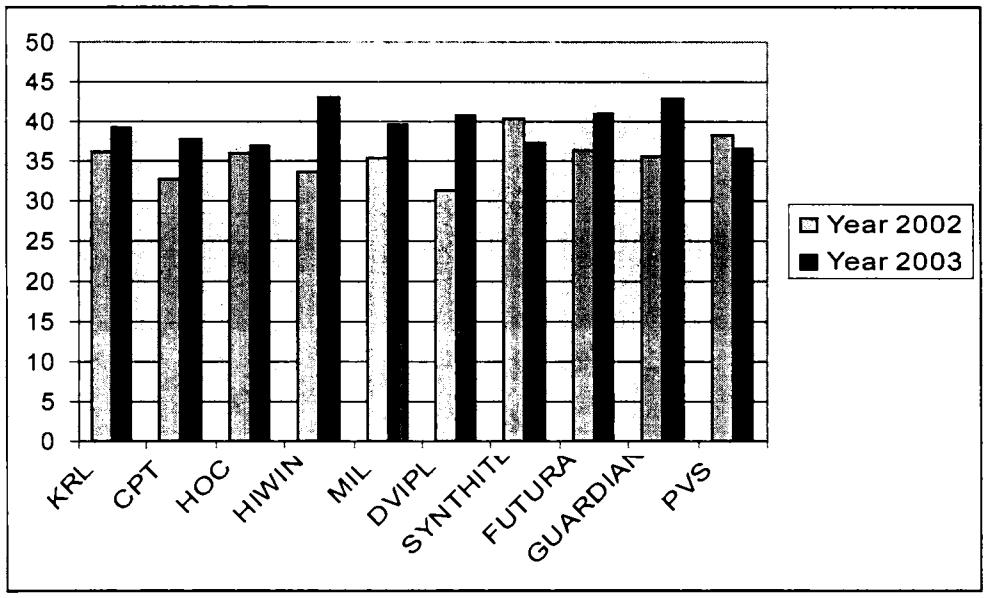
In the above table, the mean of GR for both the surveys in respect of all the sample units has been presented. Form the chart above it is noticed that GR has shown enhancement in all organizations except FUTURA. M/s FUTURA has shown a low score on grievance rate. It is essential to have an effective grievance handling system to keep the employees happy and satisfied.

TABLE – 7.25

Comparison -Accident Rate (AR)

S.No	Organization	Year 2002	Year 2003
1	KRL	36.1333	39.2666
2	CPT	32.6667	37.666
3	HOC	35.866	36.8666
4	HIWIN	33.7	43.1
5	MIL	35.4	39.6
6	DVIPL	31.3	40.7
7	SYNTHITE	40.3	37.3
8	FUTURA	36.4	40.9
9	GUARDIAN	35.5	42.9
10	PVS	38.3636	36.6

Fig 7.17



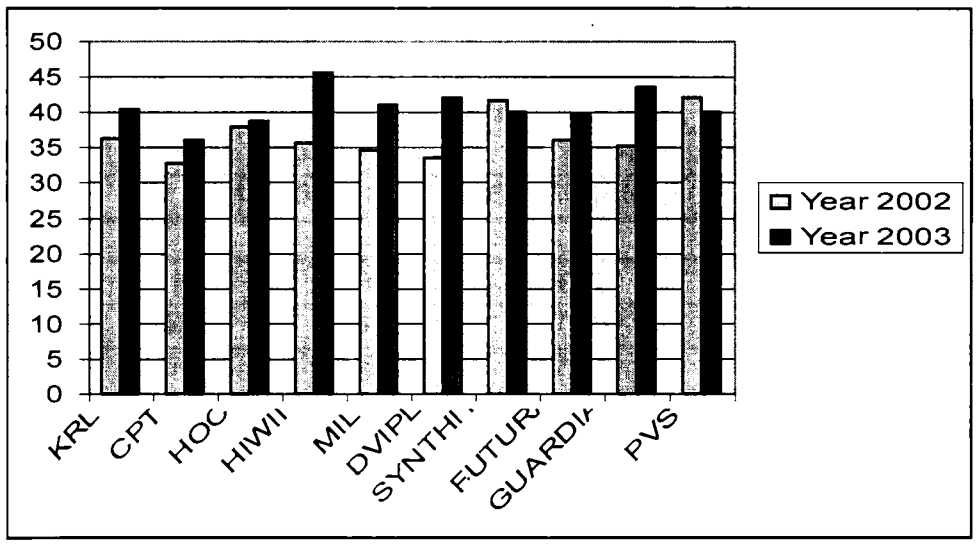
In the above table, the mean of AR for both the surveys in respect of all the sample units has been presented. Form the chart above it is observed that AR has shown enhancement in all organizations except SYNTHITE and PVS. The safety and security of employees should have. top priority in any organization. Safe and secured work environment bring in a feeling of delight and satisfaction among the workers. M/s SYNTHITE and PVS should be in a position to work towards enhancement of this attribute.

TABLE – 7.26

Comparison -Defect Rate (DR)

S.No	Organization	Year 2002	Year 2003
1	KRL	36.4	40.4666
2	CPT	32.8	36.2
3	HOC	38.066	38.8
4	HIWIN	35.7	45.6
5	MIL	34.7	41.0
6	DVIPL	33.7	42.1
7	SYNTHITE	41.6	40.0
8	FUTURA	36.1	39.8
9	GUARDIAN	35.2	43.5
10	PVS	42.1818	40.1

Fig 7.18



In the above table, the mean of Defect Rate for both the surveys in respect of all the sample units has been presented. Form the chart above it can be seen that DR has shown enhancement in all organizations except SYNTHITE and PVS. Zero Defect (ZD) is one of the principles of TQM. "Doing right first time and every time" is the principle that one should advocate. For TQM to be in place these units will have to emphasize this aspect and achieve a status of Zero Defect.

7.10 Organization-wise analysis of data

In the following sections an attempt has been made to illustrate the changes n each indicator of HRQ and also the changes in CCI, QWLI, ESI and HRQI in espect of each organization.

7.10.1 Kochi Refineries Ltd (KRL)

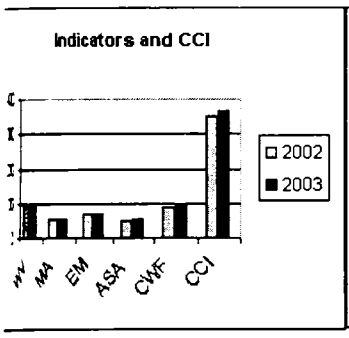
KRL is one of the largest public sector organizations in Kerala. The employees in KRL as well as other PSUs consider KRL as a model and well managed institution. In the following tables and charts, the results of the two spells of survey conducted in KRL using the instrument are discussed.

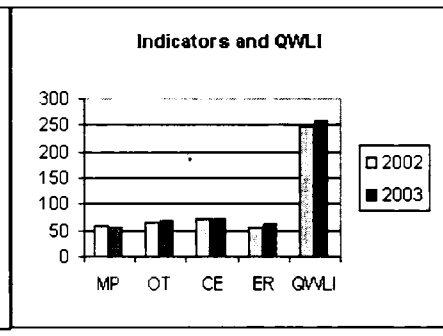
TABLE - 7.27
Analysis of data-KRL

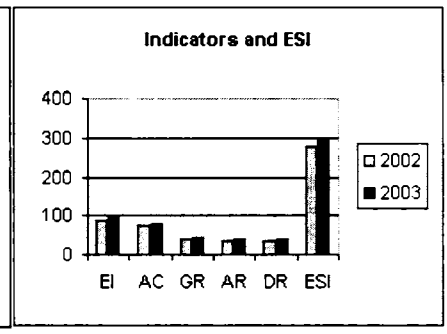
VAR	WV	MA	EM	ASA	CWF	CCI
2002	88.4	53.3	69.1	49.9	90.1	**350.9**
2003	92	55.4	71.06	54.8	93.2	**366.5**

VAR	MP	OT	CE	ER	QWLI
2002	59.46	64.32	71.4	54.06	**249.07**
2003	56.46	69.4	71.4	61.93	**259.2**

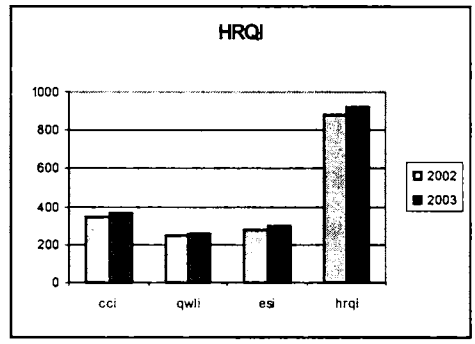
VAR	EI	AC	GR	AR	DR	ESI
2002	86.07	76.33	41.4	36.13	36.4	**276.33**
2003	96.13	80.26	42.46	39.26	40.46	**298.6**







VAR	CCI	QWLI	ESI	HRQI
2002	350.9	249.07	276.33	876.3
2003	366.5	259.2	298.6	924.3



A critical review of the values of each indicator brings out the following findings

1) CCI during the first spell of survey is above 70%. It shows that there is a favorable organizational culture in KRL. There is an increase of 16 points when compared with the values of the first survey in respect of CCI. This amounts to approximately 3% increase in CCI over a period of one year. It is seen that all the indicators of CCI have shown significant improvement during the period.
2) QWLI during the first spell of survey stood at 70%. This shows that there is fairly conducive work environment in the organization. Over a period of one year, QWLI has increased by 10 points. However, the score on motivational programs has shown a decline. The score of communication effectiveness remained static during the span of one year. It suggests that KRL has to initiate steps to improve communication with in the organization and also organize sufficient activities to keep the employees motivated.
3) Employee satisfaction index also has shown an increase of 10 points from first spell of survey to the next spell. The individual indicators of ESI have also shown increases except in the case of attitude towards change (AC).
4) The HRQI for KRL during the first spell of survey stood at 833.6 (68.3 %). An HRQI above 60 % is a positive indicator of existence of high quality human resource. The HRQI has increased by 24 points (2%) during the period of one year.

