A CASE STUDY ON THE CRITICAL SUCCESS FACTORS DETERMINING THE SUCCESS OR FAILURE OF TQM IMPLEMENTATION IN INDIAN ORGANIZATIONS

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Abstract

The present article attempts to investigate critical factors which influence successful implementation of TQM principles and practices in Indian companies. Among the various factors of business excellence, TQM has been playing pivotal role for many years in the organizations. In this study, several studies in India as well as abroad were reviewed and a conceptual framework was established for analyzing the critical success factors affecting the implementation. Then an empirical research using a questionnaire survey was carried out on five Indian organizations belonging to similar industry to investigate the key factors affecting TQM implementation in Indian organizations. Respondents were selected on a stratified random sampling basis and consisted of Managers, First line Managers and Staffs. The response rate was 60%. The analysis revealed that, employees are well aware of TQM concepts and practices. The study indicated some prominent factors out of the 12 factors identified through literature review affecting TQM implementation in Indian organizations like Quality culture, Supplier Quality Management, Top Management commitment, Design Quality Management and Education and Training. It is hoped that, this paper can provide a framework for industries as well as academicians to understand the real essence of TQM philosophy and thereafter to carry out further empirical researches to analyze the critical success factors of TQM implementation.

Keywords: Total Quality Management, Framework, Implementation, Critical success factors, Survey.

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1. Introduction

With the revolution of technology and globalization, companies are now facing increased changes in the need and preferences of the customers in terms of variety, convenience, value addition, service etc. Market has become more vulnerable. Product life cycle has been shortened imposing greater thrust on reducing time to market with more innovative products. Even it requires understanding customers' needs, well before they apprehend and then design and deliver the products and services to the customers within least lead time. There is a considerable shift from availability to promise to capability to promise. Moreover, with the economic crisis prevailed over global markets restricts the organizations to reduce their operating cost. To gain competitive advantage over the competitors and to survive in the market and to reap the benefits of sustainable business growth, it has become quite imperative to understand the real essence of TQM concepts and include and implement all those basic and advanced principles and practices to all business operations. TQM has linkages with all the business operations. In fact TQM is the elemental philosophy that enables the organization to excel in its operations.

1.1.Understanding Total Quality Management(TQM)

The definition of TQM has been a matter of discussion and debate over the years. There is no universal definition of TQM which indicates that TQM is not merely a ready to use tool or method under some predefined standards outlining TQM concepts. Rather, it can be best viewed as a holistic philosophy entailing various principles and practices which have emerged and been modified and established from time to time, based on the need and experiences.

Youssef et al.(1996), mentioned TQM as: "An overall philosophy whoseobjectives is to meet or exceed the needs of the internaland the external customer by creating an organizationalculture in which everyone at every stage of creating theproduct as well as every level of management iscommitted to quality and clearly understands itsstrategic importance". However, Demirbag et al. (2006)expressed TQM as aholistic managementphilosophy aiming continuous improvement in allfunctions of an organization to fulfil customer's needs or requirements under theleadership of top-management.In fact, TQM is a continuous process ofmanaging an enterprise on the path of business excellence (Dahlgaard et al., 1998). Thus, TQM cannot be defined in a universal way. Perhaps, comprehensively it can be described as a holistic philosophy which is based on

continuous improvement of all the functions and activities by involving everyone to meet or exceed stated and implied needs of the customers but with less cost and thereby leads organizations towards excellence.

1.2.Evolution of the concept " Total Quality"

Traditionally, the entire onus of all the consequences of poor quality was vested on QA/QC department. Quality was treated as merely inspection job for which QA/QC department was held responsible mainly. Focus was only to segregate the bad products from the lot. Crosby (1986) strongly opposed the notion and argued that, quality problems are mainly symptoms, indicating the need to investigate the root causes which is the responsibility of all concerned departments. In fact, everyone is the contributor to poor quality and should be held responsible for the cost of poor quality. Quality should be considered taking the whole aspects of the organization into account. Failure to do so is one of the major reasons behind the unsuccessful implementation of TQM in many organizations. Deming (1988) advocated, extending the scope of quality beyond inspection. He strongly believed and argued for ensuring quality at the source instead of ensuring it through inspection. He proposed more proactive and comprehensive approach to ensure quality of the products and services. In fact, after his argument, concept of modern total quality management was actually put in place. There was a paradigm shift in the belief and perception from a very narrow scope to wider "everything" scope.

