

Study of Critical Success Factors of TQM in Indian Small and Medium Scale Enterprises

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Abstract

In the era of globalization and privatization, manufacturing firms are greatly relying upon the principle of total quality management to fight with the challenges of current market trends. In developing nation like India, Small and Medium scale industries (SMEs) play a vital role in providing employment and boosting the economy of the country. The objective of the study is to identify the critical success factors that contribute to the performance of quality management practices in Indian manufacturing firms and to establish a guideline that the management can take care off to improvise their firm's productivity. A number of studies have been carried out in various parts of world showing factors affecting TQM practices and their impact on the firms performance, but a very few such type of studies is done in Indian SMEs . This study includes a questionnaire survey where small and medium scale manufacturing enterprises claiming to adopt Total quality management practices in their structure of governance are questioned. After data was collected, the critical factors are arranged accordance to their importance based on quality solving tools, i.e. fish bone diagram, histograms, and pareto analysis. At last various problems faced in SMEs are also highlighted. This study will help various other research activities carried out in quality management field as well firms planning to adopt and implement TQM.

Keywords

Total Quality Management, Critical Success Factors, Small and Medium Scale Enterprises in India

1. Introduction

In the present market scenario, sustainability of a product depends on various internal and external factors. Among these factors, optimum quality level of the product plays a vital role in survival of the product. Quality does not have any single specific definition, it varies with the person defining it. Some say it is search of excellence or other may say it is perpetual persuading of perfection. Quality can be simply defined as the degree up to which a product satisfies the need of the potential customers. Some of the common definitions are elaborated below.

According to the American National Standards Institute (ANSI) and the American Society for Quality (ASQ), quality refers to: "The totality of features and characteristics of a product or service that bears on its ability to satisfy given needs". From Crosby view, quality is "Conformance to specifications" [9]. Juran also cited the definition of quality i.e. "Fitness for use" [23] and from Garvin point of view quality is the "Value for price paid" [14]. According to Ishikawa quality is the "Support service provided" [19]. In other words, quality is the ability of a set of inherent characteristics of a product, system or process to fulfill the requirements of customers and other interested parties.

After globalization in India, the introduction of foreign products of better quality and competitive pricing gave rise to the need of change in the structure as well as practices of Indian industries. After twenty three years of globalization, there have been indeed various changes in the Indian manufacturing sector for increasing

productivity and compete with the foreign competitors. One of the major changes to be involved in the current practices in the sector is the implementation of Total Quality Management.

Total Quality Management (TQM) has become more accepted as one of the decision-making tool in gaining continuous improvement so as to improve customer satisfaction and service quality, as well as, to ensure its competitive advantage. According to Lankard, TQM is a concept introduced by business and industry to establish standards and techniques that ensures the quality of products leaving and reaching firms through continuous action rather than through one final inspection [31]. According to Oakland, Total quality management (TQM) is an approach to improving the competitiveness, effectiveness, and flexibility of a whole organization. It is essentially a way of planning, organizing and understanding each activity, and depends on each individual at each level [37]. Total quality management is a holistic quality improvement approach to firms for the purpose of improving performance in terms of quality and innovation for the last two decades. Total Quality Management is an approach which focuses on improving the organization's effectiveness, efficiency and responsiveness to customers' and other stakeholders' needs by actively harnessing people's skills and competencies in the pursuit of achieving sustained improvements to organizational performance [29].

There is a false impression in Indian small and medium scale industry that TQM are necessary for large scale units and it is an avoidable expenditure. As the process of privatization and globalization has affected the Indian small and medium scale sector, the execution of TQM practices in this sector is the best way out for their survival. The idea and implementation of TQM shall be the device to compete with large scale firms and multinational companies. TQM is an integrative managing belief which highlights the need to improve the processes, goods and services to attain and get par with customer expectations. Total Quality Management (TQM) has been widely considered as the premeditated, planned and operational tool in the quality management research field. There is an immense eagerness among manufacturing industries in adopting and implementing this approach in order to continue their sustainable competitive lead.

Successful implementation of TQM in a firm can result in various benefits like enhanced worker participation, improved communication, increased production, improved quality and take away rework, reduced costs of poor quality, amplified market share and profit, higher flexibility, increased employees and customer satisfaction, and improved competitive benefit [16]. Micro, small and Medium Enterprises (MSMEs) are one of the most effervescent and responsive sectors in Indian economy. The significance of Micro, small and Medium Enterprises (MSMEs) is attributable to its ability of employment generation, low investment and technology requirement, use of conventional or inherited skill, use of local resources, mobilization of resources and exportability of products. Manufacturing Enterprises are engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation Act, 1951). The Manufacturing Enterprise is defined in terms of

investment level in plant & machinery, small scale industries have investment in range of fifty thousand to one million(US dollar) and medium scale industries with range of one to two million(US dollar) [3]. Small and medium sized enterprises (SMEs) form the backbone of any nation's economy. Nowadays, Indian government is emphasising much in the development of this sector for the growth of economy. Implementation of TQM in this sector can lead to a revolution in the working of the SMEs and enhance the working culture of the employees.

In the present paper, performance analysis of total quality management in small and medium scale industries is being carried out. The purpose of this study is to explore which and what type of quality management practices contribute more towards the desired operational performance goals for firms operating in India. The structure of the paper is as follows. The section-2 and section-3 discusses the findings from various literatures along with

the research methodology and data collection. Section-4 entails the data analysis part where as section-5 emphasizes the collected data and discuss the results of the study. Section-6 and section-7 focuses on the conclusion and future scope of the research respectively.