There have been considerable changes in all the three variables of HRQI. This shows that KRL has a positive quality culture, work environment and well committed employees, thus showing the existence of high quality human resource.

7.10.2 Cochin Port Trust (CPT)

Cochin Port Trust, an all weather natural port, contributing to the growth of the state of Kerala and its hinter lands for the last 60 years is a large service organization employing several hundreds of people. It is ISO certified and is providing quality port facilities to its users. However it is also one of the highly unionized organizations and is known for its militant/resistant work force. Of late, there has been a paradigm shift in the approach and outlook of the employees of CPT. This fact is evident from the scores of the indicators of human resource quality.

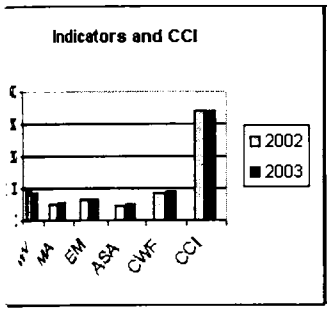
TABLE - 7.28

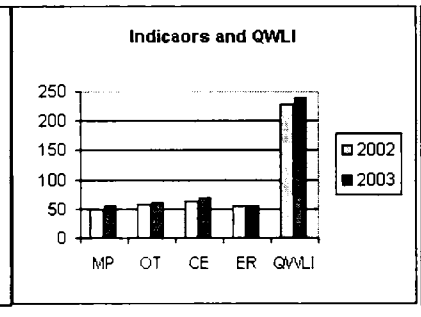
Analysis of data-CPT

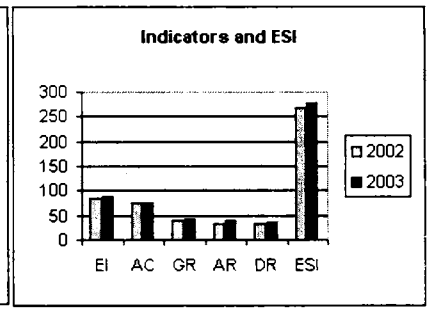
VAR	WV	MA	EM	ASA	CWF	CCI
2002	87.86	50.66	65.33	47.4	87.5	**338.8**
2003	86.7	52.8	65.33	48.66	87.9	**341.46**

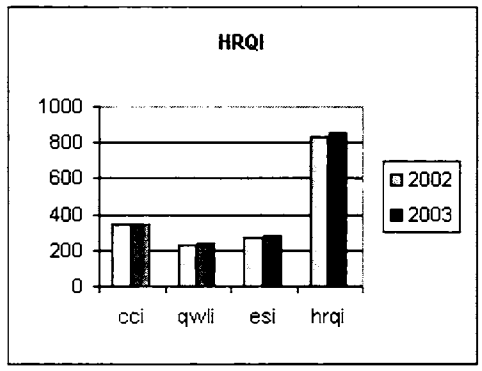
VAR	MP	OT	CE	ER	QWLI
2002	50.46	57.4	64.13	54.8	**226.8**
2003	55.73	59.13	68.53	54.4	**237.8**

VAR	EI	AC	GR	AR	DR	ESI
2002	85.93	76.06	40.53	32.67	32.8	**268**
2003	87.33	74.86	42.33	37.66	36.2	**278.4**









The CCI has shown a marginal improvement by 3 points with in a span of one year. There is no much variation in the indicators of CCI. Even though the CCI is well above 60%, the cultural change response is low. The QWLI has shown an increase of 11 points (3%). This is basically due to the developmental initiatives undertaken by the management during the year 2002-2003. The ESI also has shown significant improvement to the extent of 10 points illustrating that the employee's unrest usually prevailed in this organization is now a thing of the past. Employees have realized the responsibility and are committed and involved in the present business environment of liberalizations and privatization. Hence the level of satisfaction is fairly high.

However certain indicators such as workmanship value, employee motivation, cumulative work force, employee responsibility and attitude towards change have not shown any increase with in the duration of surveys. In certain cases there have been marginal decline. Such micro level information is of great significance for organizations to plan and develop programs specifically targeted for improvement.

7.10.3 Hindustan Organic Chemicals (HOC) Ltd

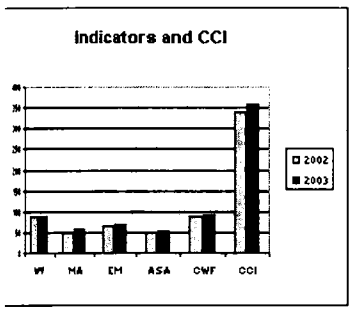
Hindustan Organic Chemical Ltd is again one of the large public sector units operating in Kerala and it has a very positive image among the public. This organization has won several awards at national and international levels. The analysis of the data has been presented in the following tables and charts.

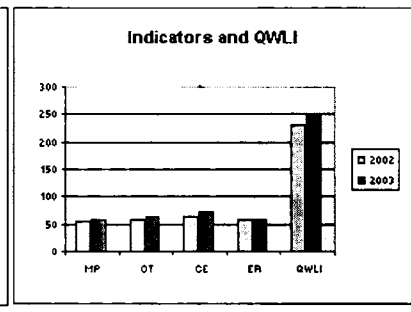
TABLE - 7.29
Analysis of data-HOC

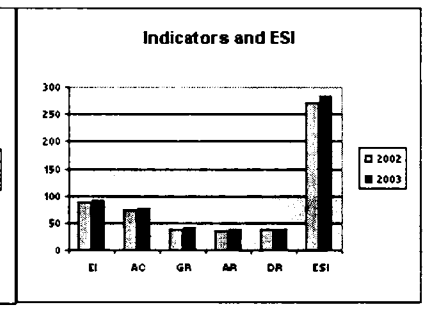
VAR	WV	MA	EM	ASA	CWF	CCI
2002	88.6	50.4	65.33	47.8	89.33	**338.8**
2003	87.8	56.26	69.46	52.8	89.93	**356.27**

VAR	MP	OT	CE	ER	QWLI
2002	53.6	56.53	63.2	56.8	**230.13**
2003	57.07	63.4	72	58.2	**250.67**

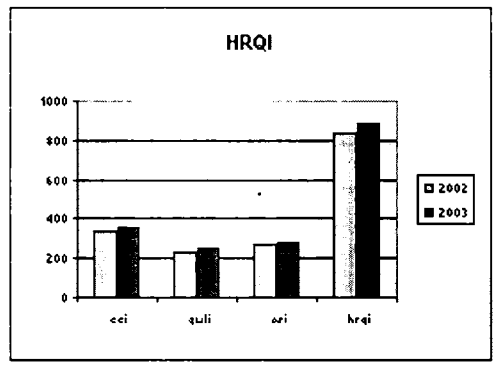
VAR	EI	AC	GR	AR	DR	ESI
2002	86.27	72.67	39.3	35.87	38.07	**272.2**
2003	90.53	76.87	39.4	36.87	38.8	**282.46**







VAR	CCI	QWLI	ESI	HRQI
2002	338.8	230.13	272.2	841.13
2003	356.27	250.67	282.46	889.4



1) The CCI has shown a remarkable improvement to the extent of 17 points (3.5%) within a gap of one year and is well above 70%. This shows that HOCL has a very positive and conducive organizational culture. All the indicators of CCI have also shown substantial improvements.
2) In the case of QWLI the increase is by 20 points, the largest among all the units under the study. Quality management undertaken by management of this unit has contributed towards positive and quality work life.
3) The ESI has also increased by 10 points. This shows that during the period of study there had been activities contributing to increased satisfaction levels.

Thus HOCL is the only public sector unit in the sample which has shown substantial improvement in all the variables of HRQ. This aspect was very much evident from the several meetings and interactions, the investigator had with the managers and functionaries of HOC during the course of this study.

7.10.4 HIWIN Technologies

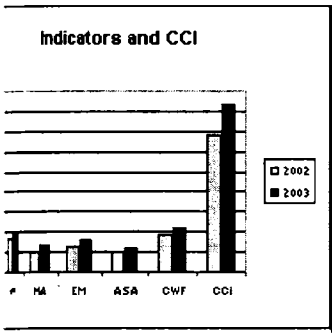
HIWIN Technology is a relatively small private sector unit engaged in manufacturing engineering and precision components to valve, automobile, textile and general engineering industries. The level of engineering skill available in this unit is of very high order and this fact is evident from the survey results. Quality of human resource stands at a very high level. During the period between the two spells of survey this organization has undertaken several measures to enhance quality aiming at export market. This fact is evident from the data analysis.

