Quality Circles : A Study of Improvements in Industrial Sector

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Abstract

"Quality Control Circles" was the name that the Japanese first of all used for "Quality Circles" in fifties and sixties. Their major concern was to improve product quality and change their past image as producers of shoddy and cheap goods. With this objective in mind, they started massive training in Quality Control to all sections of employees. It is in this context that they started small group activities which they called "Quality Control Circles." But as the time passed it was realized that such groups not only improve quality of goods and services but also achieve better productivity, cost reduction, improved safety, etc. apart from humanizing activities and bringing about attitudinal changes and greater cohesion.

KEYWORDS : Quality Circles, Improvements, Productivity, Reductions, QCFI

Introduction:

"Quality Control Circles" was the name that the Japanese first of all used for "Quality Circles" in fifties and sixties. Their major concern was to improve product quality and change their past image as producers of shoddy and cheap goods. With this objective in mind, they started massive training in Quality Control to all sections of employees. It is in this context that they started small group activities which they called "Quality Control Circles." But as the time passed it was realized that such groups not only improve quality of goods and services but also achieve better productivity, cost reduction, improved safety, etc. apart from humanizing activities and bringing about attitudinal changes and greater cohesion. In India, where similar group efforts were formally introduced only about two decades after Japan. Having the word "Control" in the title was feared as making others assume that management desires to "Control" the activities for its selfish ends. So, finally the title "Quality Circles" was debated. Some said this might again be construed as activities tackling only Quality problems, ignoring all other work related themes. It was then agreed that the meaning of the word "Quality" would have to be clarified, prior to launching of the movement as not meaning merely the quality of products and services in the narrow sense, but as quality in totality of the total performance and quality of worklife itself. That is how "Quality Circles" came to be propagated by Bharat Heavy Electricals Limited (BHEL) and then by Quality Circle Forum of India (QCFI).

Material:

The title "Quality Circles" has been accepted by various countries and has been assimilated in different languages abroad. In India also the word has been translated into local languages. One such instance is the naming of the movement as "Guna Vretha" in Kannadda by some enthusiasts in Bangalore.

There have been different interpretations of the concept of Quality Circles in various organizations all over the world but the usually accepted one, in keeping with the essence of the philosophy as it originated in Japan, is as follows:-

Definition:-

"Quality Circle is a small group of employees in the same work area or doing 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 worklives."

Following characteristics emerge on the basis of above definition:

1. Quality Circle is a small group of 8 to 10 employees but the minimum and maximum strength of Quality Circles is recommended as 5 and 15 respectively.

2. Quality Circles are composed of workers doing similar type of work or they come from same work area.

3. The nature of membership to Quality Circle is voluntary that makes this concept totally different from all other concepts or practices.

4. The members of Quality Circles meet regularly for about an hour every week or fortnight during or after working hours to identify, analyse and resolve work related problems only.

5. Quality Circles not only improve the quality of the products but also bring improvements in efficiency, productivity, cost reduction, safety, work environment, attitudes, cohesiveness, etc. These improvements may be in terms of tangible or intangible gains.

6. The work life of the work force is enriched through greater degree of job satisfaction, high motivation and high morale.

After discussing what Quality Circles are, it is equally important to mention what they are not, as there is a lot of confusion and misgivings in the minds of educationists, practitioners, readers and public in general about the concept of the Quality Circles. Therefore, it is proper to highlight by explaining the various misconceptions about Quality Circles so that a clear view is available about the concept.

1. Quality Circles are not meant for quality problem alone but any matter related to productivity, cost reduction, safety, housekeeping, etc.

2. Quality Circles are not in lieu of task forces, product committees, works committees, quality assurance or control and suggestion schemes being run in the organizations.

