

# **Total Quality Manager (TQM) Factors Effects on Large Scale Industry.**

Shraddha Sahu<sup>1</sup>, Ajit Rathod<sup>2</sup>

1. MTech in PEED, Department of Mechanical Engineering, Sagar Institute of Research and Technology, SAGE University, Indore.
2. Guide, ASST. Prof. Department of Mechanical Engineering, Sagar Institute of Research and Technology, SAGE University, Indore.

---

## **Abstract**

TQM implementation is necessary process for all organisation and business to achieve desirable goals in less effort and on less time. Methods are going in right path is helps to achieve goals in short time an integrated organisation is chosen for survey to check which TQM factor is implemented carefully and which one is lagging in a particular organisation. Survey is done in a famous steel industry in Bhilai, Chhattisgarh. 500 responders are taken for best results. After surveying and data collection from all type of employees involving supervisors, and calculating the responds most of the employees thinks total customer satisfaction is best implemented on organisation and employees involvement is not so good.

**Keywords:** Total Quality Management, Critical Success Factor, TQM Factors

---

Date of Submission: 25-05-2022

Date of acceptance: 05-06-2022

---

## **I. INTRODUCTION**

Various definitions of total quality management present in many websites and books. Although wordings are change but meaning are same of all definition. There is the summary of all of that –Total Quality Management is a working method or process in which a industry or business or any organisation can improve their management and quality of product by training of their workers or improve the working culture or the system of working by management the factors of organisation for resulting better quality and products for fulfil the needs of customers by increasing the quality of the delivered product or provide the best service to customer. Total quality management describes a management approach to long term excess through customer satisfaction. In organisation, total quality management is effort of members of an organisation in manufacturing and improving process, planning, resources, time, capital is same work environment in what they work.

### **Objective of Research:**

Aim of this research process is to study TQM factors

- I. Which TQM factor can effect the production of the company
- II. Which TQM factor is applied properly to the industry.
- III. How can eliminate lagging TQM factor.

## **II. LITERATURE REVIEW**

### **ELEMENTS OF T.Q.M.**

These elements can be divided into four groups according on their function:

1. First part-- ethics, integrity and trust.
2. Second part –Training, teamwork and leadership.
3. Third part – communication
4. Fourth part – recognition

TQM form from philosophies of TQM leaders that gives above points.

1. Ethics

It is type of disciple that defines the good and bad activity in responding on the situation. This is like one rule or setup that decide the behavioural ethics of all person. A system ethics comity design their guidelines for employees so that they can trust for justice for all person when they are in trouble, it also includes personal rights.

2. Integrity

Integrity shows morals, values, honesty, fairness, loyalty and sincerity for their work. The characteristics of integrity as to be always honest to internal customer as well as external customer. Always show realistic integrity not in duplicity.

3. Trust

Trust is always outgrowth of the integrity and ethical behaviour. In absence of trust in each other TQM is not applied. Without trust, person under or related to company can't work properly. It also gives a pride of ownership and empowerment to encourage persons under yourself.

Strong foundation of TQM is trust, integrity and ethic. Now its turn to next important level

4. Training

Training is very necessary element to workers or employees to become very efficient and more productivity. Which gives high quality product. Persons in high level comity is overall responsible for training and working or product knowledge. So, they can minimise the mistakes. Training to employees are build up personal skills like job management, decision making problem solving, Technical skills, performance improvement and analysis.

5. Teamwork

Teamwork is a key point for company, some persons work together and work is also minimise and quality increases. Problems are solve easily and many suggestions, idea are also came that can be very useful for organisations for improvement.

In TQM there is three types of teams needed they are –

A. Quality improvement teams or excellence teams ( QITS )

This is a short period team which deals only with the specific problems and team members should have professional knowledge of that particular area. There time period will be three months to twelve months.

B. Problem solving teams ( PST )

These are also not permanent teams make to solve some problems and identify the problem and also find the cause of problems. There time period will be one week to three months.

