

Internal Processes of Quality Circles : An Empirical Analysis

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The concept of quality circle, having its origin in Japan, has spread throughout the world including India. Quality circles were first initiated in India by BHEL, but later on they spread to many manufacturing and service organizations. Many organizations have claimed that strengthening of internal process of quality circles would improve quality, productivity and reduce cost as well. There is a need to evaluate the internal process of quality circles to empirically examine these claims. C.Krishnamurthy (1992) reviewed the functioning of quality circles in one large organization namely Bharath Electronics Ltd. The scope of the study was restricted to an overall assessment of the functioning of quality circle in one organisation. This study attempts to fill the research gap by focusing on evaluation of internal process of quality circles from a sample of organizations both public sector as well as private sector.

Objectives of the Study

The main objective of this study was to examine the internal process of quality circles. The specific objectives were to examine the motives for stating quality circles, types of quality circles, the issues of frequency, duration, the timing and regularity of such meetings.

Sample

A sample of fourteen manufacturing enterprises, who have been implementing the mechanism of quality circle, was selected randomly from the directory of Quality Circle Forum of India (QCFI), a non profit organization as shown in Table 1.

Table 1 Sample of by Type of Organisations

Type	n	%
Public Sector	6	43
Private Sector	8	57
Total	14	100

Source: Survey data

A sample of fifty six quality circles was selected from these organizations as shown in Table 2. From these sampled quality circles, a stratified sample of one hundred and thirty-one respondents was drawn. The respondents were the active members of quality circles. The respondents were stratified by sex, age, education and experience as shown in Table 3.

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Table 2. Sample of Quality Circles by Type of Organisations

Type	n	%
Public Sector	26	46
Private Sector	30	54
Total	56	100

Source: Survey data

Table 3 Sample of Respondents by Sex, Age, and Experience

Variable	n	%	Variable	n	%
1. Sex			2. Education		
Male	86	66	ITI	85	65
Female	45	34	Degree	46	35
Total	131	100	Total	131	100
3. Experience			4. Age		
< 5 yrs	40	31	<30 yrs	45	34
5 – 20 yrs	46	35	31-50	50	38
> 20 yrs	45	34	> 50 yrs	36	28
Total	131	100	Total	131	100

Source: Survey Data

Data Collection and Analysis

Primary and secondary data were used in this study. Quality circle's presentation in Annual Quality

Circle Convention organized by Quality Circle Forum of India was the main source of secondary data. To collect primary data from the quality circles and their members, a research instrument was constructed and administered. Structured and semi-structured interviews were conducted for steering committee members, facilitators, leaders and members of quality circles to collect additional information.

Simple descriptive statistics such as mean, percentage, and standard deviation were calculated by using Statistical Package for Social Science (SPSS) for analysis and interpretation of data.

Results and Discussion

The results and discussion of the study are presented in four sections. First section presents the results of motives for starting quality circle.

Motives for starting quality circles

Japanese started their quality circles with three motives. First, to contribute to the improvement and development of the enterprise. Second, to satisfy the higher human needs of recognition and self development. Third, to respect humanity and build a happy shop floor. There was a need to examine the motives of starting quality circles in India in the back drop of the above original objectives. Table 4 provides results of different motives for which quality circles were started in manufacturing enterprises in India.

Table 4. Motives for Starting Quality Circles

Motives	n	%
Improve Quality	59	45
Improve productivity	40	31
Improve industrial relations	32	24
Total	131	100

Source: Survey Data

Quality circles were started with a major motive of improvement of quality followed by improvement in productivity. Improving industrial relations ranked as the last motive.

Type of Quality Circles

A Quality circle is a homogeneous group and not an inter-departmental or inter disciplinary one. Members participating in circle activities must be on the same work area. Discussions taking place at the meetings should be intelligible to each one of the members. This is possible only if the composition of the circle is such that employees working in the same work become members of a circle. The work designation and the hierarchical position need not be the same or equal but the work in which they all are engaged should be common. The membership of circles in such work areas should be thrown open to all, employees at the grassroots areas from the level of foreman downwards.

The study has investigated the types of quality circles which have been functioning in the sample organizations. The survey results are presented in Table 5.

