CHAPTER - II
QUALITY GURUS – IDEAS AND INSIGHTS
2.1 Introduction

This chapter presents the ideas and insights of various quality gurus. It is discussed under three heads, that is, American quality gurus who went to Japan such as William Edwards Deming, Joseph. M. Juran, Armand Vallin Feigenbaum etc., Japanese Quality Gurus such as Kaoru Ishikawa, Masaaki Imai, Genichi Taguchi, Shigeo Shingo and western quality gurus such as Philip Bayard "Phil" Crosby and Thomas J. "Tom" Peters. Common messages from these quality gurus are also discussed.

2.2 Quality Gurus- ideas and insights

A guru, by definition, is a good person, a wise person and a teacher. A quality guru should be all of these, plus have a concept and approach to quality within business that has made a major and lasting impact. The gurus mentioned in this section have done, and continue to do, that, in some cases, even after their death. An extensive review of literature was carried out to identify the concept of TQM from quality gurus such as Deming (1986), Juran (Juran and Gryna, 1993), Crosby (1979), Feigenbaum (1991), and Ishikawa (1985) and Genichi Taguchi. Their propositions are the foundation for understanding the concept of TQM. The following subsections present the main principles and practices of TQM proposed by these quality gurus.

2.2.1 Americans gurus who went to Japan

2.2.1.1 William Edwards Deming

William Edwards Deming (October 14, 1900 – December 20, 1993) was an American statistician, professor, author, lecturer, and consultant. Deming (1986) was widely credited with leading the Japanese quality revolution. The Japanese began to heed his advice on Statistical Process Control (SPC) and problem solving techniques in 1950, but in between 30 years passed before American business began to respond. According to Deming the best efforts are not enough; a programme is needed and has to be adopted whole-heartedly. The Deming 14-point programme can be summarized as follows:

1) *Create constancy of purpose for improvement of product and service*: Inspire the workers to stay competitive in the market and remind them about the importance of stability in jobs and new opportunities which may come up in later stages, as inducing a sense of purpose in producing quality products will work as the inspiration to work efficiently.
2) **Adopt the new philosophy:** The customer demands and taste change very fast and the competition in the market grow at a rapid rate today, and we have to accept new philosophies according to the market trends and technology revolutions.

3) **Cease dependence on mass inspection:** Instead of inspecting the product for quality after production, infuse quality at the beginning itself with production quality control, as this will ensure no raw materials are wasted for the sake of quality.

4) **End the practice of awarding business on price tag alone:** Instead, minimize total cost - move towards a single supplier for any item, on trust.

5) **Constantly and forever improve the system of production and service:** Enterprise systems and services must keep growing indefinitely in order to catch up with the competitive market.

6) **Institute modern methods of training on the job:** A trained worker has more productivity and quality than an untrained one, so giving training sessions will drastically improve the quality of the person and directly it helps in better product quality performance.

7) **Institute modern methods of supervision:** A company can display stunning growth if potential leaders are identified and encouraged.

8) **Drive out fear:** Creating a fearful impression in the employees does not give more quality and productivity to work. If a person is not working willingly with satisfaction then he can never do a work perfectly even if he has the intention to be perfect in conscious mind, so driving out fear is essential.

9) **Break down barriers between staff areas:** The workers in design, sales, and production must work together to face problems and resolve them, which takes the company to better quality assurance management and also other profit with better planning.

10) **Eliminate numerical goals for the work force:** Slogans or exhortations call for more quantity in production than focusing on quality control in manufacturing, which will severely damage the quality management process. Employees should have a calm and quiet quality atmosphere in the company.

11) **Eliminate work standards and numerical quotas:** This focuses on quantity rather than quality of product.
12) Remove barriers that hinder the hourly worker: Supervisor responsibility must be focused on quality, not numbers. Abolish annual or merit rating and MBO completely.

13) Institute a vigorous program of education and training: A person must grow after joining a company, and letting them learn new technology and techniques will increase employee longevity.

