CHAPTER 2

THE CONCEPT OF TOTAL QUALITY MANAGEMENT

This chapter aims in defining the concept of total quality management. It also covers the meaning of quality, ISO 9000 quality management system, definition of total quality management, quality awards, cost of quality, quality improvement tools and barriers to total quality management.

2.1 MEANING OF QUALITY

The word "quality" often signifies excellence; nevertheless it is a word with different notion to different people. Writers on the subject have their own definition, by and large devising it to suit their own beliefs, prejudices, business and academic experiences. The result is a proliferation of unique definitions which confounds comparisons and analysis.

The dictionary meaning of quality are "the standard of how good something is as measured against other similar things" or "general excellence" or "distinctive features" (Oxford Dictionary 2006).

As per International Standard for Organisation (Quality Vocabulary), quality is defined as "the totality of features and characteristics of a product or service
that bears on its ability to meet a stated or implied need”.

Dr. W. Edwards Deming (1982) defines “quality should be aimed at the needs of the customer, present and future”.

Dr. Genichi Taguchi (1986) defines “quality of a product as the loss imparted by the product to the society from the time the product is shipped”. A loss may include customer complaints, added warranty costs, damage to company reputation, and loss of market lead amongst others. He argues that a product does not cause loss until it is out of specification.

For Philip B. Crosby (1991) “quality means conformance to requirements”, not as ‘goodness’ or ‘elegance'. If one needs quality then it must be defined in terms of requirements and measures must be taken continually to determine conformance to those requirements i.e., "doing things right first time".

Dr. Kaoru Ishikawa (1991) defines “quality as a companywide issue and must be an all-pervasive influence on the way every aspect of business is conducted”. He defines quality as, “that meets or exceeds present customer requirements and specifications while anticipating future needs through the continuous improvement of the processes, products and services”.
Feigenbaum (1991) defines “quality as the total composite product and service characteristics of engineering, manufacture, marketing and maintenance through which the product and service in use will meet the expectations of the customers”. Quality is customer determination, it is based on customer's actual experience with the product or service measured against his or her requirements.

Shigeo Shingo (1992) believes that, “quality is that which should be controlled at the source of the problem not after the problem has manifested itself”. He emphasised on zero quality control.

Juran (1995) defines “quality is customer satisfaction”. The main determinants of satisfaction are achieved through product features and freedom from deficiencies. Product features (performance, reliability, durability, ease of use, serviceability, esthetics and reputation) refer to the quality of design that meets the need of customer which provides satisfaction. Freedom of deficiencies (free of defects, errors at delivery and other business processes) refers to quality of conformance. Alternatively, he defined quality as "fitness for use".

David Hoyle (2001) defines quality as “the degree to which a set of inherent characteristics fulfils a need or expectation that is stated; general, implied or
obligatory”. This is based on the combination of the set of inherent characteristics of a product and requirement in ISO 9001:2000.

The phrases like "customer is king" and "customer delight" is no longer hypothetical in nature and the fate of many organisations is sealed by the way customers react to it, to its products and services (Deccan Herald February 2, 2005). It is their perception that will determine whether they remain loyal or seek alternative.

Customers define quality in different ways. Generally, quality means meeting or exceeding the expectations of the customer. Quality has a different meaning in the minds of customers altogether which may be:

- **Conformance to specifications**: Customers expect the products or services they buy to meet or exceed certain levels of performance (performance of the product, reliability, durability, ease of use, serviceability, esthetics, on-time delivery, etc.).
- **Value**: The intended purpose at prices that the customer buys the product or services.
- **Fitness for use**: The product or service that performs the intended purpose for which the customer has bought. It may be appearance, style, durability, reliability or serviceability.
• **Support**: The reduction of consequences of failures of a product or a service through proper support by the manufacturers or service providers.

• **Psychological**: The quality of the product or service on the basis of the psychological feeling or the impression that the customer has.

Generally customers evaluate quality of the product or service on different aspects or dimensions. Product quality dimensions are evaluated based on the performance, features, reliability, serviceability, durability, appearances, customer service and safety. Service quality dimensions are evaluated based on the reliability, responsiveness, competence, access, courtesy, communication, credibility, understanding, security and tangibles.

