CHAPTER 1

INTRODUCTION

1.1 THE ROLE OF QUALITY

'Quality is one of the twentieth century's most important management ideas' (Feigenbaum, 1999). Today's rapidly exploding global market place has been creating enormously different customer, product, organizational, human and managerial demands. Globalization of industry has brought greater economic efficiencies, as well as more stiff industrial competition. According to Juran (1986), International competition demands higher levels of quality by organizations. In these days of globalization and liberalization, most organizations find it difficult to survive unless they have a competitive edge (Kanji, 1998; Samson and Terziovski, 1999; Adam et al., 2001).

It is widely agreed that quality plays a pivotal role in improving a firm's financial and strategic performance. For instance, the United States general according office study of twenty highest-scoring Malcolm Baldrige award applications suggested that these organizations achieved better quality, lower cost, greater customer satisfaction, improved market share, and higher profitability compared to their competitors (GAO, 1991). The business units in India are ever increasingly forced to achieve world-class manufacturing capabilities in order to compete and, in many cases, to survive in the market. One of the means to achieve the world-class manufacturing capability is through the practices of Total Quality Management (TQM). In response to these challenges, many firms have joined the quality movement and implemented various quality improvement programmes, including quality circles, quality control and the ISO 9000 certification as a means to enhance competitiveness. To facilitate their drive towards higher quality levels, it is important to understand the current practices and the problems encountered on their journey to quality management implementation. Quality management has also to be effective in lowering manufacturing costs and improving productivity (Garvin, 1983).
There are two main reasons why quality management is being given increasing importance in business administration these days. One is that it enables companies to respond better to customer demand, and the other is that it enables them to improve their management efficiency. Research has conformed the strategic benefits of TQM. For a company or country to compete effectively in the global economy, its product must meet a certain standard of quality. Distribution of inferior products can harm firms and nations, both at home and abroad, and can have serious implications for balance of payments (Motwani et al., 1994). In the past few years, the level of awareness of TQM has increased considerably and as a result, a very large number of organizations have undertaken implementation of TQM projects.

1.2 DEFINITIONS OF QUALITY

The definitions of quality have been debated for many years by quality management researchers and a number of definitions have emerged (Sila et al., 2003). However, there is still no universal agreement on these definitions. As far as the definitions of quality are concerned, some of the quality pioneers coined the following terms: Feigenbaum (1951) and Abbott (1955) defined quality as ‘value’, Levitt (1972) as ‘conformance to specifications’, Juran et al. (1974) as ‘fitness for use’, Crosby (1979) as ‘conformance to requirements’, Taguchi (1981) as ‘the losses a product imparts to the society from the time the product is shipped’, and Gronroos (1983) and Parasuraman et al. (1985) as ‘meeting and/or exceeding customers’ expectations’. Today, the most widespread definition of quality is ‘the extent to which a product or service meets and/or exceeds a customer’s expectations’ (Reeves and Bednar, 1994), which reflects a shift in focus to customer satisfaction.

The on-going debate over the various definitions of quality and their implications for manufacturing and service industries is further complicated by the lack of a widely accepted definition and an implementation framework for TQM (Sila et al., 2003). Most of the contemporary TQM literature derives from the quality management principles and philosophies of quality gurus such as Feigenbaum, Crosby, Deming and Juran. These authors have been critical in the evolution of TQM frameworks with their principles. Crosby (1979)
recommended a 14-step programmes to improve quality through defect prevention. Deming (1986) prescribed 14 points encompassing the organizational requirements for effective quality management. Fegenbaum (1983, 1991) supported the integration of statistical techniques and methodology into the process of firms to implement company-wide total quality control. He also prescribed 10 fundamental benchmarks as the keys to the successful implementation of total quality control in the 1990s. Although there are varying views on the difference between total quality control (or company-wide total quality control) and TQM (Boaden 1997), they basically cover many of the same concepts to the extent that they could probably be used interchangeably.

Juran and Gryna (1988) believed that quality improvement could be attained by applying the breakthrough concept (an improvement to unprecedented levels of performance) to the problems of quality. Juran (1989) offered a framework for TQM that involves three sets of processes including quality planning, quality improvement and quality control.

1.3 CONCLUSIONS FROM QUALITY GURUS

Although each of the quality gurus on quality management has his own distinctive approach, there are some common points which are discussed below.

- Top management is responsible for quality and not the employees. It is management's responsibility to provide commitment, leadership, and the appropriate support to technical and human processes. It is imperative that management has a clear understanding of the process.

- Top management determines the climate and framework of operations within an organization. It is imperative that management fosters the participation of the employees in quality improvement, and develops a quality culture by changing perception and attitudes towards quality.
• The importance of education and training is emphasized in changing employees' beliefs, behavior and attitudes and enhancing their competencies in carrying out their duties.

