TQM CONSEQUENCES IN MANUFACTURING SECTOR

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ABSTRACT

Manufacturing industries are trying hard to use many means to uplift the quality. In present research paper, Total Quality Management (TQM) is considered such mean and an attempt is done to determine the manner for its adoption in Indian context. A detailed survey has been used to find out the exact use of the TQM factors in the Indian organisations and that shows the role of the top-managements is very effective and express the concept of the TQM (i.e. 87.32%), whereas some areas are not in full use. Further model has been formed for measuring pertinent ideas, pointers and guidelines.

KEYWORDS: Manufacturing Organizations, TQM Effect, India

The extensive competition to stay in the business, rapidly changing customer needs and expectations requires improvised products quality. The products quality and their related characteristics are widely based upon the organization's capability to utilize its all resources in an optimal manner. So, search for a compromise decision to meet organizations' objectives are on where various approaches are available to meet and measure them better. Numerous academicians, researchers, professionals have considered Total Quality Management [TQM] as that very approach after realizing its significance.

Few out of many benefits of TQM mentioned by various researchers are as such:

1. Improved competitive position.
2. Increased profitability.
3. Less scrap and reduced wastage.
4. Less scrap and reduced wastage.
5. Successful new product launch.
6. Increased productivity.
7. Increased quality.
8. Empowerment of employees.
9. Employees feel confidence.
10. Gain in positive attitude.
11. Increased team work.
12. Cleanliness, proper use of space.
13. Satisfied internal and external customers.
14. Revenue improvement.
15. Operational improvement.

Benefits ultimately culminate to a radical change in performance standard of the organisation and ensure continued growth in a competitive market situation. Total quality management prepares the organization to integrate all its activities and functions in all respects, and at various levels, for total quality effectively. Thus TQM is; continuous improvement activities, involving everyone (managers, workers and all other resources) in the organization.

RESEARCH OBJECTIVE

To suggest a comprehensive framework for adopting the factors for successful implementation of Total Quality Management.

METHODLOGY

The plan of the research paper is given in figure 1.

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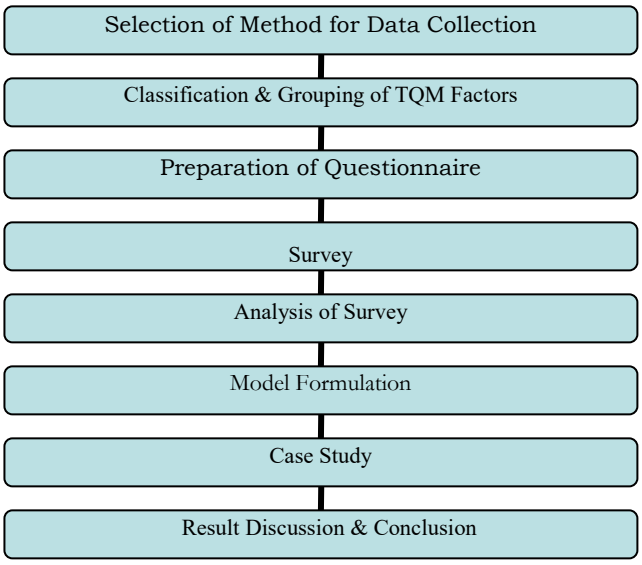

Figure 1: Work Plan

Data Collection

Analytical type of research method is used in designing and developing the questionnaire by collecting the secondary data over available facts or information by literature review. In this way, total thirty factors of importance are listed and are divided into ten groups for detailed research as given in table 1. The factors grouped according to their similarity of impacting on Total Quality Management implementation in industries.

Further, primary data is collected by using questionnaire based survey approach which is given in the annexure.

Survey

The Questionnaire was specially designed having ten questions for each group with objective to prepare a model of Attentiveness to the Groups of Factors and was sent to forty one industries where respondents were requested to give the response in terms of Yes/No for each question.