The meaning of quality has expanded beyond "customer satisfaction with products and services" to the "creation of worth for all stakeholders" (Stanislav Karapetrovic and Walter Willborn, 2002).

Quality is a philosophy, an attitude and a way of thinking that is an integral part of successful industries, businesses, healthcare, education and personal growth. It means doing the right things right, doing the right things effectively, and taking the right measurements to ensure excellence of the product or the
service. Management fads come and go but quality is enduring (James T. Scarnati & Betty J. Scarnati, 2002).

In all these definitions satisfying the customer's needs and expectations is the main criteria. What is satisfactory to the customers today may not be regarded as such tomorrow, as their expectations are continuously changing. Today, customers demand high quality and low price. Since, no one organisation can boast of holding franchise to the development and delivery of quality products and services, many organisations have embraced the total quality management concept as a way of survival. An urgent need for an organisation-wide approach and commitment to quality improvement has led to the development of the total quality management.

2.2 ISO 9000 QUALITY MANAGEMENT SYSTEM

Globalisation has radically changed the competitive landscape and process flows of business. Quality has become a major focus of business throughout the world. A greater need exists for shrewd investment in infrastructure and process standardisation for business success. Various organisations stated developing standards and guidelines. In this regard, the "International Organisation of Standardisation (ISO)" a global federation of 130 national standard bodies seeks
to promote standardisation and development of related activities worldwide through ISO 9000 quality standard.

**Meaning of ISO - 9000**

- It is a set of written standards underlying a quality system.
- It defines the basic elements of the system through documentation.
- It creates a quality system rooted in the customers’ requirements.
- It ensures uniform systems that are universally recognised.
- It creates the discipline required for a total quality process.

**The Contents of the 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 demonstrating its 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 guideline in developing and implementing a quality management system.

With a radical revision in ISO 9001:2000, the International Organisation of Standardisation calls for Quality Management Systems (QMS) approach, a framework of principles that guide organisations toward improved performance. The principles form a base in reinforcing QMS approach to managing quality. Eight quality management principles have been identified that can be used by top management in order to lead the organisation towards improved performance.

• Customer focus: Organisations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

• Leadership: Leaders establish unity of purpose and direction of the organisation. They should create and maintain the internal environment in which
people can become fully involved in achieving the organisational objectives.

- Involvement of people: People at all levels are the essence of an organisation and their full involvement enables their abilities to be used for the organisational benefit.

- Process approach: A desired result is achieved more efficiently when activities and related resources are managed as a process.

- Systems approach to management: Identifying, understanding and managing interrelated processes as a system contributes to the organisation's effectiveness and efficiency in achieving its objectives.

- Continual improvement: Continual improvement of the organisation's overall performance should be a permanent objective of the organisation.

- Factual approach to decision making: Effective decisions are based on the analysis of data and information. Applying the principle of factual approach to decision making typically leads to ensuring that data and information are sufficiently accurate, reliable and accessible.

- Mutually beneficial supplier relationships: An organisation and its suppliers are interdependent
and a mutually beneficial relationship enhances the ability of both to create value.

**QS-9000**

QS-9000 is a quality system standard developed in the USA in 1994 by a team consisting of representatives of the three big automotive manufacturers (Ford, General Motors and Daimler-Chrysler). The main objective is to standardise the procedures, responsibilities and processes in achieving consistent output. The reason for the development of such a standard was to minimise the errors resulting from definitions, reports, procedures and other documents unique to each manufacturer. The standard is fundamentally a suite of documents which includes a quality system assessment guide, and advanced product quality planning manual, a potential failure mode and effect analysis reference manual, a product part approval process manual, a measurement or gauge capability study manual and a fundamental statistical process control reference manual. (Jeffrey Lo Chi Fong & Jiju Antony, 2001).

The main purpose of this standard is to encourage automotive manufacturers and suppliers to build quality system that focus on the continuous improvement of processes and thereby product quality. This forces the
organisations to transform their cultures toward total quality management.