Table 5. Type of Quality circle

Type	n	%
Shop floor	40	71
Technical	12	22
Professional	3	5
Clerical	1	2
Total	56	100

The study found that most of the quality circles were formed by shop floor workers (71%), followed by technical staff (22%). A small number of them (7%) were formed by professional and clerical staff also. The quality circles are found to be significant in shop floor level, where in workers become members of quality circles to solve work related problems for continuous improvement of quality and productivity. Underlying the quality circle concept is the assumption that the causes of quality or productivity problems are unknown to workers and to management. However the shop floor workers have hands-on knowledge, are creative, and can be trained to use this natural creativity in problem solving.

Membership

Going by their origin, quality circles will have to be voluntary endeavors of members. Workers' membership in most quality circles usually is voluntary but supervisors who appear to have potential as circle leaders are encouraged to participate. In companies during pilot runs, management invites selected workers to become members to ensure that the first few circles are successful. Generally there are more than enough initial and new volunteers. At present, there is seldom peer pressure to join as there is in Japan. Volunteers then are asked to choose their own

leader and deputy leader. Here again, the principle is that being based on a people building philosophy, quality circle should be fully autonomous and should not get the feeling of being directed by the management in any way. The data related to the type of membership in the quality circles under study are given in the Table 6.

Table: 6 Membership in Quality Circles

Membership	Percentage
Voluntary	71
Suggestion from superiors	15
Suggestion from quality circle members	8
Suggestion from quality circle promotion department	6

Source: Survey Data

The study indicates that 71% members obtained their membership on voluntary basis and remaining became members on suggestion from superiors (15%), suggestion from quality circle members (8%) and suggestion from quality circle promotion department (6 %). The evidence shows that membership in most of the quality circles is voluntary, with a small number of members obtaining their membership involuntarily.

Motives for joining Quality Circles:

Quality circles are a formal, institutionalized mechanism for productive and participative problem solving interaction among employees. The members of the quality circle are encouraged to participate in quality circles to improve their self development, communication and problem solving skills. Table 7 presents the field survey data related to motives for joining quality circles.

Table: 7 Motives for joining Quality Circles

Motives	N	%
Self development and Personal learning	75	57
Improvement of productivity	42	33
Improvement in quality of work	14	10
Total	131	100

Source: Survey Data

The main motive for joining quality circles was for self development and personal learning (57%), followed by improvement of productivity (33%). Additional motives for joining quality circles were to improve quality of work life (10%). Besides these motives, some other interesting responses also came from the quality circle members. Motives such as improving safety record of the organisation, avoiding intra departmental problems, getting rid of inspection department were also mentioned as motives of becoming members of quality circles at the time of interview with them.

Quality Circle Meetings

Meetings play a significant role in functioning of Quality circles. In the first meeting, quality circle members meet at the appointed place and time and choose their leader and deputy leader by consensus. The facilitator/ coordinator provides the members with the necessary stationery such as pen, paper note books, black board and any other items useful and necessary for their activities. In the subsequent meetings, they identify work related problems, priorities them and select a prioritized problem for solution. After arriving at a solution by consensus the

circle members ensure that it is also implemented. If implementation of their solution has to be followed up by higher levels of management it would be passed on to them through the facilitator.

Success of quality circle meetings involve many factors including frequency, duration, timing and regularity of meetings and member's attendance. The following section presents the results of this study.

Frequency of Quality Circles Meetings:

The working of quality circles essentially revolve round their periodic meeting. The quality circles usually meet once a week, however, they may meet once in a fortnight or once in a month. The result of the study on the frequency of quality circle meetings is presented in the Table 8.

Table 8. Frequency of Quality Circle Meetings

Frequency	n	%
Once a week	61	46.6
Once in two weeks	70	53.4
Total	131	100

Source: Survey Data

The survey data shows that the majority of quality circle's meetings were conducted once in 15 days. The danger of having quality circle meetings at longer intervals is that the intervals may tend to lengthen till eventually meetings are stopped altogether. If the meeting is scheduled for every week, quality

circles can be expected to meet at closer intervals and continuity of deliberations would be ensured. However, it is important to note that even though frequency does matter, the regularity of such meetings is of great importance and must be adhered to.

Regularity of Quality Circles Meetings

To implement quality circles effectively in any organization, quality circle meetings should be regularly held. The study found that it is a general trend among all circles that 8 out of 10 meetings were held regularly. The main reasons observed for irregularity in quality circle meeting were: the inadequate members' strength to conduct the meetings, production pressures, delays in implementations QC's recommendations, etc.

