1.1 Introduction

The highly demanding and ever-changing business environment, especially after the liberalisation, privatisation and globalization, has necessitated the organizations to be astute in the competitive market, offering products and services of superior quality. Such products and services enable them to attract new customers and strengthen their relationship with the existing ones. Timely adoptions of technological innovations have served to break the geographical boundaries, resulting in more informed and demanding customers than in yester years. Increased pressure from the customers, competitors and the environment is forcing the managements to implement strategies for lowering the operating costs and improving efficiency, without compromising quality.

The definition of quality has changed over a period of time with the changing needs and requirements of the customer. But the objective has more or less been the same, to develop an approach for problem solving and conform it to standards for achieving customer delight. With management functions getting more complex, maintenance of quality in functional areas is becoming increasingly challenging.

Organisations, which have successfully implemented ISO 9001:2000, always promote customer relations, and quality is closely knitted in their corporate strategy. An organisation is a system of interrelated units, and for ISO 9001:2000 to succeed in all the entities within the organization, all the
units have to be involved totally. In the initial stages, organisations used to implement ISO 9001:2000, on the assumption that improvement in the shop-floor activities would solve all existing productivity and quality problems. Later they realized that ISO 9001:2000 was much more than just shop floor improvements.

TQM (Total Quality Management) is a management approach originated in 80’s in developed countries. It is considered a revolutionary step forward to improve business efficiency it redefines quality and upgrades its importance within the company. The top management is involved totally and stands committed. Under TQM, everybody becomes a quality leader. The customer defines quality, and the requirements of the customers are treated very seriously and these are met promptly and satisfactorily. The working level personnel are empowered and this enables them to carry out innovations which will help eventually to reduce scrap, rework and cut costs. Everyone works towards a common goal. Training imparted to the top management makes identification of critical success factors of the organization easy.

IS/ISO 9001:2000 defines the terms Management Commitment, Customer Focus, Quality Objectives, Product Realization, Customer Communication, Monitoring and Measurement, Customer Satisfaction, etc., in its Quality Management Systems Manual. These critical dimensions lay the foundation for a transformational orientation to achieve a culture of sustainable improvement, so as to have competitive advantage on a continuous basis. Quality management systems such as ISO 9001:2000 have proved that building quality into every sphere of activity, whether it is a manufacturing process or providing service, is very fundamental, and that those who believed in this philosophy reached high levels of excellence. This is further corroborated by Wali et al. (2003) and Sila and Ebrahim Pouri (2003).
Re-engineering, benchmarking, ERP, e-business, and e-commerce are also quality management tools. If any organisation adopts similar practices, it is likely to become competitive, sooner or later. It is an accepted fact that one could make an organisation competitive, provided the basic quality features required to run a business are in place. Going through the ISO 9001:2000 route might take a longer time, but it will ensure a strong work culture, as quality is built in the system itself.

1.2. Theoretical concepts of quality

A fairly elaborate review of literature was done to familiarise the works carried of the doyens in the field. The following subsections present the main principles and practices of quality management systems put forward by various pioneers in the quality movement, across the globe.

1.2.1 Deming's approach to the quality management system

Hubert (2000) has detailed the theoretical approach of Deming (1986) in respect of the quality management system, and it envisages the creation of an organizational system that fostered cooperation and learning to facilitate the implementation of process management practices. This, in turn, leads to the Continual Improvement of the processes, products, and services and help to instill employee satisfaction. These are critical to promote customer focus, and ultimately help the survival of any organisation.

Anderson et al. (1994) and Deming (1986) highlight the responsibilities of the top management to take the lead in changing the processes and systems. Leadership plays an important role in ensuring the success of quality management, because it is the top management's responsibility to create and communicate its vision to enable the organisation to accept and adopt continual improvement. The Top Management should also take the leadership of ideas, to
implement the already documented and decided policies, and to ensure a professional quality culture across the organisation.

Deming (1986) emphasises the importance of the identification and measurement of customer requirements, creation of supplier partnership, utilisation of functional teams to identify and solve quality problems, enhancement of employee skills, participation of employees, and continual improvement.

