

IMPLEMENTATION OF TQM AND ITS EFFECT OF ON EMPLOYEE SATISFACTION IN INDIAN CHEMICAL INDUSTRIES

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Abstract

This research presents new data and insights into the critical success factors of TQM and the relationship between TQM implementation and employee satisfaction . The main purpose of this research is to determine the impact of TQM implementation on employee satisfaction in the context of Indian chemical Industries.

As very few research on TQM has been done in the developing countries, so our aim is to analyze the status of the Indian chemical industries for TQM implementation, as India is becoming a major sourcing base for the world and there is a paucity of such research.

Keywords : TQM, Review, Organizational, Literature, Chemical

1. INTRODUCTION

Today, quality management has become one of the important forces leading to organizational growth and a company's success in national and international markets.

To be successful in the marketplace, each part of the organization must work properly together towards the same goals, recognizing that each person and each activity affects and in turn is affected by others. To improve competitiveness, organizations are looking for a higher level of effectiveness across all functions and processes and are choosing TQM as a strategy to stay in business. The increased awareness of senior executives, who

have recognized that quality is an important strategic issue, is reflected as an important focus for all levels of the organization.

Many companies are frustrated in their effort to improve quality through TQM because these companies have exclusively focused on financial measures instead of quality measures. Other studies, in the recent past also observed the failure of TQM. These failures are due to the too much- too soon effort without proper foundation and focus. Manufacturing firms, therefore, need to understand the TQM CSFs for the successful implementation of TQM. Therefore, there is a pressing need to establish TQM CSFs for manufacturing firms. This paper examines the TQM frameworks developed by scholars and businesses and develops the TQM CSFs for Indian chemical industries.

2.0 Effects of TQM implementation

TQM has been widely implemented throughout the world. Many firms have arrived at the conclusion that effective TQM implementation can improve their competitive abilities and provide strategic advantages in the marketplace [4]. Several studies have shown that the adoption of TQM practices can allow firms to compete globally [e.g., 36, 64, 67, 68, and 148]. Several researchers also reported that TQM implementation has led to improvements in quality, productivity, and competitiveness in only 20-30% of the firms that have implemented it [10, 129]. A study conducted by Rategan [122] indicated that a 90% improvement rate in employee relations, operating procedures, customer satisfaction, and financial performance is achieved due to TQM implementation. However, Burrows [17] reported a 95% failure rate for initiated TQM implementation programs; Eskildson [39] and Tornow and Wiley [137] reported that TQM implementation has uncertain or even negative effects on performance. Longenecker and Scazzero [100] indicated that achieving high product quality and pursuing successful TQM implementation are highly dependent on top management support. However, Motwani et al. [110] reported that there is no association between top management support for quality and the level of product quality achieved. Many researchers suggested that effective product design can lead to the improvement of product quality [e.g., 56, 84], Whereas Motwani et al. [110] reported that there is no relationship between systematic product design and the level of product achieved. Recently, Rungtusanatham et al. [125] attempted to replicate, as closely as possible, empirical evaluation of a Deming-based theory of quality management conducted by Anderson et al. [5]. In their replication study, they used data obtained from three different Italian industries to compare with the reported results in Anderson et al, [5], which used data from US - based firms. It was interesting to find that the research results between the two studies differed considerably. Thus, conflicting research findings have been reported surrounding the effects of TQM implementation on organisational performance.

2.1 Review of quality award models

Worldwide, there are several quality Awards, such as the Deming Prize in Japan (1996), 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 [54]:

- Increase awareness of TQM 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 TQM;
- Encourage firms to introduce a continuous improvement process.

Each award model is based on a perceived model of TQM. The award models 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 that influence the quality of the final offerings. They provide a useful audit framework against which firms can evaluate their TQM implementation practices, seek improvement opportunities, and the end results.

2.2 Review of other research

Worldwide, much research has been conducted in the field of TQM implementation. After a review of the relevant TQM literature, it has been found that different researchers adopted different TQM definitions and frameworks based on their own understanding of TQM and research objectives. Consequently, there is less consensus on what TQM is and what constitutes it.

