Quality Circles in Japan

Japan is one of the few countries in the world which is not endowed with much natural resources. Even, today the major food items are imported. Not very long back, the Japanese industrial organisations did not have the reputation for the quality of their products and, in fact, Japan's name was synonymous with cheap and imitation products. Before the Second World War, the Japanese products were known much for their cheap price and poor quality. The Japanese have to depend much on trade and export markets for their survival. The Second World War almost ruined the Japanese economy. The surrender of the then Japanese government to the Allied Forces and the war expenses had driven the Japanese economy towards total bankruptcy. At that time practically there was no production as most of the industrial organisations were ruined and the Japanese were desperately trying to survive. Most of the products were shabby and seldom lasted for a long time. Product quality was not in the national agenda. The government started trying to rebuild the country into a strong nation by reconstructing the economy. Initiatives were taken to augment the industrial
production and secure a competitive edge in the foreign markets by focussing more on the quality dimensions of the products. This approach, taken by some influential and farsighted industrialists, has become the driving force behind the Quality Control Circle (QCC) movement in Japan. Certain developments have helped operationalise the QCC concept as one finds today. Such developments are listed below.

- introduction of the Statistical Quality Control (SQC) technique
- formation of the Japanese Union of Scientists and Engineers (JUSE)
- introduction of the Industrial Standardization Law
- consultancy works of Dr. W. E. Deming
- lectures of Dr. J. H. Juran
- publication of Gemba (Supervisors' Guide) to QC
- first international conference on quality control held in Japan

The Quality Control movement in Japan began when the country was occupied by the Allied Forces. Mr. W.G.Magil of the Civilian Telecommunications section of the Office of the Supreme Commander for the Allied Powers (SCAP) introduced the idea of QC in the Electrical Communication section. The idea clicked and the other members of the
SCAP started adopting and promoting the Quality Control techniques.

In 1946, the JUSE (an organisation dedicated to studying foreign technology, launching research studies and implementing training programmes) was formed. Today, the JUSE has come to be the major organisational instrument for diffusing Quality Control practices in Japan. It also serves as a major link between the industrial and the academic sectors.

Also, during the occupation of the Allied forces, W. Shewhart, once the head of the technical staff, Bell Telephone Laboratories, Inc., and Dr. W.E. Deming, the then Professor of the Harvard University and the Chief Statistician of the US Bureau of Census, were invited as consultants to assist in the reconstruction of Japanese industries and to train the Japanese managerial personnel (during 1948 to 1950). Dr. Deming performed his job so effectively that he was invited again and again to train the engineers and the managers statistical methods. He earned so much reputation that the Japanese Government instituted an annual award in his name (Deming Prize). He developed what has come to be known as the PDCA cycle. The PDCA cycle has four components (i.e., Plan, Do, Check and Act).
The Japanese government also started encouraging the quality movement. As a result, the Industrial Standardization Law was passed in July, 1949. Under this law, the companies that can meet quality requirements (prescribed by the Ministry of International Trade and Industry) are entitled to use a special label on their products. As a result of operation of this law, the Japanese Standards Association (JSA), a leading body in the field of Quality Control, was formed.

During 1954-55, another management consultant and educator of international repute, Dr. J. M. Juran, visited Japan to lecture on 'Quality Management'. He emphasized on managements' role in quality control and said that 'quality' has to be taken care of right from the stage of design up to the state of providing satisfactory services to the customers. He advocated the concept of 'Total Quality' covering all the activities of an organization at all the levels involving all the employees and made it clear that 'quality' is not the concern of the production/technical people alone. Inspired by his lectures and writings, the Japanese companies started developing a new orientation. Quality Control gradually became an integral part of the managerial function. The Japanese organizations started using the Quality Control
techniques in all the functional areas. This helped mobilise the blue-collar employees to participate meaningfully in the decision-making process. The Japanese Government also became deeply involved in the wider field of Quality Control, encouraging the quality improvement programmes. It was followed up by many programmes on Quality Control, Statistics and related subjects which were also broadcast on the radio and the television. Many conferences/seminars/conventions/workshops were organised to promote quality consciousness. Over a period of time, the image of the Japanese products gradually improved.

