FACTORS IMPORTANT IN CONTEXT OF TQM IMPLEMENTATION IN INDIAN INDUSTRIES

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Abstract

In every organization, effective quality management must be a total, company-wide effect that is aimed at the avoidance of problems through the planning and engineering of products, processes and methods, the identification of problems that inevitably will arise and continuous improvement of quality performance. TQM is a total management system that sets the direction of the company and allows it to identify and develop an interaction among corporate problems and solutions, local problems and solutions, policy management efforts, daily management efforts, team activities, employee evolvement, and the role of education and training in quality improvements. This paper finds important factors, which helps to implement TQM in Indian industries and check their importance in Indian industries through survey.

Key Words: Total Quality Management, Important Factors, Likert Scale.

1.0 Introduction

Today’s total quality management (TQM) practices, encompassing the structure of organizations, company policies, procedures, managerial behavior and other manifestations of organizational cultures, are legacies of many thinkers and quality experts [1]. The underlying philosophy behind the current total quality management practices evolved slowly over a period of eighty years. It started from the concept of quality control, was transformed into quality assurance and, finally, to total quality control before assuming its present form – Total Quality Management.

Many Indian organizations have started realizing the importance of Total Quality Management (TQM) and new quality system improvement standards [2]. According to a report from World Bank on global economy, developing by nearly 5 percent a year compared with a rate of 2.7 percent in the rich industrial world and by 2020 India should be the 4th largest economy in the world. India ranks number 45 in global competitiveness among 49 countries [6]. Historically Indian industries developed management practices which suited the restrictive industrial policies of the past till the early 1980’s the demand was for mass supply. Consequently Indian manufacturers preferred to exploit the limited and yet adequate domestic market. Manufacturing excellence could be attained by a combination of several approaches to manufacturing such as value added manufacturing, continuous improvement, just in time and total quality control.

TQM has emerged as a widely accepted management system. Its popularity has resulted in a diversity of definitions. In 1988, the United States, Department of Defense described total quality management as a series of “continuous improvement activities involving everyone in the organization – managers and workers - in a totally integrated effort toward improving performance at every level.” According to the US Department, this improvement satisfied cross functional goals, such as quality, cost, schedule, mission, need and suitability [3]. Total quality management was the integration of management techniques, current improvement efforts and technical tools towards continuous improvement, in order to increase customer/user satisfaction.

TQM is a focused approach to increasing customer satisfaction and achieving business objectives. According to British Quality Association, “TQM” is a corporate business management philosophy, which recognizes that customer needs and business goals are inseparable. It is appropriate with in both industry and commerce [4]. Indian Statistical Institute, Hyderabad in its (unpublished) training document defined total quality management as an integrated organizational approach in delighting customer (Internal and external) by meeting their expectations on a continuous basis through everyone involved with the organization working on continuous improvement in all products, services and processes along with proper problem solving methodology. The definitions and statements by some researchers have been tabulated in Table 1.
<table>
<thead>
<tr>
<th>Name of Author</th>
<th>Definitions/ Descriptions/Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, E. A. et al. [1]</td>
<td>The primary emphasis of the TQM philosophy is total satisfaction for both internal and external customer, within the management environment that seeks continuous process improvement.</td>
</tr>
<tr>
<td>Charantimath P. M. [2]</td>
<td>TQM is an approach to business that looks critically not only at the products and services a company provides in relation to the process it employs to create them but also at the work force, to ensure that outputs fully satisfy customer requirements.</td>
</tr>
<tr>
<td>Ho, S. K. M. [3]</td>
<td>TQM provides the overall concept that fosters continuous improvement in an organization. It emphasizes use of all people, usually in multifunctional teams, to bring improvement from within the organization.</td>
</tr>
<tr>
<td>Jawahar, L. et al. [4]</td>
<td>Total Quality Management (TQM) is a structured approach for quality and productivity improvement that aims to address all aspects of a business including people methodology and technology.</td>
</tr>
<tr>
<td>Khanna, V. K. et al. [5]</td>
<td>TQM has been accepted by both service and manufacturing organizations globally, as a systematic management approach to meet the competitive and technological challenges. It defines the quality with emphasis on top management commitment and customer satisfaction.</td>
</tr>
<tr>
<td>Krieter, C. [6]</td>
<td>TQM is a way continuously improve performance at every level of operation, in every functional area of an organization, using all available human and capital resources.</td>
</tr>
<tr>
<td>Krumwiede, D. W. et al. [7]</td>
<td>TQM philosophy emphasizes quality achievement of products or services in a never ending process and primarily a management responsibility, not that of the worker.</td>
</tr>
<tr>
<td>Mohanty, R. P. [8]</td>
<td>TQM as an approach and as an organization wide effort is oriented towards maintaining customer satisfaction increasing productivity through waste reduction and improving the reliability of all work processes.</td>
</tr>
</tbody>
</table>

Above discussion directs to locate:

- What are basic factors of Total Quality Management which can play an important role in implementation in Indian industries?
- What is the importance of these factors in Indian industries?

