The Practices of Quality Circles in Hong Kong

Quality Circles in Hong Kong

The concept of quality circles was first introduced to Hong Kong in the manufacturing sector about fifteen years ago mainly to enhance productivity and to reduce operating costs. Since then, many organizations, big or small, old or new, local or foreign, private or public / government, have established various employee participation schemes similar to quality circles. As quality circles were gradually extended to industries other than the manufacturing companies, the purposes of introducing quality circles had also been enlarged to include service and quality improvement, staff development and building a corporate culture. These schemes have therefore been given different labels, such as: "Work Improvement Team", "Quality Improvement Team", "Work Based Improvement Team", "Service Improvement Team", "Quality Assurance Team", "Continuous Improvement Team", "Staff Suggestion Scheme".

Like in many countries, the practices of quality circles movement in Hong Kong have been mixed. On the one hand there are companies which run a high profile and successful scheme for many years. There are on the other hand also companies which could not or were not willing to introduce the scheme in their organizational structure. Some companies had a good start but took the quality quest as a fad for the year resulting in a short lived quality programme in their company history.

Reasons for Success and Failure of Quality Circles in Hong Kong

Brockner et al. (1986) reported the two conditions which are necessary for the successful implementation of a quality control programme. First, employees have to believe that their support and participation will benefit themselves as well as the organization. Second, the participants in QCs must be well trained in group dynamics and the QC problem solving tools. These conditions are obvious and logical. For any programme to be successful and long lasting, it has got to be perceived to be a programme which is producing a Win-Win situation. Dewar (1994) wrote: "*Creating Win-Win experiences for the team and those who assist the team will assure a string of long-term successes*". A programme which is beneficial only to the management would not receive the wholehearted and voluntary support from the employees. On the other hand if a programme is beneficial to the employees only, then the enthusiasm from the management will likely fade over time. For the 'marriage' to be long lasting, both parties need to perceive the bond to be mutually beneficial. The need of training to the participants in QC is self evident. Without proper training, the circles would not be able to function effectively and members would feel frustrated.

Hong Kong in the past two decades has experienced very rapid technological, educational and economic development. A problem lying ahead for Hong Kong is the restlessness of the skilled workforce, at a time of acute labour shortage in many sectors of the economy. High labour turnover is a common problem which is a symptom of dissatisfaction with the social systems of enterprises. Goldstein (1990) suggested that the problem was due to the overuse of organisational power, or more precisely authority, to gain compliance from the workforce. Previously this overuse of authority was tolerated. He writes:

> *"However, with increasing levels of education and affluence on the one hand, and of environmental complexity and uncertainty on the other hand, authority alone will neither sufficiently motivate people nor arouse their creativity enough to tackle the challenges of the next decade with the same enthusiasm as in the past decade. High calibre staff, particularly, will be least attracted to enterprises that overuse power and authority"*

There is a need for managers in Hong Kong no to rely too much on authority, to be believe less in it, and to involve their employees in decision making in far greater extent than at present (Redding and Casey, 1976). Despite this growing need for employee participation, introduction of participation scheme are not without problem. Participation and authority are basically incompatible. Authority is based on achieving compliance through legitimate power, whereas for participation it is achieved through reasoning and understanding. To circumvent this potential conflict, quality circles introduce a useful time-space block (i.e. QC meeting) during which certain behaviours are allowed, such as disagreeing with a supervisor, which would not be acceptable during the conduct of normal business. According to Goldstein (ibid.) the most probable causes of the failure of quality circles are that there was not a need for quality circles as other system-improvement substitutes existed, or that the design was poor in relation to the need. One other reason for quality circles to fail was the lack of continuous support from the top management. Goldstein (1978) writes:

> *"Unfortunately, except for very few remaining success the history of these interventions has been that the initial successes are followed by considerable regression towards the old structural patterns. The reason may be simply that pockets of democracy inserted into authoritarian systems are unlikely to survive unless, paradoxically, they are protected by dominant coalitions - an unlikely durable condition (Miller, 1975)."*

In short the failure of quality circles in most companies was due to one or more of the following reasons:

- Either or both the management and employees are skeptical about the benefits of quality circles (i.e. the Win-Win situation is not being perceived);
- Proper and adequate training about QC is lacking;
- Design of the QC programme does not meet the organizational requirements;
- The QC programme has duplicated with other system improvement schemes; and
- The support from top management is ad hoc and not lasting.