2.3 THE CONCEPT OF TOTAL QUALITY MANAGEMENT

DEFINITIONS OF TQM

The International Organisation for Standardisation defines TQM as a “management approach to an organisation centered on quality, based on the participation of all its members, and aiming at long-term success through customer satisfaction and benefits to the members of the organisation and to society”.

Total quality management is the integrated approach of various organisational activities. A. V. Feigenbaum (1991) described quality system as “the agreed company-wide and plant-wide operating work structure, documented in effective, integrated technical and managerial procedures, for guiding the co-ordinated actions of the people, the machines and the information of the company and plant in the best and most practical ways to assure customer quality satisfaction and economical costs of quality”.

According to Zaire & Simintiras (1991) “total quality management is a combination of socio-technical process towards doing the right things (externally), everything right (internally), first time and all the
time with economic viability considered at each stage of each process”.

Saylor (1992) opines that “TQM is both a philosophy and a set of guiding principles that are the foundation of a continuously improving organisation. It is the application of quantitative methods and human resources to improve the material services supplied to an organisation, all the processes within the organisation, and the degree to which the needs of its customers are met, now and in the future. It integrates fundamental management techniques, existing improvement efforts and technical tools under a disciplined approach focused on continuous improvement”.

Price & Chen (1993) view “TQM as a management system, not as a series of programs. It is a system that puts customer satisfaction before profit. It is a system that comprises a set of integrated philosophies, tools and processes used to accomplish business objectives by creating delighted customers and happy employees”.

Joseph M. Juran & Frank M. Gryna (1995) defines TQM as “the system of activities directed at achieving delighted customers, empowered employees, higher revenues and lower costs”.

Zinovy D. Rodovilsky, et al. (1996) defines TQM as “both a complete manufacturing philosophy and a tool kit
for implementing the philosophy in the production process”.

Navin S. Dedhia (1998) defines TQM as “a cost-effective system for integrating the continuous quality improvement efforts of people at all levels in an organisation to deliver products and services that ensure customer satisfaction”.

Shar'ri, Mohd. Yusof & Elaine Aspinwall (2001) putforth TQM as “a philosophy and presents a business system that companies should adopt to achieve organisational excellence”.

Zahir Irani, et al. (2002) defined TQM as “an initiative that many manufacturing organisations have adopted to improve their organisational performance and competitiveness”.

K. Shridhara Bhat (2002) writes total quality management as “a philosophy that involves everyone in the organisation in a continual effort to improve quality and achieve customer satisfaction. This describes TQM is a never ending push to improve and a goal of customer satisfaction which involves meeting or exceeding customer exceptions”.

Roger Williams, et al. (2004) defined TQM as “a management approach that ensures mutual co-operation of everyone in an organisation and associated business processes to produce products and services that meet and
hopefully, exceed the needs and expectations of customers”.

Thus total quality management as a philosophy will carry on evolving and introducing newer concepts and principles in modern business. Though it has become a perquisite in due course for the modern business, the influences made by the principles, which are developed by Deming, Juran, Crosby, Taguchi and others are still evident in corporate culture. These various philosophies are enunciated below.

2.4 **Philosophies of TQM**

**Dr. W. Edwards Deming**

Perhaps the most influential quality management thinker of the last century Dr. W. Edwards Deming always stressed the use of statistical methods. His philosophy is briefed below.

**The Deming Cycle**

The Plan-Do-Check-Act (PDCA) cycle is an all-encompassing improvement methodology.

- Plan what to do.
- Do the experimentation.
- Check the solutions.
- Act on the results.
DEMING'S 14 POINTS FOR MANAGING QUALITY

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business and to provide jobs.

2. Adopt the new philosophy. Management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.

4. End the practice of awarding business on the basis of price tag. Instead, minimise total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.

6. Institute training on the job.

7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.

9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

10. Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force. Eliminate work standards (quotas) on the factory floor, substitute leadership eliminate management by objective (MBO), eliminate management by numbers, numerical goals.

11. Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.

12. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual or merit rating and of management by objective.

13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody jobs.

**System of profound knowledge**

The System of Profound Knowledge or management by positive co-operation is described in its four inter-related elements.

1. **Appreciation for a system:** The need for managers to understand the relationships between functions and activities and that the long-term aim is for everyone to win - employees, shareholders, customers, suppliers and the environment.