Anderson et al. (1994) also have developed the theory of quality management underlying Deming's management techniques. They propose that the effectiveness of these arises from the leadership efforts towards the simultaneous creation of a collaborative and learning organization to facilitate the implementation of process management practices. Quality management also enhances Customer Satisfaction and ensures organisational survival through sustained employee fulfilment and Continual Improvement of processes, products and services.

Improvement of quality depends on the ability to control and manage the systems and processes properly, and in fixing the role of management responsibilities in achieving this. Deming (1986) advocates methodological practices, including the use of specific tools and statistical methods in design, management and improvement of processes, aimed at reducing the inevitable variation that occurs from common causes and special causes in production. The common causes of variations are systemic in nature and are shared by many: operators, machines, and products. These include poor product design, non-conforming incoming materials, poor working conditions, etc., and are to be addressed by the top management. The special causes relate to lack of knowledge or skill, or poor performance. These are related to the employees. Deming (1986) proposes 14 points as the principles of
QMS (Quality Management System) which have been quoted by Hubert (2000), as shown below:

a. Create constancy of purpose towards improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
b. Adopt the new philosophy for a new economic age through the management learning their responsibilities, and taking leadership for change.
c. Stop dependence on mass inspection to achieve quality. Eliminate the need for mass inspection by building quality into the product in the first place itself.
d. Stop awarding business on the basis of price; instead, minimize total cost and move towards a single supplier for a specific item.
e. Constantly improve the system of production and service, to enhance quality and productivity, and to achieve reduction in cost.
f. Institute on the job training.
g. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job and overhaul supervision of management and production of workers.
h. Drive out fear so that all may work in an absolutely hassle-free atmosphere.
i. Break down barriers between departments: research, design, sales, and production must work as a team, to foresee and tackle problems in production.
j. Eliminate slogans, exhortations, and numerical targets for the workforce, such as zero defects and new productivity levels. Such exhortations distract the attention from the main issues.
k. Eliminate quotas or work standards and management by objectives and numerical goals on the factory floor; substitute by leadership.

l. Remove barriers that rob the personnel of their right to pride of workmanship for hourly workers, management and engineering; eliminate annual or merit ratings and management by objective.

m. Institute a vigorous programme of education and self-improvement.

n. Encourage and guide everyone in the company to work to accomplish this transformation.

1.2.2 Juran's approach to the quality management system

As per Hubert (2000), it is a system of activities directed towards attracting delighted customers, promoting empowered employees, aiming for higher revenues and arriving at lower costs. Juran believes that the main quality problems point to the management rather than to the workers and that quality can be attained only by making the functions and activities efficient and effective. Organisation-wide assessment of quality, supplier quality management using statistical methods, quality information system, and competitive benchmarking are essential to achieve excellence in quality. Juran's approach emphasises team work (quality control circles and self-managing teams) which can promote improvement, establish better communication between management and employees, and improve coordination among the employees. He also brings out the importance of top management commitment, empowerment of employees, their participation and recognition, and rewards for their outstanding contribution.

Juran observed that it is very important to understand the customers' needs. This requirement applies to all those who are involved in marketing, design, manufacture, and services. Identifying the needs of the customers requires a systematic analysis, and a concrete action has to be taken to ensure
that the product meets their needs and is fit for its intended use. It is not enough if it meets the product specifications alone. A well-planned market research can meet this objective. In order to ensure the quality of the design, he proposes the application of techniques such as quality function deployment, experimental design, reliability engineering, and concurrent engineering. Juran considers quality management through three basic processes (Juran Trilogy): quality control, quality improvement, and quality planning. In his view, the approach to managing the quality consists in detecting and acting upon the inadequacies, through the process of quality control. This requires application of a different process like quality improvement. The inadequacies can be attributed to the deficiency in the planning process.

