



## A STUDY ON QUALITY CIRCLE MANUFACTURING INDUSTRIES

**Prof. Shantanu R. Kulkarni\* Dr. A. P. Kedar \*\***

\*Assistant Professor, RCOEM, Nagpur, Research scholar -RTM nagpur university

\*\* Professor, DBACER, Nagpur , Phd Supervisor - RTM nagpur university

### **Abstract**

*The manufacturing industry is getting greatly affected by globalization of business and the fiercely competitive environment. This has thrown new challenges of survival and growth for the manufacturing units. Therefore, adopting and implementing appropriate performance improvement techniques is imperative for manufacturing companies to survive in the global competition. The manufacturing organizations around the globe have adopted the various management techniques such as Statistical Quality Control (SQC), Total Quality Management (TQM), Quality Circles (QCs), Quality Improvement Team (QIT), Lean Manufacturing, Six Sigma, etc. To increase and maintain their competitiveness.*

*The application of QCs in various Indian manufacturing sectors has evoked mixed responses and results. However there is no sufficient information regarding success factors in the implementation of QC and the impact of QC on the performance of the organization.*

*In the Indian context, the identification of critical success factors for the QCs and their impact on the performance is under researched. This study has attempted for identification of the critical success factors of QCs, benefits of QCs and their impact on the overall performance.*

**Key Words:** *Quality Circle, Manufacturing Industries.*

### **Introduction**

There have been different interpretations of the concept of quality circles in various organizations in India and abroad. However, the most commonly accepted definitions in keeping with the essence of the philosophy as it originated in Japan are: "Quality Circle is a small group of employees in the same work-area or doing a similar type of work who voluntarily meet regularly for about an hour every week to identify, analyse and resolve work-related problems, leading to improvement in their total performance, and enrichment of their work life" (Udupa 1986).

"Quality circles are a formal, institutionalized mechanism for productive and participative problem-solving interaction among employees"(Lozano & Thompson 1980).

"Quality control circle is not just a little room adjacent to the factory floor, whose occupants make a nuisance of themselves to everyone else. It is a state of mind and a matter of leadership with everyone from the president to production trainee involved"(Rehder 1981).

"Quality circle is a small group to perform capital quality control activities within the same workshop. This small group carries on continuously as a part of companywide quality control activities self development and mutual development and improvement within the workshop, utilizing quality control techniques with all member participating"(Dr.Ishikawa).

### **Objectives of the study**

The objectives of study are as under.

1. To explore the concept of Quality Circles for the Indian Manufacturing Units
2. To determine the critical success factors of QCs based on the literature review

### **Scope and Significance**

1. The research helps to explore the concept of Quality Circles for the Indian Manufacturing Units.
2. The research focuses on identifying & evaluating the impact of critical success factors on the performance indicators.

### **Hypothesis**

H1: Quality circle approach helps in overall quality improvement in manufacturing industries

H1a. Views of Senior level officials.

H1b. Views of Junior Level officials.

H1c. Combine view.



### Sample Size & Statistical Tools

Sample size is restricted to 126 officials including junior & senior officials from Manufacturing industries around Nagpur region.

### The Statistical Tools Implemented In This Study Are

1. Cronbach's alpha reliability test as to check the internal consistency of items under consideration of a subject.
2. Bar charts as the Graphical tool along with the percentage tables to identify the trend based on the 5 point Likert scale of each item under consideration.
3. Hypothesis Testing and evaluation of critical factor and performance indicators based on
  - a. Chi-square Tests for qualitative characteristics measured on scale, as to identify the significance of the variables involvement under the association of the hypothetical statement.
  - b. Principal Component Analysis for dimensionality reduction to identify the critical success factors and performance indicators.

### Results With The Help of Hypothesis Testing

The hypothesis are tested and following are the findings of the same.

#### According To Senior Level Official The List of Critical Success Factors Are As Follows

1.	Inspiring more effective team work
2.	Building an attitude of problem prevention
3.	Problem data bank and identification of problems for QC work
4.	Role and attitude of middle level executives
5.	Objectives and causes first, solutions next approach
6.	Knowledge of old and new QC tools
7.	Follow up of implementation of suggestions.
8.	Visible management support
9.	Team spirit of all members towards Quality Circle operations
10.	Preparing recommendations for implementing solution(s).
11.	Communication gap between Circles and departmental head
12.	Interest or competence of leaders/facilitator

#### According To Junior Level Official the List of Critical Success Factors Are As Follows

1.	Inspiring more effective team work
2.	Follow up of implementation of suggestions.
3.	Create problem solving capability in the employees
4.	Interest or competence of leaders/facilitator
5.	Increasing employee motivation
6.	Team spirit of all members towards Quality Circle operations
7.	Developing harmonious manager, supervisor and worker relationship
8.	Objectives and causes first, solutions next approach
9.	Role and attitude of middle level executives
10.	Knowledge of old and new QC tools
11.	Communication gap between Circles and departmental head
12.	Visible management support



13.	Problem data bank and identification of problems for QC work
14.	Preparing recommendations for implementing solution(s).
15.	Training of all QC members (by an expert consultant).
16.	Criticizing ideas, not persons.