Table 1: Distribution of factors of TQM in various groups

Managements' effective participation	Top management leadership and commitment, Continuous improvement, Working environment, Seven management tools
Group-II **Employees' effective participation**	Total employee involvement, empowerment, Small group activities, Quality circle, Team work, Suggestion and schemes, Education and training
Group-III **Customers' power**	Customer focus and satisfaction
Group-IV **Reward schemes**	Recognition and rewards
Group-V **Communication system**	Feed back system,
Group-VI **Vendors' power**	Vendor Development
Group-VII **Statistical quality control**	Statistical process control, Daily process management, Seven quality techniques, Taguchi method, Zero defect
Group-VIII **Fast result techniques**	Just in time, Business process re-engineering, Bench marking, Quality function deployment, Total productive maintenance, House keeping
Group-IX **Quality planning and cost involved**	Quality process planning, Cost of quality
Group-X **Analytical techniques**	Design of experiment, Failure mode effect analysis

Survey results and analysis

Table 2 shows the results of Survey.

Table 2: Composite score for various groups (Respondents = 41)

Group	Score
G-I-Managements effective participation	358
G-II-Employees effective	320
G-III-Customers' power	344
G-IV-Reward schemes	237
G-V-Communication system	241
G-VI-Vendors' power	254
G-VII-Statistical quality control	304
G-VIII-Fast result techniques	350
G-IX-Quality planning and cost involved	279
G-X-Analytical techniques	218
TOTAL	2905

Concentration is being provided to each group by the organisations those are following TQM philosophy. Table 3 shows the concentration being provided to various groups.

Table 3: Concentration to Various Groups (Respondents = 41)

Group	Score	% Concentration
G-I-Managements effective participation	358	87.32%
G-II-Employees effective	320	78.05%
G-III-Customers' power	344	83.90%
G-IV-Reward schemes	237	57.80%
G-V-Communication system	241	58.78%
G-VI-Vendors' power	254	61.95%
G-VII-Statistical quality control	304	74.15%
G-VIII-Fast result techniques	350	85.37%
G-IX-Quality planning and cost involved	279	68.05%
G-X-Analytical techniques	218	53.17%

MODEL FORMATION

A non-prescriptive model is a mean of measuring pertinent ideas, pointers and guidelines and emphasizing recommended focuses and constituents in a non-prescriptive manner. This model allows organizations contemplating the introduction of TQM to identify their specific course of action and priorities. Furthermore, it allows them to identify, research and develop the individual initiatives at a pace that is appropriate to situation the organization faces and feasible given the resources available to it.

Figure 2 shows the non-prescriptive model of TQM implementation process that was derived from cumulative findings of research. The model suggests that the introduction of TQM consists of four stages: preparation and awareness, focus, planning and implementation and development and backup.