Further to the work of Deming, there were many researches that took place in the area of TQM. Dimensions of quality were identified (Garvin, 1993), though the concept of quality was still confined to product or manufacturing. However, with the effect of globalization during early 90's, demand was to incorporate many other factors including service to give more wider and simpler definition of quality from customers' perspectives. TQM can be ascertained at three dimensions i.e. physiological, strategic and measurement (Latzko and Saunders, 1995). However, in totality, it can be implemented in an organization integrating three levels i.e. paradigm level, system and structural level and technical and operational level (Daniel, 1999). The present paper aims to investigate critical success factors and thereby to present a framework for further empirical analysis.

2. Literature Review

Several studies have been made on TQM implementation to find answers to questions like what are the basic determinants or influencing factors for successful implementation of TQM?Why all the initiatives taken by organizations subsequently stop well before maturity? Why the organization cannot sustain the results or unable to proceed further to more advanced stages of development even after reaching maturity level of its capability? These questions are quite pertinent to Indian organizations since most of the Indian organizations are well aware of the facts but cannot implement TQM successfully.

According to Dale et all. (2001), TQM concepts are often confined to theoretical development which invokes the organizations to follow more holistic approach by incorporating all the management practices. Dean and Bowen (1994) said about importance of strategy implementation, information processing, customer satisfaction, process improvements etc. in TQM to reach pinnacle of success. However Ghobadian and Gallear (2001) argued that, implementation process of TQM is mostly fragmented which makes the difference between success and failure. Based on their research, they found some similarities in approaches followed by successful organizations, leading to the conclusion that, clear objectives and true intentions rather than activity control create the difference. There is a need to strike a balance between TQM implementation practices (theories in use) and managers' attitudes and perception.

TQM initiatives often fail due to the lack of essential focus and quality measures taken on some critical success factors like customer satisfaction, leadership, product quality, innovation, service etc. Critical Success Factor (CSF) model helps to identify potential factors responsible for successful implementation of TQM, to find the linkages between these factors and with organizational factors to assess potential impact on the business and to foresee possible barriers for determining feasible solutions. An extensive literature survey has been carried out to select a proper framework to identify the critical success factors. This study includes three basic and prestigious awards: the Malcolm Baldrige National Quality Award (MBNQA), the European Quality Award (EQA) and the Deming Prizeawards as TQM frameworks along with other frameworks developed by several authors.The following table depicts the analysis of TQM frameworks as described by the above mentioned awards.

Table 1. Analysis TQM Frameworks

Source: Metri, (2005)

TQM framework	Critical Success Factors*											
	1	2	3	4	5	6	7	8	9	10	11	12
Deming prize (2004)		X	X	X	X		X			X		
MBNQA (2004)	X	X	X	X	X	X	X	X	X	X		
EQA(2004)	X	X	X		X	X	X	X	X	X	X	X

*Note: 1 - Strategic quality management; 2 - Process quality management; 3 - Design quality management; 4 - Education and Training; 5- Supplier quality management; 6 - Customer satisfaction; 7 - Employee empowerment and involvement; 8 - Business results; 9 - Information and Analysis; 10 - Benchmarking; 11 - Impact on society and environment; 12 - Statistical process control.

Rahman and Bullock (2005) identified success factors like Leadership, Customer focus, Quality culture, Teamwork, Training, communication, Product design etc. among which they opined that Quality culture is the major contributor to success. Abdullah et al. (2009) found the linkage between TQM and performance measurement and pointed out six critical success factors like leadership, supplier quality management, reward & recognition, teamwork, E&T, customer focus. However Shahinand Debestani (2011) understood the importance of "soft factors" behind successful implementation of TQM in the organization and identified few soft factors as: Commitment of Leadership, Adoption and Communication of TQM, Customer Relationship, Supplier Relationship, Benchmarking, exhaustive Training, Open organizational culture, Employee Empowerment, Zero defect mentality, Process Improvement etc. Based on their research, they argued that, the most important factors include commitment in leadership, customer relationship, benchmarking and process improvement. These factors have more relationship with other soft factors. They also showed that, there is a high correlation between adoption and communication and process improvement.Saraph et al. (1989) mentioned Management commitment, Quality Strategy, Process quality management, Design quality management, Training, Supplier quality management, Customer satisfaction, Empowerment and involvement, Business results, Information and Analysis etc. as some critical factors affecting the successful implementation of TQM. Black and Porter (1996) have identified ten factors

influencing the implementation of TQM. They are:Corporate quality culture, Strategic quality management, Quality improvement measurement system, People and customer management, Operational quality planning, External interface management, Supplier's partnerships, Teamwork structures, Customer satisfaction orientation and Communication of improvement information.