2. **Knowledge of statistical theory:** Knowledge and understanding of variation, process capability, control charts, interactions and loss function.

3. **Theory of knowledge:** As all plans require prediction based on historical information, the theory must be understood before it can successfully be copied.

4. **Knowledge of psychology:** The understanding of human interactions, how people are motivated and what disillusion them.
Dr. Joseph M. Juran

Dr. Joseph M. Juran focuses on planning, organisational issues, creating beneficial change, preventing adverse change and management's responsibility. His philosophies are:

Juran's Trilogy

It is an approach to cross-functional management that is composed of three managerial processes: quality planning, quality control, and quality improvement.

1. Quality planning: This is the activity of developing the products and processes required to meet customer needs. It involves a series of universal steps that can be abbreviated as follows:

   - Establish quality goals.
   - Identify the customers - those who will be impacted by the efforts to meet the goal.
   - Determine the customer’s needs.
   - Develop product features that respond to customer’s needs.
   - Develop processes that are able to produce those product features.
   - Establish process controls and transfer the resulting plans to the operating forces.
2. **Quality control:** This process consists of the following steps:
   - Evaluate actual quality performance.
   - Compare actual performance to quality goals.
   - Act on the difference.

3. **Quality improvement:** This process is the means of raising quality performance to unprecedented levels (breakthrough). The methodology consists of a series of universal steps:
   - Establish the infrastructure needed to secure annual quality improvement.
   - Identify the specific needs for improving the projects.
   - For each project establish a project team with clear responsibility for bringing the project to a successful conclusion.
   - Provide the resource, motivation, and training needed by the team to diagnose the cause, stimulate establishment of remedies and establish controls to hold the gains.

**Juran’s 10 Steps to Quality Improvement**

- Build awareness of the need and opportunity to improve.
• Set goals for that improvement.
• Create plans to reach the goals.
• Provide training.
• Conduct projects to solve problems.
• Report on progress.
• Give recognition for success.
• Communicate results.
• Keep score.
• Maintain momentum.

**PHILIP B CROSBY**

Crosby originated the concept of zero defects and popularising the slogan "do it right the first time". He put forth four absolutes of quality management explained as below:

**FOUR ABSOLUTES OF QUALITY:**

1. The definition of quality is conformance to requirements, not as goodness.
2. The system for causing quality is preventive, not appraisal.
3. The performance standard must be zero-defect, not "that's close enough".
4. The measurement of quality is the price of non-conformance, not indexes.
CROSBY’S FOURTEEN STEPS TO QUALITY IMPROVEMENT

1. Make it clear that management is committed to quality.
2. Form quality improvement teams with senior representatives from each department.
3. Measure processes to determine where current and potential quality problems lie.
4. Evaluate the cost of quality and explain its use as a management tool.
5. Raise the quality awareness and personal concern of all employees.
6. Take actions to correct problems identified through previous steps.
7. Establish progress monitoring for the improvement process.
8. Train supervisors to actively carry out their part of the quality improvement program.
9. Hold a “Zero Defects Day” to reaffirm management commitment.
10. Encourage individuals to establish improvement goals for themselves and for their group.
11. Encourage employees to tell management about obstacles to improving quality.
12. Recognise and appreciate those who participate.
13. Establish quality councils to communicate on a regular basis.
14. Do it all over again to emphasis that the quality improvement process never ends.

**The Crosby "Vaccine"**

In the Crosby style, the "Vaccine" is explained as medicine for management to prevent poor quality. It is in five sections that cover the requirements of total quality management.

1. **Integrity:** Treat quality seriously throughout the whole business organisation from top to bottom. The company's future will be judged on its performance on quality.

2. **Systems:** Appropriate measures and systems should be put in place for quality costs, education, quality, performance, review, improvement and customer satisfaction.

3. **Communication:** The communication systems are of paramount importance to communicate requirements and specifications and improvement opportunities around the organisation. Customers and operators know what needs to be put in place to improve and listening to them will give you the edge.

4. **Operations:** Work with and develop suppliers. Processes should be capable and improvement culture should be the norm.
5. **Policies:** Must be clear and consistent throughout the business.