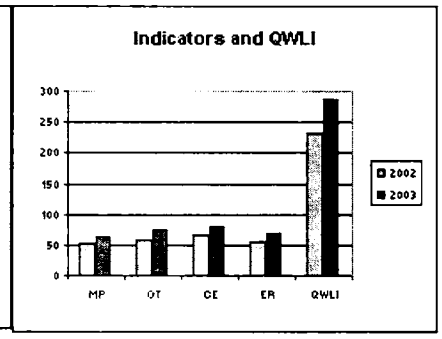
TABLE - 7.30
Analysis of data-HIWIN

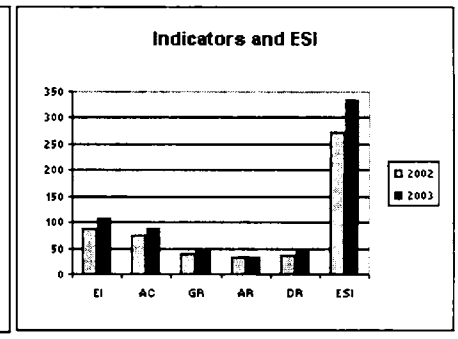
VAR	WV	MA	EM	ASA	CWF	CCI
2002	85.8	51.3	62.9	49.9	92	**341.9**
2003	102.3	65.4	78	60	110.7	**416.4**

VAR	MP	OT	CE	ER	QWLI
2002	52.5	58.3	65.8	54.7	**231.3**
2003	64	73.4	79	68.9	**285.3**

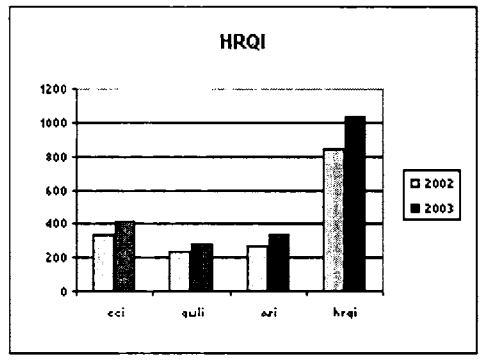
VAR	EI	AC	GR	AR	DR	ESI
2002	87.7	75.6	39.9	33.7	35.7	272.6
2003	107.7	88.5	47.9	33.1	45.6	332.8







VAR	CCI	QWLI	ESI	HRQI
2002	341.9	231.3	272.6	845.8
2003	416.4	285.3	332.8	1034.5



The CCI has shown a quantum increase of 74 points (1 5%) and stood at 82%. The QWLI has increased by 54 points (greater than 15%) and is well above 80%. Similarly it is seen that there is an increase of 60 points in the case of ESI. The change in the variables of HRQ in respect of HIWIN is the highest among all the organization in the sample. This is definitely due to the various quality measures undertaken by the management during the year 2002-2003 for putting its product in export market.

7.10.5 MIL Controls Ltd.

MIL controls is yet anther organization under the private sector engaged in manufacturing of control valves and is also ISO certified. The unit is located at Mala, Trichur district, Kerala. MIL is one of the well managed institutions under private

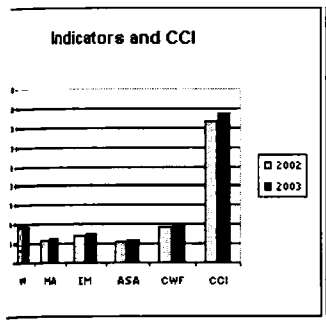
sector. MIL controls has undertaken the journey to TQM and is authorized to supply its product to the European Union process plants. A critical look at the data analysis reveals the following.

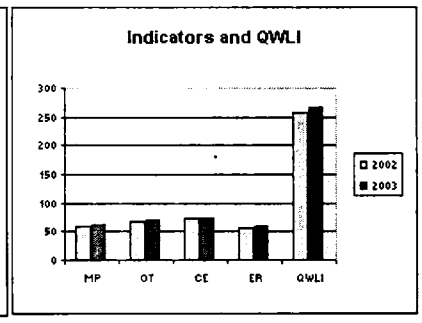
TABLE - 7.31
Analysis of data-MIL

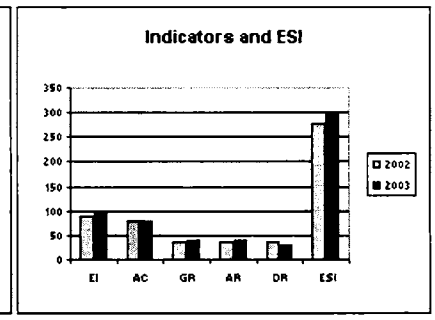
VAR	WV	MA	EM	ASA	CWF	CCI
2002	92	59.3	70.1	53.2	93.1	**367.7**
2003	93.8	62.7	75.6	57.2	96.1	**385.4**

VAR	MP	OT	CE	ER	QWLI
2002	60	68.4	73.1	57.2	**258.7**
2003	61.5	69.5	73.8	60.3	**265.1**

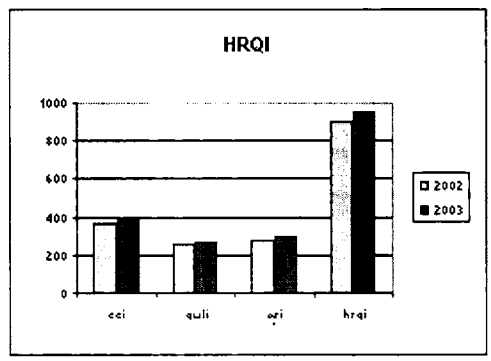
VAR	EI	AC	GR	AR	DR	ESI
2002	90.1	78	36.6	35.4	34.7	**275.8**
2003	97.2	80.1	39.6	39.6	31	**297.5**







VAR	CCI	QWLI	ESI	HRQI
2002	367.7	258.7	275.8	902.2
2003	385.4	265.1	297.5	948



1) The indicators of CCI have improved significantly from the first spell to the next spell of survey. The CCI has increased by 18 points and is well above 70 %. This shows that there is a vibrant and positive organizational culture prevailing in this organization.

2) The QWLI has improved by 13 points with in a span of 1 year and stood at 75%.

3) The ESI has also shown an enhancement of 22 points bringing out that the employees by and large are satisfied with the work.

Finally the overall HRQI has increased from 902 points to 948 points, an increase of 46 points (approximately 4%). The efforts in the path of TQM have shown developments not only in product quality but also in human quality.

7.10.6 Dressor Valve India Pvt Ltd.

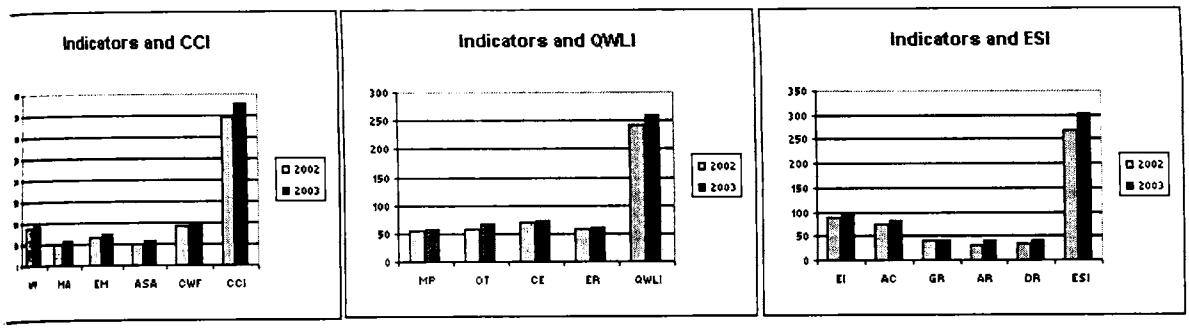
Dresser Valve India Pvt Ltd (DVIPL) is a unit of Dresser Inc USA engaged in manufacture of control valves, level instruments etc. This unit is equipped with advanced integrated manufacturing system and is well into the path of TQM. Being a unit in private sector, quality has been given top priority. This is evident from the fact that the survey results show substantial improvements in all the indicators of HRQI

TABLE - 7.32
Analysis of data-DVIPL

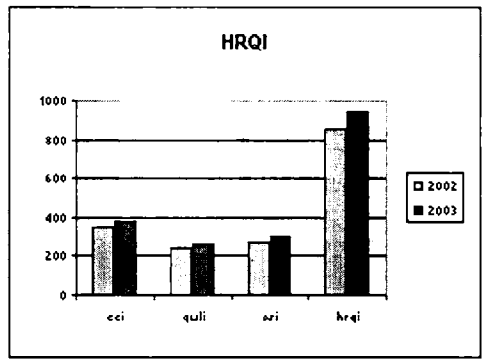
VAR	WV	MA	EM	ASA	CWF	CCI
2002	88.2	51.2	63.8	48.9	94	**346.1**
2003	94.2	58	72.4	56.4	97.2	**378.1**

VAR	MP	OT	CE	ER	QWLI
2002	55.8	57.8	69.3	57.7	**240.6**
2003	59	68.1	71.8	59.9	**258.8**

VAR	EI	AC	GR	AR	DR	ESI
2002	88	75.4	40	31.3	33.7	**268.4**
2003	97	81.5	40.7	40.7	42.1	**302**



VAR	CCI	QWLI	ESI	HRQI
2002	346.1	240.6	268.4	855.1
2003	378.1	258.8	302	938.9



The CCI has increased by 32 points (6%) during the span of one year. All the indicators of CCI have also improved significantly. QWLI has shown an increase of 18 points and ESI by 34 points. Such results highlight the fact that the activities undertaken by DVIPL in the path of TQM have been successful and contributed positively towards the enhancement of HRQI. HRQI in this organization has increased by 15 points with in the period between the surveys.

7.10.7 SYNTHITE Industrial Chemicals Ltd.

Synthite industrial chemicals Ltd is a unit in the private sector and is the market leader in spice oleoresin industry in India. The products of this company confirm to EEC/ECS food regulations. The quality standards maintained by this organization are well known and have been recognized by the department of science and technology. However a close look at the management and functioning of this organization reveals that professional management is yet to take root in this company. It is even today a family managed organization. The analysis of data

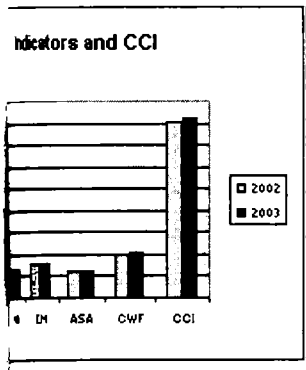
collected from this organization for both the spells of surveys is illustrated in the following tables and charts.

