



# **A STUDY ON TQM IN NORTH INDIAN MANUFACTURING AND SERVICE INDUSTRIES**

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## **Abstract**

**Total quality management (TQM) is a modern management philosophy and a journey, not a destination. TQM is a systematic management approach to meet the competitive and technological challenges which have been accepted by both service and manufacturing organizations globally. It defines the quality with emphasis on top management commitment and customer satisfaction. It focuses on attaining and maintaining impeccable quality in manufacturing as well as services, by improving the performance of products, processes and services to satisfy customers' expectations. Manufacturing and service industries recognize TQM differently. The purpose of this study is to find the benefits of TQM, shortcomings of TQM and significant differences if any in the understanding of seven success factors of TQM in the manufacturing and service industries of North India. Success factors have been identified with a critical literature review and a survey approach has been used to collect relevant data from the manufacturing and service industries. In total, 30 manufacturing industries and 30 service industries from North India were chosen for study and all responded. The paper finds that success factors have different rankings in manufacturing and service industries, but both sectors comprehend that implementation of TQM success factors is very important. The results also verified were by the rejection of the null hypotheses. The paper can be useful for those manufacturing and service industries which**

**are in the starting phase of TQM implementation.**

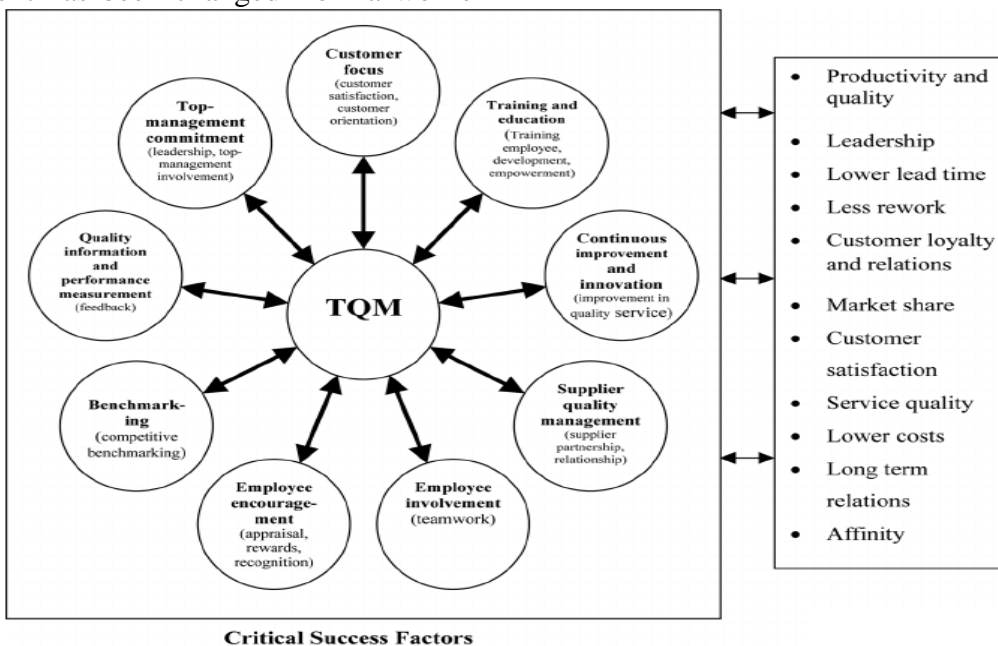
**Keywords: TQM, Customer satisfaction, Continuous improvement, Team working, Training, India.**