The following events (in the chronological order) indicate how the quality awareness was developed in Japan in a systematic manner in the fifties (1949-60).

January, 1949 : An Overseas Technical Research Committee was formed by the JUSE. That committee later developed into the Quality Control Research Group and introduced Quality Control in Japan.

June, 1949 : The JSA organised a seminar on 'Statistical Quality Control'.

September, 1949 : The JUSE organised a seminar on 'Quality Control - Basic Course'.

...
March, 1950: The JUSE published a magazine - 'Statistical Quality Control'. Japanese Industrial Standards were established under the Industrial Standardization Law. Quality Control wings at the corporate level started implementing the IS system.

July, 1950: Dr. W.E. Deming was invited to an eight-day Quality Control seminar organised by the JUSE.

June, 1951: The Deming Prize was instituted.

September, 1953: The JSA organised a seminar on 'Standardisation and Quality Control - Basic Course'.

July, 1954: Dr. J. M. Juran was invited to teach in the 'Quality Control Management' seminar organised by the JUSE.

July, 1956: Japan's short-wave radio started broadcasting a Quality Control course organised by the JUSE.

November, 1960: Government declared November of each year as the 'National Quality Month' and Q-flag was formally adopted.

Coming back to the pioneering contribution of Dr. Juran in the field of Quality Management, it would be useful to remember his classical and widely-accepted definition of Quality as 'fitness for use'. His
monumental work — Juran's Quality Control Handbook (4th edition, 1988) is a standard reference for all the academicians and practitioners in the field of Quality Management. Along with Dr. Deming, he conducted his famous courses on 'Management of Quality' for the managerial personnel in Japan. He received innumerable awards from many leading academic and professional bodies all over the world along with the highest decoration given to a non-Japanese for helping development of Quality Control in Japan. Dr. Juran, a widely-travelled man, helped various organisations in the field of Quality Management. He visited India also in 1967 at the invitation of the ISI and conducted two programmes meant for the top management people.

Dr. Juran (1981a, 1981b) observed that high quality can be achieved in an organisation, if the following three strategies are sincerely implemented:

i) leadership by the top management for quality improvement,

ii) massive education on quality-related subjects (down the line), and

iii) annual quality improvement plans and cost reduction plans and their implementation.
Since the introduction of a basic course on Quality Control in 1949, the Japanese have endeavoured to promote Quality Control education throughout the country. It began with massive education of the engineers and then spread to the top-and middle-level managers and then to the other professional groups. However, after some time, it became clear that good quality products cannot be made merely by providing good education to the engineers and the managers. What is needed is the full co-operation of the blue-collar employees actually engaged in the operations. They must understand their responsibilities, carry out their functions as expected and take care of, at least, small work-related problems. For that they are required to acquire elementary knowledge of some statistical techniques. Therefore, a massive educational programme for them was also launched.

As a part of the training programme in an industrial organisation, intra-departmental study groups were organised. A study group comprised not more than 15 workers who used to sit around a table and, hence, came the name Quality Control Circle (QCC). Later, when the magazine _Gemba to QC_ was published in April, 1962, Dr. K. Ishikawa wrote that the 'Study Group' be described as *Quality Control Circle* (QCC). When the FQC (Quality Control for Foremen)
Journal was first published, Dr. Ishikawa became chairman of its editorial board and he started advocating the idea of voluntaryism, i.e., a QCC must not function as per the instructions of a superior but should operate on a voluntary basis in the concerned workplace. He also suggested that the properly constituted QCCs should be registered with the FQC Journal and have their names published there and this would certainly help the members of the QCCs have a feeling of satisfaction and develop a sense of responsibility. As in September, 1992, there were 3,51,161 QCCs (involving more than 3 million members) registered with the QCC Headquarters. It was not known how many QCCs were not registered. It was guessed that there might be a huge number (as many as ten times the registered ones) of unregistered live QCCs at that time.