The Hong Kong Quality Management Association (HKQMA)

The Hong Kong Quality Management Association (HKQMA) was established in 1983 with the mission to promote quality management activities in Hong Kong through enhancing quality concepts and improving the quality of products and services. It is the non-profit making professional association actively promoting quality circles and other quality management practices in Hong Kong. The association conducted a questionnaire survey among its members in October 1993. The findings shed some light on the practices of quality circles among various types of organizations in Hong Kong. The specific purposes of the surveys were: (a) to identify the training needs of HKQMA members; (b) to find out areas of improvement in the membership services provided by the association; and (c) to reveal various quality management practices among different types of organizations in Hong Kong.

The Design of the Questionnaire and Research Methodology

The questionnaire (See Annex) uses a 5-point Likert type statements ranging from 1 representing "Disagree" to 5 representing "Agree". It contains 13 main statements. Including the sub statements there are 54 statement items. Statement 4 aims to reveal the benefits of quality management as perceived by the respondents. Statement 11 helps identify the training needs of the corporate members of HKQMA. Statement 12 helps prioritize the various HKQMA membership services and Statement 13 with the same sub statements identifies the extent of satisfaction towards these membership services. A gap analysis can be conducted with scores from statements 12 and 13. The other statements relate to the

various quality management practices of the respondents. The last nine questions ask for the biographical data.

The anonymous questionnaires were sent by mail to all the individual and corporate members of the association. Confidentiality was assured to the respondents.

Results of the Questionnaire

A total of 71 usable questionnaires were received, representing a mediocre response rate of below 30%. Of these responses 44 were from individual members and 23 were from corporate members. Most of the respondents were male (i.e. 86%). 53% were below the age of 40.

One encouraging sign was that 83% of the respondents (who had responsibility in the quality function in their organizations and were given the questionnaire to complete) claimed to be in the top and mid management rank in their own organisations. This may be indicative of the importance attached to quality management among the responding companies.

Positions of respondents in their organizations:		**Counts**	**Percentage**
Cumulative Percentage			
TOP MANAGEMENT	23	32.9	32.9
MID MANAGEMENT	35	50	82.9
JUNIOR MANAGEMENT	5	7.1	90.0
PROFESSIONAL	6	8.6	98.6
GENERAL STAFF	1	1.4	100
Total:	**70**	**100**	

Most responding organisations were quite sizeable in terms of their employee numbers. Less than 16% had fewer than 100 employees. 40% (i.e. 28 organisations) had staff size over 1000.

Numbers of employees in the organization:	**Counts**	**Percentage**	**Cumulative Percentage**
BELOW 50	6	8.6	8.6
50 TO 99	5	7.1	15.7
100 TO 499	15	21.4	37.1
500 TO 999	16	22.9	60.0
1000 TO 4999	16	22.9	82.9
OVER 4999	12	17.1	100
Total:	**70**	**100**	

Most respondents were in the service and manufacturing sectors. This indicated the importance of quality management in these business sectors.

Principal business nature:	**Counts**	**Percentage**	
Cumulative Percentage			
MANUFACTURING	32	45.7	45.7
SERVICE	20	28.6	74.3
GOVERNMENT	2	2.9	77.1
EDUCATIONAL	1	1.4	78.6
PUBLIC UTILITY	4	5.7	84.3
TRADING	4	5.7	90.0
OTHERS	7	10	100
	70	**100**	

Most of the responding organisations were of local/Chinese nationality. The breakdown of nationality was as follows:

Nationality of the organization:	Counts	Percentage	Cumulative Percentage
LOCAL/CHINESE	39	55.7	55.7
EUROPEAN	9	12.9	68.6
AMERICAN	15	21.4	90.0
JAPANESE	4	5.7	95.7
OTHERS	3	4.3	100
Total:	**70**	**100**	

It was most encouraging to note that seven organisations (10%) reported having over 100 QCs. On the other hand, 21 (30%) respondents had no QCs in their organizations.