However, in the context of Indian organizations, several attempts have been made to identify the critical success factors. Wali, Deshmukh and Gupta (2003) made a review of various critical success factors as mentioned by different authors. They listed out critical success factors: Top management commitment, Quality culture, Strategic quality management, Design quality management, Process management, Supplier quality management, Education and training, Empowerment and involvement, Information and analysis, Customer satisfaction etc. based on the actual practices followed by the Indian Organizations. Ahire and Ravichandran (2001)emphasized the importance of organizational culture for the implementation of quality initiatives in their studies.The studies of Acharya and Ray (2000),Gyani(2008), Joseph et al.(1999),Kakkar and Narag (2007), Khanna(2009), Kumar et al.(2009),Bhat and Jagadeesh (2009), Khanna H.K et al. (2010),Metri(2005),Jha and Kumar(2010), revealed Critical Success Factors: Top management commitment, Role of quality department, Process quality management, Product/service design, Education and Training, Supplier quality management, Customer satisfaction, Employee empowerment and involvement, Business/Quality results, Information and Analysis, Benchmarking, Quality citizenship, Quality Culture etc. Khanna H.K et al. (2010),argued for most important Competitive Priorities for Indian organizations as Quality: Producing products with high quality performance standards, Cost: Producing and distributing products at low cost, Delivery: Improvement in delivery rate and reliability, Flexibility: Improving ability to change product mix and variety. They opined that, quality management is not industry context dependent. Based on the study, they concluded that, Indian organizations are well aware of TQM concepts but they fail to implement TQM because of their inability to learn, adapt and implement the tools and techniques of TQM, mainly advanced like Six-sigma methodology etc. Kalra and Pant (2013), in their research identified eight CSF: Policy with Strategic planning, process management, improvement & control, Supplier focus and satisfaction, Customer focus and total customer satisfaction, Human resource focus with

satisfaction, Management of information, leadership in Quality, Organizations based business results. The analysis revealed that, three CSF's viz; policy with strategic plan, leadership in quality and customer focus and total customer satisfaction are playing vital role behind implementation of TQM among all others.

Thus from the literature review, it is quite evident that, there are a considerable no. of critical success factorsexist which determine success or failure of TQM implementation. However, considering the similarity in nature, implications, meaning, purpose etc. those factors can be broadly listed as below in table 2. For example, process improvement, statistical quality control, process improvement and control can be broadly described as Process Quality Management. Similarly, supplier relationship, supplier partnership, supplier focus and satisfaction etc. can be broadly included in the factor Supplier Quality Management. On the other hand, customer focus, customer relationship, customer satisfaction orientation etc. can be treated as the factor Customer Satisfaction.

Table 2. Critical Success Factors for TQM implementation

S/L	Factors
1	Top Management Commitment (TMC)
2	Strategic Quality Management (SQM)
3	Process Quality Management (PQM)
4	Supplier Quality Management (SUQM)
5	Design Quality Management (DQM)
6	Business Results (BR)
7	Employee Empowerment & Involvement (EEI)
8	Information & Analytics (IA)
9	Education & Training (ET)
10	Customer Satisfaction (CS)
11	Benchmarking (BEN)
12	Quality Culture (QC)

3. Research Methodology

The Critical Success Factors had been identified from the literature survey. (Refer table 2) Based on these factors a questionnaire consisting of 48 items had been formed to use as survey

instrument. Each response was made on a 5-point Likert quantitative scale as given below in table 3. Also apart from the main survey, the awareness level of the respondents was judged.

Table 3. Likert rating scale used for the study

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

An initial pilot survey was conducted and the reliability of the survey instrument had been assessed through the use of Cronbach's alpha test resulted α value of 0.8. The companies selected for this study were mostly located in the Eastern part of India and had been ISO 9001: 2008 certified for at least two years.Total 200 employees consisting of Managers, First line Managers and Staffs had been approached out of which 120 people responded resulting into the response rate of 60%. Figure 1 represents the distribution of the employees participated in the survey. The respondents were also assessed about their awareness on TQM concepts & practices. Figure 2 represents the awareness level of the respondents. Oursurvey document ensured confidentiality for all respondents as well as for the organizations.