TQM can be defined as a set of techniques and procedures used to reduce or eliminate variation from a production process or service-delivery system in order to improve efficiency, reliability, and quality [133]. It integrates fundamental management techniques, existing improvement efforts, and the technical tools under a disciplined approach focused on continuous improvement [33]. According to Kanji and Asher [86], TQM is a continuous process of improvement for individuals, groups of people, and whole firms; it encompasses a set of four principles (delight the customer, management by fact, people-based management, and continuous improvement) and eight core concepts (customer satisfaction, internal customers are real, all work is process, measurement, teamwork, people make quality, continuous improvement cycle, and prevention). TQM can also be defined as the application of quality principles for the integration of all functions and processes within the

firm [124]. In reality, no firms can fully implement TQM. TQM is a continuous improvement process and is thus never ending.

Quality, based on the participation of all its members and aiming at long-term success through customer satisfaction and benefits to all members of the organization and to society [77]. Flynn et al, [41] defined TQM as: An integrated approach to achieving and sustaining high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the firm, in order to meet or exceed customer expectations. According to Ho and Fung [71], TQM is a way of managing to improve the effectiveness, flexibility, and competitiveness of a business as a whole. It is also a method of removing waste, by involving everyone in improving the way things are done. According to Vuppalapati et al, [142], TQM is an integrative philosophy of management for continuously improving the quality of products and processes to achieve customer satisfaction. Hackman and Wageman [62] systematically reviewed the three quality gurus' (Deming, Juran, and Ishikawa) propositions about TQM. According to their review results, the following five interventions are the core of TQM: explicit identification and measurement of customer wants and needs; creation of supplier partnership; use of functional teams to identify and solve quality problems; use of scientific methods to monitor performance and identify points of high leverage for performance improvement; use of process management heuristics to enhance team effectiveness. Dean and Bowen [30] defined TQM as a philosophy or approach to management that can be characterized by its principles, practices, and techniques. Its three principles are customer focus, continuous improvement, and teamwork. Each principle is implemented through a set of practices, which are simply activities such as collecting customer information or analyzing processes. The practices are, in turn, supported by a wide array of techniques.

Choi and Eboch [26] studied the TQM paradox using management of process quality, human resources management, strategic quality planning, and information and analysis as the constructs of TQM implementation. Black and Porter [11] identified ten critical factors of TQM: people and customer management, supplier partnership, communication of improvement information, customer satisfaction orientation, external interface management, strategic quality management, teamwork structure for improvement, operational quality planning, quality improvement measurement systems, and corporate quality culture. In Powell's [117] study, the following elements were identified as TQM framework: executive commitment, adopting the philosophy, closer to customers, closer to suppliers, benchmarking, training, open organization, employee empowerment, zero-defects mentality, flexible manufacturing, process improvement, and measurement. Ho and Fung [71] identified ten TQM elements: leadership, commitment, total customer satisfaction, continuous improvement, total involvement, training and education, ownership, reward and recognition, error prevention, and cooperation and teamwork. Waldman [143] identified eight key TQM elements as: top management commitment to place quality as a top priority, a broad definition of quality as meeting customers' expectations, TQM values and vision, the development of a quality culture, involvement and empowerment of all organizational members in cooperative efforts to achieve quality improvements, an

orientation toward managing-by-fact, the commitment to continuously improve employees' capabilities and work processes through training and benchmarking, attempts to get external suppliers and customers involved in TQM efforts. Mann and Kehoe [103] divided TQM into ten elements. They are supplier improvement, process control and improvement, internal customer focus, measurement and reporting, leadership, quality system, participation, recognition, education and training, and external customer focus.

Although much research has been conducted in the field of TQM implementation, no universally accepted TQM definition or elements presently exist. Actually, researchers have different ideas about TQM concept and elements. However, most agree that TQM is a philosophy or approach to management focusing on continuous improvement, customer focus, systematic process management, supplier partnership, and teamwork. The implementation of such a management philosophy requires a set of practices.