II. Literature Review

As Kanji pointed out, the way of life of an organization committed to customer satisfaction through continuous improvement varies from association to association and from one nation to another, but has certain values that can be implemented to protect market share, increase returns and lessen expenditure [24].

Taking the present work into account, the heart of this research was to get an understanding of the critical success factors of TQM and their impact on the working practices of SMEs in India. In order to get complete knowledge of the assumptions and practice, various studies were analyzed and examined.

Table 1: TQM Practices and Factors Affecting SMEs

Authors	Findings
Arawati Agusa and Za'faran Hassan (2011) [1]	TQM supports and accentuate production performance with increase the level of customer-related performance.
Anh Chi Phan , Ayman Bahjat Abdallah and Yoshiki Matsui (2011) [39]	To gain high competitive advantage factors like Leadership & vision, process management, and communication and information sharing are to be practised.
Cemal Zehira , Öznur Gülen Ertosunb , Songül Zehi and Büra Müceldili (2011) [45]	To achieve positive performance, firms have to give importance to leadership and customer service.
Gholamreza Jamali, Mehran Ebrahimi, Mohammad Ali and Abbaszadeh (2010) [20]	Top management commitment, strategic quality planning, process management and training, are drivers & respectively are significant.
S.Salaheldin (2009) [42]	Benchmarking, top management commitment, continuous improvement, costumer focus etc are Critical success factors (CSF) in TQM.
Massoud M. Arshida , Jalan Munshi Abdullah and Syed Omar Agil (2013) [5]	CSFs for TQM in Libyan Iron & Steel Company (LISCO) are: Leadership, Training, Supplier quality, Vision, Employee Involvement, Quality Recognition and Reward and Customer Focus.
Karoline Borum Jorgensen and Anne Fomsgaard Nielsen (2013) [22]	CSFs to be engaged in the observed analysis were Leadership, Customer focus, People management, Supplier quality management, Quality data & reporting and Process management.
S B Mallur and N L Hiregoudar (2010) [34]	Indicated crucial issues for organizations to consider, in areas found to be lacking like Leadership, quality vision, supplier selection, recognition, customer satisfaction evaluation etc.
Samir Baidoun (2003) [6]	Top management commitment and involvement, Employee involvement and empowerment, Continuous process improvement, using quality tools, customer dependable suppliers are factors.
Ozden Bayazita and Birsen Karpak (2007) [7]	Framework to identify the degree of effect of factors affecting TQM implementation and investigated the readiness of Turkish manufacturing industry to adopt TQM.
Boca Gratiela Dana (2012) [10]	Organization should be directed to customer satisfaction, continuous improvement of their services, company compliance requirements etc.
Cemal Zehira, Öznur Gülen Ertosunb, Songül Zehirc and Büşra Müceldillid (2012) [45]	TQM activities affect value and/or pioneering performance and also defining the effective components on these performance types.
Tiong Kung Leong , Norhayati Zakuan and Muhamad Zameri Mat Saman (2012) [32]	Practical and non-technical approaches in quality management have to be redefined and clarify so that simple theory of quality management maintenance can be uniform and enhanced.
Kuan Yew Wong (2005) [44]	Critical success factors (CSFs) for implementing knowledge management in small and medium enterprises (SMEs) are analysed.
ˆIsmah Osman, Husniyati Ali Wan Edura Wan Rashid and Kamauzaman Jusoff (2009) [38]	TQM will give an impact towards noteworthy returns, performance improvements, better cooperation and conclusion in services.
Romodan Mohammed (2005) [35]	For successful application of TQM, factors are categorised and what SMEs are lacking in implementing them are also highlighted in the given paper.

Dr. Sukhwinder Singh Jolly (2013) [21]	Increasing the efficiency of the SMEs and reducing the spending to enhance productivity and to remain competitive in the market is the key aim which TQM helps to achieve.
Shahab Alam Malik, Muhammad Zahid Iqbal, Razia Shaukat and Jia Yong [33]	Vendor connection and benchmarking were found to be most crucial determinants of non-financial performance followed by top management commitment, employee involvement and customers focus.
Raj Kumar, Dixit Garg and T.K. Garg (2009) [28]	Provides a direct approach to top administration to put into practice TQM programme through customer happiness as foremost centre area for improvement.
Antony et al. (2002) [4]	TQM implementation leads to Improved employee involvement, communication, productivity, customer satisfaction, efficiency and reduced costs of poor quality.
Gunasekaran, Forker and Kobu (2000) [16]	SMEs play a significant role in providing employment opportunities and supporting large-scale manufacturing firms in a nation.
Rajib Lahiri [30]	SMEs face competition from large industries due to lack of funds, lack of infrastructure, challenges on manufactured goods standardization, anti dumping policy, total quality management, poor management etc.
Muhammad Mubarak [36]	Spreading the culture of TQM and training employees. More attention to customer service by knowing their needs and get feedback. More attention to continuous improvement by simplifying the working procedures, the development and looking for the technology to improvise.
Janis Preide (2012) [41]	Nations are most engaged in quality management from perspectives of ISO recognizing quality management as tool for improving processes and rising competitiveness of the firm.

On the basis of the above literature review, our paper discusses the following research questions.

- What is the degree up to which various factors of total quality management are being followed in Indian small and medium scale industries?
- Do Indian industries satisfy with findings of researchers from other nations in successful implementation of total quality management in SME?
- Which factors or sub factors are to be prioritized from SMEs point of view in order to have better clarity in applying TQM in their organizations?
- What problems the industries are facing during application of TQM practices?