3. Quality Circles are not a platform for raising the demands by the workers and to unload the problems by management.

4. Quality Circles are not a technique for resolving problems by management.

5. Quality Circles cannot be a medicine for all the ailments of an organization.

Method:

To examine the possible improvements, as suggested by Quality Circles, in quality, productivity, efficiency, work culture, communication skills, industrial relations, earnings, morale, self confidence, creativity, leadership abilities, interdepartmental cooperation, group cohesiveness, etc. two big industrial organizations equipped with Quality Circles were selected from Haryana. These both are ISGEC (Indian Sugar and General Engineering Corporation) and BILT (Ballarpur industries ltd. – Shree Gopal Division). These both are the flagship companies of Puri and Thapar Groups respectively, situated at district headquarters Yamuna Nagar and head offices in

Delhi. The former has more than 100 Quality Circles and latter has 54 in the areas of manufacturing, engineering, maintenance, store and spares, personnel, etc.

The workers in both the organizations were approached with the help of a structured questionnaire and 75 and 35 respondents from ISGEC and BILT respectively came out with their views on the extent of improvements brought by Quality Circles in various aspects. Their responses have been summarized in the appropriate tables and subjected to statistical test of percentages, standard error for differences between Proportions, Chi-square and Co-efficient of Contingency to check and strengthen the accuracy and authenticity of the results.

The meaning and the significance of various aspects under survey have been discussed briefly and the results have been as under:

A product or service has quality when it satisfies the user's needs, both stated or implied. For about organization, therefore, quality is something about which constant and continuous efforts are to be ensured. That is why various steps are taken by the organizations to improve quality of their products or services to come up to the expectations of their users.

Productivity refers to the relationship between the input(s) and output of a process expressed quantitatively. Although it is quite a difficult task to bring an improvement in the productivity, yet a number of techniques are tried out by organizations from time to time for this purpose. This is an area which is to be managed with strict discipline and mite by the managements of the organizations.

To improve quality and productivity, it is the efficiency of the work force which needs to be improved and maintained first. Efficiency is a relative term and it further depends on a number of factors such as morale, creativity, self confidence, work environment, inclusive of working conditions, etc.

Work culture is a new concept for developing countries but developed countries have successfully created, maintained and utilized and still reaping the benefits of work culture. The organizations implementing it gain quantitatively as well as qualitatively. Sincerity, dedication, devotion, loyalty etc. of workers towards their work and organization are emphasized by this concept. It is something which cannot be created overnight but has to be cultivated slowly and steadily .

Communication is an omnipresent activity. Communication is said to be complete and over when the receiver of the message understands the messages in the same sense, as it is intended to. In the absence of an effective communication system, organization are bound to face multiple behavioral, administrative and technical problems which may result into the failure of the organization on various fronts. Therefore, managements are very much conscious and alert to need of developing the communication skills of the managerial, supervisory and operative staff. For this purpose seminar, conferences, workshops etc. are conducted from time to time to create and maintain the much needed communication skills for the work force.

In 1920, Elton Mayo and Roothilisberger propounded the theory of Human Relations and emphasized that use of Human Relations approach brings workers and managers close to each other and conflicts are minimized or abolished. Thus, industrial peace is established which, in turn, leads to improvement in efficiency, productivity, profitability, etc. Similarly, industrial relations can be described as relationship between employee and employee, employer and employee and employer and employer. Good industrial relations result into a number of benefits mentioned above.

The goal of every business is maximisaiton of profits of earnings. Earinings have different meanings in various spheres like Economics, Accountancy, Taxation, etc. Earnings sustain a business and are vital for growth and expansion and diversification of a business. The perfect integration of organizational goals and individual needs is achieved through earnings. For earnings, workers and management have to work very hard, efficiently and effectively so that productivity of the concerned organization gets improved. For achieving all these aspects, Quality Circles have a definite and strategic role to play.

Morale is complex and psychological concept which can be explained in different ways. It is reflected by the zeal of a person towards his work, work environment, attitude towards employer and his efforts to attain the organizational goals. Job satisfaction, performance, productivity, needs etc. are inter related and inter woven concepts.

Self Confidence leads to success and every organization wishes to be successful. To create, develop and promote confidence in the work force, a member of methods are applied. Training is one of the best methods to build confidence in the employees of the concerned organization.