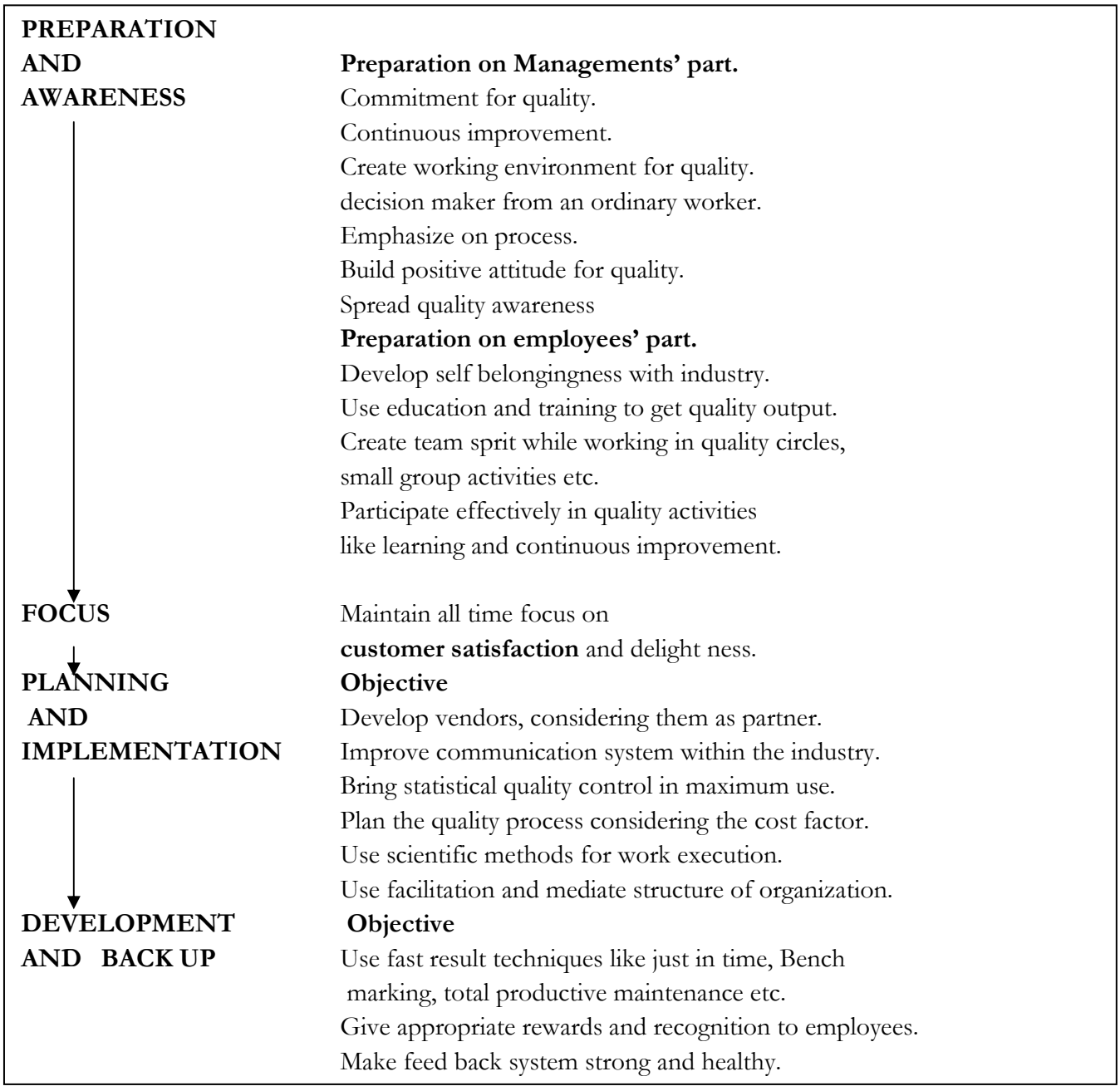

Figure 2: A non-prescriptive model of TQM implementation process

Stage 1: Preparation and Awareness

It is concerned with gaining thorough knowledge of what can and what should be expected from introduction of TQM and its implementation. At this stage, particular attention is required first at management's commitment for quality in all aspects through continuous improvement and by creating working environment for quality management. The top management in its leadership style encourages staff to adopt a preparedness to innovate, experiment and improvement. Continuous philosophy relies heavily on a culture, which encourages suggestions and involvement of operational employees. Empower the employees after their training by using them in decision making for day to day problems through quality circles and suggestion schemes. It

creates good understanding between employees and management which will be helpful in further stages.

Stage 2: Focus

Customer satisfaction must be taken as the focus for successful TQM implementation. Customer satisfaction as an index of a product's quality covers two important areas-

- The actual performance of a product compared against the 'expectation' fostered in a customer's mind during selling process.
- The level of customer support provided after the delivery of the product.

Product documentation is the primary source of this information and it should be clear and precise.

Sage 3: Planning and Implementation

In this stage start up the planned implementation programme step by step. Quality is people and Communication is an expression of trust and confidence in people and induces cooperation involving people assisting each other. Also, communicating the company's total-quality-management programme to vendors involves the same basic principles that are used to communicate the programme internally. All these programmes are based on the principles of benefit from good purchaser-vendor relationship.

For improving productivity and quality in any organization, the key techniques are based on quantitative data. These techniques using quantitative data for the control of process is called "Statistical Process Control (SPC)." There are many quantitative techniques for the process control and improvements but these are generally referred as seven basic tools. This quantitative data analysis facilitates decision making on improvements in process for better productivity, quality, and efficiency and cost effectiveness.