The objectives of our research are to

- Clarify the application of the principles of total quality management.
- Know the effectiveness of the application of the principles of TQM.
- Provide some of the findings and recommendations.

III. Research Methodology and Data Collection

After formation of research questions, ways to solve the problem were finalised. It started with development of the questionnaire and after survey was completed, various statistical tools like Flowchart, Cause-effect, or fishbone diagram, Pie/bar graphs, Histogram Pareto chart, Control charts was used to find out and justify the results obtained.

The questionnaire development was a very important part and utmost care was taken to keep this section as simple as possible. The questions were clearly laid out which made the respondents feel ease to be a part of the survey and give precious views on the working of total quality management in their respective firms.

The questionnaire is mainly divided into two sections:

1. Personal and organisational details of the respondents.
2. Factors affecting quality management practices in the SMEs.

Table No.2: Questionnaire Details

Topics	No of questions	Contents
General Information		
Personal details	4	Shows name, designation , educational qualification, experience etc
Organisational details	5	Firm name, workforce size, type of industry etc
Influencing Factors		
Leadership and vision	5	Indicates management view on quality improvement policy & plans.
Quality commitment	5	Shows quality in product design, review and feedback from experts.
Employee involvement	5	Meetings and encouragement of employees, quality circles

Customer focus	5	Customer feedback, programs to implement customer service etc
Continuous improvement	5	labels and signboards, waste elimination, etc
Process monitoring and control	5	Includes periodic audits, review of targets etc
Incentive and recognition system	4	Company certification, employees incentives etc
Fact based management	3	Quantitative techniques in process, training etc

The questionnaire was developed taking various considerations in account and the most important was not to harm the sentiments of the respondents. Purpose of our survey was to include all possible factors affecting total quality management in an organisation. After a few iterative reconsiderations, with reformatting and successive improvising in the questionnaire the final questionnaire was planned.

After final development of the questionnaire, field survey was carried out among various small and medium scale enterprises across different parts of India. Various lists of SMEs from different institutions like MSME department of India, Crisil rating agency, chamber of commerce, other associations and personal connections were the major sources for attaining information regarding the industries and forming the database. About two hundred fifty small and medium manufacturing firms were contacted for participating in the survey. Out of above firms, one hundred eighty firms who said they are trying to implement TQM in their firms, agreed to be a part of the survey and give their valuable opinion.

Based on review of literature, various critical factors affecting

total quality management were well communicated with the respondents and their response was incorporated in the survey. Respondents were asked to grade a variety of attributes under every factor on five point Likert scale. The Likert scale ranges from 1 mark for strongly disagree to 5 marks for strongly agree depending on importance. Likert scale has a unique odd number of choices where 3 marks stands for 'not sure' which allows to the respondent to dodge the question. After carrying out the questioning part, various problems which are being faced by the SMEs were discussed with the respondents. After the completion of the questioning part, different analysis has been carried out. It includes profile of the respondents and overall analysis, which represents successful indicators of factors affecting total quality management in the small and medium scale enterprises.

A. Profile of Respondents

The characteristics of the manufacturing enterprises are summarised further:

Table 3: Respondent's Sector Type

Type of industry	Number of firms
Rubber & Plastics	72
Electrical Equipments	36
Machinery & Equipments	30
Food Products	24
Others	18
Total	180

No of Medium scale Industries: 72

No of Small scale Industries: 108

Table 4: Number of Employees in Firm of the Respondents

Work force	Frequency	% of enterprises
0-20	36	20.00
20-50	78	43.33
50-100	42	23.33
100+	24	13.33
Total	180	100

Table 5: Respondent's Working Experience (in Years)

Work experience	Frequency	% of respondents
0-5 yrs	54	30.00
5-10 yrs	42	23.33
10-15 yrs	48	26.67
15+ yrs	36	20.00
Total	180	100

Table 6: Respondent's Educational Qualification

Qualification	Frequency	% of respondents
Post Graduate	48	26.67
Graduate	114	63.33
Under Graduate	18	10.00
Total	180	100

Table 7: Respondent's Job Profile

Job profile	Frequency	% of respondents
MD/GM/ PROPRIETOR	42	23.33
Manager/ Supervisor	90	50.00
Junior staff	48	26.67
Total	180	100

IV. Data Analysis

This section presents the detailed analysis of the data collected through questionnaire. One section focuses the fishbone diagram & descriptive statistics, where as another section entails the distribution pattern of respondent views based on questionnaire.

A. Fishbone Diagram and Descriptive Statistics

After the completion of the survey part, the above observation is analysed. From the analysis point of view, the factors which are taken into account are assembled in accordance to their effect on the performance of total quality management in small and medium scale enterprises. This is done by using the various quality control tools like flow chart, fishbone diagram, histogram etc. These factors are sorted out in accordance to their mean and their importance in the working habitat of the industries. After the sorting part is over, the view of respondents on the factors are analysed and which factors are to be taken into account for

improving the overall quality management are checked out. It has been also noticed that most of the firms take some steps to check the quality of their respective products but the overall coordination among the various departments is minimal which result in loss in productivity and hampering the total quality management practices in the organisations. The analysis which has been carried out in the process is described as below.