Various important factors founded by researchers are:

1. Top management leadership and commitments [TMLC]
2. Continuous improvement [CI]
3. Seven management tools [SMT]
4. Working environment [WE]
5. Education and training [ET]
6. Total employee involvement [TEI]
7. Employee empowerment [EE]
2.0 Survey of Indian Industries

A survey has been carried out to understand the importance of various factors of total quality management in Indian industries. The Indian industries having ISO certification were the main source of data collection for the survey. For the survey a questionnaire on Total Quality Management in industries was prepared (designed on the basis of five point likert scale) and mailed to 150 different industries covering the fields of automobile engineering, textile engineering, electrical and electronics engineering, light weight engineering and heavy weight engineering works in India and abroad. Seventy five responses (Response rate = 50%) to this questionnaire were obtained.

3.0 Results of Survey

Within the last two decades, Total Quality Management (TQM) has evolved as a strategic approach in most manufacturing and service organizations to respond to the challenges posed by competitive business world [90]. Survey shows the importance of various factors founded out from literature review (Table2) and it was clear that overall 33 percent industries accept various factors as ‘very important’, 40 percent as ‘important’, 22 percent as ‘less important’, 5 percent as ‘least important’ and no factor was found as ‘not important’.

1. Senior management leadership and commitment is crucial for the TQM. Providing good leadership means having close involvement in implementation process to maintain the momentum. Seventy one percent industries confirm top management leadership and commitment as ‘very important’ factor of TQM.

2. Continuous improvement has acquired a broad meaning, i.e., enduring efforts to act upon both chronic and sporadic problems and to make refinements to processes. Fifty nine percent industries confirm continuous improvement as ‘very important’ factor of TQM.

3. Many tools and techniques are available to assist management in planning and implementation of solutions of problems of quality planning. Seven management tools are widely used for problem solving and quality planning by most of the organizations world over but use of these tools for quality improvement in Indian companies is still less. Twenty four percent industries confirm seven management tools as ‘very important’ factor of TQM.

4. The importance of working environment cannot be under estimated in the context of bringing out total quality change through layout in company. Indian corporate sector has started recognising the significance of working environment improvement through methods – engineering and other techniques. Twenty four percent industries confirm seven management tools as ‘very important’ factor of TQM.

5. TQM training, so vital to success of a TQM program, is usually a much neglected action item. Top management must first be educated and trained about the quality improvement process, before training starts for others. TQM training should be continuous throughout the TQM implementation phases. Fifty percent industries understand employees’ education and training is ‘very important’ factor of TQM.
6. Employee involvement is one of several concepts of total quality management, one of the latest 
philosophies in business and industry. Employee involvement is a system that encourages employees to 
participate in improvement of business by using their creative abilities to make suggestions for 
improvement and by sharing their expert knowledge regarding their immediate work areas. Fifty three 
percent industries confirm employees as ‘very important’ factor of TQM.

7. A sense of autonomy for oneself and creating autonomy for others is the basic concept of empowerment. 
Empowerment means sharing responsibilities and power at all levels in organization, and helping people to 
develop, enabling them to innovate, take initiatives and make independent decisions to satisfy the needs of 
customers, which may be internal or external to organization. Forty percent respondent industries 
understand empowerment as ‘very important’ factor of TQM.

8. A quality circle is a small group usually four to ten people who identify, analyze and solve their work 
related problems or improvements of their work environment, relations or even their personal problems 
inside their organizations. Thirty four percent industries understand quality circle is ‘very important’ factor 
of TQM.

9. Most effective way to harness the ideas and talents of all employees is use of team force based problem 
solving. The team force focus on the progressiveness reduction of activities that add cost but no value to the 
end product no matter which area of business activity they look at. Thirty one percent industries understand 
team work is ‘very important’ factor of TQM.