Number Quality Circles in the organization:	Counts	Percentage	Cumulative Percentage
Nil	21	30.4	30.4
1 to 10 QCs	18	26.1	56.5
11 to 50 QCs	20	29	85.5
51 to 100 QCs	3	4.3	89.9
Over 100 QCs	7	10.1	100
Total:	**69**	**100**	

Less than 33% of the respondents claimed that they did not have any recognition and reward scheme. Most organizations did have some kind of recognition and reward. The breakdowns were as follows:

	Counts	Percentage	Cumulative Percentage
Nil	23	32.9	32.9
Recognition Only	9	12.9	45.7
Reward Only	3	4.3	50.0
Recognition & Reward	35	50	100
Total:	**70**	**100**	

The Perceived Benefits of Quality Management Activities

Statement 4 in the questionnaire aimed to find out the perceived benefits of quality management activities, including the quality circles. The followings are the various perceived benefits in decreasing order of effectiveness scores. As all perceived benefits were scored with means above the neutral value of three, the respondents generally agreed that the Quality Management activities (including QCs) in their organization would bring forth the kinds of benefit suggested in the questionnaire. Relatively speaking the most obvious benefits were improvement of customer service and productivity.

Perceived Benefits:	Counts	Mean
IMPROVE CUSTOMER SERVICE	67	4.19
IMPROVE PRODUCTIVITY	66	4.15
REDUCE COST	67	4.04

DEVELOP QUALITY CULTURE	69	4.03
BUILD BETTER TEAMWORK	69	3.99
DEVELOP STAFF POTENTIAL	69	3.8

Independent-sample T-Tests were performed on the lists of perceived benefits between the Manufacturing and Service groups. The only significant difference (at 0.05 level) was on the benefit of teamwork development. The following table, in ascending order of significance levels, summarises the difference of perception of benefits between the two groups of respondents. The smaller the 2-tail significance level implies the two groups' perceptions were more different statistically.

Perceived Benefits of QM Activities:	**Means of Manufacturing sector** (32 cases)	**Means of Service sector (20 cases)**	**2-tail significance level for equal variance**
Build better teamwork	3.61	4.35	0.01
Improve Customer Service	3.87	4.40	0.06
Develop Quality Culture	3.74	4.30	0.09
Develop Staff Potential	3.48	4.00	0.12
Reduce Costs	4.10	3.84	0.43
Improve Productivity	4.19	4.05	0.67

A closer examination of the above table reveals that the Manufacturing sector perceived the tangible benefits (i.e. productivity improvement and cost reduction) better than the Service sector. The Service sector perceived the intangible benefits (i.e. customer service, quality culture, better teamwork, and staff development) better the Manufacturing sector. In fact most manufacturing firms treat the tangible benefits of cost reduction and productivity enhancement as their number one business priority. The Service sector usually have different business focuses and these organizations tend to value the intangible benefits more than the tangible ones. The perception revealed by the survey was therefore in line with the business focuses of the two different sectors.

Perceived Benefits of QM Activities:	**Means of Top Management** (23 cases)	**Means of Other Staff** (47 cases)	**2-tail significance level for equal variance**
Build better teamwork	4.30	3.80	0.04
Improve Customer Service	4.52	4.02	0.04
Develop Quality Culture	4.39	3.82	0.04
Reduce Costs	4.30	3.88	0.13
Develop Staff Potential	4.00	3.67	0.24
Improve Productivity	4.30	4.05	0.35

The above table summarises the difference in perception of benefits between the top management respondents and the respondents below top management rank. In general the top management respondent could appreciate the benefits better than the others.

