

“QUALITY CIRCLES: A KEY TO ORGANISATIONS PROFITABILITY”

Mr. L.S.Shirsat¹, Mr. N.D. Khutafale², Mr. K.S. Vishwakarma³, Mr. P.B. Malve⁴

^{1,2,3,4} Faculty - Shri Datta Meghe Polytechnic, Wanadongri, Nagpur.
E-mail:- lshirsat@yahoo.com

ABSTRACT

Today our nation faces serious problems because of high cost of production and foreign competition. So it's essential to build quality products at reasonable cost and compete with any nation in the world.

Today, Japan is undoubtedly the leader in quality workmanship in the world. Japan has worked for past many decades to reach that place now. Japan adopted a six-point program to improve quality image. Quality circle is one point of them. Quality circles involve people in solving problem and tap their brainpower. If person perceives that working harder is a threat to him, he will work less, thus using less of his brain power. On the other hand, if the person sees working co-operatively can improve communication and quality, cut waste and also eventually give more job satisfaction and enjoyment. He will work more effectively and will use more of his untapped brain power. It has been a reality that has profited both the company and its people. It is the foundation of quality circles. The same is explained by taking case of material loss in the workshop of shree Datta Meghe Polytechnic Nagpur.

KEYWORDS

Quality Circle, Case Study Quality Circle.

INTRODUCTION

THE CONCEPT OF QUALITY CIRCLES

Quality circle is a small group of employees in the same work area on doing similar type of work, who voluntarily meet regularly for about an hour every week to identify, analyze and resolve work related problems, leading to improvements in their total performance and enrichment of their work life

OF QUALITY CIRCLES

The salient features of quality circles, as per the aforesaid definition are-

- **Small group of employees**
- It is recommended that minimum and maximum number of members in any quality circle should be between 5 and 15 respectively.

- **Employees from the same work area**

A quality circle is a homogeneous group and not an interdepartmental one. The members may be from the same work area or doing similar work. The discussion taking place at the meeting should be intelligible to each one of the members. This is possible only if the members are from the same area or doing similar type of work.

- **Participation is voluntary**

It is the voluntary nature of the membership to quality circles that makes this concept totally different from all other hitherto adopted practices

- **Meet regularly to resolve work related problems**

The employee working in any particular area know best, what problems are hindering the quality, productivity and optimum performance as also how they can be remedied.

- **Improvement in total performance**

As a result resolving work related problems relating to quality productivity, cost reduction, safety, etc. the total performance of the work area naturally improves, resulting in both quantifiable as well as intangible gains to the whole organization.

- **Enrichment of work life**

The spin off benefit of quality circles to the organization include enrichment of work life of their employees apart from attitudinal changes, cohesive team culture, etc. This is a result of avoidance of drudgery due to repeated rework because of rejections, an improved working environment, happier relations and greater job satisfaction etc.

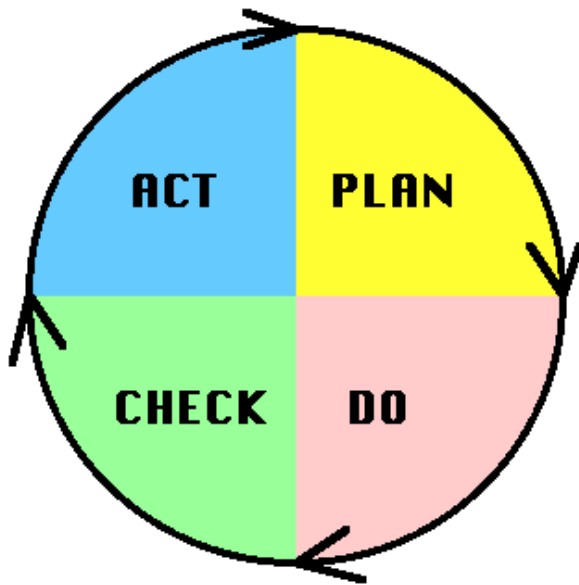
THE GENESIS AND DEVELOPMENT OF THE QUALITY CIRCLES

After World War II, when all most industries in Japan had been destroyed, there was no production as such, people achieved a reputation for producing cheap and shoddy goods and their name was synonymous with poor quality people not trained to build quality. The nation was without guidance. At that time General Douglas Macarthur, who was in command of the allied forces in Japan,

felt that something must be done to improve the nations image, and asked the U.S. government to send some one to teach better quality control methods to the Japanese. Dr. Edward Deming, an eminent expert engineer and scientist in statistical methods. He professes that every one should plan, collect data, analyze and construct the work and keep the circle rotating. This is how Quality is maintained in a company. Dr. Deming's philosophy is known as Deming's wheel. (see fig. 1).