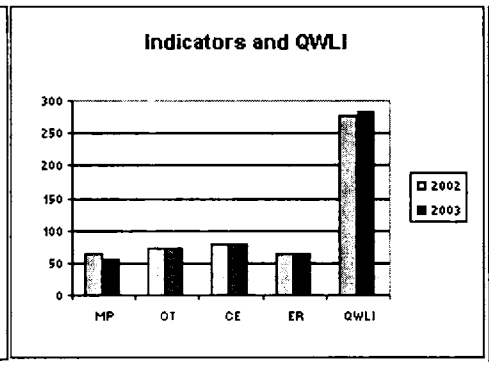
TABLE - 7.33
Analysis of data- SYNTHITE

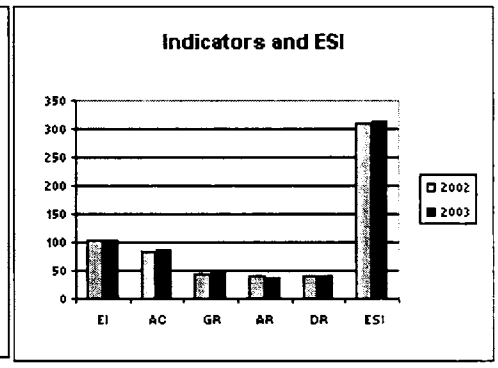
VAR	WV	MA	EM	ASA	CWF	CCI
2002	97.1	64.7	79.7	60.4	100.3	**402.2**
2003	103.2	63.2	79	59.8	105.2	**410.4**

VAR	MP	OT	CE	ER	QWLI
2002	63.7	71.7	77.4	63.2	**276**
2003	54.8	73.5	79.9	64.7	**282.9**

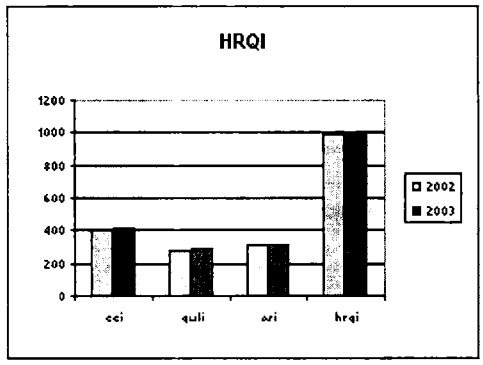
VAR	EI	AC	GR	AR	DR	ESI
2002	102.8	84.3	42	40.3	41.6	**311**
2003	103.6	87.1	45.8	37.3	40	**313.8**







VAR	CCI	QWLI	ESI	HRQI
2002	402.2	276	311	989.2
2003	410.4	282.9	313.8	1007.1



Cultural Change Index during the first spell of survey in this organization is above 80 % and the improvement shown as per the data of second spell of survey is only by 8 points. The response to cultural change is comparatively very low. This may be due to the fact that the organization has already reached a very high level of quality culture and further changes in CCI need longer duration. This is also true in the case of QWLI and ESI. The changes in these variables are only by 3 points and 13 points respectively. However, these variables are well above 70%. The levels of these variables comparatively very high and hence the improvements may take longer duration.

HRQI has also increased during the period of survey by 15 points (1.2%). However the level of HRQI in this organization is above 75%. It may be concluded that even though the enhancements are comparatively low, the quality of human resource is remarkably high.

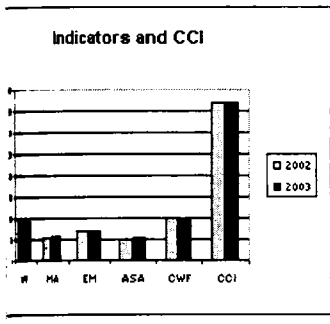
7.10.8 FUTURA Medical Products (P) Ltd.

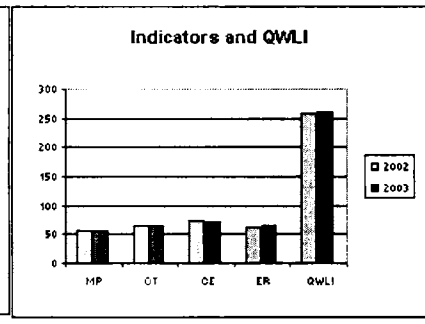
TABLE - 7.34
Analysis of data- FUTURA

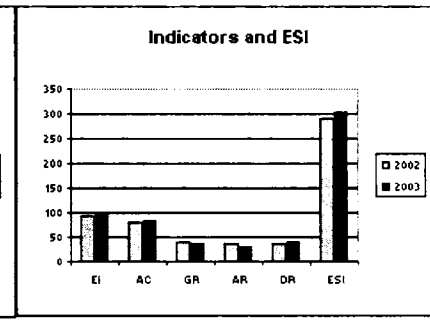
VAR	WV	MA	EM	ASA	CWF	CCI
2002	94.2	55.3	69.5	50.9	101.1	**371**
2003	91.2	56.4	69.9	54.4	98.5	**370.4**

VAR	MP	OT	CE	ER	QWLI
2002	56.5	65.2	72.9	61.9	**256.5**
2003	57.9	66.2	71.6	63.8	**259.5**

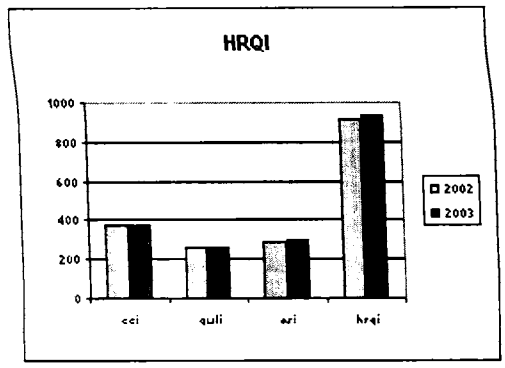
VAR	EI	AC	GR	AR	DR	ESI
2002	93.4	81	41.6	36.4	36.1	**288.5**
2003	99.4	83.6	38	30.9	39.8	**301.7**







VAR	CCI	QWLI	ESI	HRQI
2002	371	256.5	288.5	916
2003	370.4	259.5	301.7	931.6



This company is engaged in providing medical safety products and diagnostic systems. The changes in variables in HRQI in respect of FUTURA are very marginal. In fact there has been slight decline in CCI. But it is seen that the levels of CCI, QWLI and ESI are well above 70%. Enhancement from this level will be slow. Further the surveys were conducted with in a span of one year. The same has been observed in case of other organization also. If an organization has very high level of the index, further improvements will take longer duration. However it is pertinent to note that the improvements in variables as well as HRQI are significant. This once again illustrates the potential of the instrument developed by the researcher.

7.10.9 GUARDIAN Controls Ltd.

Guardian Controls Ltd is engaged in manufacture of electro-mechanical relays in collaboration with CII-Technologies USA. This organization is ISO certified and is the largest exporter of relays from India. The company has been continuously implementing measures to ensure quality in process and products. These activities have definitely contributed positively leading to significant improvement in human resource quality. This is abundantly evident from the following illustrations.

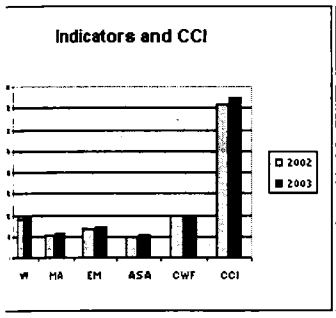
TABLE - 7.35

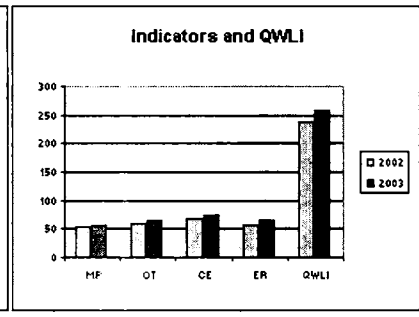
Analysis of data-GUARDIAN

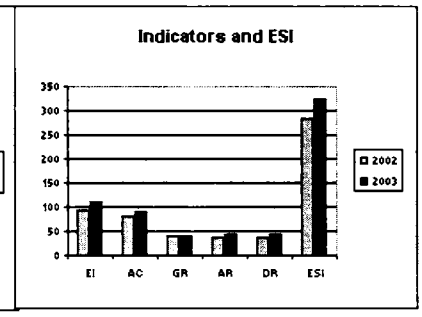
VAR	WV	MA	EM	ASA	CWF	CCI
2002	89.5	53.7	68.2	48.7	96.8	**359.8**
2003	94.1	56.7	71.4	52.8	99.4	**374.4**

VAR	MP	OT	CE	ER	QWLI
2002	53.4	59.7	69.3	55.5	**237.9**
2003	56.2	64.7	72.8	65.2	**258.9**

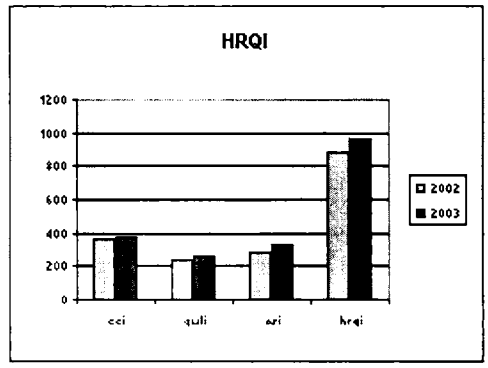
VAR	EI	AC	GR	AR	DR	ESI
2002	92.1	79	40.9	35.5	35.2	**282.7**
2003	108.9	88.7	41	42.9	43.5	**325**







VAR	CCI	QWLI	ESI	HRQI
2002	359.8	237.9	282.7	880.4
2003	374.4	258.9	325	958.3



CCI in respect of Guardian controls Ltd stood at 72% during the first spell and with in a span of one year has increased by 3% approximately. Even though the percentage increase is marginal the level of the index is fairly high. This is also true in the case of QWLI and ESI. HRQI of this organization has shown an increase of 6% during the period of survey. Finally it may be concluded that the HRQI in this organization is very high (80%). This is basically due to the thrust given to quality management efforts so as to meet international quality standards.