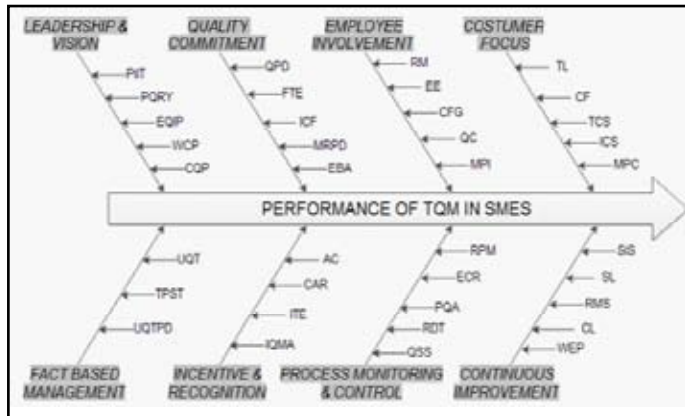


Fig. 1: (Fish Bone Diagram)

In Fig. 1, the various factors which are affecting the quality management practices are shown in a Fish bone arrangement. The fish bone analysis forms a simple structure interlinking various factors. The main frame is formed by the major factors where as the constituent factors form the tertiary support which is influencing the performance of the TQM in the SMEs in India. Fish bone diagrams also helps in identifying root causes of the quality failure and helps in diagnosing the problem as it provides an easy way to trace back the production path to implement the quality improvement practices in the overall management structure of the enterprises. As this quality management practices affect the overall productivity of the manufacturing firms, analysis of these individual critical success factors are being done to improve the quality practices of the firm and make the SMEs aware about their quality management policies.

On completion of the formation of basic structure of quality management practices, the actual statistical calculations of the factors are being done. Mean, median, standard deviation and variance of the influential factors along with their constituents are calculated. The outcome of the results is being shown in Table 8.

Table 8: Descriptive Statistics of Factor

Factor	Full Form	Mean	Median	Std.Dev	Variance
PIIT	Planning & implementing improvement techniques.	4.066667	4	0.827682	0.685057
PQRY	Focus on product quality rather than yield.	4.266667	4	0.691492	0.478161
EQIP	Company has an effective quality improvement plan.	4.3	4	0.702213	0.493103
WCP	Policies and plans are well communicated to the employees	4.333333	4	0.606478	0.367816
CQP	Company has a clear quality policy	4.4	5	0.770132	0.593103
QPD	Primary consideration of quality in product design	4.133333	4	0.507416	0.257471
FTE	Getting feedback from technical experts.	4.166667	4	0.698932	0.488506
ICF	Inclusion of customer feedback.	4.233333	4	0.727932	0.529885
MRPD	Multi-functional review of product /service design	3.866667	4	0.681445	0.464368
EBA	Ensuring benchmark activities.	3.5	3	0.820008	0.672414
RM	Organization of regular meetings.	3.966667	4	0.718395	0.516092
EE	Encouragement of employees	4.233333	4	0.568321	0.322989
CFG	Clarity and formality in goals.	4.066667	4	0.691492	0.478161
QC	Presence of quality circles.	3.633333	4	0.76489	0.585057
MPI	Management involvement in planning and implementing.	4.033333	4	0.718395	0.516092
TL	Integration of training lessons to work processes.	3.766667	4	0.85836	0.736782
CF	Inclusion of customer feedback.	4.333333	4	0.546672	0.298851
TCS	Techniques to determine customer satisfaction.	3.933333	4	0.784915	0.616092
ICS	Program to implement customer service.	3.933333	4	0.691492	0.478161
MPQ	Top management involvement in planning quality.	4.333333	4	0.660895	0.436782
SIS	System on item segregation.	3.566667	3	0.897634	0.805747
SL	Signboards and labels.	4.066667	4	0.784915	0.616092
RMS	Records management system.	4.133333	4	0.571346	0.326437
CL	Cleanliness.	4.233333	4	0.568321	0.322989
WEP	Programs on waste elimination.	4.633333	5	0.614948	0.378161
ECR	Employee compliance to regulations	4.133333	4	0.681445	0.464368
RPM	Adoption of repair and preventive maintenance.	4.1	4	0.711967	0.506897
PQA	Periodic quality audits.	3.6	3	0.894427	0.8
RDT	Review of departmental targets.	3.933333	4	0.784915	0.616092
QSS	Quality as primary consideration in supplier selection.	4.3	4	0.466092	0.217241
AC	Application for ISO 9000 certification	4.366667	5	0.808717	0.654023
CAR	Company application for recognition.	4.266667	4	0.73968	0.547126

ITE	Incentives to employees.	4.1	4	0.607425	0.368966
IQMA	Involvement in quality management association.	3.7	4	0.876907	0.768966
UQT	Utilization of quantitative techniques in process.	3.7	4	0.794377	0.631034
TPST	Training on problem-solving techniques.	3.7	4	0.749713	0.562069
UQTPD	Utilization of quantitative techniques in production design.	3.8	4	0.886683	0.786207

From the above statistics, the influencing factors are again shown in fig. 2, where these factors are arranged in a flow chart in accordance to their importance and impact on total quality management practices in the small and medium scale enterprises. It is apparent from the chart that leadership and management vision with a mean value of 4.273333 plays the most vital role in functioning of quality management practices in the firms. For successful implementation of TQM leadership is very much important and the maximum enterprises have good management policy.

Now a days, enterprises are also taking utmost care in implementing continuous improvement plans in their production structure to make maximum use of man, machine, and material. Quality commitment and employee involvement also form critical success factors during implementation of TQM practices in SMEs but these factors are somehow sided by most enterprises

and these factors has to be improved in order to have successful implementation of TQM. Most of the respondents from the firms also feel that fact based management (mean = 3.73333) is not worrying their working practices although it act as an important link in functioning of total quality management in the SMEs.