Deming's PDCA cycle can be illustrated as follows:

Fig.1



1954 to 1955 another famous management consultant, Dr. Juran started visiting Japan. He lectured and preached what is known as total quality control. Quality begins at the design stage and ends after satisfactory services are provided to the customer. It is not just manufacturing quality one should be concerned with, but the total quality should be concerned with, the quality that counts for the total success of the company.

The Japanese Government was also deeply involved in this service aspect for a quality improvement program. A six point program which included the following was adopted by Japan to improve the quality image.

- a) Quality audits
- b) Nation-wide promotion for good Quality
- c) Quality training
- d) Use of statistical methods
- e) Nation-wide Quality control activities
- f) Quality circles

In April 1962, a magazine called "FQC" (Quality circles for foreman) was started in Japan. The main objective was to facilitate education, training and propagation of quality control techniques and to help first line supervisors and foreman to improve their abilities of quality control. The foreman who received quality training through the magazine and or Dr. Deming and dr. Juran, were wandering what to do with the knowledge received. Someone asked, "why not form small groups in the shop and teach the workers these techniques? Why not spread the knowledge and ask their help in solving daily problem? After all, who knows the job best?". This is how quality circles were born in 1962.

Quality Circles Are Not For Problems Of Quality Alone

Initially in early 1960, the major concern of Japanese organization was improvement of quality. But as the quality circle activities expanded and as the members gained more experience in problem solving application of various techniques, the matter being discussed also started changing to incorporate longer and more difficult items closely related to the policies established at a higher level. As a result, the themes taken up by quality circles were no longer limited to quality but incorporated such diverse themes as productivity, efficiency, cost reduction, design safety, production control, etc.

Another gradual development which took place was that while quality circles in the initial stages were introduced mainly in production workshops, concept slowly started expanding to include non production areas such as offices, sales departments, ware-houses, insurance companies, banks, hospitals, etc. it has since established that Q.C. concept can be effectively introduced in any kind of work or services.

Much of the success of Japanese industry today can be attributed to the quality circle concept. Realizing the efficiency of this philosophy, the quality circle movement flew rapidly in that country and the painstaking and preserving efforts of the Japanese leaders resulted eventually in the quality circles concept being accepted all over the world as a very effective instrument for improving the total performance of any organization.

Quality Circles Come To India

We have in our country ample natural resources, unlike Japan and has to import most of the industrial input, it requires. It is claimed that India has the third largest technical manpower in the world. We have individuals with extraordinary

merit. But we are lacking in the capability to work together as a cohesive group, a team spirit; so necessary to achieve organization objective. So anything we do to bring about greater cohesiveness among all sections and employees would go a long way in improving the prosperity of any organization and its employees and the operation of quality circles has resulted in such a healthy outcome.

Generation of team spirit is one of the intangible benefits of the philosophy of quality circles and it is in this connection, the quality circles are relevant in India. The first quality circle in India was established in Bharat Electricals Ltd. In 1980. Since then, more and more organizations are contemplating the starting of quality circles. Over two hundred companies such as Hyderabad Allyns, Bajaj Auto, Indian Explosives, Hindustan antibiotics, Bharat Electronics Ltd. Air-India, Shriram Fibers, Telco, Indian Airlines, State Bank of India. Apollo hospitals etc. are reported to be already operating quality circles.

Objective of Quality Circles

There are a number of objectives that can be accomplished in the quality circle programs. These objectives are as follows-

- **Self development**

Every person who goes in the circle gets training in quality circle techniques. The knowledge acquired through training and working with people helps to promote success in other areas of life also. Problem solving techniques such as Pareto diagram, cause and effect analysis, etc. are simple and can be used any where to analyze and solve problems. In broader sense, quality circles help people improve their abilities and develop themselves to the fullest extent.