Stage 4: Development and Backup

Rewards are the form of employee's involvement in which the organization identifies and recognizes employees who have made positive contribution in the success of the organization. The reward should be commensurate to the situation and level of achievement, i.e. higher the achievement, the higher the reward. Recognition and rewards can be in many forms but it is always better to develop new ideas to suit the local situation for recognition. In many of the responding companies, rewards range from simple handshake or pat on the back to a banquets in honour of the individual or team. The rewards are appropriately presented so those fellow employees know about it. Recognition and rewards system should be based on following considerations:

- Relate the reward to achievement
- Frame certificates
- Presentation of the reward by the appropriate level of management
- Use the local process for publicity in family and friends
- Present the reward in the appropriate surrounding and occasion
- Vary the method of presenting rewards (avoid ritualistic approach)
- Diversify the reward (picnic off, theatre, cricket match ticket etc.)

Thus integrating the efforts at various levels and using the above factors of TQM implementation as the foundation and pillars of an implementation strategy an organization can plan a transition to total quality management culture. By using the above model, it is hoped that Indian companies shall be able to implement TQM in a systematic manner. Figure 3 explains all the constituents of TQM implementation model based on the discussions and observations made during the study. A case study based on this model is discussed in next PART which clearly shows the effect of model on productivity and quality.