7.10.10 Popular Vehicles and Services Pvt Ltd.

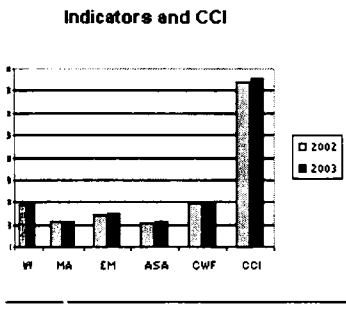
Popular Vehicles and Services Pvt Ltd is one of the dealers of Maruti Udyog Ltd and is well known for its innovative marketing strategies. PVS is the only car dealer to have ISO certification. Here again it is noticed that the level of CCI, QWLI and ESI are well above 70%. PVS has been implementing activities aimed at improving the services to its customers. This is clear from the result of the survey the HRQI in this organization is above 75 %. However, during the period 2002-2003, the enhancement in each variable is marginal. It is also observed that QWLI and ESI have declined marginally.

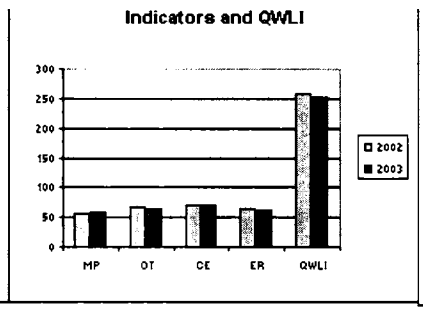
TABLE - 7.36
Analysis of data-PVS

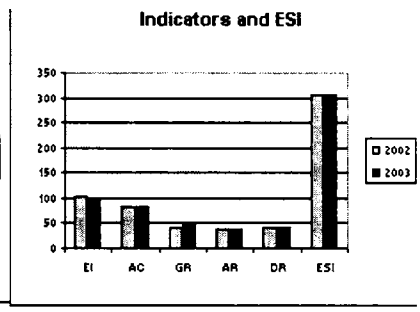
VAR	WV	MA	EM	ASA	CWF	CCI
2002	93.4	56	72.36	53.9	95.63	**371.3**
2003	97.1	54.6	73.3	55.1	98.8	**378.9**

VAR	MP	OT	CE	ER	QWLI
2002	57.45	68	68.72	64.54	**258.72**
2003	58.2	64.2	69.2	61.1	**252.8**

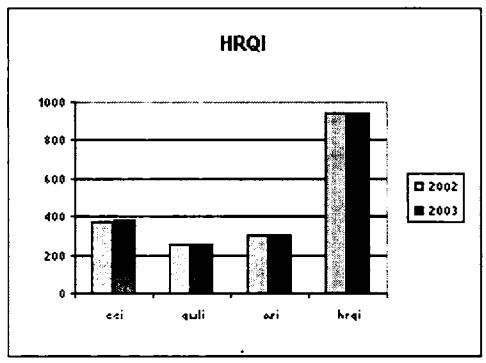
VAR	EI	AC	GR	AR	DR	ESI
2002	103.45	82.36	39.9	38.36	42.18	**306.27**
2003	99.6	82.7	46.5	36.6	40.1	**305.5**







VAR	CCI	QWLI	ESI	HRQI
2002	371.3	258.72	306.27	936.29
2003	378.9	252.8	305.5	937.2



This may be due to fact that the activities undertaken to improve the work environment and employee satisfaction level would not have been as effective as planned. The management has to take this aspect into consideration while designing further programs in implementing TQM. But it is important to once again reiterate that the level of HRQI is considerably very high and improvement from such levels needs more time and additional efforts.

7.11 Conclusion

In this chapter, the result of reliability test, significance analysis and factor analysis done on the data collected in both the spells of surveys have been presented. The reliability test proves that the instrument is reliable for assessing the various dimensions of HRQ. Significance analysis conclusively shows that the instrument is capable of assessing even marginal variations in the different indicators

of HRQ. Even though the period between the two spells of survey was only one year, the changes in different indicators of HRQ due to TQM efforts have been significant.

Subsequently in this chapter, indicator wise variations for all the organizations have been analyzed. From this analysis it is observed that there have been significant changes in each indicator due to TQM efforts. However in certain organizations it could be noticed that some of the few indicators have shown a negative trend. Such information will be of great importance to organizations specifically to target programs to enhance the level of indicators showing negative trend. It could be seen that the HRQI have shown positive changes in all the organizations. However it is observed that the improvements in CCI, QWLI, ESI and HRQI are comparatively higher in private organizations than public sector units. Further it is important to note that the instrument is able to pin-point the areas of weaknesses in the qualitative dimensions of human resource. In fact, it may not be out of place to mention that few private organizations included in the sample have appreciated the outcome of the survey and sought feedback from the investigator for developing future training and orientation programs for their employees.

CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

8.0 Introduction

This research work started with the major objective to design and develop and instrument/model for measuring human resource quality in different organizations. It was also aimed at measuring changes in organizational culture, quality of work life and employee satisfaction consequent upon the efforts of TQM. Instrument developed has also been used to assess the variations in HRQI due to the impact of TQM practices.

8.1 HRQ Model/Instrument

A number of questionnaires and instruments have been developed in the past. A list of few of these instruments developed by T.V.Rao is given below with the objective to differentiate the HRQ instrument developed by the researcher.

1) HRD practice profile for assessing the extend to which various HRD activities and roles are being performed effectively by the HRD department

2) HRD climate survey questionnaire to measure the HRD climate prevailing in an organization.

3) HRD competency check list for assessing the extent to which any given HRD professional has the competency required to be an HRD manager and missionary.

4) Training effectiveness questionnaire to assess the extent to which the training function is being effectively managed.

5) Performance planning and development questionnaire to assess and monitor the implementation of development oriented appraisal.

6) Effective counselor attitudes questionnaire to assess the extent to which any employee has the attitude to be a counselor

7) Supervisory and leadership beliefs questionnaire to assess the HRD styles of the line managers.

Table 8.1

HRD instruments

S.No	Instrument	Number of questions/statements
1	HRD practice profile	94
2	HRD climate survey	38
3	HRD competency check list	70
4	Training effectiveness survey	25
5	Performance planning and development	33
6	Effective counselor attitudes	25
7	Supervisory and leadership beliefs	10

The above review gives the details of commonly used HR instruments for measuring HR activities and effectiveness. The details of the instrument are available in the book, "The HRD missionary- role and functions of HRD managers and HRD department"-T.V.Rao, Oxford and IBH publishing Co (1990).

The main objective of this study was to develop a model/instrument to assess the HRQ in organizations. The instrument described in detail in chapter V, has been developed based on extensive literature survey. Fourteen indicators of HRQ were identified from the literature survey and also based on expert opinion. These indicators are also grouped under three variables namely CCI, QWLI and ESI. These three variables when taken together give rise to the HRQI. The instrument thus developed consists of 279 statements grouped under fourteen indicators of HRQ. The instrument is appended in the thesis.

It is relevant to compare the instrument developed by the researcher for assessing HRQ with that developed by T.V.Rao (1999) for HRD audit. This comparison is done to establish the relevance of the present instrument and also its significance.

The HRD audit questionnaire by T.V.Rao is very comprehensive and is administered to line managers and the HRD staff and it is meant for supervisory and English speaking categories. This instrument has eight dimensions and 258 items as detailed below.

Table 8.2

HRD audit questionnaire

Category	Dimensions	No. items
A	Carrier system	29
B	Work planning	38
C	Development systems	59
D	Self renewal system	31
E	HRD	84
F	HRD function	14
G	Strength, weakness and suggestion	3
	Total	258

The HRD score can be obtained by adding up the dimension vise scores. The overall score is the general level of HRD effectiveness of the company.

The HRQI instrument developed by the researcher has 14 variables and 279 items. They are spread on three dimensions namely CCI, QWLI and ESI.

Table 8.3

HRQI instrument

Category	Dimensions	No. items
A	Cultural Change Index	114
B	Quality of Work Life Index	77
C	Employee Satisfaction Index	88
	Total	279

The HRQI score is obtained by adding up the dimension wise scores. The overall score of the HRQI is indicative of the quality of HR in the company.

8.2 Test Results

The instrument described above has been tested for reliability. It is observed that the instrument is reliable for measuring HRQ and its variables- CCI, QWLI and ESI. Significance analysis/hypothesis testing was also conducted to establish the utility of the instrument.

8.2.1 Reliability Test

Reliability of the instrument was tested using the reliability test in SPSS10. It has been observed that the statements used for assessing the levels of 14 indicators show an average reliability score of above 0.7. The reliability of the instrument when grouped under CCI, QWLI, ESI and HRQI is well above 0.9. This illustrates the fact that the instrument/model is statistically reliable.

8.2.2 Significance Analysis

Hypothesis testing was done to verify weather the changes are significant or not. Even though the two spells of surveys were conducted with in a span of one year, all the selected organizations show significant improvements in all the indicators and finally in human resource quality. This also shows that the instrument is statistically valid in assessing the changes in the indicators of HRQ due to the efforts of TQM.

8.2.3 Factor Analysis

Factor analysis was conducted on the data to verify whether the number of statements can be reduced or not, so that the instrument becomes easy and handy to administer. The details of factor analysis have been presented in chapter VII. From the analysis it is observed that one can think of modifying the instrument with less number of statements. However, this will lead to a drastic reduction in the reliability of the instrument. Hence it is desirable to use the instrument in its original form when one requires micro level assessment of changes in the indicators of HRQ.

8.3 Survey Results- A summary

From the analysis of the data it is observed that there is increase in Cultural Change Index (CCI) in all organizations from first spell to second spell of survey. QWLI and ESI have also increased in all organizations except in organization 10. Human Resource Quality Index has shown significant improvement in all the ten organizations from first spell of survey to the next spell. It can be concluded that the instrument/model developed by the researcher is capable of assessing the levels of

each indicator and also human resource quality. Periodical assessment using the model gives ample opportunity for the organization to identify the areas of weaknesses. Further based on the assessment the organization can plan activities to improve the indicators of HR quality. There is scope for improving the instrument by extensive studies in different organizations. It may not be out of place to point out that some of the organizations have shown interest in conducting repeated surveys using the instrument and getting the feedback for designing their future programs for improving the human resource quality.