C. Natural work teams (NWT )

These teams have very efficient and skilled workers. Which take care of employee training teams, Self managing teams. This team work for only two hours in a week.

6. Leadership

It is possibly the most important element in TQM. It appears everywhere in an organization. Leadership in TQM requires the manager to provide an inspiring vision, make strategic direction that are understood by all and to install value that guide subordinates.

7. Communication

Communication should bind everything by explain their thoughts together. From labour to manager so from starting of production line to end of line, from foundation to roof all persons, processing lines, all steps are bound with binding mortar called communication. Communication means a common understanding of ideas and thoughts between the sender and the receiver.

There are three different ways of communication :

I. Downward communication – this is dominating form of communication in an organization. Supervisors do this type of communication to their employees. To make clear to their employees.

II. Upward communication – in this type of communication labour or lower category employee tell the problems or accidents or any incident or complaints so that the higher level supervisors get the knowledge and fix the problems or mistakes. As employees provide any constructive criticism, supervisors must listen effectively to correct the situation. It generates the trust between supervisors and employees.

III. Sideways communication – this type of communication is allow to make conversion between customers and supplier. And also for the employees to each other and higher level supervisor to lower level employees.

8. Recognition

It is the last and final element in the entire system. It joins all above points to each other.. As people recognized in company or old employees to some different post or some good quality or knowledge to different department, it is very difficult to choose for that kind of changes to increase productivity and encourage the employees for their work. Recognition works when it act immediately for an employee performance. It also been done by giving some gifts, trophies, medals or giving award banquet parties.

Places- achiever or better performer give recognition in front departmental members or in front of supervisors and top management persons.

Time – on time of meeting or in award functions or in some special day, etc.

So when we conclude and make discussion, we have some elements; ethics, integrity, trust, training, teamwork, leadership, communication and recognition. By applying this elements any organisation can apply TQM in better manner for increasing productivity and take better output from employees.

Supervisors play important role for combining employees and top management in productive way. Supervisors take order from high level authorities and order lower level employees to do work and complete task of an organisation.

TQM involves trust, integrity, ethics it is very important elements for gaining trust of customer. Training is important for the knowledge of the work and working important. Leadership is important for making decision and for giving work to the employees. Communication is important for giving instructions and also for employees to take their opinions to the management. And recognition helps to cheer the employees to take work from them, also to give credit for a particular achievement or for new enhancing the system.

**Likert Scale:** Its psychometric scale commonly involved in research that employs questionnaires. The scale is named after its inventor, psychologist Rensis Likert. Likert distinguished between a scale proper, which emerges from collective responses to a set of items (usually eight or more), and the format in which responses are scored along a range. When responding to a Likert item, responders specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. As such, Likert scales have found application in psychology and social sciences, statistics, business and marketing.

### III. METHODOLOGY

From literature Review, it is conclude that there are some factors that effect TQM implementation on industries. For survey Large and integrated industry is selected for checking which factor is implemented fully and which factor is lagging from others. Steel plant in Bhilai Chhattisgarh is chosen and surveying process is performed. Total 500 persons are respondent and involve in this process. They are workers/ general employees and some supervisors.

By using Likert scale the Questionary is prepared some factors and Likert option is on questionnaire. The critical success factors of Total Quality Management which are effect the TQM implementation in an organisation. They are:

1. Leadership
2. Organizational structure
3. Planning
4. Training and education
5. Communication
6. Teamwork
7. Employee involvement
8. Continuous improvement
9. Measurements and evaluation
10. Customer focus
11. Total customer satisfaction.

**Steps of surveying:**

1. First select the firm/organisation which allow to research on an organisation.
2. Apply for permission to get entry in the firm or known connections in the firm.
3. Prepare questionary on data collection process.
4. Distribute the questionary paper.
5. Collect the paper after sometime/ day.
6. Start sectioning of data as per needs
7. Make data table, graphs and calculation.

These are the basic steps of the any surveying. After following these steps data are made in form of table.