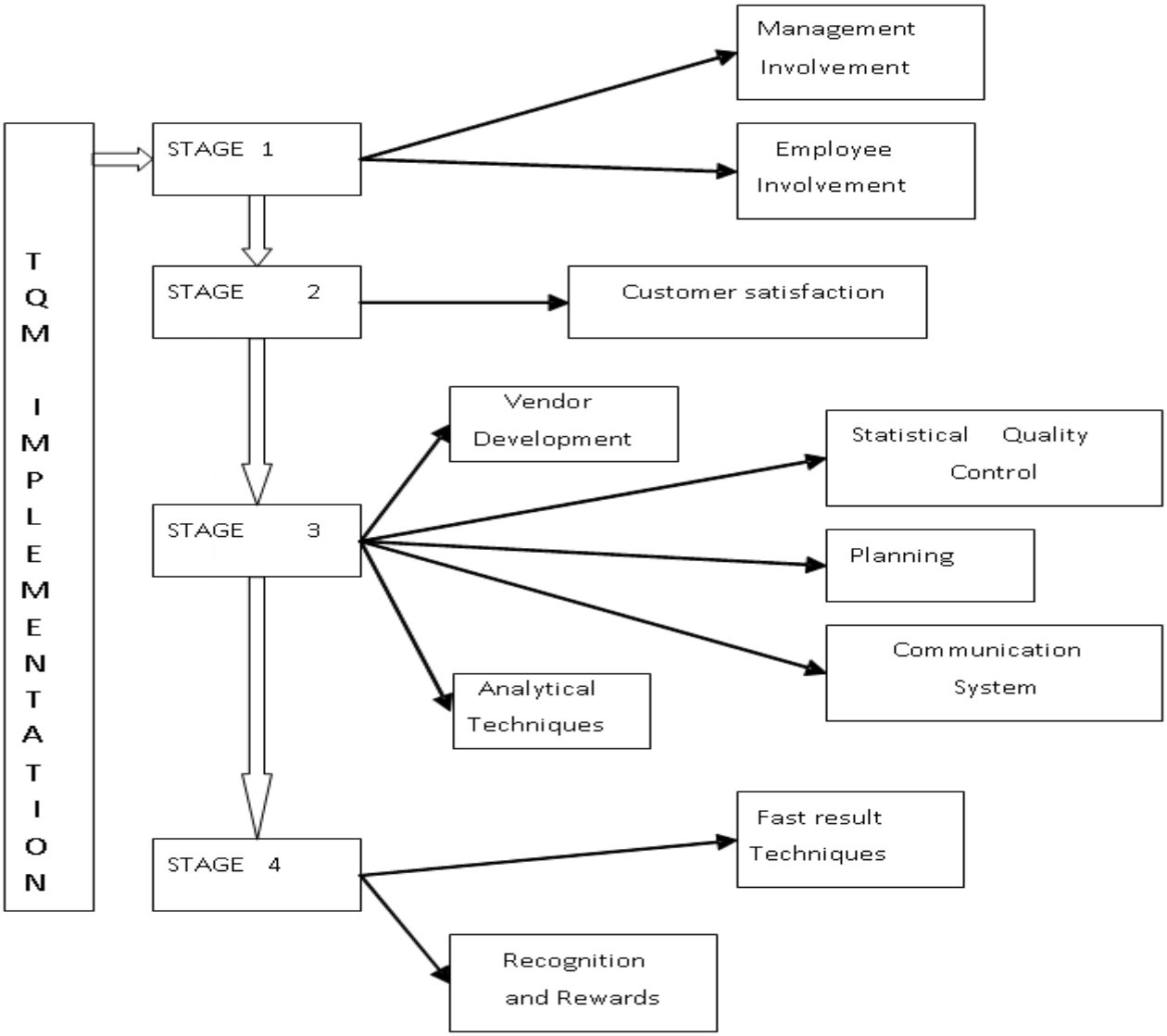

Figure 3: Constituents of Model

RESULTS, DISCUSSION AND CONCLUSION

Survey shows that role of the top-managements is very effective and express the concept of the TQM (i.e. 87.32%), whereas some areas are not in full use.

Whereas, state of mind of the Indian management is more concentrated on some factors of TQM are- cost of product, volume of business, returns etc. and some factors like- feedback system, analytical techniques, quality planning & its costs, reward schemes etc. are generally left alone. Total Quality Management activities become stand alone types and the programmes are losing their defined objectives.

It is a common observation that managers, in the initial euphoria of discovering yet another management technique, are impatient to apply it and expect quick results. In such cases disillusionment occurs rapidly causing the technique to be termed a fad, that's what is happening with TQM in Indian industries.

REFERENCES

Ahuja, I.S. 2012. Total quality management implementation for reducing percent process defects in a manufacturing organization. Int. J. Business Performance Management. 13(1) 1-17.

Basak D. and Bandopadhyay C. 2007, Implementation of TQM in R&D Institute. International Conference on management of R&D Department of management studies, IIT Delhi. 440 - 445.

Breja, S.K., Banwet, D.K. and Iyer, K.C. 2011, Quality strategy for transformation: a case study. The TQM Journal. 23(1) 5-20.

Choi, Y., Kim, J. Y. and Yoo, T. 2016, A study on the effect of learning organisation readiness on employees' quality commitment: the moderating effect of leader–member exchange. Total Quality Management and Business Excellence, 27(3/4) 325-338.

Chou Amy Y. and Chou David C. 2007, Total Quality Management Practices. International Journal of Information System and Change Management. 2(1). 21-29.

Dakic, S. 2010, The importance of TQM concept as a factor of competitive advantage of companies. Perspectives of Innovations, Economics and Business. 6(3) 18-20.

Ebrahimi, Z.F., Wei, C.C. and Rad, R.H. 2015,The impact of the conceptual total quality management model on role stressors. Total Quality Management and Business Excellence. 26(7/8) 762–777.

Gözükara, I., Çolakoğlu, N. and Şimşek, O.F. 2019, Development culture and TQM in Turkish healthcare: importance of employee empowerment and top management leadership. Total Quality Management & Business Excellence. 30(11-121) 302-1318.

Gunasekaran N., Arunachalam V.P., Arunachalam S. 2009, A Framework for implementing TISIT model to integrate TQM with software and information technologies. International Journal of Information Technology and Management. 8(2) 129-145.

Gupta, V., Garg, D. and Kumar, R. 2018, Performance evaluation of TQM attainment in Indian manufacturing sector, Int. J. Services and Operations Management. 29(2) 214-235.

Gupta, V., Kumar, R. and Garg, D. 2017, Efficacy appraisal model of TQM elements in Auto Industry in India. Int. J. Services and Operations Management. 26(1) 122-140.

Mohanty R.P. Jaju S.B. Lakhe R.R. 2009, Towards managing quality cost: A case Study. Total Quality Management and Business Excellence. 20(10) 1075-1094.

Ramkumar, S. and Savithri, S.R. 2017, Total Quality Management and Research Productivity-A Case Report. Nitte Management Review. 11(2) 1-7.

Shrivastava, R.L. and Gorantiwar, V.S. 2014, An instrument for identification of critical factors for quality and productivity improvement in sponge iron industry, Int. J. of Services and Operations Management. 19(3) 377-412.

Tiku, G. L. 2008, Quality Engineering. Industry 4.0, April, 59-61.

Yuart, M. 2009, Quality Planning and Management. Newyork.