The results of the survey establish the linkage between TQM practice and Cultural change. Efforts in TQM definitely bring out a change in the way people think and act within the organizations. The training and developmental programmes equip the employees with necessary skill and ability to continuously improve the level of performance. Change in culture is not an easy task. Focused efforts of the organization to bring in cultural modifications will definitely succeed over a period of time.

TQM is not culture specific. Very often people ask whether a certain culture is a pre-requisite for introducing TQM. A culture is represented by the language or special words that people share, by the way things are done and the way people relate to each other. Obviously some conditions enable the smooth introduction of TQM while others hinder it. But a given culture is not a precondition for introduction of TQM. It may be remembered that a culture is a product of the way the system has been over a period of time. In TQM, therefore, the efforts will be for changing the system, and cultural change occurs as a natural consequence.

The results of this survey establish the linkage between TQM practices and QWL. An organization getting a score of 210 or above out of 350 may be considered to be successful in having a QWL conducive for facing the challenges of change. The assessment conducted by the researcher shows an increase in the level of each indicator. The management efforts are contributing positively to the improvement of work life.

The way an organization attracts, develops, motivates and retains people determines the success and failure. TQM practices should create new form of work organization, encouraging the skills, flexibility and commitment of the employees. The control approach to people management is still much in evidence. This strategy was appropriate in a world of limited changes, long product life, increasing markets

and poorly educated work place. However, in a fast changing and competitive environment, management should aim at developing people and building quality work environment. TQM efforts should be directed to structure the workplace in such a way as to energize and motivate employees so that the quality of work life improves and becomes satisfying to the work force.

The ESI measured using the instrument has shown significant enhancement in every organization except one. This has been presented in detail in chapter VII. HRQI of all the organizations along with the changes in HRQI in the first spell of survey to the second spell of survey with in a gap of one year have been clearly discussed. HRQI has increased significantly in all the organizations. As has already been mentioned, the organizations were selected deliberately keeping in mind that they were not affected by any factors other than TQM activities. This aspect has been discussed in detail in the earlier chapter. It can thus be concluded that the improvement in human resource quality in all these organization was due to the impact of TQM.

Finally as stated by Martins and De Tolado (2000) an organization gets only one chance to implement TQM, if it fails for lack of commitment, fails completely. Conversely it is important to ensure improvement in personal quality/human resource quality for the success of TQM. Product quality and process quality follow as a natural consequence of improvement in human resource quality. As stated by Ulrich (1991), organizations do not think, manufacture, decide, nor take advantage, people do it all. Hence for the success of TQM, efforts towards continuous improvement in human resource quality are essential and in other words improvement in HRQ is a natural out come of TQM.

In conclusion, TQM should aim at continuous improvement in HRQ, conquering all obstacles which come in the way. Human quality in an organization provides support to all functions in the journey towards TQM.

8.4 Limitation of the study

1. Only ten organizations have been taken up for the study, three in public sector and rest in private sector. Further the surveys were conducted in two spells with in a gap of one year. One year period is not an appreciable gap for quantum improvement in human quality as the variables are behavior oriented

and intangible. Repeat surveys using the instrument every year may give significant information on the various indicators.

2. The surveys had been conducted at the supervisory level only. It is observed that such instruments are normally administered only to supervisory and managerial employees. For example HRD score card developed by T.V.Rao is been administered only to supervisory level employees. In small organizations particularly, the seven private organizations in the sample, the researcher could meet and administer the questionnaire to five to ten respondents as the middle level employees are only that many in number.
3. This instrument consists of several statements which require proper logical reasoning and understanding and hence it may not be appropriate to administer this instrument to lower level employees.

8.5 Areas for future research

The instrument developed by the researcher has been tested in ten organizations. It has been demonstrated that this instrument will be a very useful tool for organizations practicing TQM. This instrument can be used to give periodical feedback regarding areas of strength and weaknesses as regards to HRQ. It is suggested that the instrument may be administered in large number of organizations for modifications and final corrections. The following areas of research can be undertaken using this instrument

1. The instrument can be administered in knowledge based industries with requisite modifications in the statements and evaluated for consistency and validity.
2. The instrument may be used for benchmarking organizations in respect of HRQI.
3. Research can also be undertaken to design and develop training programs based on the out comes from periodical administration of this instrument.

8.6 Conclusion

This research was started with the main objective of developing an instrument to assess HRQ in organizations. An instrument was developed based on extensive literature survey and expert opinion. Statistical validity of the instrument was established. Further using the instrument surveys were conducted in two spells in ten selected organization. The data thus collected was analyzed and has been presented in chapter 7. From the research it is concluded that the instrument developed is capable of assessing the level of HRQ in any organization (refer section 7.8). This instrument has the following major uses.

1. This instrument may be used to assess HRQI of any organization.
2. It can also be used to benchmark organizations based on HRQI. The HRQI of a world class organization can be taken as a benchmark to compare different organizations. In other words the HRQI of a socially accepted organization in a state may be compared with that of different organizations.
3. The assessment using the instrument will enable the management of any organization to design and develop appropriate training and development strategies to improve HRQI.
4. Organization can also benchmark CCI, QWLI and ESI using this instrument.

In the process of globalization and liberalization of Indian economy, the rule of the game has changed. Most of the giant organizations are going for mergers and acquisitions. As per the data of Center for Monitoring Indian Economy (CMIE), the mergers and acquisitions of Indian organization have increased in recent times. But the success rate is very low because of the cultural mismatch and failure in human resource management. It is now a proven fact that the technology is not the only significant point among successful organizations. It is the people who give the leverage. Employees are the permanent associates and it is they who serve the organization with their work, talent, creativity and drive. "Human dynamics play a pivotal role in surmounting obstacles, defusing complex situations and achieving organizational goals" (Biswajeet Pattanayak-2004). Just like a man is known by company he keeps, an organization is known by the people it is comprised of. Thus the quality of HR is the most critical factor for organizations to face today's

challenges. The HR of an organization represents its largest investment. In fact, government report shows that approximately 75% of national income is spent to compensate the employees. Hence it becomes very important to sustain and improve HRQ. In short all efforts of management and leadership should be to assess and develop the HRQ in the organization. This instrument developed by the researcher is available for use by industry and the same can be improved by future researches.

This research has provided excellent opportunities for the investigator to understand the various concepts of quality management and provided in depth understanding of human dimensions in organizations. The researcher being a student of management considers this work as his life time achievement. The investigator having done the research feels fully confident to continue such activities for self development and to contribute significantly towards HRQ improvement in organizations.

References and Bibliography

1. Ahir S.L, Golhar. D.Y, Waller M.A (1996), "Development & Validation of TQM implementation constructs", *Decision Sciences*, Vol.27, No.1, pp.23-56.

2. Almaraz, J (1994), "Quality Management and the process of Change", Journal of Organisational Change in Management, Vol.7, No.2, pp.6-14.

3. Arthur J.B. (1994), 'Effects of Human Resource Systems on Manufacturing Performance and Turnover', Academy of Management Journal, 3(37): 670-87.

4. Askey, J.M., Dale, B.G., (1994), "From ISO 9000 series registration to Total Quality Management an examination", Quality Management Journal, Vol-4, pp. 67-76.

5. Atkinson, P.E., (1996), Creating Cultural change – The key to successful TQM, IFS Publications, Kempston.

6. Bal, J, (1998), "Process analysis tools for process improvement". The TQM Magazine, Vol-10, No.5, pp 342-354.

7. Biswajeet Pattanayak (2004) "Human Resource Management" Prentice Hall of India, New Delhi.

8. Blackburn R. and Rosen B. (1993), 'Total Quality and Human Resources Management: Lessons learned from Baldrige Award winning companies', Academy of Management Executives, 3(7):43-65.

9. Blackwell Encyclopaedia Vol. IX : Human Resource Management P395.

10. Boselie P., Paauwe J. and Jansen P.G.W. (forthcoming in 2001), 'Human Resource Management & Performance: lessons from the Netherlands', The International Journal of Human Resource Management.

11. Bodinson, G.W. (1991), "Warning Ignoring ISO Standards may be harmful to your company's future", Industrial Management, Vol.33, No.2. 1991, pp. 11-12.

12. Bowen, David E & Lawler III, Edward, E (1992), "Total Quality oriented HRM", Organisational Dynamics, Spring pp. 29-41.

13. Brown, M.G., Hitchcock, D.E., and Willard, M.L., Why TQM fails and what to do about it, Burr Ridge, Illinois, New York, IRWIN Professional Publishing,1994.

14. Business Today, Jan 7-21, 1995, Special issue on The Quality Revolution.

15. Business Today, jan. 7-21, 1996, Special issues on Managing People.

16. Chase, R.B., and Aquilano, N.J., Production and Operations Management: A Life Cycle Approach, 5 edition, Homewood, IL: Irwin, 1989.

17. Choi T.Y. and Eboch K. (1998), 'The TQM paradox: Relations among TQM practices, plant performance, and customer satisfaction', Journal of Operations Management, 1(17): 59-75.

18. Conference Board (1991), Employee Buy-in to Total Quality, New York, Conference Board.

19. Coster E (1992). The Quality of Work Life - A New Perspective Human Resource Management. Vol7 (10), 68-70.

20. Cowling, Alan and Newman Karin, (1998), Banking on People : TQM service, Quality and Human Resources" Personeel Review, vol-24, No.7. pp. 25-40.

21. Criteria for Performance Excellence (CPE), Malcolm Baldrige National Quality

22. Award, 1997

23. Crosby, P.B., Quality Is Free, New York: McGraw-Hill, Inc., 1979.

24. Crosby, P.B., Quality Without Tears, New York: McGraw-Hill, Inc., 1984.

25. Crosby, P (1989), Let's Talk quality, 96 questions that you always wanted to ask Phil. Crosby, Mc Graw Hill, New York, N.Y 167.