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

• There is a broad agreement that all aspects of activities should be looked at for quality improvement, as these all contribute towards quality. Functional integration is considered to be an important ingredient of TQM. Quality is a company-wide activity. The quality management approaches proposed by the quality gurus also have some shortcomings and limitations.

Some researchers have commented on various gaps in these suggestions about quality management. These include the lack of a conceptual framework and of a sound instructional methodology to help organizations of different types examine quality management, in particular, to identify which aspects of quality management matter, how much is needed, and how to establish customers' needs satisfactorily. Although these gurus have been strong on what is broadly needed, including detailed techniques, they offer little guidance on the immediate and direct value or relevance to organizations. It is difficult to connect the general quality concepts and ideas to these specific circumstances of an organization - to its markets, management practices, and human resource management. It is important that organizations do not rigidly apply the methods proposed by the gurus. Organizations need to examine the suggestions and match them to the specific requirements (Ghobadian and Speller, 1994; Garvin, 1987; Chase and Aquilano, 1989).
1.4 REVIEW OF QUALITY AWARD MODELS

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

- Increase awareness of the importance of quality management because of its important contribution to superior competitiveness;

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

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

- Promote understanding of the requirements for the attainment of quality excellence and successful deployment of quality management;

- Stimulate organizations to introduce a quality management improvement process.

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

It is generally accepted that the contemporary TQM evolved from works of “gurus” such as Deming, Juran, Feigenbaum and Crosby, but there is not only one standard definition of TQM. A few of the definitions found in the literature are as follows.

- ‘TQM is an approach to managing organizations which emphasizes the continuous improvement of quality and customer satisfaction, entails the application of systematic tools and approaches for managing organizational processes with these ends in mind, and involves the establishment of structures such as quality improvement teams and councils maintaining focus on these ends and enacting organizational improvement processes’ (Mohrman et. Al. 1995, p. 26).

- Ho (1997, p. 276) defines the term TQM as:
  
  Total = everyone associated with the company is involved in continuous improvement (including its customers and suppliers if feasible);
  Quality = customers’ expressed and implied requirements are met fully;
  Management = executives are fully committed’.

- ‘A positive attempt by the organizations concerned to improve structural, infrastructural, attitudinal, behavioral and methodological ways of delivering to the end customer, with emphasis on: consistency, improvements in quality, competitive enhancements, all with the aim of satisfying or delighting the end customer’ (Zairi et al., 1994).

An analysis of these definitions suggests that, after all, they are not very different. For instance, most emphasize concepts including continuous improvement, customer focus, human resource management and process management. The purpose of this research is not to elaborate on these definitions (for a detailed discussion of the definition of TQM, see Boaden 1997) but rather to propose a methodology for identification of critical success factors and sustainable development of TQM. It is true that the way TQM is defined by a researcher determines which items will be used to develop a
questionnaire in these empirical studies and eventually have implications for the nature of the factors extracted based on companies' responses to these questionnaires. However, it would be most preferable if all these studies had started out with the same definitions of TQM. This would ensure consistency across these studies in terms of the contents of their questionnaires and make the results of these studies more comparable (Sila et al., 2003).

Although there is some agreement over which factors constitute TQM, different studies still produced different sets of TQM factors, which may have arisen from certain differences in the definitional or methodological approaches taken by various researches. Some researchers attempted to overcome these disparities in the set of TQM factors by using the criteria of quality awards such as the Malcolm Baldrige National Quality Award (MBNQA) and the European Foundation for Quality Management (EFQM) as their preferred TQM factors in their studies. However, the fact that various studies yielded different factors may also be due to the differences between countries business environments in which the surveyed firms operate, which in turn are effected by various factors including culture, religion, education levels, information technology, government regulations, the extent of industrialization, and so on (Sila et al., 2003). These factors bring into question the universal applicability of certain TQM factors, which have been implemented successfully by companies in certain countries. Another reason for the differences in the TQM factors extracted in various studies may be due to the types of industries surveyed, company size, and so on, that may imply that there is a need for a contingency approach to TQM. A study on cross-culture management style conducted by Hofsted (1980) in 60 countries that involved 1,60,000 employees found that differences in work-related values and perspectives were more due to culture than organizational position, age or gender. Hofsted identified four culture dimensions: individualism/collectivism, power distance, uncertainty avoidance and masculinity/femininity.
1.6 SUSTAINABLE DEVELOPMENT OF TQM

Sustainability is defined as 'the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance' (Zairi & Liburd 2001). Quinn (2000) describes sustainability as the development that meets present needs without compromising the ability of future generations to meet their own needs. Without sustainability, there is little benefit to be gained from TQM (Curry et al., 2002). In addition, the focus of maintaining competitive advantage and performance does not simply emphasize the present time, but also the future (Zairi, 2002). In addition, the interest of organizational survival, growth, performance and improvement have therefore got to be concerned with not just the present but also the future. However the concept of sustainability remains unclear, and how it applies in TQM is worth further exploration.