The modern industries are largely responsible for the problems of monotony and boredom affecting work force. Due to the repetitive nature of work craftsmanship, pride in one's work and creativity have been adversely affected or lost in this age of rapid industrialization. Creativity can produce better results but unfortunately there is no scope for workers to exhibit their knowledge, wisdom and capabilities in performing the activities. It may not be untrue to say that creativity is being suppressed in this era of industrialization.

Sound and effective leadership can take the organization to unimaginable heights by passing through different phases of the business and economic cycles. On the other hand, poor leadership creates numerous problems which ultimately become the cause of closure or sinking of the organization. Quality Circles provide a platform to the work force and managerial staff to develop the skills and abilities required for effective leadership.

Due to the over-lapping of roles and interdependence of different departments on each other, main requirement is of creating and maintaining the atmosphere of cooperation to achieve the organizational goals. Cooperation leads to coordination, which in turn, is a force for pulling the horses of different colours in one direction. To get cooperation, the key element is mutual willingness to help each other and this feeling cannot be purchased but is definitely to be created and Quality Circles can help a lot in this regard.

The group cohesiveness is better achieved through co-operation, coordination and the sense of belongingness among the members of an organization. For achieving group cohesiveness it is also essential to remove all the bottlenecks found in the inter-personal relations and in the work environment. Group cohesiveness also demands the reduction or removal of conflicts at individual level, group level and organizational level. For doing so, Quality Circle have definitely a role to play.

Results :

The responses to all such aspects have been summarized under Table 1.

Table 1
Extent of Improvement of Different Aspects Brought by Quality Circle
Number of Respondents

To what extent QCs help in improvement of the following	ISGEC : 75				BILT : 35				TOTAL 110			
	To a large extent	To some extent	No effect at all	Do not Know	To a large extent	To some extent	No effect at all	Do not know	To a large extent	To some extent	No effect at all	Do not know
1. Quality	55(73.34)	10(13.33)	0(0.00)	10(13.33)	29(82.86)	06(17.14)	0(0.00)	0(0.00)	84(76.36)	16(14.55)	0(0.00)	10(09.09)
2. productivity	60(80.00)	05(6.67)	0(0.00)	10(13.33)	32(91.43)	03(08.57)	0(0.00)	0(0.00)	92(83.64)	08(07.27)	0(0.00)	10(09.09)
3. Efficiency	60(80.00)	10(13.33)	0(0.00)	05(06.67)	35(100.00)	0(0.00)	0(0.00)	0(0.00)	95(86.36)	10(09.09)	0(0.00)	05(04.55)
4. Work Culture/ Work life	75(100.00)	0(0.00)	0(0.00)	0(0.00)	35(100.00)	0(0.00)	0(0.00)	0(0.00)	110(100.00)	0(0.00)	0(0.00)	0(0.00)
5. Communication skills	50(66.67)	20(26.66)	0(0.00)	05(06.67)	29(82.86)	03(08.57)	0(0.00)	03(08.57)	79(71.82)	23(20.91)	0(0.00)	08(07.07)
6. Human Relations	54(72.00)	20(26.66)	0(0.00)	01(01.34)	18(51.43)	10(28.57)	0(0.00)	07(20.00)	72(65.45)	30(27.28)	0(0.00)	08(07.07)
7. Earnings	0(0.00)	0(0.00)	75(100.00)	0.00	0(0.00)	0(0.00)	35(100.00)	0(0.00)	0(0.00)	0(0.00)	110(100.00)	0(0.00)
8. Morale	75(100.00)	0(0.00)	0(0.00)	0.00	35(100.00)	0(0.00)	0(0.00)	0(0.00)	110(100.00)	0(0.00)	0(0.00)	0(0.00)
9. Self Confidence	75(100.00)	0(0.00)	0(0.00)	0.00	29(82.86)	06(17.14)	0(0.00)	0(0.00)	104(94.55)	06(05.06)	0(0.00)	0(0.00)