To promote the QC activities throughout the country and do that effectively, the QCC Headquarters was established in 1963 and nine regional chapters were formed in 1964 which publish books and journals, organise slide shows, conduct seminars, lectures, etc., and offer many correspondence courses. For all their activities, the basic works used are those by Dr. Ishikawa which have been published by the JUSB. Different types of activities are organised for the purpose of promoting self-development
and mutual development among the members of the QCCs. These apart, the JUSE organises the annual QCC Conference for the foremen, QCC conferences, mutual visits by (and discussions among) the members of the QCCs, QCC cruising seminars, and sending of the QCC study teams abroad. Japan's great success in the QC activities has been possible because of relentless pursuit for excellence in the Japanese organisations by making use of the teachings of Dr. Deming and Dr. Juran.

The information presented below shows the development (in the chronological order) of the QCCs in Japan during the sixties and seventies (1962-80).

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May, 1962</td>
<td>The first QCC was registered with the QCC Headquarters.</td>
</tr>
<tr>
<td>November, 1962</td>
<td>The first Annual QCC Conference for foremen was held.</td>
</tr>
<tr>
<td>September, 1964</td>
<td>Regional Chapters of QCCs were formed in four different districts.</td>
</tr>
<tr>
<td>April, 1966</td>
<td>Dr. Juran observed Japanese QCC activities.</td>
</tr>
<tr>
<td>June, 1966</td>
<td>A special QCC session was organised at the 10th Conference of European Organisation for Quality Control (held in Stockholm, Sweden).</td>
</tr>
</tbody>
</table>
June, 1967: The number of Registered QCCs grew to 10,000.

April, 1968: The JUSE sent the first QCC Study Team abroad.

March, 1969: The number of registered QCCs grew to 20,000.

May, 1969: The 100th QCC Conference was held in Tokyo.

July, 1970: The number of registered QCCs grew to 30,000.

June, 1971: The JUSE organised the first QCC Seminar.

August, 1971: The 200th QCC Conference was held.

September, 1971: The number of registered QCCs grew to 40,000.

November, 1971: The first National QCC Conference was held in Tokyo.

November, 1972: The number of registered QCCs grew to 50,000.

May, 1973: The 300th QCC Conference was held.

June, 1974: The number of registered QCCs grew to 60,000.

October, 1974: The 400th QCC Conference was held.
June, 1975: The number of registered QCCs grew to 70,000.

January, 1977: The number of registered QCCs grew to 80,000.

March, 1977: The 600th QCC Conference was held.

December, 1977: The 700th QCC Conference was held.

June, 1978: The number of registered QCCs grew to 90,000.

October, 1978: The First International QCC Convention was held.

February, 1979: The 800th QCC Conference was held.

June, 1979: The number of registered QCCs grew to 1,00,000.

January, 1980: The 900th QCC Conference was held.

September, 1981: International QCC Convention was held.

May, 1985: The Third International QCC Convention was held.

April, 1989: Dr. Ishikawa expired.

October, 1990: The Fourth International QCC Convention was held.
The table given below will give an idea about the phenomenal growth of the QCCs in Japan during the sixties and seventies.