14) Create a situation in top management that will push every day on the above points: Just like products and services, every employee in a company must work to accomplish the transformation.

2.2.1.1.1 Deming’s PDCA cycle

Deming believed that adoption of, and action on, the fourteen points was a signal that management intended to stay in business. Deming also encouraged a systematic approach to problem solving and promoted the widely known Plan, Do, Check, Act (PDCA) cycle. The PDCA cycle is also known as the Deming cycle, although it was developed by a colleague of Deming, Dr. Shewhart.

- Plan what is needed
- Do it
- Check that it works
- Act to correct any problems or improve performance

It is a universal improvement methodology, the idea being to constantly improve, and thereby reduce the difference between the requirements of the customers and the performance of the process. The cycle is about learning and ongoing improvement, learning what works and what does not in a systematic way; and the cycle repeats; after one cycle is complete, another is started.

2.2.1.1.2 Deming’s deadly sins and diseases

Besides defining the steps required for transforming a company’s quality culture in Deming’s theory, it also defining the deadly sins and diseases which cripple virtually in an organization for a successful management. These deadly sins and diseases, as listed below, help companies to identify what should be avoid for the quest of their quality.
1. Lack of constancy of purpose
2. Emphasis on short-term profits
3. Evaluation of performance, merit rating, or annual review
4. Mobility of management
5. Running a company on visible figures alone
6. Excessive medical costs
7. Excessive costs of liability

2.2.1.2 Joseph M Juran

Joseph Moses Juran (December 24, 1904 – February 28, 2008) was a Romanian-born American management consultant and engineer. He is principally remembered as an evangelist for quality and quality management, having written several influential books on those subjects. He was the brother of Academy Award winner Nathan H. Juran. Joseph M. Juran made many contributions to the field of quality management in his 70+ active working years. His book, The Quality Control Handbook, is a classic reference for quality engineers. He revolutionized the Japanese philosophy on quality management and in no small way worked to help shape their economy into the industrial leader it is today. Dr. Juran was the first to incorporate the human aspect of the quality management which is referred to as TQM. The process of developing ideas was a gradual one for Dr. Juran. Top management involvement, the Pareto principle, the need for widespread training in quality, the definition of quality as fitness for use, the project-by-project approach to quality improvement--these are the ideas for which Juran is best known, and all emerged gradually. Juran considered quality management as three basic processes (Juran Trilogy): Quality control, quality improvement, and quality planning. In his view, the approach to managing for quality consists of: The sporadic problem is detected and acted upon by the process of quality control; The chronic problem requires a different process, namely, quality improvement; Such chronic problems are traceable to an inadequate quality planning process. Juran defined a universal sequence of activities for the three quality processes, which is listed below.
Table 2.1: Juran’s Quality Trilogy (Universal Processes for Managing Quality)

<table>
<thead>
<tr>
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<th>Quality planning</th>
<th>Quality control</th>
<th>Quality improvement</th>
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<tbody>
<tr>
<td>1</td>
<td>Establish quality goals</td>
<td>Choose control subjects</td>
<td>Prove the need</td>
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<td></td>
<td>Identify customers</td>
<td>Choose units of measure</td>
<td>Identify projects</td>
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<td></td>
<td>Discover customer needs</td>
<td>Set goals</td>
<td>Organize project teams</td>
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<td></td>
<td>Develop product features</td>
<td>Create a sensor</td>
<td>Diagnose the causes</td>
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<td></td>
<td>Develop process features</td>
<td>Measure actual performance</td>
<td>Provide remedies, prove remedies are effective</td>
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<td></td>
<td>Establish process controls, transfer to operation</td>
<td>Interpret the difference</td>
<td>Deal with resistance to change</td>
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<td></td>
<td></td>
<td>Take action on the difference</td>
<td>Control to hold the gains</td>
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Juran defined four broad categories of quality costs, which can be used to evaluate the firm’s costs related to quality. Such information is valuable to quality improvement. The four quality costs are listed as follows:

- **Internal failure costs** (scrap, rework, failure analysis, etc.), associated with defects found prior to transfer of the product to the customer;
- **External failure costs** (warranty charges, complaint adjustment, returned material, allowances, etc.), associated with defects found after product is shipped to the customer;
• **Appraisal costs** (incoming, in-process, and final inspection and testing, product quality audits, maintaining accuracy of testing equipment, etc.), incurred in determining the degree of conformance to quality requirements;

• **Prevention costs** (quality planning, new product review, quality audits, supplier quality evaluation, training, etc.), incurred in keeping failure and appraisal costs to a minimum.