3.0 Research Methodology

3.1 Research design

The role of research design is to connect the questions to data. Design sits between the two, showing how the research questions will be connected to the data, tools and procedures to use in answering them. Research design must follow from the questions and fit them with data. The design is the basic plan for a piece of empirical research, and includes main ideas such as strategy, sample, and the tools and procedures to be used for collecting and analyzing empirical data [118].

3.1.1 Research strategies

For conducting empirical research, there are two methods of data collection: qualitative and quantitative. These two methods have their strengths and weaknesses. The qualitative method permits researchers to study selected issues in depth and detail. Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness, and detail of qualitative inquiry. The quantitative method, on the other hand, requires the use of standardized instruments so that the varying perspectives and experiences of people can fit a limited number of predetermined response categories, to which numbers are assigned. The advantage of a quantitative method is that it is possible to measure the reactions of many people to a limited set of questions, thus facilitating comparison and statistical aggregation of the data. This gives a broad, generalisable set of findings presented precisely and compactly. By contrast, a qualitative method typically produces a wealth of detailed information about a much smaller number of people and cases. This increases understanding of the cases and situations studied but reduces generalization [116].

3.2 Literature review

The first question - “What is CSFs of TQM?”- is descriptive in nature. According to Punch [118], a descriptive study sets out to collect, organize, and summarize information about the matter being studied; it is concerned with making complicated things understandable. For answering this research question, a literature review approach was the best strategy. The literature review on all aspects of TQM helped to provide a detailed understanding of the state of TQM today in terms of its research and its application within industries. The literature review identified what the concept of TQM is. Similarly, the literature review on all aspects of CSFs identified what is important for measuring CSFs. Thus, the first research question, “What is CSFs of TQM?”, was answered.

3.3 Questionnaire survey

The second research question-“What are the effects of TQM implementation on organisational performance in Indian manufacturing Industries?”-is to examine the effects of TQM implementation on overall business performance. In essence, to answer this research question is to verify a theory. According to Punch [118], a theory verification study aims to test a theory or, more accurately, to test hypotheses derived from the existing theory. It is a common practice in social science areas that have traditionally emphasized quantitative research. Such a study starts with a theory, deduces hypotheses from it, and proceeds to test these hypotheses. Thus, a questionnaire survey was the most appropriate strategy to answer this research question. The greatest advantage of a questionnaire survey is its lower cost compared to other methods. Mail questionnaires also have sample-related advantages: Geographic coverage, larger samples, and wider coverage within a sample population. A questionnaire survey can be used only when the objective of the study is clear and not complex [14]. In the area of TQM implementation, much research has been conducted using questionnaire surveys to collect information (e.g., [5], [26], and [45]). These researchers tested the effects of TQM implementation on overall business performance using questionnaire surveys. Generally, questionnaires were used to obtain a large database of TQM information with a low level of details. In this study, the questionnaire survey was used to obtain information about TQM implementation and overall business performance from a wide range of Indian manufacturing industries.

There were four main steps in the methodology used in our research study:

1. Choosing the appropriate performance measures.
2. Gathering a sample of organisations that have effectively implemented TQM.
3. Developing a questionnaire and distributing it to the selected organisations.

4. Empirical analysis of data obtained using SPSS and Amos 20.0 software, to find the impact of TQM on organisational performance.

3.4 Research sample

Any attempt to establish the link between TQM and organizational performance must focus on firms that have implemented TQM effectively. This is important because while most firms will claim that they have implemented TQM, few are doing it effectively. Including non-effective implementers will obscure the impact of TQM. Effectively implementation means that the key principles of TQM such as focus on customer satisfaction, employee involvement, and continuous improvement are well accepted, practiced, and deployed within the firm.

We used the ISO 9000 : 2000 certified company as a proxy for effective implementation of TQM. A review of ISO 9000 : 2000 criteria confirmed that the core concepts and values emphasized are those that are widely considered to be the building blocks of effective TQM implementations. ISO 9000 : 2000 certifications are given after the applicant goes through a multi-level evaluation process where internal or external experts judge the applicant.

Steps followed for questionnaire survey are as follows : (a) Questionnaire development and (b) Contacting relevant persons

A questionnaire was developed and distributed to 200 Indian chemical companies for the collection of data and following assumptions were made :- respondents will behave rationally, respondents will not be biased with geographical locations, etc. and ISO 9000 is foundation for TQM implementation.