Juran defines a universal sequence of activities for the three quality processes, which are listed in Exhibit 1.1 and specifies the four broad categories of quality costs, which can be applied to evaluate the costs incurred by an organization, on account of maintaining quality. Such information is very valuable for controlling the cost. The four quality costs are: internal failure costs due to scrap, rework, failure analysis, etc., which are associated with the defects found prior to the transfer of the product to the customer; external failure costs on account of the warranty charges, complaint adjustment, returned material, allowances, etc., which relate to the defects found after the product is shipped to the customer; appraisal costs as a net result of the incoming, in process, and final inspection and testing, product quality audits, maintaining accuracy of testing equipment, etc., which are incurred while determining the degree of conformity to the quality requirements, and finally prevention costs contributed by quality planning, new product review, quality audits, supplier quality evaluation, training, etc., which get accumulated in the
process of keeping failure and appraisal costs to a minimum. The universal processes for managing quality can be detailed as given in Exhibit 1.1

<table>
<thead>
<tr>
<th>Quality planning</th>
<th>Quality control</th>
<th>Quality improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish quality goals</td>
<td>Choose control subjects</td>
<td>Prove the need</td>
</tr>
<tr>
<td>Identify customers</td>
<td>Choose units of measure</td>
<td>Identify projects</td>
</tr>
<tr>
<td>Discover customer needs</td>
<td>Set goals to organize</td>
<td>Project teams</td>
</tr>
<tr>
<td>Develop product features</td>
<td>Create a sensor</td>
<td>Diagnose the causes</td>
</tr>
<tr>
<td>Develop process features</td>
<td>Measure actual performance</td>
<td>Provide remedies which are effective</td>
</tr>
<tr>
<td>Establish process controls transfer to operation</td>
<td>Interpret the difference;</td>
<td>Deal with resistance to</td>
</tr>
<tr>
<td></td>
<td>Take action on the difference</td>
<td>change control to hold the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gains</td>
</tr>
</tbody>
</table>


Exhibit 1.1: Universal Approach to Managing for Quality

1.2.3 Crosby’s Approach to the quality management system

Crosby (1979) identifies a number of important principles and practices for a successful quality improvement programme, which included 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 states 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 doing things right the first time and attention to detailing the second. He also stresses
the importance of the management style to have a successful quality improvement. The key to quality improvement is to change the thinking of the top level managers and make them not accept mistakes and defects, as this would in turn reduce the expectations and the standard in their jobs.

Crosby also presents the quality management maturity grid, which can be used by the organisations to evaluate the maturity of their quality management. The five stages in the grid are: uncertainty, awakening, enlightenment, wisdom and certainty. These stages can help to assess progress in terms of parameters such as attitude, present quality, problem handling techniques, cost of quality as a percentage of sales, and summation of the status of quality of an organisation. The quality management maturity grid and the cost of quality measures are the main tools for managers to evaluate the level of quality. He offers a 14-step programme that can guide organizations to pursue quality improvement. Hubert (2000) has summarized these steps as follows:

a. Make it clear that management is committed to quality
b. Form quality improvement teams with senior representatives from each department
c. Measure processes to determine where current and potential quality problems lie
d. Evaluate the cost of quality and explain its use as a management tool
e. Raise the quality awareness and personal concern for all the employees
f. Take actions to correct the problems identified through previous steps
g. Establish process monitoring for the improvement process
h. Train supervisors to actively carry out their part of the quality improvement programme
i. Hold a “Zero Defect Day” to let everyone realise that there has been a change and to reaffirm the management commitment.
j. Encourage individuals to establish improvement goals for themselves and for their groups

k. Encourage employees to communicate to the management the obstacles they face in attaining their improvement goals

l. Recognise and appreciate those who participate.

m. Establish quality councils to communicate on a regular basis

n. Do it all over again, to emphasise that the quality improvement programme never ends

1.2.4 Feigenbaum’s approach to the Quality Management System

Hubert (2000) 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:

a. Quality is a companywide process

b. Quality is what customer says it is

c. Quality and cost are a sum, and not difference

d. Quality requires both individual and team zealotry

e. Quality is the way of managing

f. Quality and innovation are mutually dependent

g. Quality is an ethic

h. Quality requires continual improvement

i. Quality is the most cost-effective and least capital-intensive route to productivity

j. 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.
1.2.5. Ishikawa’s approach to the Quality Management System