10. Small group activities have received widespread attention since the very beginning. Economies shattered by 
World War II adopted this approach for reconstruction on large scale, motivated by the instinct for 
themselves and their peoples and small groups have solved many problems related to customers and 
marketing in companies. Twenty nine percent respondent industries understand small group activity as ‘very important’ 
factor of TQM.

11. Suggestion schemes are the device to encourage employees to bring out their constructive ideas for total 
improvement of work operations and services. Cost reduction and quality / productivity improvements are 
the advantage resulting from such Suggestion schemes. Twenty nine percent industries understand 
suggestions from employees’ as ‘very important’ factor of TQM.

12. In coming years word customer will take on a different meaning. The customer side of any business will be 
a major force in tomorrow’s global markets. Dealing with these forces will require a new approach to 
designing managerial actions. Fifty nine percent respondent industries consider customer focus and 
satisfaction ‘very important’.

13. Recognition and rewards are vital in any TQM programme. They are the most important way of achieving 
the behaviour required for a successful implementation of TQM. Rewards encourage people to accept 
responsibility, put in their best efforts, be creative and exercise initiative. Twenty seven percent respondent 
industries consider recognition and reward ‘very important’.

14. Upper managements have been designing and implementing motivational programmes by calculated 
employee – customer linkages at various levels in the organisational hierarchy. That is why it is important 
to communicate the TQM policy and policy intentions to everyone in organisation. Thirty one percent 
respondent industries consider communication system ‘very important’.

15. Vendors have a strong and important impact on the products, services, work processes and distribution. 
They are at the beginning of the chain of process steps for product or service. The quality of the raw 
material will have an impact on the quality of the end product. The selection of the right source of supply is 
very important. Vendors can provide what is required only when he knows exactly what is wanted. Twenty 
nine percent respondent industries consider vendor development ‘very important’.

16. Statistical process control (SPC) is a means of improving processes by reducing their variability. SPC offers 
two important insights in to manufacturing processes one improves the control of variation and the other is 
a distinction between the variation present in the process and the deviations which are allowed from the 
specifications. Thirty seven percent respondent industries consider statistical process control ‘very important’.

17. Daily process management means identifying and monitoring a process, ensuring that it meets the target, 
discovering abnormalities, and preventing their recurrence. It provides means for making hundreds, if not 
thousand, of minor improvements that after accumulation can produce very significant results. These 
improvements, moreover, are of the kind that is often quickly noticed by customers. Twenty four percent 
respondent industries consider daily process management ‘very important’.

18. The fact that in normal course, the parts had zero defect in terms of specification limits, did not by itself 
guarantee customer satisfaction. Parts produced to higher level of consistency brought about a new 
situation. Zero defects in the changed situation had more stringent acceptance limits, signalled by greater 
satisfaction to customers. Twenty two percent respondent industries consider Zero defects ‘very important’.

19. Improvement in quality by reducing the number of defectives is a goal every organization likes to pursue. 
However, the reduction of defectives requires an additional investment in procuring suitable technology and
training of employees. Taguchi technique is a simplified way to overcome this problem. Taguchi method is creating its importance in Indian industries as twenty five percent respondent industries consider it ‘very important’.

20. The seven quality control tools are born of principle of variability. No two things or human beings are identical in nature. Two very similar things are difficult to obtain. Mainly the causes for variation can be divided into chance cause and assignable cause and to check the type of causes, these seven quality control tool helps a lot. Twenty percent respondent industries consider seven quality control tools ‘very important’.

21. Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement in critical, contemporary measures of performance, such as cost, quality, service, and speed. Eighteen percent respondent industries consider business process reengineering ‘very important’.

22. Total preventive maintenance can be defined as an activity encompassing various planned and unplanned maintenance tasks, routine and long term decisions and includes a continuous improvement approach for meeting customers’ requirements. It is a philosophy of maintenance designed to lower overall cost of production. Fifty two percent respondent industries consider total preventive maintenance ‘very important’.

23. Quality function deployment is a tool which transforms customer requirement into product parameters. It is basically a matrix indicating ‘what is required’ on vertical axis and ‘how to achieve it’ on horizontal axis. Ten percent respondent industries consider quality function deployment ‘very important’.

24. Housekeeping is a process wherein everyone is committed and involved in up keeps of the workplace and cleanliness of machines, materials, and information etc. such that only needed materials and information is kept and its fastest accessibility is ensured. Twenty eight percent respondent industries consider it very important.