**Table 1: respondent’s opinion on TQM factors applied on industry by using Likert scale.**

TQM Factors	Strongly disagree	Disagree	Neutral/ Don't know	Agree	Strongly Disagree
Leadership	8	15	85	280	112
Organizational structure	17	19	52	189	223
Planning	5	13	19	141	322
Training Education	0	20	50	200	230
Communication	8	23	25	350	94
Team work	18	31	20	282	149

*Total Quality Manager (TQM) Factors Effects on Large Scale Industry.*

<b>Employee involvement</b>	20	18	56	333	73
<b>Continuous improvement</b>	13	24	62	197	204
<b>Measurement and evaluation</b>	7	14	28	150	301
<b>Customer focus</b>	0	26	22	153	299
<b>Total customer satisfaction</b>	3	17	9	69	402

**Table 2: respondent’s opinion on TQM factors applied on industry by using Likert scale. In percentage (%).**

<b>TQM Factors</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral/ Don't know</b>	<b>Agree</b>	<b>Strongly Disagree</b>
<b>Leadership</b>	1.6%	3%	17%	56%	22.4%
<b>Organizational structure</b>	3.4%	3.8%	10.4%	37.8%	44.6%
<b>Planning</b>	1%	2.6%	3.8%	28.2%	64.4%
<b>Training Education</b>	0%	4%	10%	40%	46%
<b>Communication</b>	1.6%	4.6%	5%	70%	18.8%
<b>Team work</b>	3.6%	6.2%	4%	56.4%	29.8%
<b>Employee involvement</b>	4%	3.6%	11.2%	66.6%	14.6%
<b>Continuous improvement</b>	2.6%	4.8%	12.4%	39.4%	40.8%
<b>Measurement and evaluation</b>	1.4%	2.8%	5.6%	30%	60.2%
<b>Customer focus</b>	0%	5.2%	4.4%	30.6%	59.8%
<b>Total customer satisfaction</b>	0.6%	3.4%	1.8%	13.8%	80.4%

**Calculations:**

**Table 3: Number of scale**

Strongly disagree	1
Disagree	2
Neutral / don't know	3
Agree	4
Strongly disagree	5

Mean –

- Leadership :  $1*8+2*15+3*85+4*200+5*112 / 500 = 3.94$ .
- Organizational Structure :  $1*17+2*19+3*52+4*189+5*223 / 500 = 4.164$
- Planning :  $1*5+2*13+3*19+4*141+5*322 / 500 = 4.524$
- Training education:  $1*0+2*20+3*50+4*200+5*230 / 500 = 4.28$
- Communication:  $1*8+2*23+3*25+4*350+5*94 / 500 = 3.998$
- Teamwork:  $1*18+2*31+3*20+4*282+5*149 / 500 = 4.026$
- Employee involvement:  $1*20+2*18+3*56+4*333+5*73 / 500 = 3.842$
- Continuous improvement:  $1*13+2*24+3*62+4*197+5*204 = 4.11$
- Measurements and evaluation:  $1*7+2*14+3*28+4*150+5*301 / 500 = 4.4488$
- Customer focus:  $1*0+2*26+3*22+4*153+5*299 / 500 = 4.459$
- Total customer satisfaction:  $1*3+2*17+3*9+4*69+5*402 / 500 = 4.7$ .

**Table 4: Ranking of TQM Implementation from above Calculation**

<b>TQM factor</b>	<b>Mean</b>	<b>Ranking</b>
<b>Leadership</b>	3.946	10
<b>Organizational structure</b>	4.164	6
<b>Planning</b>	4.524	2
<b>Training education</b>	4.28	5
<b>Communication</b>	3.998	9
<b>Teamwork</b>	4.026	8

<b>Employee involvement</b>	3.842	11
<b>Continuous improvement</b>	4.11	7
<b>Measurements and evaluation</b>	4.4488	4
<b>Customer focus</b>	4.459	3
<b>Total customer satisfaction</b>	4.7	1

**Result:**

All TQM factor is important but some factors are focused more and some are less. By doing above data collection and calculation, it is shown that TQM factors are applied on industry and running it smoothly but, respondents have different opinion on TQM implementation. Some respondents disagree and agree and also have neutral opinion or they don't know about TQM factors that are followed in industries. All have different choices and different though on working condition of the plant or some different organisation.