10. Creativity	75(100.00)	0(0.00)	0(0.00)	0.00	30(85.71)	05(14.28)	0(0.00)	0(0.00)	105(95.45)	05(04.55)	0(0.00)	0(0.00)
11. Leadership Abilities	59(78.67)	16(21.33)	0(0.00)	0.00	28(80.00)	04(11.43)	0(0.00)	03(08.57)	87(79.09)	20(18.18)	0(0.00)	03(02.73)
12. Inter departmental	0(0.00)	15(20.33)	60(80.00)	0.00	0(0.00)	0(0.00)		0(0.00)	0(0.00)	15(13.64)	95(86.36)	0(0.00)
13. Inter departmental Co-operation	30(40.00)	43(57.33)	0(0.00)	02(02.06)	20(57.14)	10(28.57)	0(0.00)	05(14.29)	50(45.55)	53(48.18)	0(0.00)	07(06.37)

Figures given in parentheses represent percentages.

100 percent respondents of each of the organizations held uniform opinion by describing to a large extent option regarding work culture and morale aspects being improved by the operation of Quality Circles. Regarding 'self confidence' and 'creativity' the improvement was observed 'to a large extent' by 100 percent BILT respondents. 82.26 percent and 85.71 percent ISGEC respondents opined for the former and the latter aspects respectively for the same option i.e. 'to a large extent'.

Efficiency was affected by the operation of Quality Circles 'to a large extent' as observed by 100 percent BILT respondents and in case of ISGEC the same was opined by 80 percent respondents.

Quality and productivity were improved by the operation of Quality Circles 'to a large extent' as felt by 73.34 percent and 80 percent respondents and in case of ISGEC the same was opined by 80 percent respondents.

Quality and productivity were improved by the operation of Quality Circles ' to a large extent' as felt by 73.34 percent BILT and 91.43 percent BILT respondents opined for the same option for the given aspects respectively.

66.67 percent ISGEC respondents held that Quality Circles improved 'to some extent' and the remaining preferred to keep mum in this regard whereas 82.86 percent and 8.57 percent of BILT respondents opined for the same options respectively. Both the organizations respondents were uniform in finding 'no effect at all' by the operation of Quality Circles on communication skills.

98.66 percent of the ISGEC respondents felt that human relations have improved by the operation of Quality Circles by taking 'to a large extent' and 'to some extent' together. The same was observed by 80 percent of BILT respondents. None of the respondents under both the organizations felt 'no effect at all' of the Quality Circles on human relations.

It was thought proper to examine the improvement in earnings brought by Quality Circles. Surprisingly, both the units were uniform in their responses as the entire sample respondents found 'no effect at all' on the earnings by the operation of Quality Circles.

ISGEC was ahead of BILT for finding improvement in leadership abilities 'to a large extent' and 'to some extent' together as it was observed by 100 percent respondents of the former organization and by 91.43 percent respondents of the latter organization. No one from any of the organizations denied the improvement in leadership abilities by the operation of Quality Circles.

While ISGEC has lagged behind the BILT in this regard as 40 percent and 57.14 percent respondents of the respective organizations found the improvement 'to a large extent'. 'To some extent' improvement was felt by 57.33 percent and 28.57 percent respondents of ISGEC and BILT respectively.

80 percent and 100 percent respondents of ISGEC and BILT respectively denied any sort of improvement in the inter departmental cooperation brought by the operation of Quality Circles. Only 20 percent ISGEC respondents opined the improvement in this regard 'upto some extent'.

The next Table 2 has been constructed to apply the statistical test Difference between Proportions to 'to a large extent' option of the query –"Extent of improvement in Different Aspects brought by Quality Circles' explained under previous table.