### 2.2.1.3 Armand Vallin Feigenbaum

Armand Vallin Feigenbaum (born April 6, 1922) is an American quality control expert and businessperson. He devised the concept of Total Quality Control, later known as Total Quality Management (TQM). Hubert (2005) has reiterated the thoughts of Feigenbaum, the originator of Total Quality Control (1985), who argues that quality needs to be applied to all the stages. He also considers human relations as a basic issue in quality control activities. The following ten benchmarks are defined for total quality:

1. Quality is a company-wide process
2. Quality is what customer says it is
3. Quality and cost are a sum, and not difference
4. Quality requires both individual and team zealotry
5. Quality is the way of managing
6. Quality and innovation are mutually dependent
7. Quality is an ethic
8. Quality requires continual improvement
9. Quality is the most cost-effective and least capital-intensive route to productivity
10. Quality is implemented with a total quality system connected with the customers and suppliers.

These ten points provide the organization the necessary foundation for implementation of its international quality leadership.
2.2.2 Japanese Quality Gurus

2.2.2.1 Kaoru Ishikawa

Kaoru Ishikawa (July 13, 1915 - April 16, 1989) was a Japanese organizational theorist and Professor at the Faculty of Engineering at The University of Tokyo, noted for his quality management innovations. He is best known in North America for the Ishikawa or cause and effect diagram (also known as fishbone diagram) that is used in the analysis of industrial process. Ishikawa (1985) argued that quality management extends beyond the product and encompasses after-sales service, the quality of management, the quality of individuals and the firm itself. He claimed that the success of a firm is highly dependent on treating quality improvement as a never-ending quest. A commitment to continuous improvement can ensure that people will never stop learning. He advocated employee participation as the key to the successful implementation of TQM. Quality circles, he believed, are an important vehicle to achieve this. Like all other gurus he emphasized the importance of education, stating that quality begins and ends with it. He has been associated with the development and advocacy of universal education in the seven QC tools (Ishikawa, 1985). These tools are listed below:

- Pareto chart;
- Cause and effect diagram (Ishikawa diagram);
- Stratification chart;
- Scatter diagram;
- Check sheet;
- Histogram;
- Control chart.

Ishikawa (1985) suggested that the assessment of customer requirements serves as a tool to foster cross-functional cooperation; selecting suppliers should be on the basis of quality rather than solely on price; cross-functional teams are effective ways for identifying and solving quality problems. Ishikawa’s concept of TQM contains the following six fundamental principles:
• Quality first—not short-term profits first;
• Customer orientation—not producer orientation;
• The next step is the customer—breaking down the barrier of sectionalism;
• Using facts and data to make presentations—utilization of statistical methods;
• Respect for humanity as a management philosophy, full participatory management;
• Cross-functional management

2.2.2.2 Masaaki Imai

Masaaki Imai (born, 1930) is a Japanese organizational theorist and management consultant, known for his work on quality management, specifically on Kaizen. Imai is the chairman of an international management consultancy which is based in Tokyo. He has brought those management philosophies and tools which have been popular in Japan over years and grouped those concepts as a single one — kaizen. He believes kaizen has been responsible for Japan’s economic success. Kaizen, according to Imai (1986), means ongoing improvement involving everyone — top management, managers and workers. It is an umbrella concept which covers most of those uniquely Japanese practices that have achieved a worldwide fame, at the same time, having a balance of innovation, as claimed by Imai. Figure 6 shows the Kaizen Umbrella.
2.2.2.2.1 Kaizen Umbrella