**Armand Feigenbaum**

Feigenbaum originated the concept of total quality control. He defined total quality control as, “an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various groups in an organisation so as to enable production and service at the most economical levels which allow full customer satisfaction”.

Feigenbaum is also known for his concept of the ‘hidden plant’. That is in every factory a certain proportion of its capacity is wasted; not getting it right first time.

**Feigenbaum’s Crucial Elements of Total Quality**

The elements of total quality to enable a totally customer focuses (internal and external) are:

1. Quality is the customer’s perception of what quality is, not what a company thinks it is.
2. Quality and cost are the same not different.
3. Quality is an individual and team commitment.
4. Quality and innovation are interrelated and mutually beneficial.
5. Managing quality is managing the business.
6. Quality is a principal.
7. Quality is not a temporary or quick fix but a continuous process of improvement.
8. Productivity gained by cost effective demonstrably beneficial quality investment.
9. Implement quality by encompassing suppliers and customers in the system.

**Kaoru Ishikawa**

Perhaps the most dominant leader in JUSE. He is well known for coming up with the concept for the fish bone diagram, known as the 'Ishikawa' or 'cause and effect diagram', used to improve the performance of teams in determining potential root causes of their quality problems.

**Kaoru Ishikawa's company-wide quality**

Ishikawa, built on Feigenbaum's concept of total quality, suggested that all employees have a greater role to play, arguing that an over-reliance on the quality professional would limit the potential for improvement. Maintaining a company-wide participation was required from the top management to the front-line staff. As every area of an organisation can affect quality, all areas should study statistical techniques and implement as required with internal and external quality audit...
programmes. To name a few areas, engineering, design, manufacturing, sales, materials, clerical, planning, accounting, business and personnel that not only improve internally but also provide the essential information to allow strategic management decisions to be made concerning the company.

Under the company-wide, Ishikawa umbrella is not just a company's internal quality control activities but the company itself, the quality of management, human respect, after sales service and customer care. Therefore suggests the following benefits:

- Reduced defects.
- Improve product quality is improved.
- Quality improvement becomes the norm.
- Increased reliability.
- Reduced costs.
- Increased quality of production.
- Waste is identified and reduced.
- Rework is identified and reduced.
- Improvement techniques are established and continually improved.
- Inspection and after-the-fact expenses are reduced.
- Contracts are rationalised.
- Sales and market opportunities are increased.
- Company reputation is increased.
• Interdepartmental barriers are broken down and communication becomes easier.
• False and inaccurate data is reduced.
• Meetings are more effective and focused.
• Repairs and maintenance are rationalised.
• Improvement in human relations.
• Company loyalty is increased.

DAVID GARVIN

Garvin identified his eight dimensions of quality which he maintained and covered the meaning of quality to managers, operators and customers. By accepting that, customers have a different perception of quality than that of a manager, quality effort can be focused. The eight dimensions are.
1. Performance,
2. Features,
3. Reliability,
4. Conformance,
5. Durability,
6. Serviceability,
7. Aesthetics and
8. Perceived quality.
Shigeo Shingo

Shigeo Shingo developed the concept of mistake proofing ‘zero quality control’ (ZQC) or ‘Poka-Yoke’ (pronounced POH-kay YOH-kay) meaning 'inadvertent mistake' - 'prevention'. He originated the ‘Single Minute Exchange of Die’ (SMED) as part of the ‘Just-in-Time’.

The basic idea with Poka-Yoke is to devise simple mechanical or physical devices, which make defects impossible.

Shingo understands that mistakes are part of normality and as such target these areas to reduce the probability of process failure. The use of source inspection and Poka-Yoke devices are used to ensure that the correct conditions prior to production or operations being carried out. These often prevent the process from continuing until conditions are satisfied.

Source inspection is aimed at making inspection part of the production process, so that errors are identified before they become defects.

Under source inspection and Poka-Yoke, when an error is detected, the whole process is stopped until the cause is determined and corrective action taken.

These techniques eliminate the need for statistical sampling and effectively constitute the zero-defect quality control approach.
'Those who are not dissatisfied will never make any progress'. He believed that progress is achieved by careful thought, pursuit of goals, planning and implementation of solutions.