- **Mutual development**

In a quality circle, people work in groups. The quality circle helps learn to work with the people to cope with personal differences, understand others views and to work co-operatively towards a common goal.

- **Improvement in quality**

Quality circles in Japan were started in 1962 to solve quality problems. Even today more than 20% of the circle activities are involved in solving quality problems.

- **Waste reduction**

Quality circles identify wastage of resources in their work area and eliminate them.

- **Job satisfaction**

Quality circles help to promote more job satisfaction since people are aware that their ideas will be considered, which satisfy their "achievement" need.

- **Cost reduction**

Quality circles identify hazardous conditions in their work areas and suggest and implement the remedies. This results in improvement in safety.

- **Problem solving opportunity**

The quality circles provide an excellent opportunity to solve many problems that the members face daily.

- **Team building**

The quality circles help in generating team spirit among the members.

- **Linking all levels in the company**

The quality circles open the old water tight compartments and link people from the workman level to top management level.

- **Getting people involved**

The people engaged in quality circle activities get more interested and involved in their jobs.

- **Improve participation**

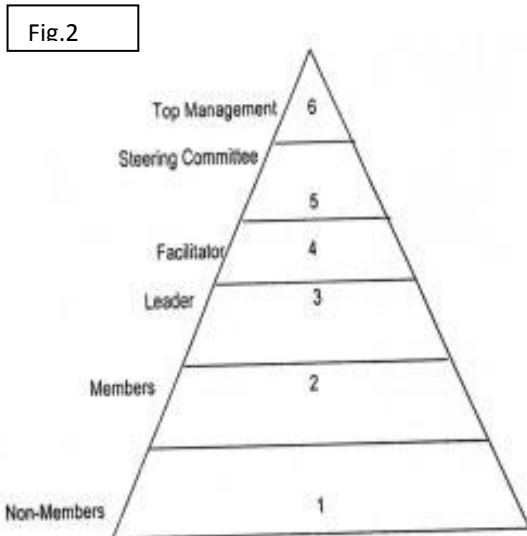
People who are shy in the beginning, to join quality circle, start participating. Once they see that it is going to help them in the long run and participating at the working level is fostered.

- **Reducing absenteeism and grievances**

The members of the quality circles enjoy the work and it makes them come to work instead of staying at home for minor reasons. Also, the circles provide an opportunity to the people to solve their work related problems and their grievances are reduced.

STRUCTURE OF QUALITY CIRCLES

The structure of quality circle is governed by the unique conditions in obtaining in different countries and organizations and also has to suit the set up that is already existing. (see the fig. 2 depicting a typical structure of a quality circle)



The elements of quality circle organization are as follows:-

(a) Members

Members are the basic elements of the structure of quality circles. The members perform the following functions:-

- Attend all meetings
- Learn to use statistical techniques
- Follow code of conduct
- Participate actively in quality circle activities and contribute positively
- Promote quality circle programs.

(b) Leader/ deputy leader

The leaders /deputy leaders are chosen by the members of quality circle themselves.

They have to perform the following functions:-

- Generate enthusiasm for circle activities
- Make necessary facilities available to the circle
- Meet with the circle once a week
- Keep records of meetings
- Create co-ordination and harmony in the circle
- Be a link between circle members and management
- Enforce code of conduct
- Give assignments to members Trains the members in various problem-solving techniques
- Evolves consensus decision making
- Promote quality circle program.

Facilitator

The facilitator or co-ordinator is nominated by the management. He performs following duties-

- Serves as quality circle program co-ordinator
- Trains members – leaders and management
- Maintains circle records
- Arranges meetings with outsiders
- Attend in circle meetings
- Publicizes the program

- Links all people in the organization
- Prepares for presentation
- Ensure necessary facilities required for an effective operation of quality circles

Steering committee

the ' steering ' or 'operating committee' consists of heads of the departments and the chief executive of the organization as the chairman.