## **Introduction**

TM has now been recognised as a generic management tool, relevant for service and public sector organisations. During the past decade, many manufacturing companies have felt the need to improve the quality of their products and become more customer-focused. This new direction is evident in the popularity of terms such as total quality management, company-wide quality control, and continuous quality improvement. The success of the quality improvement efforts depends upon the ability to deploy customer desires throughout the organisation (Sullivan, 1986). TQM has focused mainly on the manufacturing sector. In the late 90s, corporations such as American Express finally began abstracting and applying TQM to the service sector. Manufacturing is considered to be associated with those organisations where there is a very low level of direct contact with the customer (Dale et al, 1997). For the present work, manufacturing companies are defined as "those which produce solid products with help of manufacturing activities" and service companies are defined as "those which transfer inputs like plan, knowledge, skills, into output in form of service. The purpose of TQM is to provide a quality product or service to customers, which will, in turn, increase productivity as well as customer satisfaction and decrease cost (Garg et al, 2002; Antony et al., 2004). With a higher quality product/service and lower price, competitive position and

customer satisfaction in the marketplace will be enhanced. This series of events will allow the organisation to achieve the objectives of profit and growth with greater ease. TQM is a way of managing the industries to improve the product as well as service quality and the overall efficiency of production and other operations. TQM had many parameters to work out its strength. However, a few were chosen as success factors of TQM (Figure 1) for manufacturing as well as service industries for the present study. Management commitment, customer satisfaction, continuous improvement, teamwork, employee empowerment, training, feedback and effective communication are a few such success factors which are effective in manufacturing and service industries. Management leadership and commitment are crucial for the TQM. Providing good leadership means having close involvement in the implementation process to maintain the momentum of employees towards customer satisfaction. In the coming years, the word "customer" will take on a different meaning. The customer side of any business will be a major force in global markets in the years to come. Dealing with these forces will require a new approach to design managerial actions and continuous improvement (Matani, 1998). Continuous improvement has acquired a broad meaning, i.e. continuing efforts to act upon regular as well as irregular problems and to make refinements in processes. The role of employees in the scenario of continuous improvement has been changed from a worker

to a problem solver. The most effective way to harness the ideas and talents of all employees is the use of team force to solve problems. The team force focuses on the reduction of activities value that adds cost but not to the end product, no matter which area of business activity they look at (Raghunathan, 1994). (Rao Empowerment means sharing responsibilities and organisation, power at all levels of the helping people to develop, enabling them to innovate, take make the initiative and independent decisions to satisfy the needs of customers, who may be external to the organisation internal or (Mohanty et al, devices available to 1999). Suggestion schemes are of the many encourage employees to bring out their improvement of work constructive ideas for total operations and services. Cost reduction and improvements are the advantages of quality/productivity resulting from such a suggestion scheme. TQM training, so vital for the success of a TQM program, is usually a much-neglected action item. Top management must be educated and trained about the quality improvement process before others are. TQM training should be continuous throughout the TQM implementation phases. For many years upper management has been designing and implementing motivational programmes by calculated employee-customer linkages at various levels in the organisational hierarchy. This is why it is important to communicate the TQM policy and policy intentions to everyone in the organisation.



**Figure 1: Success factor of TQM**

The present study is a sample study in North Indian manufacturing and service industries and aims to find answers to the following questions:

- What are the benefits and shortcomings of total quality management in manufacturing and service industries?
- What is the significant difference in the understanding of success factors of TQM in North Indian service and manufacturing industries?

### Research Design

The first of the questions above can be answered through a literature survey and discussions with experts in TQM. "Experts" in TQM are those who are using full or part TQM academically or practically in their courses or work. Academic experts mostly publish their work in reputed journals or conferences, through which we can gain knowledge of various benefits and shortcomings. Also, certain professors were contacted to understand this. The experts using TQM practically were those industrialists/manufacturers who were using TQM in their work. Most people from HR/the shop floor were contacted to understand this. These benefits ultimately culminate in a radical change in the performance standard of the organisation and ensure continual growth in a competitive market situation (Garg et al, 2005; Dale et al, 1997; Ghobadian and Gallear, 2001; Mohanty et al, 1999). Total quality management prepares the organisation to integrate all its activities and functions in all respects, and at various levels, for total quality effectively. Although there is evidence that supports the benefits of TQM initiatives in manufacturing and service industries, a large number of studies have shown that 60-80 per cent of TQM initiatives fail to show a significant impact on business/service performance. Researchers have also indicated that many organisations have encountered difficulties in implementing TQM (Mohanty and Lakhe, Zeithaml et al, 1985). Researchers within the TQM fraternity have suggested the shortcomings listed in Appendix 2. Organisations are more concerned about short-term business returns rather than long-term sustainability of business performance.