In some instances, organizations launch quality management initiatives with great enthusiasm only to achieve performance improvements that are short-lived. These organizations fail to sustain continuous improvement efforts and, thereby, cannot remain competitive in their industries over long periods of time. Factors such as lack of top management support and/or employee empowerment, failure to create a conducive culture, inconsistent human resource management policies, and others have been cited as factors contributing to TQM failures (Dayton, 2001; Shin et al., 1998).

1.7 RESEARCH ISSUES

Even though there has been a large number of research works carried out and published related to TQM in the past few decades, only a few focused on documenting the critical success factors of TQM using statistical methods. Exclusive investigation related to scale development studies and the TQM effects versus performance measurement studies are limited.
Quality function deployment is an excellent TQM tool available to translate the customer requirements into product features and it offers a convenient matrix format to visualize the inputs against outputs. So far, this concept was utilized for product development, business planning and strategic planning applications. The potentials offered by this powerful technique to derive the critical success factors and quality-related action programs of TQM are yet to be utilized.

In the last two decades, authors in various countries developed and published quality instruments by conducting postal type empirical survey studies. The current period is an era of information technology and Internet. The potential benefits of the powerful media 'Internet' was not harnessed for conducting empirical studies. Data collection is very fast and communication is very effective through e-mail and internet and hence a methodology is to be developed for conducting empirical studies through internet.

Facing the intense pressure of global competition, organizations need to consider incorporating the idea of sustainability in TQM in order to sustain their competitive advantage and performance improvement (Zairi, 2002). Hence an algorithm is to be formulated to identify the less developed quality-related action programs and critical success factors of TQM in industries.

Sustainable development is the primary requirement to make the implementation of TQM very effective. Hence in the present research, an algorithm for the calculation of TQM implementation index (TQMII) was developed and its' benefits are demonstrated.

The results of this research work are expected to provide empirical support for managers to take decisions required for selection and implementation of quality system in their organization, and will throw light into the time period that may be necessary to experience the benefits due to the implementation of TQM.
1.8 RESEARCH OBJECTIVES

The research objectives considered in the current project are as follows.

- To systematically review the current literatures on critical success factors factorized and validated by the empirical studies and propose vital few critical success factors by adopting Pareto analysis technique.

- To propose a methodology for deriving critical success factors of TQM by adopting QFD methodology.

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- To develop and validate a quality instrument for the measurement of critical success factors and quality-related action programs of TQM through web-enabled survey.

- To identify the critical success factors of total quality management in Indian industries through web-enabled survey.

- To identify the indicators of quality and firm performance measures and to explore the relationship between TQM critical success factors and the performance measures.

- To propose and validate a TQM implementation index (TQMII) for manufacturing industries.

- To propose and validate a model for sustainable development of TQM.

1.9 AN OVERVIEW OF THE THESIS

The thesis is presented in eight chapters. The remaining seven chapters are organized as follows.

In chapter 2, a review of literature on quality management in manufacturing industries and critical success factors of TQM are presented. Observations from the literature review and motivation for the present study are also discussed.
The critical success factors of TQM, factorized, validated and published by empirical studies are identified and discussed in chapter 3. This is followed by a Pareto analysis of the critical success factors and the presentation of vital few critical success factors.

In chapter 4, a methodology is proposed to derive quality-related action programs and critical success factors of TQM using QFD methodology. The proposed methodology is validated with an industrial case study. Finally quality-related action programs and critical success factors are benchmarked and reported.

Internet based survey of Indian industries for the development of quality instrument is reported in chapter 5. This is followed by a discussion on the development of an instrument for measuring the level of quality management implementation in Indian industries. Validation of the instrument using the data collected through web-enabled survey among companies in India is explained, and a framework for quality management is also presented.

In chapter 6, the indicators of quality and firm performance in different types of industries are explored. The relationship between the levels of implementation of TQM critical success factors and firm performances are also investigated and the findings are reported.

The model for sustainable development of TQM is presented in Chapter 7. Later, an algorithm for TQM implementation index is explained, followed by validation of the algorithm. The quality-related action programs and critical success factors are benchmarked and the findings are discussed.

A summary of the results and the findings of the research are presented in chapter 8. The limitations of this research work and the scope for future research are also presented.