![Kaizen Umbrella Diagram]

**Figure 1.1: Kaizen Umbrella**

*Source: Imai, Masaaki (1986) Kaizen, the key to Japan's competitive success*

The type of improvement that kaizen emphasizes is the constant and gradual improvement, which takes place all the time in every process and involves everyone in an organization. When a level of standard is attained, it should be ensured that it could be maintained and even achieving a higher standard in the future. It is a kind of long-term and long-lasting improvement. After studying the concepts from different gurus, it can be concluded that the common elements in various quality philosophies constitute a majority rather than a minority, for choosing any of those managing principles is not the most important. The utmost important point is to ensure the awareness among all participants within an organization to understand the reasons for implementing such quality management tools. With all the definitions and interpretations by all the mentioned quality gurus and scholars, the term quality in this paper is going to be defined as the characteristics of a product or service that could make a satisfaction to the customer through the whole process of production. This could allow the discussion for quality management in the coming part of the section.
2.2.2.3 Genichi Taguchi

Genichi Taguchi (January 1, 1924 - June 2, 2012) was an engineer and statistician. From the 1950s onwards, Taguchi developed a methodology for applying statistics to improve the quality of manufactured goods. Taguchi methods have been controversial among some conventional Western statisticians, but others have accepted many of the concepts introduced by him as valid extensions to the body of knowledge. Dr Genichi Taguchi believed it is preferable to design product that is robust or insensitive to variation in the manufacturing process, rather than attempt to control all the many variations during actual manufacture. To put this idea into practice, he took the already established knowledge on experimental design and made it more usable and practical for quality professionals. His message was concerned with the routine optimisation of product and process prior to manufacture rather than quality through inspection. Quality and reliability are pushed back to the design stage where they really belong, and he broke down off-line quality into three stages:

- System design
- Parameter design
- Tolerance design

"Taguchi methodology" is fundamentally a prototyping method that enables the designer to identify the optimal settings to produce a robust product that can survive manufacturing time after time, piece after piece, and provide what the customer wants. Today, companies see a close link between Taguchi methods, which can be viewed along a continuum, and quality function deployment (QFD).

2.2.2.4 Shigeo Shingo

Shigeo Shingo (1909 - 1990) was a Japanese industrial engineer who is considered as the world’s leading expert on manufacturing practices and the Toyota Production System. Shigeo Shingo is strongly associated with Just-in-Time manufacturing, and was the inventor of the single minute exchange of die (SMED) system, in which set up times are reduced from hours to minutes, and the Poka-Yoke (mistake proofing) system. In Poka Yoke, defects are examined, the production system stopped and immediate feedback given so that the root causes of the problem may be identified and prevented from occurring again. The addition of a checklist recognises that humans can forget or make mistakes! He
distinguished between “errors”, which are inevitable, and “defects”, which result when an error reaches a customer, and the aim of Poka-Yoke is to stop errors becoming defects. Defects arise because errors are made and there is a cause and effect relationship between the two. Zero quality control is the ideal production system and this requires both Poka-Yoke and source inspections. In the latter, errors are looked at before they become defects, and the system is either stopped for correction or the error condition automatically adjusted to prevent it from becoming a defect.