### Analysis of data

The data collected were analysed by using SPSS Version 7.5 and Minitab Version 138

Software in order to test the hypothesis  $H_0$  at the 5 per cent level of significance (the Significance level based on the asymptotic distribution of a test statistic). A value of less than 0.05 is considered significant and was chosen to analyse the data. The table illustrates the means, standard deviations and paired comparison for each factor for both manufacturing and service industries. The paired-samples  $t$ -test is a statistical test of the null hypothesis (i.e. there are significant differences in understanding the success factors of TQM in service and manufacturing organisations in North India). It is used when the observations for two groups can be paired in some way. Pairing is used to make the two groups as similar as possible. The differences observed between the groups can then be attributed more readily to the variable of interest.  $p$ -values are often used in hypothesis tests to either accept or reject a null hypothesis. The  $p$ -value represents the probability of making a Type 1 error or rejecting the null hypothesis when it is true. The smaller the  $p$ -value, the smaller the probability to make a mistake by rejecting the null hypothesis. A cut-off value often used is 0.05, that is, the null hypothesis is rejected when the  $p$ -value is less than .05.

### Ranking of factors

The respondents were asked to rank the factors in descending order of importance from 1 to 7. Rank 1 means the most important factor for total quality management and rank 7 means the least important. The scores were then added together to determine the list of factors in a hierarchical manner. Table II illustrates the rank of each factor in both the manufacturing and service industries.

### Discussion

From Table 1, it can be seen that the  $p$  values of various factors are less than 0.05, except for effective communication, which clearly rejects the null hypothesis (there is a significant difference in the understanding of success factors for TQM in manufacturing and service industries). This observation shows that both sectors understand management commitment, customer satisfaction, continuous improvement, teamwork, employee training and feedback as success factors of total quality management.

**Table 1: Factors, mean, standard deviation, paired f-value and p-value for 5 percent significance level**

Success factor	Mean		SD		Paired comparison	
	Manufacturing	Service	Manufacturing	Service	t-value	p-value
Management commitment	3.57	3.31	0.413	0.413	2.47	0.027
Customer satisfaction	3.48	3.15	0.575	0.297	2.29	0.038
Continuous improvement	3.65	3.27	0.588	0.564	2.31	0.037
Teamwork	3.67	3.24	0.458	0.479	2.80	0.014
Employee training	3.61	3.23	0.417	0.489	2.47	0.027
Feedback	3.93	3.55	0.482	0.469	2.45	0.028
Effective communication	3.43	3.07	0.459	0.451	2.10	0.054*

Note: \*Not significant at the 5 per cent level

However, TQM's success in effective communication ranked seventh (Table 1) in both sectors and also there is a significant difference between the means of both industries (Table 1).

From Table 2 it is clear that communication in the company has the least importance in both manufacturing and service industries for total quality management. However, the literature review showed that communication within the whole organisation is very important for effective and efficient operations. Also, the participation of top management in the process of quality management can motivate employees