**NUMBER OF QCCS AND THEIR MEMBERS IN JAPAN**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of QCCs</th>
<th>No. of members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>23</td>
<td>N.A.</td>
</tr>
<tr>
<td>1963</td>
<td>51</td>
<td>N.A.</td>
</tr>
<tr>
<td>1964</td>
<td>1,051</td>
<td>N.A.</td>
</tr>
<tr>
<td>1965</td>
<td>4,930</td>
<td>70,920</td>
</tr>
<tr>
<td>1966</td>
<td>7,307</td>
<td>90,829</td>
</tr>
<tr>
<td>1967</td>
<td>11,651</td>
<td>1,42,955</td>
</tr>
<tr>
<td>1968</td>
<td>17,416</td>
<td>2,12,134</td>
</tr>
<tr>
<td>1969</td>
<td>25,973</td>
<td>3,14,398</td>
</tr>
<tr>
<td>1970</td>
<td>33,499</td>
<td>3,88,543</td>
</tr>
<tr>
<td>1971</td>
<td>42,366</td>
<td>4,72,921</td>
</tr>
<tr>
<td>1972</td>
<td>51,615</td>
<td>5,51,643</td>
</tr>
<tr>
<td>1973</td>
<td>57,599</td>
<td>6,00,300</td>
</tr>
<tr>
<td>1974</td>
<td>65,477</td>
<td>6,64,458</td>
</tr>
<tr>
<td>1975</td>
<td>72,475</td>
<td>7,23,201</td>
</tr>
<tr>
<td>1976</td>
<td>78,395</td>
<td>7,74,012</td>
</tr>
<tr>
<td>1977</td>
<td>86,189</td>
<td>8,36,448</td>
</tr>
<tr>
<td>1978</td>
<td>94,787</td>
<td>9,03,471</td>
</tr>
<tr>
<td>1979</td>
<td>1,03,644</td>
<td>9,77,474</td>
</tr>
<tr>
<td>1980</td>
<td>1,15,254</td>
<td>10,62,759</td>
</tr>
</tbody>
</table>

Source: A Survey of QC Circles, FQC No.216, JUSE, January, 1981
The QCCs have now become a part of the organisational life in Japan. Besides the manufacturing organisations, the QCCs are now functioning in the service organisations like banks, insurance companies, electric power utilities, superstores, departmental stores, hospitals, hotels, restaurants and even in beauty parlours.

It has to be noted here that the Japanese organisations started QCCs long after their managerial personnel were trained in Quality Control and Company-wide Quality Control (CWQC) was put into operation. However, some companies in India are trying to launch QCs without having CWQC and, thus, are not becoming effective in terms of functioning of their QCs.

Quality Circles — Beyond Japan

Japan's remarkable economic growth has made many countries interested in the basic features of the Japanese organisations. Some of the paternalistic features of the Japanese organisations, viz., life-time employment, seniority-based salary/wages and promotion and enterprise-based unions, have drawn much attention of the management academicians and practitioners all over the world. Co-operative labour unions, group working, on-the-job training, job rotation, etc., are amongst the most studied
features of the Japanese organisations. In the International Industrial Relations Congress held in Kyoto in 1983, transferability of the Japanese Industrial Relations system was discussed and debated upon.

Despite massive research work on the major features of the present Japanese organisations and their management, only the QCCs widely spread in other countries. This, perhaps, demonstrates the universality of the concept of QCC. In this connection, Dr. Ishikawa (1984) stated:

'I first thought that QC Circles cannot work in foreign countries due to differences in social, cultural and religious backgrounds. I thought that it would be possible only in Taiwan, Korea and China where 'Kanji' is used. But the number of countries where the Japanese QC Circles are implemented has increased'. This universality of the concept of QCC has been nicely expressed by Sasaki (1990): 'The QC Circle is not at all a unique product of Japan based on the unique culture of Japan. It can be applied to any culture.'

Although it is quite difficult to appreciate fully the actual conditions under which the QC are operating

*Japan's Quality Control Circle (QCC) is also described as Quality Circle (QC) in many countries. These two terms have been used in the same sense.*
in different countries, one can have an idea about the QCs in such countries based on a number of papers and reports presented in the international QC programmes.

The functioning of the QCs in a number of countries other than Japan (continent-wise: Asia, Europe and America) have been touched upon below in order to have an overall idea (globally speaking).

Republic of South Korea

Since the concept of QC has been introduced in South Korea in the early 1970s, the QCs have contributed significantly in the process of quality improvement, making the Korean products more competitive. The QC activities in South Korea are very much related to the Total Quality Control (TQC) activities and have been divided into four stages: Daybreak, Introductory, Development and Maturity.