The flow chart of the factors shows that Indian small and medium scale industries are also following the same type of TQM structure as followed by their counterparts in other parts of the world. Indian SMEs are trying to satisfy with the findings of various research scholars regarding various critical factors like satisfaction of customer, effective participation of management and employees, incentives and reward schemes, communication system, supplier's power, statistical quality control, fast result techniques, quality arrangement and cost involved, systematic techniques etc.

After the overall study of the critical success factors, individual analysis of the factors is being carried out and recommendations are made.

B. Distribution Pattern of Respondent Views

In this section, the distribution pattern of the views of the respondents on the factors is being examined. With the help of graphs and histograms, the quality management practices carried out in the enterprises is being revealed.

From fig.no.3, the inference done from the data is as follows. Maximum 70% of the respondents strongly agreed on the program of waste elimination practices occurring in their respective firms and utmost 73.33% of participants simply agreed with the factor that quality is considered as a major criterion while designing a product. About 50% of the respondents were not sure whether their respective firms have any proposal on the factors like item segregation and ensuring bench mark activities. Maximum 10% of participants disagreed with the factor that their firm takes necessary steps in planning and implementing improvement techniques during production in their firms. Now taking lowest into account, only 13.33% of the respondents strongly agreed with the factors such as ensuring benchmark activities, quality circles and regarding training on problem solving techniques among the employees. Only 23.33% of the participants agreed with application for ISO certification, waste elimination programs and item segregation.

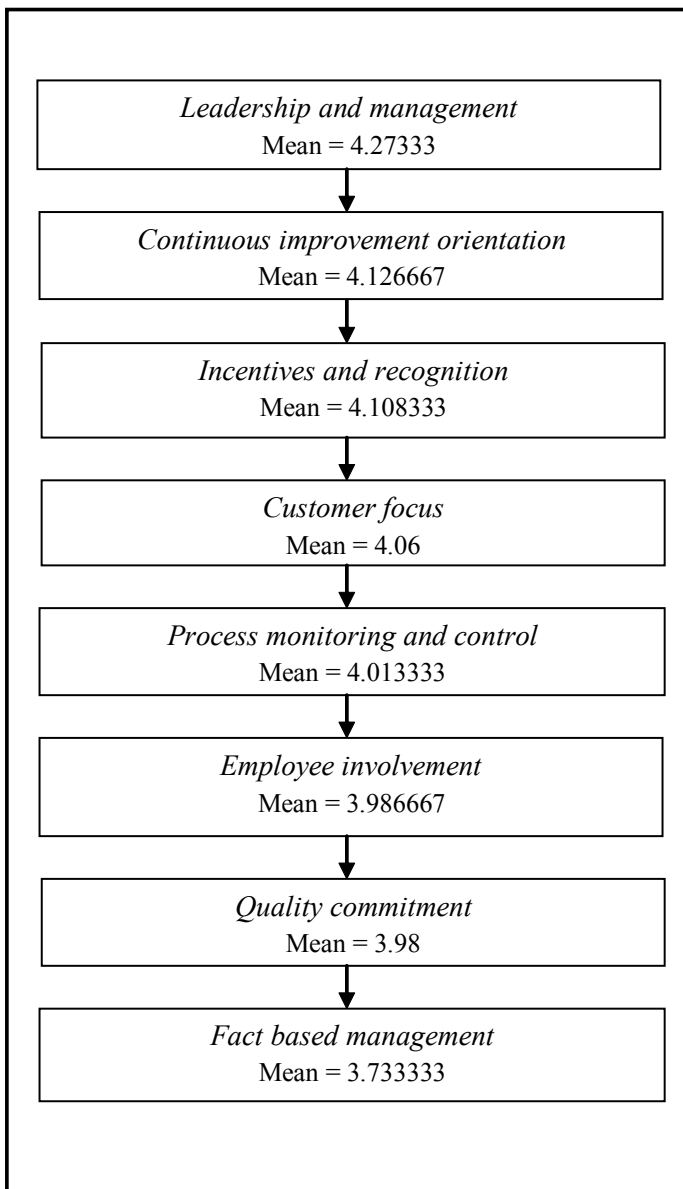


Fig. 2: (Flow Chart of Major Critical Factors)