The empirical data were obtained from a survey of ISO 9000 certified Indian chemical industries. The responses of questionnaire survey were analyzed using structural equation modeling by SPSS AMOS 20.0. The reliability of the practice and performance measures were evaluated and the hypothesized relationship between TQM practices and organisation's performance were examined using structural equation modeling.

4.0 Analysis

4.1.1 Reliability Analysis

Cronbach alpha is a measure for the internal consistency of the items, that together covers the specific (new and underlying) factor. In general, a value of 0.60 is acceptable.

Table 4.1

S. No..	Item	Cronbach Alpha
1.	Customer Focus	0.70
2.	Communication	0.65
3.	Delegation	0.69
4.	Continuous Improvement	0.85
5.	Results & recognition	0.67
6.	Leadership	0.64
7.	Process Improvement	0.66
8.	Supplier Focus	0.68
9.	Team Work	0.69
10.	Value & Ethics	0.78
11.	Work Culture	0.72
12.	Strategy	0.73

All our factors has Cronbach alpha value above 0.60 which shows the internal consistency of items.

4.2 Correlation Analysis

4.2.1 Correlation between TQM Constructs and Results (Peoples')

Table 4.2

S. No..	Item	(Correlations)
1.	Customer Focus	0.64***
2.	Communication	0.28*
3.	Delegation	0.68***
4.	Continuous Improvement	0.57***
5.	Results & recognition	0.82***
6.	Leadership	0.65***
7.	Process Improvement	0.47**
8.	Supplier Focus	0.90***
9.	Team Work	0.34**
10.	Value & Ethics	0.57***
11.	Work Culture	0.64***
12.	Strategy	0.56***

*p < 0.05, **p < 0.01, ***p < 0.001

5.0 CONCLUSION

One of the most interesting parts of conducting empirical research is to interpret the research findings, however, caution should be exercised in interpreting the results obtained from statistical data analysis [101]. There may be a temptation to overstate the findings. In fact, interpretations should be based on a total view of the sampling frame. Therefore, care should be taken not to over generalize the results. There are several inherent weaknesses in the questionnaire survey. When analyzing the data in questionnaires, it is important to keep in mind the following issues:

- The results might be affected by the position of the respondents in the firms. For example, in most cases the persons who had the most responsibilities for quality management completed the questionnaires. These respondents' views might be different from those of other persons in the firms.
- The results might be affected by the education and quality management knowledge of the respondents.
- Some respondents might tend to answer questions in a way that would show their firms in a positive light.
- Some respondents might tend to answer questions in a way that would show their firms in a negative light.

TQM can be a powerful technique for unleashing employee creativity and potential, reducing bureaucracy and costs, and improving service to clients and the community. TQM is focused on quality, presumably a concern of both management and workers, and methods improvements should eliminate wasteful bureaucratic activities, save money, and make more human resources available for core activities, specifically client service.

It is concluded from this analysis that high scores on TQM constructs [e.g Delegation, Results & Recognition, Leadership, Customer focus and supplier focus] leads to high scores on employee satisfaction.

In order to make TQM yet a successful venture and transfigure the organization into a 'whole' one, the following action points are proposed:

- * Periodically diagnose the quality-related and allied problems in the company through regular meetings, brainstorming and organization-based surveys.
- * Find out the reasons for deviations in the desired behavior of employees.
- * Generate more commitment among employees towards TQM by providing TQM training, and organizing more TQM workshops.
- * Bring more quality awareness among people and help them to perceive quality as a super-ordinate goal.
- * Use of a variety of technical (scientific) methods to enhance analysis and process management methods to enhance team effectiveness.

* Reinforce the system for information sharing, reward and recognition scheme, monitoring results, accountability as well as the feedback coordination.

* Create an ambience of open dialog about progress in the TQM transformation that will enable learning and further change. The TQM transformations will endure only if the top management requires and eventually would institutionalize an honest organization-wide conversation that surfaces valid data about the quality of management in each unit or department in the organization.

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