- On total customer satisfaction responders are strongly agree with 80.4%, agree with 13.8%, doesn't know 1.8%, disagree with 3.4% and strongly disagree with 0.6%.
- From above calculations and with data given by employees most of the people thinks total customer satisfaction is best implemented on organisation and employee involvement is not so good because Managers and leader order them and they have to follow.

**IV. CONCLUSION**

This dissertation is a study report of TQM factor implementation on integrated industry where all employees are connected and dependent on each other's work and also help each other work create a successful firm from the above result, the conclusion are following:

- From principles and philosophy some points are obtained for examine the TQM implementation which are basic and important points from which any organisation can increase its service to customer.
- According to data findings most of the people satisfy with their work goal of customer satisfaction which is mandatory for any firm or organisation.
- Other factor have average score of rating but, all factors are apply here properly and give a stable organisation with highest annual turnover.

**V. FUTURE SCOPE**

- With the help of this data other industry would be compared with other big or small firms.
- More factors are compared and evolve by this study. Taking it base more research work is done by doing other big industry and check which TQM factor is more focused on that firm.

**REFERENCES**

- [1]. Amit A. Patel, Seth G.L. Bihani S.D College of Technical Education Institute of Pharmaceutical Sciences and Drug Research, Sri Ganganagar, Rajasthan, INDIA., Refrence ID: PHARMATUTOR-ART-1553; Concept and Philosophy of Total Quality Management; articles/concept and Philosophy of Total Quality Management, 13 Dec 2012; isixsigma.com/index.php?option=com\_k2&view=item&id=1333:the-eight-elements-of-tqm&Itemid=179. on website; <https://www.pharmatutor.org/articles/concept-philosophy-total-quality-management> .
- [2]. Pdca/ luchidchart/ blog how to apply pdca ; Posted by: Lucid Content Team PubMed.gov. "Application of Kaizen Principles to a Large Cochlear Implant Practice: A Continuous Quality Improvement Initiative at Mayo Clinic." Accessed June 3, 2021. FXSSI. "TOP 10 Most Profitable Companies in the World in 2021." Accessed June 3, 2021. Macrotrends. "NIKE Market Cap 2006-2021 | NKE." Accessed June 3, 2021. Smartsheet. "A Quality Principle: Everything You Need to Know about Total Quality Management." Accessed June 3, 2021. Investopedia.com pdca article. By MARSHALL HARGRAVE Updated June 03, 2021. on website; <https://www.investopedia.com/terms/p/pdca-cycle.asp> .
- [3]. Dale,B.G and Lascelles,D.M(1997) Article publication date:1 December 1997 emerald insight/ Journal. Dale,B.G and Lascelles,D.M(1997), "Total Quality Management adoption: revisiting the Levels", the TQM magazine,vol.9 No.6,pp.418-428. <https://doi.org/10.1108/09544789710186957> and <https://www.emerald.com/insight/content/doi/10.1108/09544789710186957/full/html>.
- [4]. Dale, B. G. and Lightburn, K. L. (1992), Continuous quality improvement: why some organisations lack commitment. International Journal of Production Economics, 27(1), 57–67.
- [5]. Deming, W. E. (1982), Quality, Productivity and Competitive Position. Massachusetts: MIT Press.
- [6]. Zhang Zhihai, Implementation of Total Quality Management An Emperical Study of Chinese management firm.pdf, dec12, 2000.
- [7]. "Total Quality Management" wiley.com/college/sc/reid/chap5.pdf.
- [8]. "Concept of Total Quality Management" dissertation.ub.rug.nl/files/faculties/ management/2001/z.zhang/c2.pdf.
- [9]. "TQM Consultant - Training Article" training management.info/pdf/ TQM%20 training.pdf.