2.5 AWARDS OF TOTAL QUALITY MANAGEMENT

Quality is no longer confined to the quality of a product or a service. It applies to delivery, administration, customer service and all other aspects of company. It encompasses all the ways in which a company meets the needs and expectations of its financial stakeholders, its customers (external and internal) and the community (social and environmental) as whole in which it operates. Quality has become crucial in gaining a competitive advantage worldwide. The thrust of quality has embarked the companies to owe to ISO certification and seek guidance through quality models/awards for implementing quality programs.

Depending on the various organisational variables, many models have been developed for implementing quality programs. Dana M. Johnson (2004) studies organisational change model for implementation of quality standard requirements, F. Balbater Benavent, et al. (2005), model of quality management for self-assessment, Jack A. Castle (1996), an integrated model in quality management. Many
such models based on quality-cost dynamics, tools and techniques, effective team work, etc., has made an impact on the improving quality. All these quality criteria has encompassed in the form of quality excellence awards namely, Deming Prize (DP), Malcolm Baldridge Quality Award (MBNQA), European Foundation for Quality Management (EFQM), the Rajiv Gandhi National Quality Award (RGNQA) have played a key role in quality revolution in Japan, USA, Europe and in India. These models/awards provide well-defined criteria for assessing and demonstrating an organisation's effectiveness under the label of quality.

**The Deming Award**

The Deming Prize (DP) was established in 1951, to honour Dr. Deming and at the same time, give recognition to Japanese companies that have achieved outstanding performance improvement through the effective application of company-wide TQM and quality control methods. The Deming Prize is awarded for the individuals, Deming Application Prize and the Deming Factory Prize for the companies.

The Deming Prize criteria encompass all areas for continuous improvement. The evaluation is done based on the ten criteria categorised as: top management leadership-vision-strategies, organisational structure and its operation, quality assurance system, management
systems for business elements, human resource development, effective utilisation of information, TQM concepts and values, scientific methods, organisational powers and contribution to realisation of corporate objectives.

**MALCOLM BALDRIGE NATIONAL QUALITY AWARD (MBNQA)**

The Malcolm Baldrige National Quality Award was established in 1987 by Public Law 100-107 and signed into effect by President Ronald Reagan (Rudolph Jacob, et al. 2004) has been seen as a major catalyst for transforming US businesses. The award is given to manufacturing and service businesses, small and large organisation. From 1999 Baldrige Award is rewarded to educational and healthcare organisations also. The Baldrige Award program was designed as a value system, a tool for education and communication, a vehicle for cooperation and a device to help to evaluate quality standards. The organisations for this award are judged on the outstanding performance in seven areas: leadership, strategic planning, customer and market focus, information and analysis, human resource focus, process management and business results. The criteria are directed toward dual results-oriented goals, on one hand to project key requirements for delivering ever-improving value to customers, while on the other
hand to maximise the overall productivity and effectiveness of the delivering organisation.

**THE EUROPEAN QUALITY AWARD (EQA)**

The European Quality Award (EQA) was established in 1991 with the support of the European Foundation for Quality Management (EFQM) and the European Commission. The EQA consists of two categories: the European Quality Prize (EQP) and the European Quality Award (EQA). The EQP is awarded to companies demonstrating excellence in quality management as their fundamental system for continuous improvement and the EQA is awarded to the most successful exponent of total quality management in Western Europe.

The EQA considers nine criteria namely, leadership, policy and strategy, people management, resources, process, people satisfaction, customer satisfaction, impact on society and results. These criteria provide a generic framework that can be applied widely to any organisation or component part of an organisation.

**THE RAJIV GANDHI NATIONAL QUALITY AWARD (RGNQA)**

The Bureau of Indian Standards (BIS) instituted the Rajiv Gandhi National Quality Award in 1991. There are four award categories: one for large scale manufacturing
units, one for small scale manufacturing units, one for service sector organisations and one for best of all. There are six commendation certificates each for the large and small-scale manufacturing units and one commendation certificate given to service sector organisation.

