CHAPTER II

REVIEW OF LITERATURE ON TOTAL QUALITY MANAGEMENT AND HUMAN 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 Tauchchi (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 teamwork. 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 workplace. 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

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

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, identify 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;
9. Break down barriers between departments – team working to tackle problems;
10. Eliminate numerical goals for the workforce - eliminate slogans and exhortation, make reasonable requests of the workforce;
11. 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;
Institute a vigorous program of education and training - for continual updating and improvement;

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 - appreciate 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 thorough 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:

<table>
<thead>
<tr>
<th>Malcolm Baldrige</th>
<th>Rajiv Gandhi</th>
<th>European Qlty</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>10%</td>
<td>18%</td>
</tr>
</tbody>
</table>

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 Award (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 1,000 points 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:
  - 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 identify 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 identify 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 assess 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 analyze 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 analyze work processes (Juran, 1974; Ishikawa 1985; Deming 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 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.

43
• 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 or 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 as 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
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, a 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.


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

Irvine (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 identify 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-skillness 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 goal 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 stakeholders 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 eagerness) 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 Morrison (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 al 2001). The finding of Sohol and Morrison 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 from 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, Jugar’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 throughout 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.