Ishikawa pays special attention to the statistical techniques used in the industry (1984). He emphasises the need for effective data collection and presentation, use of Parato diagrams, and cause and effect diagrams to prioritise quality improvements. He is of the opinion that quality means not only the quality of the product, but also the after-sales management of the company itself and the human beings working there. Hubert (2000) has consolidated the effects of Ishikawa’s approach as follows:

a. Product quality gets improved and becomes uniform, and thereby defects are reduced.
b. Reliability of goods is improved.
c. Cost is reduced.
d. Quality of production is increased and it becomes possible to make rational production schedules.
e. Wasteful work and rework are reduced.
f. Expenses for inspection and testing are reduced.
g. Contracts between vendor and vendee are rationalized.
h. The sales market is enlarged.
i. Better relations are established between departments.
j. Generation of false data and false reports is reduced.
k. Discussions are carried out more freely and democratically.
l. Meetings are conducted more smoothly.
m. Repairs and installation of equipment and facilities are done more rationally.
n. Human relations are improved.
1.2.6 Conclusions derived from the review of the thoughts of quality leaders

1. Top management plays a crucial role in the success of quality management.

2. Identification of quality problems and involvement of employees depend to a very great extent on the effective functioning of the cross-functional teams (CFT). This also helps to break down the barriers between departments.

3. Self-improvement should become a part of a good quality management practice.

4. Identifying the customer requirements as well as ensuring that the product or service meets the intended use, is a mandatory requirement of any quality management practice.

5. Quality costs such as internal failure costs, external failure costs, appraisal costs and prevention costs, are to be given serious attention to ensure quality.

6. Recognition of the employees for the good work done, implementation of programmes such as, on-the-job training, quality improvement, cause and effect analysis, etc., will culminate in quality products and services.

7. Prevention of poor quality rather than detecting it after it occurs, can save a lot of time and effort.

8. Total quality control (TQC) covers the full scope of the product and service life cycle, right from the product concept through production and customer service.

9. Quality is everybody's job, and training focused on quality attitudes, quality knowledge, and quality skill influences the level of quality in an organisation.
10. Improvement is continual in nature and this is essential for maintenance of quality.

11. Fact-based management systems ensure implementation of allround quality.

The research questions and objectives in turn are closely knitted to these fundamental concepts of quality.

1.3 Background of the research work

The literature review undertaken for this study has given different views on the usefulness of the implementation of ISO 9001:2000. Some of the reports have brought out the benefits of ISO 9001:2000. Athul (2000) mentions in his study of the industries in India that a significant positive difference exists in ISO 9001:2000-certified organizations in comparison to those which are not certified for quality in the specific areas of training, team building, quality improvement programmes and strategic planning. Sachdeva et al. (2007) have reported that ISO 9001:2000 implementation has become a critical factor for the Indian companies for their existence. The findings of the study are that the organisations have been able to improve their performance in the specific areas of organizational performance, cost of quality, schedule of supply and procurement by implementation of this quality standard. James (2007) has confirmed the benefits of ISO 9001:2000 implementation to organisations for sustained product quality, enhanced market image, increased Customer Satisfaction, etc. His further study on the improvement of organizational climate on account of ISO 9001:2000 implementation has shown substantial improvement of climate motives such as achievement, expert influence and extension. Implementation of quality management systems, such as ISO 9001:2000, has improved Customer Satisfaction substantially across various industrial settings as per Mehra and Ranganathan (2008).
There are also reports which have indicated that ISO 9001:2000 implementation did not bring out positive results. The study of Henricks (1992) reports the bankruptcy of Wallace Co., a Baldrige Award winner. The case of Wallace getting into a financial problem is reported also by Zurier Steve (1992) (url.http://www.highbeam.com/doc/IGI-11818720.html). Restructuring of Florida Power and Light a Deming Prize winner, on account of financial difficulties has been quoted by Main (1991). Garvin (1991) has mentioned the financial pressures faced by Baldrige winners, Motorola, Federal Express and Cadillac since receiving the MBAQN Award. Lamprechet (1992) states that ISO 9001:2000 does not guarantee a quality product; it only guarantees a set of documents attesting to the quality practice of the company. In a research study of North American companies, Shannon et al. (1998) conclude that ISO 9001:2000 certification was obtained by companies only as a credible public signal of effective quality management practice and firms with a small number of large customers did not go for this as there were better alternatives for achieving quality. Other major research studies which give indications that the acquisition of ISO 9001:2000 certification has not improved quality in real terms are those reported by Mahadevappa and Korteswar (2004) and Rajbir et al. (2006).