25. Indian industries have embarked on numerous prescriptions for catching up with Japanese. The concept of Just in Time (JIT) refers to an objective for the reduction and eventually elimination of inventory at all levels throughout the organization. It refers to a process that is capable of instant response to demand without any overstocking either in expectation of demand or as a result of inefficiencies in the process. Twenty nine percent respondent industries consider just in time ‘very important’.

26. The strength to compete, once developed, may not last long as competitors will soon develop such strengths with them. So there is a need for continuous augmentation of such strengths by such magnitudes that will be significantly more than the competitors’ achievements. This is the reason for which western management have today recognized the need for an approach called ‘Benchmarking’. Twenty eight percent respondent industries consider benchmarking ‘very important’.

27. In order to understand the proper linkage of quality with costs, various costs such as prevention cost, appraisal cost, internal failure cost and external failure cost are to be introduced. The useful outcome of such an analysis of quality related costs like this is that it helps companies to assess the relationship between various cost categories. Nineteen percent respondent industries consider cost of quality ‘very important’.

28. Quality Process Planning involves the planning and design of both the physical facilities and the information and control systems required manufacturing a good or delivering a service. The goal of quality process planning is to ensure that the product conforms to design specification and is produced in an economical and productive fashion. Twenty one percent respondent industries consider quality process planning ‘very important’.

29. A designed experiment is a series of ordered tests in which purposeful changes are made to input variables of a process or system so that the reason for the changes in the output responses can be identified. DOE is a powerful technique introduce by R. A. Fisher in England to study the effect on the outcome of multi – variable simultaneously. Twenty four percent respondent industries consider design of experiment ‘very important’.

30. Failure mode and effect analysis is a tool used for reviewing the design of any new product before it is product ionised. It can also be used for analysing the effect of failure of individual components on the system as a whole. Twenty percent respondent industries consider failure mode and effect analysis ‘very important’.
### Table 3 Importance of factors of Total Quality Management (N=75)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Very important</th>
<th>Important</th>
<th>Less important</th>
<th>Least important</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMLC</td>
<td>53</td>
<td>20</td>
<td>02</td>
<td>-</td>
</tr>
<tr>
<td>CI</td>
<td>44</td>
<td>28</td>
<td>03</td>
<td>-</td>
</tr>
<tr>
<td>SMT</td>
<td>18</td>
<td>25</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>WE</td>
<td>25</td>
<td>31</td>
<td>16</td>
<td>03</td>
</tr>
<tr>
<td>ET</td>
<td>37</td>
<td>29</td>
<td>06</td>
<td>03</td>
</tr>
<tr>
<td>TEI</td>
<td>40</td>
<td>31</td>
<td>04</td>
<td>-</td>
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<td>EE</td>
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<td>38</td>
<td>07</td>
<td>-</td>
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<tr>
<td>QC</td>
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<td>40</td>
<td>07</td>
<td>02</td>
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<tr>
<td>TW</td>
<td>23</td>
<td>41</td>
<td>08</td>
<td>03</td>
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<tr>
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<td>42</td>
<td>10</td>
<td>01</td>
</tr>
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<td>SS</td>
<td>22</td>
<td>31</td>
<td>16</td>
<td>06</td>
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<tr>
<td>CFS</td>
<td>44</td>
<td>27</td>
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<td>-</td>
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<tr>
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<td>07</td>
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<td>QPP</td>
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<td>29</td>
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<td>06</td>
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<tr>
<td>DOE</td>
<td>18</td>
<td>22</td>
<td>26</td>
<td>09</td>
</tr>
<tr>
<td>FMEA</td>
<td>15</td>
<td>32</td>
<td>22</td>
<td>06</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>735</strong></td>
<td><strong>894</strong></td>
<td><strong>496</strong></td>
<td><strong>125</strong></td>
</tr>
</tbody>
</table>

N – Total number of respondent industries.
No factor has been rated as ‘Not important’ by industries.
4.0 Conclusion

Although the definitions could differ but essentially TQM is based on the important considerations like understanding and fulfilment of needs of customer is must to business success, top management must feel responsible for leading the work towards quality, all functions at all levels of an organization must focus on continuous improvement and continuous learning, training and education are the responsibility of everyone in the organization. Based upon Importance of various factors industrialists can make an TQM implementation model suitable to their works.

References
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