THE PRACTICES OF QUALITY CONTROL CIRCLE IN MANUFACTURING INDUSTRY

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ABSTRACT

Quality Control Circles (QCC) suggest that improved quality and product of practices. The purpose of this study is to determine the dominant factor for the application of Quality Control Circles (QCC). The factors are management commitment, employee's involvements also training and education. These items were empirically tested by data collected manufacturer-based organizations in Sri Gading manufacturing industrial area, Batu Pahat, Johor, Malaysia. Finding showed that factor of management commitment was the essential element in the application of QCC.

Key Words: Quality Control Circle, TQM, Management Commitment

INTRODUCTION

According to Fukui et al. (2003), QC Circles is an effective management tool of TQM. The core of QCC is the usage of quality control techniques to solve problems such as check sheets, Pareto diagrams, cause-and-effect diagrams, control charts, scatter diagrams and histograms in the analysis process (Mizuno et al. 1978).The statistical tools in QCC offer a sequential problem solving procedure so that potential causes are not overlooked and viable solutions to chronic problems can be discovered (Motwani, 2003). According to Curry and Kadasah (2002), mostly used quality control tools were Statistical Process Control, Process Charts, Pareto Charts, Cause-and-Effect Diagrams. According to Fukui et al. 2003,

LITERATURE REVIEW

The NPC started the promotion of the QCC activities back in 1982 to support the "Look Ease Policy" phase of Malaysian economic development. Two national organization were designated by the government to monitor the development of QCC activities in the country-NPC for the private sector and the National Institute of Public Administration (INTAN) for the public sector (Nik, N.Z, 2007).

Abo-Alhol (2005) states that QC Circles proponents suggest a wide array of positive results when this participation technique is used either in manufacturing or service sector. QC Circles have been aiding organizations to achieve continuous quality improvement through employee participations in problem solving tasks (Kumar et al. 2007). Fukui et al. 2003 state that the philosophy of QCC is based on the concepts of participative management and humanistic management.

Based on the factors extracted from the previous researches, 3 common factors were identified in the present study. The factors were:

(i) Management Commitment

Leadership involves defining the need for change, creating new frameworks to mobilize commitment to those vision frameworks for thinking about strategy, structure and people (Aalbregtse, 1991). According to Besterfield, (1995) Management should actively participate in quality transformation by outlining the quality goals, policies and plans so that the employees are constantly reminded that the customer is the top priority, not the product. Management commitment; requires developing

management systems that assure and ensure that quality is built into each and every process in organization (Mohd, 2003).

(ii) Employees' Involvement

Zhang (1999), to inspire action on quality, the first step is to change the people's attitudes that lead to the change in behaviors. Federation of Malaysian Manufacturers (FMM) Directory Malaysian Industries, Healthcare Forum (2000) state that, empowerment involvement in decision making is commonly viewed as essential for assuring sustained results.

The participation of employees enables them to improve their capabilities, increase their self-respect and change certain personality traits (Zhang, 1999).

(iii) Training and Education

Training and education forms a vital part of quality management. Training and education are one of the key elements of total quality in which many people are involved, so the success of the implementation depends directly on how well they have been done (Kanji and Asher, 1993). Research shows that training and education are one of the most important elements in a successful implementation of total quality management and quality control circles (Zhang, 1999).Meanwhile, education and training are a failure if there is no result in a change in behavior (Juran and Gryna, 1993).

RESEACH METHODS

The population for the present study was the manufacturing organizations located in Sri Gading, manufacturing industrial area, Batu Pahat, Johor, Malaysia which were registered as members of QCC under Malaysia Productivity Corporation (MPC). Generally, the organizations applying QCC are TQM-based organizations which had been awarded with certificates on ISO 9000 Series Quality Management System. There were altogether 40 organizations short listed by MPC. Only 34 questionnaires out of 40 were returned.

The questionnaires used in this study were extracted based on previous researchers regarding to the factors of quality control circles application. The questionnaires were divided into 4 parts. The parts were as follows:

Part I: Background of the respondent.
Part II: Management Commitment
Part III: Employee's involvements.
Part IV: Training and education.

The data collected from the questionnaires were analyzed using Statistical Package for Social Sciences (SPSS) version 12.0.

RESULTS AND DISCUSSSION

The objective of the analysis is to determine dominant factor in QCC applications in Sri Gading manufacturing industrial area, Batu Pahat, Johor, Malaysia. The factors identify are management commitment, employee's involvement and training

The respondents who answered the questionnaires were in the Quality Control (QC) department. Most of the organization applying QCC in this manufacturing area operated between 6 to 15 years. The organizations start applying QCC at least 2 years before. Meanwhile, the duration of some organizations implementing QCC is more than 9 years. Most of organizations rank themselves as intermediate applicants in term of experience and familiarity with the tools and techniques in QCC. All of this data showed in Table 1.

TABLE 1: Background of the Respondent

Variable	Category	Percentage
Job Designation	QC Manager QC Assist Manager QC Members	20.6 64.7 14.7
Age of Organizatio n	≤ 5 years 6-10 years 11-15 years ≥ 16 years	23.5 41.2 26.5 8.8
Duration of QCC Application	≤ 2 years 3-5 years 6-8 years ≥ 9 years	8.8 38.2 36.5 26.5
Level of Experience	Introductory Intermediate Advanced	35.3 55.9 8.8

QC members were asked commonly used tools and technique. This is to determine the most used tools and technique within manufacturing industrial. Table 2 shows that cause-and-effect diagrams were used mostly within groups.

TABLE 2: Commonly Used Tools and Techniques

Cause-and-Effect Diagrams	30
Pareto Analysis	14
SPC	8
Quality Costing	8
Purpose Analysis	11
Flowcharting	6
Check Sheet	15
Histogram	17
Scatter Plot	5
Graph	15
Diagrams of Rejected Items	1

Table 3 show result of this study by comparing the mean scores for the three factors, the factor of Management Commitment achieved higher mean score compared to the other two factors. Findings show that Management Commitment was the dominant factor in the QCC application with mean score 4.21.

TABLE 3: Summary of the Research Findings

Factor	Mean Score	Standard Deviation
Management Commitment	4.2059	0.37734
Employee's Involvement	3.9673	0.43640
Training and Education	4.1043	0.48988

Management Commitment

In quality management, the management involvement and their total participation is necessary to lead and facilitate the implementation. For this study, the analytical results show that the management i.e. departmental heads, have understood the importance of quality and quality improvement within the

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