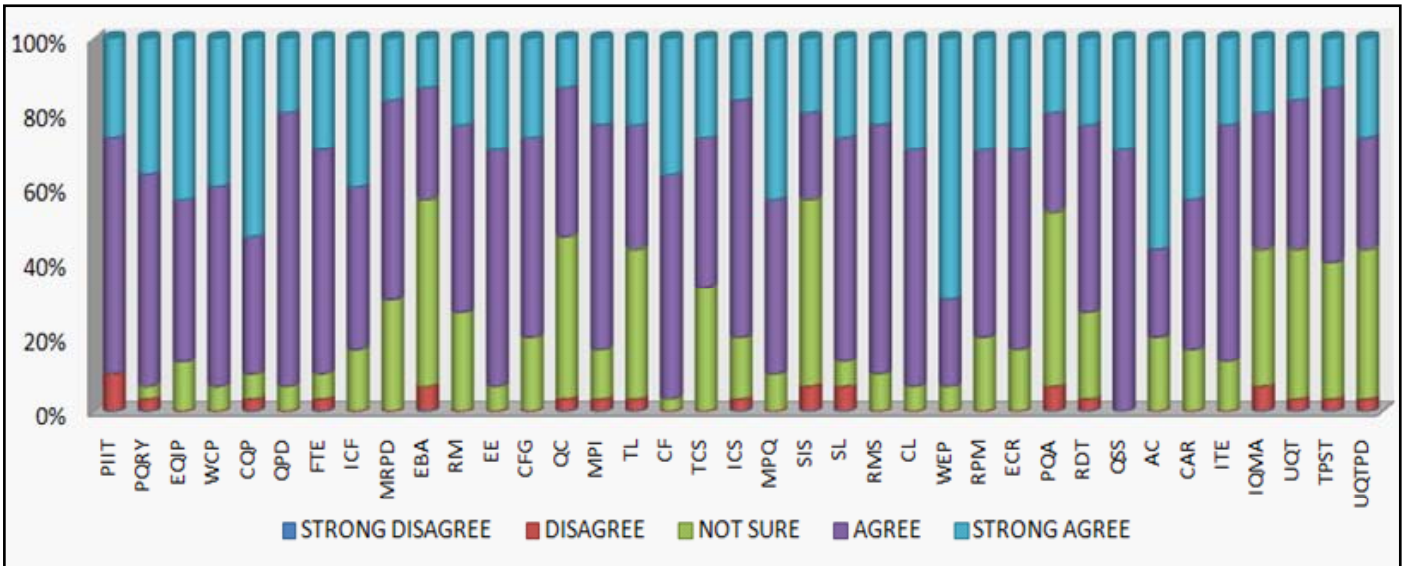


Fig. 3: (Survey Results of Different Practices of TQM)

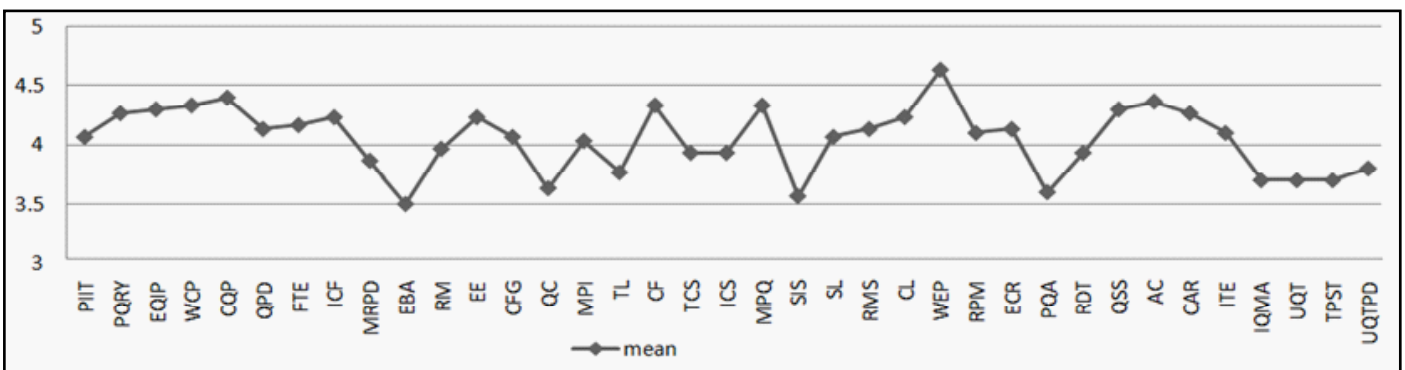


Fig. 4: (Mean Distribution of Sub Factors)

From fig.no.4, it can be clearly seen that the factor WEP i.e. waste elimination program has the highest mean value of 4.633333. On further breakdown it is shown that about 70% of participants strongly agreed and 23.33% agreed while nobody disagreed with this factor. Now the factor with minimum mean value of 3.5 is EBA i.e. ensuring benchmark activities where maximum 13.33% of respondents strongly agreed and 30% only agreed with it. On contrary, 50% of the participants were not sure of this factor prevailing in their firms. The mean of all the factors is found to be 4.035208, factors with individual mean value smaller than that of the sample are taken into account and what steps are to be taken to inflate their number are discussed further. In the next section, top and bottom five individual sub factors affecting the total quality management practices in the SMEs are discussed.