1.4. Formulation of the problem

The present study attempts to compare the findings of the earlier researchers quoted in the literature review, with the observations of the research scholar in respect of Quality Management Systems followed in selected organizations in Kerala. This formed the basis for this work, which aims at assessing the impact of ISO 9001:2000 certification on the Quality Management Practices in ISO 9001:2000 certified organizations as well as in those not certified by this standard, through the perception of the employees. This study is hoped to bring out the factors which influence the impact of

1.5. Scope of the study

The present study attempts to evaluate the quality management practices followed in 24 selected organisations in Kerala, from multiple units dealing with aerospace hardware, glassware, rubber products, health care products, civil construction, etc. These include 12 organisations which have implemented ISO 9001:2000 and the rest which have not gone for this quality certification.

1.6. Objectives of the study

The objectives of the present study are:

i. To evaluate and compare the level of the existence of Top Management Commitment in the quality management practices of ISO 9001:2000- certified organizations and in those which are not certified by this standard.

ii. To investigate the extent of Employee Involvement in ISO 9001: 2000-certified organisations as well as in those which are not ISO 9001:2000-certified, and draw comparison between these.

iii. To assess the existence of Team Working in both the categories of organizations certified and not certified by ISO 9001:2000 and compare the extent of this variable.

iv. To evaluate the status of Continual Improvement in ISO 9001: 2000- certified organisations and in those which do not have a quality certification, and strike a comparison.
v. To verify whether the thrust on internal communication in ISO 9001:2000-certified as well as not certified organizations is comparable.


1.7. Research questions

i. Are the quality management practices in ISO 9001:2000 certified organizations and in those which are not certified by ISO 9001:2000 standards, comparable when looked at from the point of view of the dimensions of quality management such as Top Management Commitment, Employee Involvement, Team working, Continual Improvement, Internal Communication and Customer Satisfaction?

ii. What similarities or dissimilarities are observed in the two types of organisations in respect of these quality dimensions?

iii. What conclusions could be derived from these observations?

iv. If there are significant differences between the two categories, what can these be related to?

1.8. Hypotheses of the study

The hypotheses of the study are derived, based on the assumption that quality is seemingly better in ISO 9001:2000 certified organisations compared to that in organisations which do not have quality certification. These are listed below:
Hypothesis 1: Top Management Commitment is higher in ISO 9001:2000-certified organisations, compared to that in those not certified by this standard.

Hypothesis 2: ISO 9001:2000 certified organisations display a higher level of Employee Involvement in comparison with that seen in organisations which are not qualified by this standard.

Hypothesis 3: Better Team Working exists in ISO 9001:2000-certified organizations, compared to that in organizations not certified by this standard.

Hypothesis 4: ISO 9001:2000 certified organizations practise Continual Improvement more meticulously in comparison to those which are not certified by this standard.

Hypothesis 5: ISO 9001:2000 certified organizations put higher thrust on Internal Communication compared to those which are not certified by this standard.

Hypothesis 6: Customer Satisfaction is higher in ISO 9001:2000 certified organizations in comparison to what is practised by organizations which do not have this certification.

1.9 Chapterisation Scheme

The thesis is organised under seven chapters.

The first chapter provides an introduction to the study. It includes the statement of the problem, objectives, hypotheses, research design, concepts and definitions, and organization of chapters.

The second chapter focuses on the reviews, and the relevant literature of the studies in this field carried out by various researchers in the past.
The third chapter titled *Significance of Quality Management Systems - Theoretical Perspectives*, highlights the issues related to the evolution and practice of these systems in organisations in India in general and in the business units of Kerala in particular.

The fourth chapter discusses the research design, the analytical frame-work and data collection. The various tests conducted are described in detail.

The fifth chapter deals with the analysis and interpretation of the data collected during the process of study.

The sixth chapter presents the summary of the study and findings.

The seventh chapter gives an account of the conclusions emerging from the study.