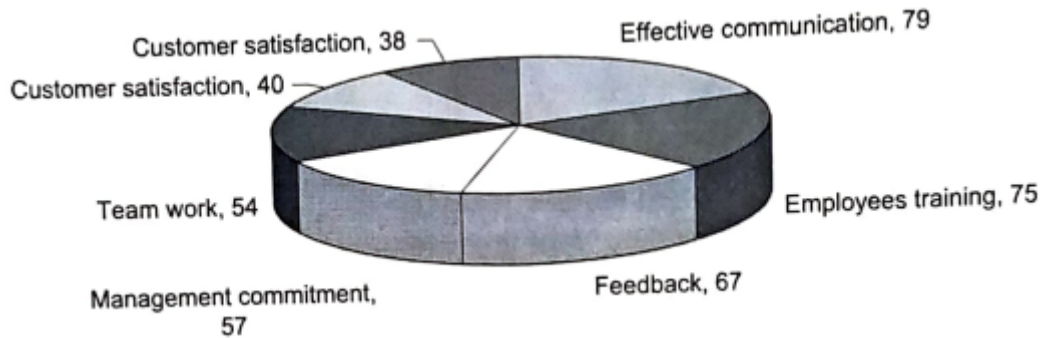
to take an active part in quality activities. These results for effective communication reflect the culture of companies and the nature of teamwork and other problem-solving activities in an organisation. Table 3 presents the comparison of key findings of this work against other research projects by illustrating the findings of significant differences in various success factors of total quality management in manufacturing as well as service industries (Antony et al, 2004). Figures 2 and 3 show the scores of each factor in the manufacturing and service industries, respectively, on the basis of which they were ranked.

**Table 2: Ranking of success factors**

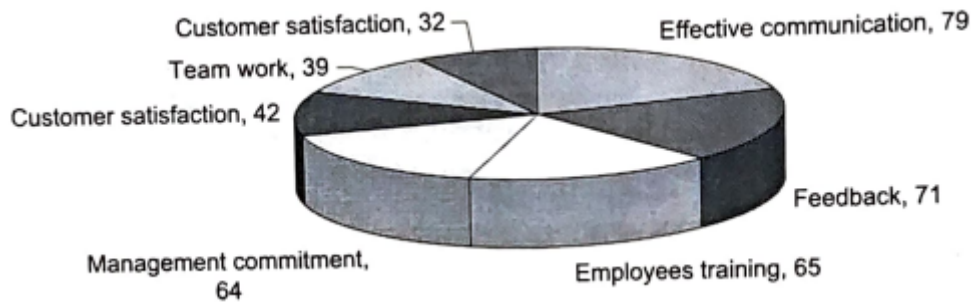
No.	Success factor	Ranking in manufacturing sector	Ranking in service sector
1	Continuous improvement	1	3
2	Customer satisfaction	2	1
3	Team work	3	2
4	Management commitment	4	4
5	Feedback	5	6
6	Employees training	6	5
7	Effective communication	7	7

**Table 3: Comparisons of findings of present work with various authors**

Factors	Huq <i>et al.</i> (USA)	Solis <i>et al.</i> (Taiwan)	Anton <i>et al.</i> (UK)	Present paper (India)
Continuous improvement	NC	NC	NS	S
Customer satisfaction	NS	S	NS	S
Team work	S	S	NS	S
Management commitment	S	NS	S	S
Feedback	NS	S	S	S
Employees training	S	S	S	S
Effective communication	NS	NC	NS	NS



**Figure 2: Scores of factors for the manufacturing sector**



**Figure 3. Scores of factors for the service sector**

### Conclusion

The study reported in this paper was carried out with the help of questionnaire sent to many manufacturing as well as service industries to understand the benefits, shortcomings and significant differences between the understanding of both sector regarding the success factors of total quality management. In total, 60 questionnaires were sent to both manufacturing and service industries. A total of seven factors consisting of 35 variables were considered in the questionnaire. It is found that all seven success factors are considered to have lower importance for TQM practices in Indian service industries as compared to manufacturing industries. Both sectors have different priorities for TQM, but both described effective communication as being not so important, which is contradictory to the literature review but seems correct when compared with the findings of various researchers. It was found that both sectors understand the importance of management commitment to TQM so ranked it the same. Future work can be carried out in the following directions:

- The number of responses can be increased by involving more organisations at an all-India level.
- The number of factors can also be increased after discussion with pioneers in the field.

- The implementation of TQM can be carried out on the basis of these factors after making a systematic plan.

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