V. Results and Discussion

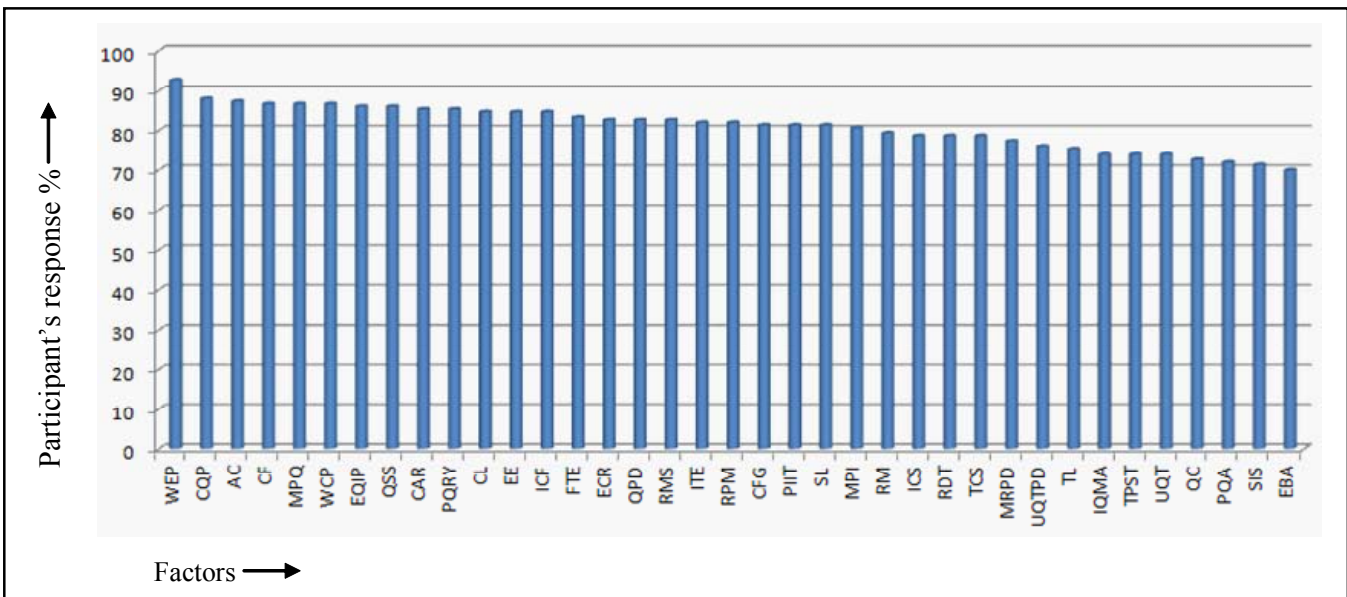


Fig. 5: (Paretopgraph of Sub Factors)

In the fig. 5, Pareto analysis of the factors has been carried out where the factors are arranged in a descending manner with respect to their effect on total quality management in the small and medium scale industries. From the above chart top and bottom five factors are chosen and are further discussed.

A. Programs on Waste Elimination

The statistical information implies that almost all enterprises take necessary precaution to stop wastage of resources which is a good sign of management but there are few constraints. In accordance to the views of the respondents, firms take steps to minimise wastage during actual production but some of the processes used during the waste elimination practices are not very much environmental friendly. So more sustainable and modern methods must be used to make the waste elimination practices eco friendly and economical in long run.

B. Company has a Clear Quality Policy

About 80% of the participated have a dedicated quality control unit in order to check their products after production and are confined to their quality policy. Here the management should take steps to implement total quality management practices. Instead of checking the product quality after production, quality checks must be carried out from the very beginning design phase to the actual production phase of the product. It will not reduce the product failure rate but also enhance the total productivity of the firm. Quality policy of the firm should also be well communicated among the employees and customers.

C. Application for ISO Certification

A major drawback for the SMEs in India is failure of products in comparison with their international counterparts. So in order to compete with international standard a major number of enterprises are opting for ISO certification. Firms should take necessary steps to standardise their product and make their products more reliable. Initially it may seem as an extra cost which can be avoided but ultimately it will lead to better productivity and increase the profitability of the enterprise. ISO certification will also make them more aware of the quality practices prevailing all over the world.

D. Customer Feedback

Customer always forms the pinnacle in any structure of an organisation. A product is always designed in accordance to the requirements of the consumers with a motto of satisfaction to the customer. So feedback from the customer is very vital for a successful implementation of quality management. Feedback from the customers helps them to evaluate their performance during making of the product. Inclusion of feedback helps the firm to re-examine their product and helps them to take any decision for any future modifications in their products.

E. Management involvement in Planning & Implementations

The triumph of a quality improvement program depends much on commitment of the top management and their vision to implement them. Management should clearly communicate their quality goals to their employees and make understand on how to achieve the goals clearly. Clear planning is essential for the management to implement these quality improvement programs in their organisation. These programs and planning increases the cost of production marginally but ultimately it can lead to better

functioning of the firm.

F. Utilization of Quantitative Techniques in Process

The process of quality practices is not about checking the final product only rather it is a complete coordination among all the departments. Quantitative techniques are a part of fact based management where management use various techniques like graphs, charts, flowcharts, forecasting etc for better production rate. But as seen in the SMEs, less care is taken in the process management and more importance is given to final output. This type of culture should be avoided and better mode of production must be prevailed. Industries should avoid the old model of calculations with presumptions and apply new quality improvement techniques.

G. Presence of Quality Circle

Quality circles are generally formed in large scale industries where small groups of trained professionals are responsible for checking and controlling the quality practices in various departments. They work as a team with coordination among themselves. In case of small and medium scale industries, due to less financial capacity presence of quality circles are avoided. So it gets difficult to identify and rectify a mistake which results in confusion with decrease in productivity. Quality circles should not limit to only large scale firms rather SMEs must adopt it.

H. Periodic Quality Audit

For an enterprise, financial audit helps to know their economic status where as quality audit helps to enhance the overall working condition. Periodic quality audits are very much essential in diagnosing the health of the firm as early detection of any problem restricts the firm incurring huge loss in future. The flowchart of quality audit starts from procuring raw materials to the completion of the product along with the feedback from the customer. So SMEs should adopt quality audit in their management practices.

I. Item Segregation

Item segregation form an important part of during practising of TQM in small and medium scale industries. It somehow refers to being separated from others. As the name suggests, it can be production of different types of goods so that disturbance in one product can be managed with the other product or in order have an edge over competitors unique products are to be produced. So, the Indian SMEs should give an eye to this factor in order to sustain in the business.

J. Ensuring Benchmark Activities

A benchmark activity refers to the comparison of firm's product with their competitor products. Here a minimum quality level that is to be achieved is fixed and the products manufactured are made at par or above this level. But in case of SMEs, it is seen that not much care is taken in this matter and products are made only to meet the customer demand. It is one of the major reasons for the failure of Indian products in international markets as most products fail to qualify the quality tests. SMEs in India should be aware of the quality standards of their counterparts.