26. Crosby P (1980), Quality is Free: The art of Making quality certain, Penguin Books, new York, N.Y.

27. Dale B.G., Cooper C.L., Wilkinson A. (1997), Managing Quality & Human Resources; A Guide to continuous improvement, Blackwell, Oxford.

28. Dale B.G. (1999), Managing Quality, 3 rd edition, Blackwell Publishers, Oxford.

29. Dale, B.G., and Plunkett, J.J., Managing Quality, New York: Philip Allan, 1990.

30. Dale, B and Cooper G (2000), Total Quality and Human Resources, U.K. Infinity Books.

31. Dale, B.G, and Oakland JS (1994), Quality improvement through standards, Stanley Thomes Publisher, Chettenham.

32. Dale, Barrie G (1996), "Bench Marking on total quality management adoption: a positioning model". Benchmarking for Quality Management and Technology, Vol.3, No.1, pp. 28-37.

33. Davis, Douglas and Fisher, Thomas J "The pace of change. A case study of the Development of Total Quality Organisation", International Journal of Quality and Reliability Management, Vol.II, 8, pp. 5-18.

34. Dawson, Patrick (1994), "Quality Management: Beyond the Japanese Model", International Journal of Quality and Reliability Management, Vol.11, No.7, pp. 51-59.

35. Dawson, Patrick (1998), "The Rhetoric and Bureaucracy of Quality Management: A totally Questionable Method?", Personnel Review, Vol.27, No.1, pp. 5-19.

36. Dean, James W (Jr) & Bowen David, E (1994), "Management Theory and Total Quality: Improving research and practice through theory Development", Academy of Management Review, Vol.19, No.3, pp. 92-413.

37. Delamotte Y & Takezewa S (1984)- Quality of Work life International perspective. Geneva : International Labour Office.

38. Delery J.E. and Doty D.H. (1996), 'Modes of Theorising in Strategic Human Resource Management: Tests of universalistic, contingency, and configurational performance predictions', Academy of Management Journal, 4(39): 802-35.

39. Deming, W.E., Out of Crisis, Cambridge, Massachusetts Institute of Technology,1986.

40. Deming W Edwards, (1981), Japanese Methods for productivity and Quality, George Washington University, Washington.

41. Deming, W. Edwards, (1986), Out of the Crisis: Quality, Productivity & Competitive position Cambridge University press, Washington.

42. Deming, W. Edward (1993), The New Economics for Industry, Government, Education, Cambridge M.A, MIT Centre for Advance Engineering Study. Department of Trade and Industry (1990), The single Market, Testing and Certification, HMSO, London Feb. 1990.

43. Dewhurst, F.Martinex, Lorento Angel R. and Dale, Barrie G. (1999), "TQM in public organisation: an examination of issues", Managing Service Quality, Vol.9, No.4, pp. 265-273.

44. Endosomwan J.A, and Savage _ Moore, W. (1991), "Assess your organisation's TQM posture and Readiness to successfully compete for the Malcolm Baldrige Award", Industrial Engineer, Vol. 23, No.2, 1991, pp. 22-4.

45. Falmholtz E-A (1995), "Managing organisational transitions: implications for corporate and HR Management", European management Journal, Vol.13, No.4, pp. 39-51.

46. Feigenbaum, A.V., Total Quality Control, 3rd edition, New York: McGraw-Hill 1991.

47. Feigenbaum, A (1956), "Total Quality Control", Harvard Business Review, vol.34, No.6, pp. 93-101.

48. Feigenbaum, A (1961), Total Quality Control, McGraw Hill, New York, NY.

49. Fisher, C.M (1995), "The differences between appraisal schemes: variation and acceptability Part II: Rhetoric and the design of schemes", Personnel Review, Vol.24, No.1, pp. 51-66.

50. Flynn, B.B, Schroedor R.G and Sakakibara, S. (1994), "A framework for quality management, research and an association and an associated Measurement instrument", Journal of Operations Management, Vol.II, No.4, pp. 339-66.

51. Foley, K (1987), Report of the committee of Review of standards, Accreditation and quality control and assurance. Australian Govt. publishing Services.

52. Garvin, D.A., Competing on the eight dimensions of quality, Harvard Business Review, Nov./Dec., 1987.

53. Ghobadian, A., and Speller, S (1994)Gurus of quality: a framework for comparison, Total Quality Management, Vol. 5, No. 3.

54. Ghobadian, A. & Woo, H.S (1996), "Characteristics, benefits and shortcomings of four major quality awards", International Journal of Quality and Reliability Management, Vol.13, No.2, 1996, pp. 10-44.

55. Gratton, Lynda (1996), "The missing Link; Human Resources and Business Strategies", The Antidote, Issue-1.

56. Guest D.E. (1999), 'Human Resource Management - The Workers' Verdict', Human Resource Management Journal, 3(9): 5-25.

57. Gupta, C.B 2003 Human Resource Management, New Delhi – Sultan Chand and Sons, p-6-7)

58. Hackman J.Richard & Wageman R. (1995), "Total Quality Management: Empirical, Conceptual & Practical Issues", Administrative Science Quarterly, Vol.40, No.22, pp. 309-342.

59. Hakes, C. (1991), Total Quality Management a Key to Business Improvement, Chapter & Hall, London.

60. Hart, C. and Schlesinger, L. (1991), "TQM and the human resource professional: applying the Baldrige framework to human resources", Human Resource management, Winter, Vol.3 No.4, pp. 433-54.

61. Hendricks K.B. and Singhal V.R. (2001), 'The long-run stock price performance of firms with effective TQM programs', Management Science, 3(47): 359-68

62. Hilland V.G (1990), Improving the Quality of Work life, Boardroom (1) 4-5.

63. Hill, F.M. and Collins, L.K (1998), "The positioning of BPR and TQM in long term organisational changes strategies", The TQM Magazine, Vol.10, No.6, pp. 438-446.

64. Hill, M. Fraces, Haglet, Shirley – Ann, Meegan Sarah (2001), "A study of the Transition from ISO 9000 to TQM in the context of Organisational Learning", International Journal of Quality and Reliability Management, Vol.18, No.2, pp. 142-168.

65. Ho, SK (1997), "Are ISO 9000 and TQM routes for logistics excellence", Logistics information Management, Vol.10, No.6, pp. 275-283.

66. Ho, SK (1994), "Is the ISO 9000 series for TQM", International Journal of Quality and Reliability Management, Vol.11, No.9, pp 74-89.

67. Huselid, M.A. (1995), 'The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance', Academy of Management Journal, 3(38):635-72.

68. Huselid M.A and B.E Becker (1997), The impact of high performance work systems, implementation effectiveness and alignment with strategy on shareholder wealth, Rutgers University, New Brulswick, N.J, 18-19

69. Inmai M (1986), Kaizen: The key to Japanese Competitive Success, McGraw Hill, New York, N.Y.

70. Ishikawa (1996), What is Total quality control? The Japanese Way, Prentice Hall, Englewood Cliffs.

71. Ishikawa, K., What is Total Quality Control? - The Japanese Way, London: Prentice Hall, 1985.

72. Johnson, R.H; A.M Ryan ad M.J. Schmit (1994), Employee attitude and branch performance at Ford Motor Credit, paper presented at the 9th annual conference of the society of industrial and organization psychology, Nashville, TN

73. Juran, J.M., and Gryna, F.M., Quality Planning and Analysis, New York: McGraw-Hill, Inc., 1970.

74. Juran, J.M., and Gryna, F.M., Quality Planning and Analysis, 3rd edition, New York: McGraw-Hill, Inc., 1993.

75. Juran, J.M (1969), Managerial Breakthrough, A new concept of the Manager's Job, New York, McGraw Hill.

76. Juran, J.M (1974), The Quality Control Handbook, 3rd edn. New York, McGraw Hill.

77. Juran, J.M (1988), "Quality Control Handbook, McGraw Hill, New York, N.Y.

78. Juran, J.M (1988), "Juran on Planning for Quality, Free Press, New York, N.Y.

79. Juran, J.M (1991), "Strategies for world class quality", Quality programmes, Vol.24, No.3, 1991, pp. 8-15.

80. Kanji, G.K., Asher, M., Total quality management process: A systematic approach, Advances in total quality management series, London: Carfax Publishing Company, 1993.

81. Kanji, G.K., Asher, M., 100 Methods for Total Quality Management, London: Sage Publications, 1996.

82. Kaniji, G.K (1998), "An innovative approach to make ISO 9000 standards more effective", Total Quality Management, Vol.1, pp 67-78.

83. Khandwalla, Pradip N. (1988), "Organisational design for change" in Chattopadhyaya Somnath & Pareek Udai (ed) Managing organisational change, New Delhi, Oxford & IBH.

84. Lakhe R.R, Dr.R.P.Mohanty (1989), Handbook of total Quality Management; Jaico Publishing House 1989

85. Lakhe R.R & Mohanty R.P (1994), "Total Quality Management; Concepts, Evolution and acceptability in Developing Economies". International Journal of Quality & Reliability Management, Vol.II, No.9.

86. Lawler E.E. III, Susan A.M and Gerald E Ledford Jr. (1992), Employee Involvement and Quality Management. Practices and Results in Fortune companies. San Francisco, Jossey Boss.

87. Lee, R.G and Dale, R.G (1988), "Business process Management: a review and evaluation", Business process Management Journal, Vl.4, No.3, p. 214-225.

88. Lee, T.Y., Leung, H.K.N, Chan, K.C.C (1999), "Improving Quality Management on the basis of ISO 9000", The TQM Magazine, Vol.11, issue 2, pp. 30-34.

89. Lehrer R.N (1982) Participative Productivity and Quality of Work life. Eglewood Cliffs, Prentice Hall.

90. Lindsay M.W and Patrick, A. Joseph, (1997), Total Quality & Organisation Development, Boca Raton Fl. St. Lucie, CRC press.