Figure1. Study sample distribution (in percentage)

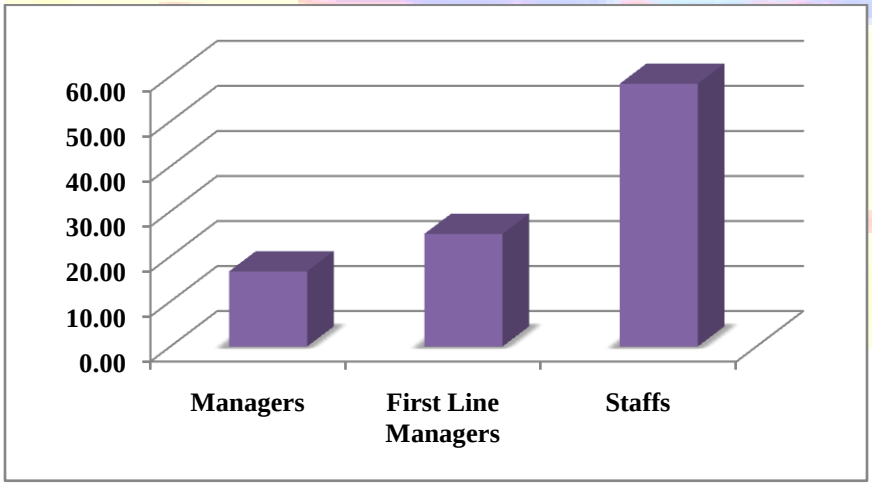
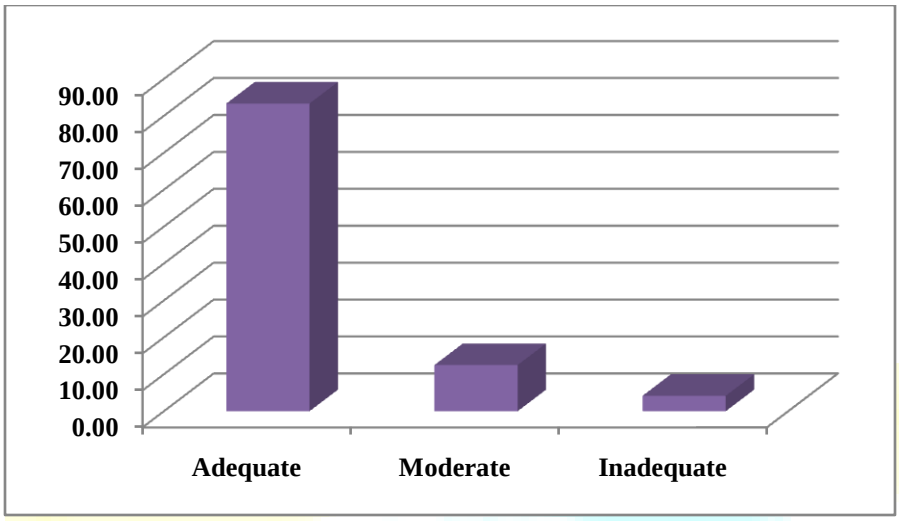


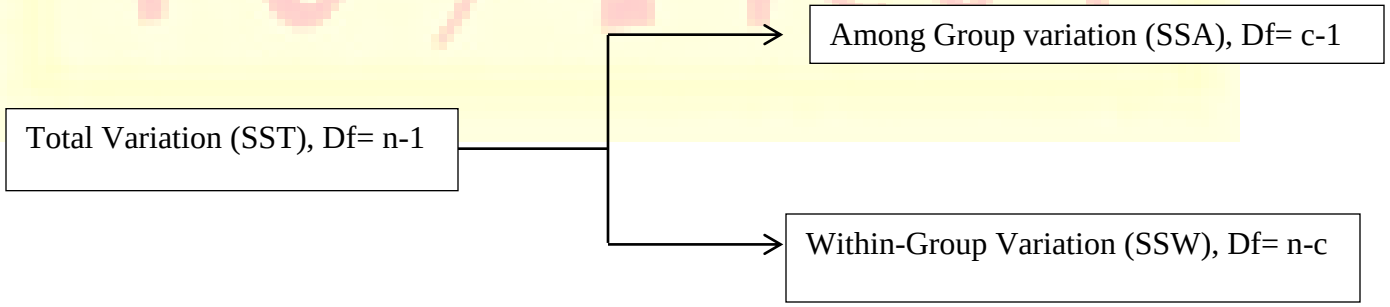
Figure2. TQM Concepts Awareness Level of the respondents (in percentage)



The filled questionnaires were collected back and the data was managed in a usable format. For the analysis of the data, ANOVA method was applied by using SPSS version 21.

3.1.Analysis of Variance (ANOVA)

ANOVA method is used to carry out the comparison of means of several populations.The aim of ANOVA is to detect differences among several population means. The technique requires the analysis of different forms of variance associated with therandom samples under study.In ANOVA, the total variation can be sub divided into Among-group variation and Within-group variation where, the former one measures the differences from group to group and the later one measures the random variation within a group.