The functions of the 'steering committee' are as follows:-

- Prepares objectives for the circles in the plant
- Promotes quality circles throughout the organizations
- Constantly reviews the progress
- Reviews training material
- Follows up the completed projects
- Takes decision on the important recommendations of quality circles, falling outside the competence of other levels of management.
- Provides financial support to give thrust to the promotion of quality circles

HOW DO QUALITY CIRCLES OPERATE?

The Quality circles follow the steps given below to resolve the problems-

- Members bring potential problem.
- Collection of data using statistical techniques such as check-sheets and graphs, etc.
- Analysis of the problem using two important statistical tools-namely Brainstorming and cause effect diagram.
- Development of solutions.
- Management presentation.
- Management approval; implementation and follow-ups
- The entire cycle is depicted in the figure 3-A-B-C.

ADVANTAGES OF QUALITY CIRCLES

The impact of Quality Circles is as follows:-

Improvement in human relation and work area morale.

- Quality Circles promote participative culture. The employees from different levels interact to achieve the common organization goal through Quality Circles.
- Quality Circles enhance the job interest of the members. The generation of natural interest in

their work is heating for both the organization and employees.

- Quality Circle is a group activity and it improve the total effectiveness of the employees as a body and thus it generates more effective team work.
- Quality Circles reduce percentage defects and improve the quality.
- Quality Circles by result in house-keeping, cost effectiveness and safety.
- Quality Circles by reducing rejection, and cost and improving working environment and quality also improve productivity of the organization.
- Quality Circles provide the motivation to the members. The Quality Circles satisfy the higher level needs of an employee as per Maslow's need hierarchy namely – social needs, ego needs, self-fulfillment.
- Quality Circles enhance problem solving capability.
- Quality Circles result in improved communication amongst the members.
- Quality Circles promote personal and leadership development.
- Quality Circles catalyze the attitudinal changes.
- The Quality Circle thus, is not a merely another technique, but a people building philosophy.

WHAT QUALITY CIRCLES ARE NOT?

'Some misconception about Quality Circle'

In order to make Quality Circle movement a self-sustained one and to make the philosophy a way of life, it becomes imperative to give clarifications at every opportunity to dispel erroneous impressions that may exist regarding this philosophy-

- Quality Circles do not tackle just quality problems, but any issue affecting productivity, safety, house-keeping etc. can be taken up
- Quality Circles are not a substitute for :-
 - (a) Task Forces created by management to resolve a specific problem.
 - (b) Product committers which primarily aim at improving quality.
 - (c) Work committees which include representatives of both management and trade unions whose participation is not voluntary.
 - (d) Quality Control department suggestion schemes:-
- Quality circle is not a forum for grievances or a spring board for demands.
- Quality Circles do not change existing organizational structure or the chain of command.

- Quality circles are not a means for the management to unload all their problems.
- Quality circle – is not just another technique like analysis or ABC analysis but a philosophy, a way or life.
- Quality circle is not a panacea for all ills.

CASE STUDY

PROBLEM FORMULATION

The present study was conducted by selecting a problem concerning with the material loss in workshop of Shree Datta Meghe Polytechnic, Nagpur by forming a quality circle. The authors were involved as internal observer in the operation of quality circle working in workshop. The production involves manufacturing of eccentric shaft, spindle and metallic numerals in the machine and fitting shop. The operation involves in producing the above products comprises of various methods of manufacturing such as facing ,drilling, filling, cutting, shaping, threading etc. The operations of these quality circle as given below realize the impact of quality circle.

CASE STUDY

- a) Name of the organization: Workshop, Shree Datta Mehge, Polytechnic, Nagpur.
- b) Number of circle: 01 (one)
- c) Section where the circle is operating : Machine and fitting shop
- d) Number of meetings held: 10 (ten) for last two month

The quality circle under consideration has a leader, a facilitator, a coordinator and four members. The object of the present quality

Circle is 'reduction of material wastage'. This problem was so chosen for solution because of following facts:

- a) Whether there was any reduction in material wastage.
- b) Whether there were any saving and financial losses that should be minimized.
- c) Whether it had any effect on the working of the workers and relationship between workman and management.

There were differences in the actual and expected material consumption. Table 1 gives the detail of material consumption for the month August 2019 to October 2019, before implementation of quality circle, and Table 2 shows the detail of material consumption for the month November 2019 to December 2019 after implementing quality circle. After various discussion and brain storming

sessions following causes related to man, machine, material and methods were located.