91. MacDuffie J.P. (1995), 'Human Resource Bundles and Manufacturing Performance: Organisational Logic and Flexible Production Systems in the World Auto Industry', Industrial and Labour Relations Review, 2(48): 197-221.

92. MacDuffie J.P and J.F Krafcik (1992), Integrating technology and HR for high performance manufacturing, New York, Oxford university press.

93. Mclachlan, V.N. (1996), "In praise of ISO 9000", The TQM Magazine, vol.8, No.3, pp. 21-23.

94. Mc Kinsey & Company (1998), "Management of Quality: the single major important challenge for Europe", European management Forum, 19 oct Mountreux, Switzerland.

95. Melivile, S. and Murphy, A (1989), "Quality Improvements through people" Quality Assurance, Vol.15, No.1, 1989, pp. 25-28.

96. Mo, J.P.T. and Chan, A.M.S (1997), "Strategy for the successful implementation of ISO 9000 in SMEs", The TQM Magazine, Vol.9, No.2, pp. 135-145.

97. Motwani, J.G., Mohmoud, E and Rice, G. (1994), "Quality practices of Indian Organisation: An empirical analysis", International Journal of Quality and Reliability Management, Vol.11, No.1, pp. 38-52.

98. Muhlemeyer, P. and Clarke, M. (1997), "The competitive factor: Training & Development as a strategic management task", Journal of workplace learning. Vol.9, No.1, pp. 4-11.

99. Nelson, C.A. (1993), Managing Globally – A Complete guide to competing worldwide, New York, McGraw Hill.

100. Nwabueze, U. (2001), "An industry betrayed: the case of total quality management in manufacturing", The TQM Magazine, Vol.13, No.6, pp. 400-408.

101. Oakland, J.S (1989), Total Quality Management, Butterworth – Heinenemann Ltd., Oxford, UK.

102. Oakland, J.S (1990), "TQM – 3, what next?" Total Quality Management - 3: Proceedings of the 3rd International Conference IFSI Ltd., Springer-Verlag, London, pp.133-54.

103. Oakland, J.S (1993), Total Quality Management, Butter Worth, Heinman, Oxford.

104. Oakland J.S (1995) Total Quality Management, London- Bulterworth Heinemann.

105. Oliver, N (1990), "Employee Commitment and Total Quality Control", International Journal of Quality & Reliability Management, Vol.7, No.1, pp. 21-9.

106. Ostroff. C (1995), HR management: Ideas and trends in personnel, 21st June, 356, CCH Incorporated.

107. Owen, F.J. (1986), Why Quality Assurance in a chemical manufacturing company? Symposium on quality assurance in the process industries, Institute of Mechanical Engineers, Manchester, Dec 1986.

108. Paauwe J. and Richardson R. (1997), Introduction Special Issue on *HRM and Performance, The International Journal of Human Resource* Management, 3(8): 260.

109. Pegels, Carl C.(1994), "TQM defined in terms of reported practice", International Journal of Quality and Reliability Management, Vol.11, No.5, pp. 6-18.

110. Pfau L.D; TQM Gives Companies a Way to Enhance Position in Global Market Place, industrial Engineer, 21,4,1989, pp.17-21.

111. Pfeffer .J (1998), The human equation: Building profits by putting people first, Boston , M.A: Howard business school press.

112. Puay, S.H. Tan K.C, Xie. M and Goh, I.H (1998), "A comparative study of nine national Quality awards", The TQM Magazine, Vol.10, No.1, pp. 30-39.

113. Pulat, B.M, (1994), "Total Quality Management: a framework for application in manufacturing", The TQM Magazine, Vol.6, No.4, pp. 44-49.

114. Rajuvir (2000), "Managing the ever changing organisation", Paper presented at the 32nd National Convention of ISTD, 17-19 Jan, 2002.

115. Rao T.V, (1999), HRD Audit – Evaluating the Human Resource Function for Business Improvement, New Delhi, Response Books.

116. Reddy, Y.R.K (1990), Strategic Approach to Human Resource Management, New Delhi, Wiley Ltd.

117. Reddy, N.J (2000), "The Role of HRD in Organisations". In Going Global Leveraging Human Potential, Academy of HRD (Ed), New Delhi, Tata Mc Graw Hill.

118. Reed R., Lemak D.J. and Montgomery J.C. (1996), 'Beyond process: TQM content and firm performance', Academy of Management Review, 1(21): 173-202.

119. Robbins S.P (1993) Organisational Behaviour, Englewood Cliffs, New jersey, Prentice Hall.

120. Saraph J.V. Benson P.G. and Schroeder R.G (1989), "An instrument for measuring critical factors of Quality Management", Decision Sciences, Vol.20, No.4, pp.810-829.

121. Schein.E (1990), Career Anchors - Boston University Associates Inc.

122. Schien, E.H. (1985), Organisational Culture and Leadership: A Dynamic View, Jossey-Boss, San Francisco, C.A.

123. Schmit, M.J and S. Allscheid (1995), Employee attitude and customer satisfaction: Making theoretical and empirical connection, personal psychology 48: 521-536.

124. Schneider B and D.E Bowen (1985), Employee and customer perception of service in banks: replication and extension, journal of applied psychology, 70: 431.

125. Schrender AMG and Flowers J (1992)- Journal of Industrial Psychology, Vol 18 (2) 10-13.

126. Schonberger J.R (1994), "Human Resources Management lessons from a decade of total quality management and re-engineering", California Management Review, summer, pp. 109-123.

127. Schuler, R.S. and Jackson, S.E (1987), Linking Competitive Strategies with Human Resource Management Practices", Academy of Management Executive, Vol.1, No.3, August, pp. 207-209.

128. Shridhara Bhat K "Total Quality Management Text & Cases" - First Edition 2002. Himalaya Pubish House, New Delhi 2002.

129. Sink, DA (1991), "TQM- the next frontier or just Another bandwagon", Productivity, Vol.30, No.3, pp. 400-414.

130. Singels, J., Ruel, G. and Water, V.V (2001), "ISO 9000 series certification and performance" International Journal of Quality and Reliability Management, Vol.18, No.1, pp.62-75.

131. Simmons, D.E., Shadur M.A and Preston A.P (1995), "Integrating TQM and HRM", Employee Relations, Vol.17, No.3, pp. 75-86.

132. Smith S (1990), "Transforming Culture", TQM Magazine, August, pp. 205-207.

133. Snape Ed., Wilkinson A, M.M, and Redman, T. (1995), "Managing Human Resources for TQM: possibilities and pitfalls", Employee Relations, Vol.17, No.3, pp. 42-51.

134. Spector, B and Beer, M (1994), "Beyond TQM Programmes", Journal of Organisational Change Management, Vol.7, No.2, pp. 63-70.

135. Taguchi G (1986), Introduction to Quality Engineering, American Supplier Institute, Dearborn, MI.

136. Thiagarajan T and Zairi M (1997), "A review of total quality management in practice: understanding the fundamentals through examples of best practices applications Part III", The TQM Magazine, Vol.9, No.6, pp 414-417.

137. Thiagarajan T and Zairi M and Dale, B.G., (2001), "A proposed model of TQM implementation based on an empirical study of Malaysian Industry", International Journal of Quality and Reliability Management, Vol.18, No.3, pp.289-306.

138. Taguchi, G., Introduction to Quality Engineering: Designing Quality into Products and Processes, White Plains, NY: Kraus International, UNIPUB (Asian Productivity Organization), 1986.

139. Tobin L.M - The New Quality Landscape TQM, International Journal of System Management, 412,11,1990, pp.10.-14.

140. United Nations' development programme (UNDP): Human Development Report 2003.

141. Van Der Weile, T.Dale. B.G. and Williams, A.R.T (1997), "ISO 9000 series registration to total quality management: the transformational Journey", International Journal of Quality and Science, Vol.2, No.4, pp. 235-252.

142. Waldman, D.A (1994), "Designing performance management system for total quality implementation" journal of Organisational change management Vol.7, No.2, pp.31-34.

143. Walton, M (1991), Deming Management At Work, Putman;'s Sons, New York, N.Y.

144. Walker J.W. (1992), Human Resource Strategy, McGraw Hill, New York, NY.

145. Watson, S. and D'Anmunio-Green (1996), "Implementing cultural change through human resources, the elusive organisational Alchemy?" International Journal of Contemporary hospitality Management, 8/2, pp., 25-30.

146. Welbourne, Thresa and Alice Andrews (1996), Predicting performance of initial public offering firms: Should HRM be the equation ? Academy of management journal, 39: 839-919

147. Wiele van der A. (1998), Beyond Fads; Management fads and organisational change with reference to quality management, Eburon, Delft. Adam, Everette, James Hershauer, and William A. Ruch, Productivity and Quality, Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1981.

148. William M Lindsy, Joshp A Petrik : Total Quality and Office Developemnt 1997

149. William A., D., P. and Walters, M(1993), Changing Culture: New Organisational Approaches, 2nd ed, IPM, London.

150. Wilkinson A and Witcher b (1993), "Holistic TQM must take account for Politioal Process", Total Quality Management, Vol.4, p.16.

151. Wilkinson A, and Witcher B (1992), "Conference Review: Quality concerns, for management" International Journal of Quality and Reliability Management, Vol.9, No.2, pp. 64-68.

152. Whiltington, D, "Some Attributes of BS 5750: A Study", International Journal of Quality and Reliability Management, Vol.6, No.3, 1998, pp. 54-58.

153. Yang, John Zhuang (1994), "The Japanese approach to Quality Management _ A Human Resource Perspective", Journal of Organisational Change Management, Vol.7, No.3, pp. 44-64.

154. Zaire M; Simintaries A.C; The Sales Link in the Customer Supplier Chain, Productivily 32,3,1991, pp.427-434.

155. Zairi, M (1994), "TQM what is wrong with the Terminology? TQM Magazine, Vol.6, No.4, pp. 6-8.