Where, c = Number of groups; n = Total number of values in all groups combined i.e. n = $n_1+n_2+\ldots\ldots+n_c$

Total Variation SST = $\sum_{j=1} \sum (X_{ij} - \overline{\overline{X}})^2$ Among-Group Variation SSA = $\sum n_j(\overline{X_j} - \overline{\overline{X}})^2$

Within- Group Variation SSW = $\sum \sum (X_{ij} - \overline{X}_j)^2$

Where, SST = Sum of Squares Total; SSA = Sum of Squares Among-groups; SSW = Sum of Squares Within-groups.

$\overline{\overline{X}} = (\sum \sum X_{ij})/n$ = Grand Mean; X_{ij} = ith value in group j; n_j= number of values in group j

n= total number of values in all groups combined; c = number of groups

$\overline{X}_j$ = sample mean of group j

4. Results and Discussion

The following hypothesis was tested:

H_1: Not all the factors are equally significant for TQM implementation.

The result of the ANOVA test performed on the data obtained through survey is given below.

Table 4. ANOVA result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7416.522	11	674.229	51.351	.000
Within Groups	18749.433	1428	13.130		
Total	26165.956	1439			

Thus, from the table 4 it is clearly evident that, all the factors are not equally significant for the implementation of TQM. Therefore, the alternate hypothesis which we formed initially is tested and accepted.

The following table shows respective means and standard deviations of the corresponding factors based on the responses collected. Accordingly, their ranks are also shown here.

Table 5. Descriptive Statistics

Factor	Mean	Std. Deviation	Rank
TMC	7.85	2.737	3
SQM	11.45	4.726	9
PQM	8.15	2.556	7
SUQM	6.00	1.461	2
DQM	8.01	2.636	4
BR	12.28	4.987	12
EEI	11.84	4.920	10
IA	11.93	4.863	11
ET	8.03	2.742	5
CS	8.09	2.710	6
BEN	11.41	4.731	8
QC	5.91	1.467	1

Thus, based on the mean values calculated, top five critical success factors are Quality culture, Supplier Quality Management, Top Management commitment, Design Quality Management and Education and Training, which most of the respondents had felt neglected in the organization resulting into unsuccessful implementation of TQM and poor sustainability.

Evidences and research suggest that, most of the time TQM implementation does not meet the objectives because of lack of proper vision, leadership, commitment of senior management level, gap between adaptation and institutionalization of TQM concepts etc. Thus, Top management commitment plays as a vital force behind TQM implementation.

Quality culture on the other hand, is a very fundamental requirement for TQM implementation. Essentially it includes collaboration, proactive mind-set, free and fair climate, openness in communication, transparency, ownership, continuous improvement, job satisfaction, learning and involvement, authority equal to responsibility etc. which result into increases in productivity, quality, and customer and employee satisfaction. Lack of developing and sustaining a quality oriented culture aligned with basic goals of the organization lead to failure in TQM implementation.

In TQM philosophy, suppliers are essential and integral part of the organizations. To generate quality output as well as to implement TQM effectively, it is imperative to follow a proactive

approach by ensuring quality at upstream. Better coordination and collaboration with suppliers, improved quality of supplier's operations not only reduces downstream cost but also ensure quality right at the source and thereby aid to successful implementation.

To generate effective result and to meet or even to exceed customers' expectation, it is crucial to listen to the "voice of the customers" and thereby design the products/services, aligned processes accordingly. Thus, design quality management is an important element of success for the organizations.

For successful implementation of TQM and more importantly, to ensure sustainability, it is highly recommended by the researchers that, the organizations should create a learning and "always happening" environment. Therefore, Education and Training is one of the basic ingredients of success for the organizations. TQM essentially is based on continual development of all the aspects for which training is very important.

5. Conclusion

It is quite evident from this study that, there are a considerable number of factors affecting the successful implementation of TQM in Indian organizations out of which the factors like Quality culture, Supplier Quality Management, Top Management commitment, Design Quality Management and Education and Training are more significant for the implementation TQM in Indian companies. In this study, one empirical approach has been applied to find out the prominence of the factors as revealed from the literature review. The study is also limited to similar industry and therefore, the findings should not begeneralized. However, this study can be further extended to several industry specific researches to understand the nature of the success factors in different industries as well as further attempts can be made to find out the interdependencies among the factors. This study, in that sense can be utilized as a framework for all such future studies.

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