Training Need Analysis

The following table summarises the priority of the respective training needs in driving the various quality management initiatives in their organizations. The followings are arranged in descending of order of perceived importance:

Training Areas:	**Counts**	**Mean Scores**
OTHER (e.g. data analysis, quality tools, continuous improvement, process management, quality awareness for top management)	6	5.00

QUALITY CONCEPT TRAINING	69	4.62
TQM TRAINING	70	4.57
QUALITY ASSURANCE TRAINING	68	4.43
TEAM BUILDING TRAINING	69	4.42
PROBLEM SOLVING TRAINING	69	4.42
LEADERSHIP SKILLS TRAINING	68	4.38
QCC CONCEPT TRAINING	66	4.32
ISO9000 AWARENESS TRAINING	67	4.31
MANAGEMENT TRAINING	67	4.22
ISO9000 DOCUMENTATION TRAINING	65	4.09
PRESENTATION SKILLS TRAINING	68	3.81
PROPOSAL WRITING TRAINING	67	3.69

Excluding the item on other training (which item had only six responses), a factor analysis was performed on the list of training topics in order to reveal parsimoniously the broad training areas. Using Principal Component method with eigenvalue larger than one, the data were rotated by Varimax method. Missing values were excluded on pairwise basis.

It was computed that:
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.74162
Bartlett Test of Sphericity = 367.52262, Significance = 0.00000
The KMO value of 0.74 and the very small significance level of Bartlett Test of Sphericity suggested that the use of factor analysis was appropriate.

Three factors were extracted and they are labelled as:
Factor 1: (**Practical Tools**)
- Presentation Skills
- Proposal Writing
- Problem Identification / Solution
- Leadership Skills

Factor 2: (**Management Concepts**)
- Quality Assurance
- Quality Concepts / Awareness
- Total Quality Management
- General Management / Supervisory Programmes
- Team Building

Factor 3: (**Quality Training**)
- ISO 9000 Awareness
- ISO 9000 Documentation / Implementation
- QCC Concepts

An independent-sample T-Test was conducted to compare the means of the training needs of the Manufacturing and Service sectors. Although none of the difference was statistically significant, the comparison indicated the different emphasis on their training needs. The training needs for both the Manufacturing and Service sectors were rather similar.
The top five items for each group were bolded.

Training Areas:	**Means of Manufacturing Sector**		
Means of Service Sector	**2-Tail sig. level for equal variance**		
QUALITY CONCEPT TRAINING	**4.63**	**4.45**	0.33
TQM TRAINING	**4.56**	**4.70**	0.45
QUALITY ASSURANCE TRAINING	**4.43**	4.25	0.42
TEAM BUILDING TRAINING	**4.43**	**4.30**	0.51

PROBLEM SOLVING TRAINING	4.33	**4.50**	0.43
LEADERSHIP SKILLS TRAINING	**4.48**	**4.30**	0.33
QCC CONCEPT TRAINING	4.24	4.22	0.95
ISO9000 AWARENESS TRAINING	4.37	4.21	0.54
MANAGEMENT TRAINING	4.25	4.05	0.48
ISO9000 DOCUMENTATION TRAINING	4.21	3.78	0.18
PRESENTATION SKILLS TRAINING	3.72	3.65	0.80
PROPOSAL WRITING TRAINING	3.62	3.42	0.50

Another perspective to compare the training requirements would be according to the nationality of the organizations. The following table contrasts the training needs of the Chinese and Non-Chinese firms. The top five items for each group were bolded. It was interesting to note that Chinese and Non-Chinese companies had different training requirements in quality concept, quality assurance, and presentation skills.

Training Areas:	**Means of Local / Chinese firms**	
Means of Non-Local / Chinese firms	**2-Tail sig. level for equal variance**	
QUALITY CONCEPT TRAINING	**4.46**	**4.86**	0.01
TQM TRAINING	**4.47**	**4.71**	0.16
QUALITY ASSURANCE TRAINING	4.27	**4.63**	0.05
TEAM BUILDING TRAINING	**4.45**	4.37	0.64
PROBLEM SOLVING TRAINING	**4.45**	4.43	0.94
LEADERSHIP SKILLS TRAINING	**4.39**	4.38	0.93
QCC CONCEPT TRAINING	4.19	**4.48**	0.22
ISO9000 AWARENESS TRAINING	4.17	**4.45**	0.22
MANAGEMENT TRAINING	4.24	4.21	0.92
ISO9000 DOCUMENTATION TRAINING	4.00	4.17	0.55
PRESENTATION SKILLS TRAINING	3.97	3.59	0.10
PROPOSAL WRITING TRAINING	3.76	3.61	0.52

Membership Services of HKQMA

Statement 12 in the questionnaire listed a range of membership services provided by HKQMA. The membership services expected from among the respondents were ranked in decreasing order of importance as below:

Types of HKQMA Membership Services:		**Counts**	**Mean**
IN-HOUSE TRAINING	71	4.38	
NEWSLETTER	70	4.36	
INDUSTRIAL VISIT	70	4.34	
PUBLIC SEMINAR	71	4.27	
CONSULTANCY	70	4.23	
NEW MEMBER ORIENTATION	69	4.12	
LIBRARY	70	4.06	
RESEARCH	69	4.01	
QCC CONVENTION	68	3.9	
OVERSEA STUDY TOUR	70	3.81	
BOOKSALE	70	3.8	

A factor analysis was performed on the list of membership services in order to reveal parsimoniously the broad services desired by the HKQMA members. Using Principal Component method with eigenvalue larger than one, the data were rotated by Vaimax method. Missing values were excluded on pairwise basis.

It was computed that:

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.78572
Bartlett Test of Sphericity = 348.33737, Significance = 0.00000
The KMO value of 0.79 and the very small significance level of Bartlett Test of Sphericity suggested that the use of factor analysis was appropriate.

Three factors were extracted and they are labelled as:
Factor 1: (**Experience Sharing**)
- Organization of Oversea Study Tours
- Industrial Visits
- Research
- Orientation Gathering for New Members

Factor 2: (**Public Information**)
- Book Sales
- Library
- HKQMA Newsletter / Publication
- Public Seminar / Workshop

Factor 3: (**Tailor-Made Services**)
- Consultancy Services
- In-House Training Programmes
- Biennial 'QCC Convention / Conference'

The following outlines the perceived satisfaction towards the membership services provided by the HKQMA. These are ranked in decreasing order of satisfaction:

Types of HKQMA Membership Services:	**Counts**	**Satisfaction Mean**
QCC CONVENTION	67	3.90
NEWSLETTER	69	3.77
INDUSTRIAL VISIT	66	3.58
PUBLIC SEMINAR	67	3.49
IN-HOUSE TRAINING	67	3.30
OVERSEA STUDY TOUR	65	3.29
CONSULTANCY	66	3.21
NEW MEMBER ORIENTATION	66	2.95
BOOKSALE	67	2.90
RESEARCH	63	2.83
LIBRARY	66	2.73

There were four items whose satisfaction scores were below the neutral value of three. There are shaded in the above table.

The satisfaction scores should be studied in conjunction with the importance scores. The difference between the two kinds of scores would indicate the expectation "gap" that existed. The "Gap" is operationally defined as the difference between the Importance Mean Scores and the Satisfaction Mean Scores. The items with the widest gaps should receive higher priority attention by the HKQMA. The following tables lists the Gaps in the descending order.

HKQMA Membership Service Items:	**Importance**	**Satisfaction**	**Gap = Importance - Satisfaction)**
Library	4.06	2.73	1.33
Research	4.01	2.83	1.18
New Membership Orientation	4.12	2.95	1.17

In-House Training	4.38	3.30	1.08
Consultancy	4.23	3.21	1.02
Book Sales	3.80	2.90	0.90
Public Seminars	4.27	3.49	0.78
Industrial Visits	4.34	3.58	0.76
HKQMA Newsletter	4.36	3.77	0.59
Oversea Study Tours	3.81	3.29	0.52
QCC Convention	3.90	3.90	0.00

The gap analysis provided much useful information for the HKQMA to improve its membership services. The following Radar chart succinctly depicts the gaps for each membership service.

Determinants of Good Quality Management Practices

It was difficult to define what was "good" quality management practice, and what was not. In this paper good quality management practice was operationally defined as the arithmetic mean of statements 1 and 2 in the questionnaire. The two statements were:

- *My organisation has programs to develop "quality awareness" among staff members.*
- *Most staff members in my organisation have involvement in quality management practices.*

It was natural to assume that a company which is conscious of the need to develop quality awareness among its employees and if in addition most of its employees have involvement in the quality management practices, would be having good management practices.