Meetings Schedule

The meetings of the quality circles may be held either during working hours or after working hours or both during and after working hours. In the first case, employer provides time off with pay to quality circle members to conduct the QC meetings. In the second case, the employees would sacrifice their time to conduct QC meetings. In the third case, both management and employees would sacrifice and or invest their time to conduct meetings.

The findings of the study shows that 46% of the meetings are held during working hours, 45% were held after working hours and the remaining 9% meetings were held both working and after working hours. Most the manufacturing organizations work in three shifts: first shift - 7 a.m. to 3 p.m., second shift -3 p.m. to 11 p.m. and third shift 11 p.m. – 7 a.m. QC meetings would be conducted during three shifts under

any one of the three cases discussed above.

However, practical difficulties would arise when circle members belong to different shifts. To solve this problem, three alternatives are suggested first, during working hours if the members belong to two shifts, for one week, the circle meets one hour before quitting time for the first shift; the next week the circle meets for the first hours of the second shift. If three shifts exist, the same type of rotation pattern can occur. Second, both during and after working hours, each shift can function with a linking pin (one/two people who attend all meetings) being the coordinating mechanism. They will carry the meeting affairs to next meetings. Third, after working hours, it is left to the members arrive at a satisfactory meeting schedule by consensus themselves.

Length of Quality Circle Meetings

Quality circle usually meets for an hour to identify and solve work related problems. However, the practice differs from organization to organization. The data collected from the sample organizations are presented in Table 9.

Table: 9 Length of quality circle meetings

Length	n	%
< hour	29	22
One hour	74	57
>hour	28	21
Total	131	100
Mode : One Hour		

Source: Survey Data

Most of the quality circles meet for an hour as the Mode is one hour. However, 22% of the respondents felt that their quality circle meets for less than an hour while 57% of the respondents felt that their quality circles will meet for more than an hour. Interview results revealed that the actual duration of the meeting varies depending on the problem on hand, time of starting of the meeting, the day of the meeting and such other factors.

Members' Attendance in Quality Circles Meetings:

The successful implementation of quality circle depends upon the full attendance of the members. However, as it is voluntary, no one can compel the members to attend the meetings. The findings of the study show that on an average the members' attendance rate was 85%. Lack of interest of members, inability to attend meetings due to exigencies related to work, fear of losing incentives such as over-time-work, being on leave on personal grounds, shift changes were some of the reasons cited for being absent from meetings.

The Extent of Member Participation:

The duration of participation of members in quality circle activities is an important parameter to determine its effectiveness. Since how long members have been participating in quality circles are presented in Table 10.

Table: 10. Members' participation in Quality circles

Duration	n	%
< 1 YEAR	29	28
1 - 2 YEARS	46	35
> 2 YEARS	49	37
TOTAL	131	100
MODE : 2 YEARS	MEAN : 3.38 YEARS	

The respondents have been participating in quality circle activities over a period of time. About 37% of respondents have been involved for a period of more than 2 years and another 35% are involved in quality circle activities for more than a year. The study observed that the number of members discontinuing from being quality circle member is very marginal. Even though they are not regular to meetings, they prefer to retain the membership. This is an indication that generally the bondage among the members of quality circles is close and they have a sense of collective well-being.

Facilities for Conducting Meetings

Facilities for conducting quality circle meetings like meeting room, furniture and black board are prerequisite for success of quality circle. In response to our query in this regard, most of the circles (79%) have opined that they are provided with all such facilities. However, a small number of respondents (about 21 %) reported that they lack such facilities and it is the responsibility of the company management to provide them.

Conclusion:

An evaluation of the Internal Process of the quality circles in the organizations under study reveals that by and large, quality circles are functioning satisfactorily. The study found that majority of quality circles were shop floor quality circles with voluntary participation by members. Most of the members joined quality circles for self-development and personal learning. On an average, the members have been participating in quality circle since two years. The frequency of quality circle meetings ranged from one week to two weeks. Most of the quality circles meetings were conducted regularly with an average attendance of 85%. Duration of the quality circles meeting was for an hour. The circles meeting were held both during the working hours and after the working hours.

It is recommended that an appropriate system for recognizing and rewarding the member's contribution to quality circle activities needs to be designed and implemented. The quality circle activities should be given wide publicity through in-house magazines and notice boards. Quality circle members should be nominated to participate in regional conferences such as Quality Circle Conventions organized by QCFI to strengthen the internal process of quality circles. Adequate support from the management is crucial to successful implementation of quality circles.

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