**According To Both the Type of Official the List of Critical Success Factors Are As Follows**

1.	Inspiring more effective team work
2.	Create problem solving capability in the employees
3.	Increasing employee motivation
4.	Follow up of implementation of suggestions.
5.	Developing harmonious manager, supervisor and worker relationship
6.	Team spirit of all members towards Quality Circle operations
7.	Interest or competence of leaders/facilitator
8.	Preparing recommendations for implementing solution(s).
9.	Problem data bank and identification of problems for QC work
10.	Objectives and causes first, solutions next approach
11.	Knowledge of old and new QC tools
12.	Visible management support
13.	Role and attitude of middle level executives
14.	Communication gap between Circles and departmental head
15.	Listening to and showing respect for the views of other members.
16.	Building an attitude of problem prevention

**Conclusion**

Quality circles are better understood as the mechanism which not only solves the problems which are within their limit but also understood as a problem prevention mechanism.

At first, let us talk about the critical success factors of the quality circles. Quality circles inspire more effective team work which enhances the problem solving ability of the individuals & group. It is also observed in the research that employees become more creative while solving the problem. Quality circle approach has an advantage that employees remain motivated at work. This helps in solving the work related problems. It is also observed during the research that quality circle enhances harmonious relationship among manager, supervisor and worker. When people work as one team the results are bound to come positive.

However quality circle cannot be called panacea for all kind of problems in industries. It must be noted that there are issues related with quality which can be dealt with quality circle approach.

**References**

1. Joseph J.S.,Ganguly A.& Khobragade D.V.,(1985): "The Implementation of Quality Circle Concept, its practice and impact on quality of work life", 1985, Research report No. 18, Bombay: Central Labour Institute.
2. Juran J.M.(1980): "International significance of the Quality Control Circle Movement", Quality Progress 13, Nov. 1980. 21.
3. Kamata: "Japan in the Passing Lane:An insider's Account of life in a Japanese auto factory", translated by Tatsuru Akimoto, Boston, Allen and uwin.
4. Krishnamurthy, (1991): "Quality Circles in Bharat Electronics: A Review", 1991, Vol. 22, No 1. pp 43-56.
5. Lawler E.E.,(1985): "Quality Circles after the Fad", in Harwaard Business Review, 1985, Jan-Feb. pp65-71.
6. Lozano R. and Philip C. Thompson (1980): "QC Implementation in the Space Shuttle External Tank Program at the Michoud Marietta Corporation", 1980, ASQC 34th Annual Technical Conference Transactions.
7. Maheshwari B.L.(1987): "Quality Circles", Mohan Primlani for oxford and Ibh Publishing Company, 1987, NewDelhi.



8. Maheswari B.L.,(1987): “Quality Circles”, 1987, Mohan Primplani for oxford and Ibh Publishing company, New Delhi.
9. Maheswari B.L.,(1987: “Quality Circles”, Mohan Primplani for oxford and Ibh Publishing company, 1987, New Delhi.
10. Marks, L.M. Mirvis P.H. Hackett, E.J. & Grady, J.F. Jr.,(2006): “Employee participation in a Quality Circle Program – Impact on quality of work life, productivity and absenteeism”, 2006, Journal of Applied Psychology, 71(1), pp 61-69.
11. Mathew George(1991): “Quality Circle”, 1991, The Central Board for Workers Education publication New Delhi.
12. Mazumdar, Sudha A.,(1984): “Quality circles at Home”, 1984, Quality circle India, 1984, pp 8-10.
13. Michael W. Plczak, (1988): “Quality Circles Comes to Home”, quality progress, December 1988 pp 37-39.
14. Nonaka, (1993): “The History of the quality circle”, Quality Progress, 1993 September, pp 81-83
15. Olga L. Cracker, Cyril Charney and Johnny Sik Leung Chiu(1986): “Quality circles – a guide to participation and productivity”, 1986, Methuen Publications New York.
16. Ootaki Atsushi, (1986): “Quality circle”, 1986, Kenshu, 1986 No.99 4-9, spring.
17. Quality Circle Forum of India: “Quality Circle Chapter Reports”, Quality Circle India, 1997 July – 2008 march.
18. Quality Circle India (2005):“Chapter Activities”, Quality Circle Forum of India publication, Nov-04-Jan-05.
19. Rafael I.A., (1984): “Quality circles as a form of employee participation and job design”, 1984 an abstract of a doctoral dissertation, Ohio State University.
20. Raj kumar & Dixit Garg, (2002): “Quality Circles at Factory Gate”, 2002, Oct-Dec. productivity, vol 43, No. 3.
21. Ralph Barra (1983): “Putting Quality Circles to Work”, 1983, McGraw Hill Publications, New Delhi.
22. Ralph Barra, (1983): “Putting Quality Circles to work”, 1983, McGraw-Hill Inc., New Delhi.
23. Robert E. cole and Dennis S. Tachiki, (1984): “Forging institutional links: making quality circles work in the U.S.”, National productivity review, winter 1984, pp 417-429
24. Robert R. Rehder (1981): “What American and Japanese Managers are Learning from Each other”, 1981, Business Horizons 24 march-April, 68.