2.2.3 Western Quality Gurus

2.2.3.1 Philip Bayard "Phil" Crosby

Philip Bayard "Phil" Crosby, (June 18, 1926 – August 18, 2001) was a businessman and author who contributed to management theory and quality management practices. Crosby initiated the Zero Defects program at the Martin Company. As the quality control manager of the Pershing missile program, Crosby was credited with a 25 percent reduction in the overall rejection rate and a 30 percent reduction in scrap costs. According to Crosby, quality means "conformance to requirements”. Crosby identified a number of important principles and practices for a successful quality improvement program, which include, for example, management participation, management responsibility for quality, employee recognition, education, reduction of the cost of quality (prevention costs, appraisal costs, and failure costs), emphasis on prevention rather than after-the-event inspection, doing things right the first time, and zero defects. Crosby claimed that mistakes are caused by two reasons: 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. Crosby also stressed the importance of management style to successful quality improvement. The key to quality improvement is to change the thinking of top managers to get them not to accept mistakes and defects, as this would in turn reduce work expectations and standards in their jobs. Understanding, commitment, and communication are all essential. Crosby presented the quality management maturity grid, which can be used by firms to evaluate their quality management maturity. The five stages are: Uncertainty, awakening, enlightenment, wisdom and certainty. These stages can be used to assess progress in a number of measurement categories such as management understanding and attitude, quality organization status, problem handling, cost of quality as percentage of sales, and
summation of firm quality posture. The quality management maturity grid and cost of quality measures are the main tools for managers to evaluate their quality status. Crosby offered a 14-step program that can guide firms in pursuing quality improvement. These steps are listed as follows

1. Management commitment: To make it clear where management stands on quality.
2. Quality improvement team: To run the quality improvement program.
3. Quality measurement: To provide a display of current and potential non-conformance problems in a manner that permits objective evaluation and corrective action.
4. 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 felt by all personnel in the company toward the conformance of the product or service and the quality reputation of the company.
6. Corrective action: To provide a systematic method of resolving forever the problems that are identical through previous action steps.
7. Zero defects planning: To investigate the various activities that must be conducted in preparation for formally launching the Zero Defects program.
8. Supervisor training: To define the type of training that supervisors need in order to actively carry out their part of the quality improvement program.
9. Zero defects day: To create an event that will make all employees realize, through personal experience, that there has been a change.
10. Goal setting: To turn pledges and commitment into actions by encouraging individuals to establish improvement goals for themselves and their groups.
11. Error causal removal: To give the individual employee a method of communicating to management the situation that makes it difficult for the employee to meet the pledge to improve.
12. Recognition: To appreciate those who participate.
13. Quality councils: To bring together the professional quality people for planned communication on a regular basis.

14. Do it over again: To emphasize that the quality improvement program never ends.

2.2.3.2 Thomas J. "Tom" Peters

Thomas J. "Tom" Peters (born November 7, 1942) is an American writer on business management practices, best known for In Search of Excellence (co-authored with Robert H. Waterman, Jr). In 1990, Peters was referred to in a British Department of Trade and Industry (DTI) publication as one of the world's Quality Gurus. Tom Peters identified leadership as being central to the quality improvement process, discarding the word “Management” for “Leadership”. The new role is of a facilitator, and the basis is “Managing by walking about” (MBWA), enabling the leader to keep in touch with customers, innovation and people, the three main areas in the pursuit of excellence. He believes that, as the effective leader walks, at least 3 major activities are happening:

- Listening - suggests caring
- Teaching - values are transmitted
- Facilitating - able to give on-the-spot help

Having researched successful American organisations, he concluded that any intelligent approach to organising had to encompass, and treat as interdependent, seven variables, in what became known as the McKinsey 7-S Framework, designed to force explicit thought about both the hardware and software of an organisation.

2.3 Common messages from Gurus

1. There are no shortcuts to quality - prescribed procedure to be followed
2. No quick fixes – it takes time to establish quality
3. Improvement requires full commitment and support from top
4. Extensive training needed
5. Participation of all employees is a must
6. Employees should be recognized and rewarded for their quality improvement endeavors

7. Process control is a very important tool for Quality management

8. To achieve total quality, top management commitment and responsibility is very essential

9. Quality culture should be properly maintained for quality management practices

2.4 Conclusion

In this chapter, a comprehensive review was conducted to identify the various concepts and philosophies contributed by the various quality gurus such as William Edwards Deming, Joseph M. Juran, Armand VallenFeigenbaum, Kaoru Ishikawa, Masaaki Imai, Genichi Taguchi, Shigeo Shingo, Philip Bayard "Phil" Crosby, Thomas J. "Tom" Peters etc. From this review, it is revealed that there are no shortcuts to quality and participation of all employees is necessary for quality improvement. Quality culture should be properly maintained for quality management practices.