The Cronbach alpha for this "good quality practice" is 0.63. This will be used as the dependent variable. A multiple linear regression analysis was then conducted. The independent variables were:

Q5 *My organisation provides in-house quality management training*
Q6 *In my opinion the in-house management training programmes are good*
Q7 *My organisations uses external quality management training facilities*
Q8 *In my opinion, the external training are useful in promoting quality management activities in my organisation*
Q9 *The top management in my organisation shows strong support and commitment in quality management activities*
Q10 *The middle management has very good commitment in the quality management activities*
Q11 *In general, the ordinary staff members like to participate in the quality management activities*
Q12 *Proper recognition and reward are given to those who have good achievements in quality management activities*

Using Stepwise selection method, with criterion of entry of 0.05 and removal of 0.10, only two independent variables (i.e. Q9 and Q10) were retained.

The regression coefficients and the beta weights were as follows:

Variable:	**Regression coefficients B**	**SE B**	**Beta Weights**	**T**	**Sig T**
Q10	0.41	0.12	0.46	3.42	0
Q9	0.23	0.11	0.28	2.06	0.04
(Constant)	1.69	0.40		4.18	0

From the beta weights (which indicate the relative importance of the variables), it was clear that commitment of the middle management is the key determinant for "good quality management practices". The coefficient of determination R is 0.45 and this measures the goodness of fit of the model.

The regression formula was:

Good Quality Management Practice = 0.23 Q9 + 0.41 Q10 + 1.69

This finding is in line with the conclusion drawn by Chan et al. (1994) in their study on a public transportation company that superior support and recognition are the key factors for employees to participate in the QC activities.

Examples of proper rewards and recognition were cited by the participants in the International Convention on Quality Control Circles (ICQCC) held in Hong Kong in October 1994. A large public hospital introduced appropriate human resource strategy to support the QC leaders and members and introduced Quality Leadership Awards to recognise and motivate staff participation in their Quality Assurance Scheme. (Yam 1994).

The role of upper management support is obviously crucial in the journey of continuous improvement. In this respect, Juran (1991) writes:

> "*Upper managers must personally lead the effort. Having observed a great many companies in action, I am unable to point to a single instance in which stunning results were achieved without the active and personal leadership of upper managers*".

The importance of middle managers' commitment was discussed by Dale et al. (1993) in the bilingual (English and China) booklet entitled. "The Role of management" published by the Hong Kong Government to help local industries to realise the importance of quest for quality. They write:

> *"Middle Managers have a vital part to play in the introduction of TQM. They will only be effective; however, if they too are committed to it as a concept".*

A Few Concluding Remarks

In this paper the history of quality circles in Hong Kong has been outlined. The reasons for success and failure of QCs were then discussed in light of the economic and political changes in recent years. Against this background, the survey research of the HKQMA was reviewed. Quite a number of useful and interesting findings were revealed. In general quality management activities were distinctly perceived to bring about various tangible and intangible benefits to the organisations. The manufacturing companies perceived tangible benefits more distinctly than the service companies. On the other hand, the service companies perceived the intangible benefits more obviously than the manufacturing firms. However caution should be exercised in interpreting the results. The sample in the present study was still relatively small. Moreover being selected from among the members of the HKQMA, the respondents might have a tendency to bias towards positive attitudes on the perceived benefits of quality management activities. In this respect, Barrick et al. (1987) also caution about the existence of positive-finding bias towards the benefits of quality circles. The research results also provided useful information about the training needs of companies in Hong Kong. Companies of different nationality had slightly different training requirements. The gap analysis revealed the areas for improvement of the membership services provided by the HKQMA. The use of multiple linear regression analysis help identify the determinants for good management practices. The determinants were firstly middle management commitment and secondly top management support in quality management activities. In future researches, it would be useful and important to develop a better construct of "good quality management" as the dependent variable.

The gap analysis revealed the areas for improvement of the membership services provided by the HKQMA. The range of HKQMA membership services can be factored into: *Experience Sharing, Public Information, and Tailor-Made Services*.

The use of multiple linear regression analysis helps identify the determinants for good management practices. The determinants identified from this study were firstly middle management commitment and secondly top management support in quality management activities. In future researches, it would be useful and important to use a larger sample and to develop a better construct of "good quality management" as the dependent variable. Such information would help individual organization in their never ending journey towards excellent quality.

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Concepts, and Quality Training.