Table 2
Difference between Proportions to 'a large extent' Response Option

Category	Number of Respondents						CR	SIGNI.
	ISGEC		BILT		TOTAL			
Quality	55	(73.33)	29	(82.86)	84	(76.36)	1.095	
Productivity	60	(80.00)	32	(91.43)	92	(83.64)	1.509	
Efficiency	60	(80.00)	35	(100.00)	95	(86.36)	2.847	**
Work-Culture	75	(100.00)	35	(100.00)	110	(100.00)		
Communication Skills	50	(66.67)	29	(82.86)	79	(71.82)	1.758	
Human Relations	54	(72.00)	18	(51.43)	72	(65.45)	2.113	*
Earnings	0	(0.00)	0	0	0	(0.00)		
Morale	75	(100.00)	35	(100.00)	110	(100.00)		
Self-Confidence	75	(100.00)	29	(82.86)	104	(94.55)	3.688	**
Creativity	75	(100.00)	30	(85.71)	105	(95.45)	3.350	**
Leadership Abilities	59	(78.67)	28	(80.00)	87	(79.09)	0.160	
Cooperation	0	(0.00)	0	(0.00)	0	(0.00)		
Cohesiveness	30	(40.00)	20	(57.14)	50	(45.45)		

*   1% level of significance
**   5% level of significance
figures given in parantheses represent percentages
Source: Field survey

The two firms are identical in their responses to 'to a large extent' option of improvement brought by Quality Circles as regards to the 'work culture' and 'morale'. The 'earnings' and 'co-operation' options did not find any response from any respondent of the two firms. For 'efficiency', 'self confidence' and 'creativity' aspects the hypothesis stands rejected at 1% level of significance implying that firm differ significantly from each other as regards to the proportions for improvement brought by Quality Circles 'to a large extent'. For rest of the aspects firms do not differ significantly from each other except for 'human relations' and that too at 5% level of significance.

The above improvements brought by Quality Circles are also supplemented by various reductions caused by Quality Circles. Such reduction are of wastages, absenteeism, accidents, costs and labour turnover.

For controlling the wastages of material, labour and overheads programmes of cost-consciousness and awareness are run in the organization. In the present industrial

environment of competitiveness, managements have realized and made the labour force understand that reduction in wastages means increase in profitability.

The consequences of absenteeism are manifold resulting into decreased efficiency, reduced productivity and diminished profitability. If this is allowed to persist unchecked, the survival of the organization may be endangered. Therefore, the managements are supposed to be vigilant about the phenomenon of absenteeism. The seriousness of this problem demands a strategy to use a number of measures to check the menace of absenteeism. The quality circles also can play its role in reducing the absenteeism.

The lives of industrial workers are always exposed to various risks and accidents top the list of such risks. An accident incapacitates a worker to perform to his full potentialities. These accidents occur the moment the safety provisions prescribed under section 21 to 41 of the Factories Act, 1948 are not complied with. The managements of industrial organizations adopt a number of safety measures, voluntarily or statutorily, along with various other techniques, which in one way help reducing industrial accidents. Since Quality Circles play an important role in creating better work environment they may have a definite role to play in reducing the number of industrial accidents.

The significance of the costs can not be overemphasized. Every organization though to be in a hurry to have an edge over others in the matters of reduction of costs since costs reduced means enhanced profits and profits and wealth maximization are the two basic financial goals of the business organizations. Quality Circles, as they are meant to improve the efficiency and productivity, can also contribute their mite in reducing the costs.

Managements of the organizations take all the possible steps to minimize and control the labour turnover rate to the possible extent. These steps include a scientific system of recruitment, selection and placement, enlightened supervision, development of an effective communication system and participative management techniques. Since Quality Circle concept is participative and people building in nature, its role in this regard need not be over-emphasised.

The above discussed aspects were put to analytical examination by raising the query as –'To what extent Quality Circles reduce wastages, absenteeism, accidents, costs and labour turnover?' the response have been summarized under Table 3.

The analysis reveals that the entire sample respondents of both the organizations were uniform in finding out the reduction in wastages by taking the 'to a great extent' and 'to some extent', 100 percent BILT respondents agreed that Quality Circles reduce costs and labour turnover whereas the same options were expressed by 86.67 percent and 77.33 percent ISGEC respondents for reduction of costs and labour turnover respectively. As regards the absenteeism BILT has an edge over ISGEC as 71.43 percent and 60 percent respondents of the respective organizations felt the reduction in absenteeism 'to a great extent' by Quality Circles. 20 percent and 8.57 percent respondents of ISGEC and BILT respectively found themselves unable to comment on the reduction in accidents by Quality Circles. 40 percent and 57.14 percent respondents of ISGEC and BILT respectively opted for the 'to a great extent' option whereas 33.33 percent and 31.43 percent respondents from the respective organizations replied to 'to some extent'category.