Causes Related to Man

- a) Lack of knowledge about the materials
- b) Proper instruction not given about the work
- c) The materials were cut more than the required amount.
- d) Lack of knowledge about the operations
- e) Lack of knowledge about handling special tools

Causes Related to Machines

- a) Machines not operating at optimum condition
- b) Frictional wear of machine parts
- c) Problem arising due to misalignment of machine

components

- d) Lack of implementation of new and automatic machines

Causes Related to Methods

- a) No proper inspection in the machine shop after the material has been issued from the store
- b) No proper care was taken in storing the materials
- c) Lack of knowledge of improving the existing method of production

Causes Related to Material

- a) No proper inspection of the material dimension before machining
- b) Materials obtained not having the required composition

Table 1

Items	specification	Material consumption per two month		Material loss in machining, Kg.	Material loss in Rs
		Expected, Kg.	Actual, Kg		
M.S. Rod	Length, mm : 50 Diameter, mm : 31 Carbon % 0.01 to 1	210	105	105	1785.00
C.I. Block	Length, mm : 50 Width, mm : 50 Thickness, mm :50	135	75	60	1920.00
M.S. Flat	Length, mm :75 Width, mm : 48 Thickness, mm : 6	53	30	23	437.00
Total					4142

Table 1 Details of material consumption for the month Aug. 2019 to Oct. 2019 (before implementing quality circle)

Table 2

Items	specification	Material consumption per two month		Material loss in machining, Kg.	Material loss in Rs
		Expected, Kg.	Actual, Kg		
M.S. Rod	Length, mm : 50 Diameter, mm : 31 Carbon % 0.01 to 1	210	150	60	1020.00
C.I. Block	Length, mm : 50 Width, mm : 50 Thickness, mm :50	135	105	30	960.00
M.S. Flat	Length, mm :75 Width, mm : 48 Thickness, mm : 6	53	45	8.00	152.00
Total					2132

Table 1 Details of material consumption for the month Oct. 2007 to Dec. 2007 (after implementing quality circle)

Table3

Material wastage before implementing quality circle, Rs	Material wastage after implementing quality circle, Rs	Saving amount for two month, Rs
4142	2132	2010

Table 3 Saving in the material wastage for the Oct. 2019 to Dec. 2019.

DISCUSSION AND CONCLUSION

After implementation of quality circle, steady reduction in material wastage was observed. Considering the material wastage for the Aug. 2019 to Oct. 2019 as a base year, calculated savings for the next two Month Oct. 2019 to Dec. 2019 is obtained and shown in the Table 2. Besides this Table 3 gives the complete details of the monetary gain for the Month Oct. 2019 to Dec. 2019 which shows a sufficient amount of saving. Following observation were achieved after implementation of quality circle.

- Improvement of internal personal relationship
- Self-confidence was developed in solving more complex problem related to production.
- A good teamwork was achieved among the workman
- Material wastage was minimized as a result heavy monetary gain was obtained.

Table 4 shows a percentage of contribution of various factors that led to material loss in the given order. These four factors were chosen as the most effective factor in analyzing the problem. The various reason or causes of each factor were determined using Ishikawa diagram (Fishbone diagram).The causes and effect

Reason/cause	Percentage%	Cumulative%
Man	35.7	35.7
Machines	28.6	64.3
Methods	21.4	85.7
Material	14.3	100

Were obtained by calling various quality circle meetings (ten) through brainstorming session and discussion. And hence these factors led to the result of the present study in the following order:

- Man
- Machine
- Method
- Material

Further this quality circle approach for quality improvement in G.H.Raisoni Polytechnic workshop may bring new dimension, shifting dependence for decisions and actions, conventional bureaucratic approach towards existing system. Empowering employees exhibit considerably owing the responsibility of managing the organization. This change revealed that quest for quality service is in the hand of all employees. This success of quality circle in the workshop and small enterprises. This quality approach may be required to be spread in all polytechnic workshop and small-scale enterprise existing in the country. The sustenance of success will

lead to total quality improvement emerging as a centre of excellence of its own in any small enterprise in India.

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