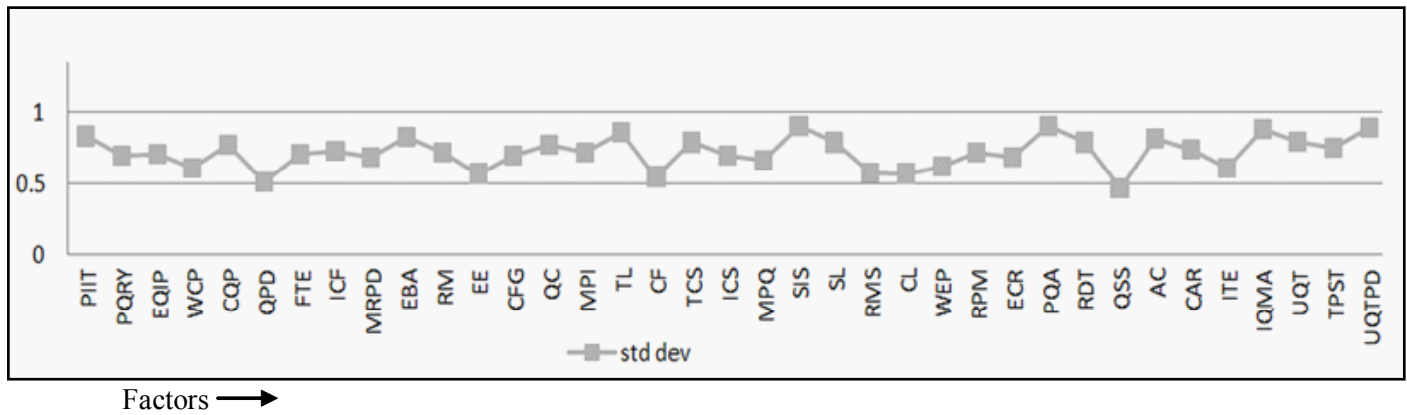


Fig. 6: (Standard Deviation Chart)

After discussing the various sub factors above, now the standard deviation of all the factors are related to check whether the findings are acceptable or not and at last problems faced by SMEs for application of TQM are highlighted. Standard deviation act a great statistical tool to check the reliability and acceptability of the results found from the data collected. From fig no 6, it can be explained that the std. deviation of all the factors are in the range of 0.5-1. This shows that the results obtained do not deviate largely from the findings of the survey. As the graph indicate most of the participants agreed with the factors affecting total quality management practices in their organisations. Major amount of care is being taken to implement TQM practices in the firms by the respective management team.

1. Problems in Application of TQM in SMEs

Total quality management is vital for a firm to compete and sustain in the business and now they are takings necessary actions to implement this practices in their institution. But these firms are also facing some difficulties during application of quality management practices and after discussing with the participated respondents some of the problems are highlighted below.

- Change in working culture is a slow process and sometimes the top management behave arrogantly towards quality issues.
- Due to less financial support and lack of resources, it is difficult for the firms to implement better quality management approaches.
- Over burden of work on the employees due to limited size of workforce leading to disturbed working habitat.
- Lack of innovation in product and process also tends to lower the productivity
- Lack of patience in top management prevails and they should understand that TQM implementation requires some time to show its fruitfulness.

VI. Conclusion

In the present market scenario of high competitiveness and fluctuation, manufacturing industries are greatly relying on cost savings where total quality management gives a platform to achieve this cost cuttings measures. The main theme of this study was to recognize the critical success factors of TQM practices in Indian SMEs and the survey conducted within SME's provides encouraging feedback in accordance to the quality practices prevailing in their organisations.

By using various problem solving tools like fishbone diagrams, histograms, and pareto graph etc, the results inferred from the questionnaire survey is that the Indian small and medium scale

manufacturing enterprises are trying cope with new quality management practices to increase the productivity. The study also satisfies the findings of various research scholars regarding TQM application in SMEs in other parts of the world. On a broader picture, it can be said that leadership and top management vision paves a path for the quality practices to execute in the firms with a clear quality policy. Customer focus is also vital for a SME to sustain and proper care is to be taken to provide adequate service and have feedback from the customer. Continuous improvement programs with recognition and incentives to employees are also prime consideration of the management which the survey showed but at the same time Indian SMEs are trailing behind with the factors like Fact based management, employee involvement etc. The above factors should be given more stress to improve the productivity of the firms. The results indicate that total quality management holds the key to achieve competitive advantage in Indian manufacturing firms. Different components such as utilization of quantitative techniques in process, benchmarking activities, periodic quality audits, item segregation, quality circles, involvement in quality management association, training to employees should be strengthened to create a better quality management environment in the SMEs. The study presented here will help the production and top managers in identifying the areas in which they need to focus their attention in order to improve the total productivity of the firm along with improved customer satisfaction and resource utilization.

VII. Scope for Future Work

The thesis is subject to the common limitations of survey research. The study applies perceptual data provided by the working respondents of the firms, which may be biased. The study can also be applied to a more number of manufacturing firms to quantify and justify the results obtained from the SMEs. As TQM is a complete approach to improve the quality of the firms, the survey should also include stakeholders, customer's reaction towards working of the firm. When the possibility of extracting complete and comparable objective data for the organizations under observation is present, it is thus recommendable for further research to complement the analysis with objective data.

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