Table 3
Extent of Reduction brought in various Aspects by Quality Circles

Category	Number of Respondents						CR	SIGNI.
	ISGEC		BILT		TOTAL			
(a)Wastages								
To a Great Extent	56	(73.33)	28	(80.00)	83	(75.45)	0.757	
To Some Extent	20	(26.67)	7	(20.00)	27	(24.55)	0.757	
Can't say	0	(0.00)	0	(0.00)	0	(0.00)		
Not at all	0	(0.00)	0	(0.00)	0	(0.00)		
Total	75	(100.00)	35	(100.00)	110	(100.00)		
(b) Absenteeism								
To a Great Extent	45	(60.00)	25	(71.43)	70	(63.64)	1.161	
To Some Extent	15	(20.00)	2	(5.71)	17	(15.45)	1.931	
Can't say	15	(20.00)	3	(8.57)	18	(16.63)	1.509	
Not at all	15	(0.00)	5	(14.29)	5	(4.55)	3.350	**
Total	75	(100.00)	35	(100.00)	110	(100.00)		
(c) Accidents								
To a Great Extent	30	(40.00)	20	(57.14)	50	(45.45)	1.682	
To Some Extent	25	(33.33)	11	(31.43)	36	(32.73)	0.198	
Can't say	15	(20.00)	4	(11.43)	19	(17.27)	1.108	
Not at all	5	(6.67)	0	(0.00)	5	(4.55)	1.563	
Total	75	(100.00)	35	(100.00)	110	(100.00)		
(d) Costs								
To a Great Extent	30	(40.00)	28	(80.00)	58	(52.73)	3.914	**
To Some Extent	35	(46.67)	7	(20.00)	42	(38.18)	2.681	**
Can't say	7	(9.33)	0	(0.00)	7	(6.36)	1.868	
Not at all	3	(4.00)	0	(0.00)	3	(2.73)	1.200	
Total	75	(100.00)	35	(100.00)	110	(100.00)		
(e) Labor Turnover								
To a Great Extent	40	(53.33)	29	(82.86)	69	(62.73)	2.983	**
To Some Extent	18	(24.00)	6	(17.14)	24	(21.82)	0.811	
Can't say	9	(12.00)	0	(0.00)	9	(8.18)	2.139	*
Not at all	8	(10.67)	0	(0.00)	8	(7.27)	2.007	*
Total	75	(100.00)	35	(100.00)	110	(100.00)		

* 1% level of significance   ** 5% level of significance   Source:-
Field survey

Note:- Figures given in parentheses represent percentages.

Aspects	(a) Wastages	(b) Absenteeism	(c) Accidents	(d) Costs	(e) Labour Turnover
Chi-sq	0.573	16.260	4.918	16.352	11.764
d.f.	1 independent	3 Dependent	3 Independent	3 dependent	3 dependent
C	0.072	0.359	0.207	0.360	0.311

The operation of Quality Circles bring reduction in wastages, absenteeism, accidents, costs and labour turnover upto certain extent. When tested statistically, no significant difference was found between the proportions of two selected firm with respect to reduction in wastages, accidents and absenteeism at 1% level of significance for 'to a great extent' option.

For Chi Square test, the hypothesis of independence was rejected for finding no association in case of reduction in absenteeism, cost and labour turnover by Quality Circles and for remaining aspects of reduction, the hypothesis stood accepted.

It is obvious from the above analysis that Quality Circles reduce the wastages, absenteeism, accidents, costs and labour turnover in varying degrees. For all aspects BILT was having an edge over ISGEC respondents in a good percentage failed to reply for the reduction in all the aspects except wastages.

It may be concluded on the basis of above analysis that Quality Circles not only bring improvement in various aspects but also contribute by reducing the wastages, accidents, labour turnover, cost and absenteeism.

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