The assessment process is similar to that of MBNQA. In case of large scale organisation the assessment will be made on the basis of nine criteria: leadership, policies-objectives and strategies, human resource management, resources, processes, customer focused results, employee satisfaction, impact on environment and society, business results. Small-scale organisation will be assessed based on six criteria: leadership, human resource management, processes, customer focused results, impact on environment and society and business results.

2.6 **Cost of quality**

In recent past, organisations have realised the need to develop and assess cost of quality. Cost of quality is regarded as a management tool and as an indicator of the economic health of the many organisations. Cost of quality appraises a company’s performance with respect to the process in which a product is manufactured and/or a service is delivered.
The cost of quality is generally classified into four categories: *internal failure cost*, *external failure cost*, *appraisal cost* and *prevention cost*.

*Internal failure costs* include scrap cost, loss cost, rework cost, failure analysis cost, 100% sorting inspection cost, re-inspection and retesting cost and downgrading cost.

*External failure cost* is the costs that are associated with defects that are found after shipment of the product to the customers. They include warranty charges cost, complaint adjustment cost, returned material cost and allowance cost.

*Appraisal cost* is the cost incurred to identify poor quality products before shipment to customers. They normally include incoming inspection and testing cost, in-process inspection and testing cost, final inspection and testing cost, accuracy of test equipment cost, inspection and testing of materials & services cost, and evaluation of stock cost.

*Prevention cost* is all of the costs expended to prevent errors from occurring in all functions within a company. They include quality planning cost, new product review cost, process control cost, quality audit cost, supplier quality evaluation cost and training cost (Juran 1995).
As a system, cost of quality provides cost details that are often hidden. It includes “cost of conformance” and the “cost of non-conformance” to quality requirements. Cost of conformance consists of all costs associated with maintaining acceptable quality and cost of non-conformance (cost of poor quality) is the total cost incurred as a result of failure to achieve quality.

2.7 Quality Improvement Tools

Organisations use many different quality improvement tools. These include basic QC tools, statistical process control, quality function deployment and process analysis. The improvement methodology must be geared to the specific organisation. No matter what the improvement methodology, it should be used throughout the organisation to create and maintain a systematic, integrated, consistent, organisation-wide perspective.

Tools and techniques are practical methods, skills, means or mechanisms that can be applied to particular tasks. They are used to facilitate positive change and improvements. A single tool may be described as a device, which has a definite role, which aids in achieving the quality of products and services. It is often narrow in focus and is usually used independently. Examples of tools are; cause and effect diagrams, Pareto analysis,
relationship diagrams, control charts, histograms, flowcharts, etc.

A technique on the other hand, has a wider application than a tool. This often results in a need for more thought, skill and training to use techniques effectively. Techniques can be thought of as a collection of tools. For example, statistical process control (SPC) employs a variety of tools such as charts, graphs and histograms, as well as other statistical methods. Examples of techniques are SPC, benchmarking, quality function deployment, failure mode & effects analysis, design of experiments, etc. These tools and techniques play an important role in achieving continuous improvement.

### 2.8 Barriers to Implementation of Total Quality Management

In recent years, organisations have begun to realise that total quality management is the way to achieve long-term business success. Studies have reported that, many organisations have found it difficult to implement an effective total quality management policy. Barriers which impede total quality management implementation comprise a range of issues. These include insufficient levels of education, lack of skill, lack of understanding of quality management and poor assimilation of quality work
culture. Besides these points, issues such as non-conformance with procedures, low employee morale, turnover, and absenteeism also play a vital role. These factors are thought to contribute significantly towards ineffectiveness of total quality management implementation. In general barriers may be human related, finance related, training, infrastructure, interdepartmental relations, culture etc.

2.9 Summary

This chapter describes the different definitions of quality offered by various quality management thinkers and philosophers. It also covered the definitions of TQM's essential elements, ISO 9000 and QS 9000. It also described the approaches to TQM proposed by eminent philosophers. Various awards/models have been discussed featuring models like the Deming Prize (DP), the Malcolm Baldrige National Quality Award (MBNQA), the Rajiv Gandhi National Quality Award (RGNQA) and the European Quality Award (EQA). Cost of quality, quality improvement tools and barriers to implementation of TQM are also discussed.