Daybreak Stage (1960s) — The traditional industries of South Korea gradually started modernising in the 1960s, adopting and introducing modern management philosophy and techniques. It was a period of fostering the basic industries, ensuring growth of import-substitute industries for consumer products and increasing production of the light industries. The government started promoting
awareness for quality control of industrial products which resulted in gradual introduction of Quality Control activities (such as inspection to eliminate/reduce non-conformance to specifications and utilisation of SQC techniques in plant control activities) in the secondary industries. As a result, the QC activities started getting recognition as an essential function.

**Introductory Stage (1970s)** — The import-substitute industries gradually developed an export-orientation for intermediate and plant materials, giving emphasis on the heavy chemicals and other technology-intensive industries. Also, quantitative growth of the manufacturing activities, caused by severe international competition, necessitated Quality Control campaigns supported by strong government measures. The emphasis given by the QC Promotion Headquarters were on continuous innovations in the industrial organisations and development of new markets for the Korean industry.

In this stage, QC activities expanded very fast (the no. of registered QCs was 1,257 in 1975 which reached 56,081 in 1980). The first National QCC Contest was held. Korean Standards Association (KSA) developed a consolidated training course for QCCs.
Development Stage (1980s) — The Korean economy achieved remarkable annual growth during this stage and was characterised by continuous growth and technological innovations. Competitive advantages of the large industries necessitated protection of medium- and small-industries. Also, the government-oriented economy turned into a civil-oriented economy characterised by autonomous and self-regulated market system with much emphasis on Quality Control activities. It became necessary to develop an atmosphere of balancing between the large industries and the medium- and small-industries and transfer the achievements in the Quality function of the advanced precision industry and the other hi-tech industries to the medium and small ones.

This kind of felt-change could be realised through large industries' efforts to activate the organisations and the man-power related to the Quality Control programmes. During this period, certain new dimensions of Quality Control such as stability, reliability, maintainability, economy, etc., started drawing attention of the industrial world. And, the QCs consolidated their position in the shop floor and started playing a key role in productivity improvement. Their activities also grew in terms of participation in (and organising) international conventions (covering,
inter alia, finance, hotel and construction sectors). A QCC convention for the service industry was held in 1986.

**Maturity Stage (1990s)** — In South Korea, the QCs were initiated under the strong leadership of the government through promotion of awareness in QC and TQC. However, by the end of the 1980s, the QCs started broadening their horizon by not confining themselves only to the government-oriented activities and ensuring professionalism for their qualitative improvement. Now, all the employees, from top to bottom, in an organisation are eager to participate in the QC movement by integrating levels and departments in terms of functioning of the QCs. The number of QCs registered in March, 1993 was 87,985 (with 8,09,354 members) operating in 5,144 companies.

The QCs in South Korea were initiated in the mid-seventies. Their activities are co-ordinated by the KSA. Vigorous activities in the wider field of Quality Management in South Korea have prompted the KSA to promote expansion and development of the QCs for bringing about competitiveness through continuous innovation and improvement by encouraging meaningful participation of all the employees in an organisation from top to bottom.
The objective of forming the QC is not merely introduction of any system or method but fostering quality consciousness of the members of an organisation and changing the direction of the organisation to customer-oriented activities. Keeping the enlarged role of the employees in mind, the National Quality Control Circle (NQCC) Contest is being organised to help grow nation-wide quality control.

An important award — Master Hand of Quality — was instituted in 1991. This award is given to the field employees who have contributed much towards quality and productivity improvement. This award is a reputed one and plays a key role in creating positive working environment in the South Korean organisations. This award has been won by many employees so far. A significant offshoot of this award is the 'Master Hand of Quality Control' instituted with a view to encouraging the employees in the local areas to study and develop the methods used by (and the causes of) the QC and to contribute to the activation of the QC. It is to be noted that the QC in South Korea have contributed significantly to the improvement of quality of the products to make those competitive in the foreign markets.

The KSA has set the objective of strengthening Quality
Management (including the QCs') activities for continuous quality innovation in the 1990s (Kim, 1993; Narayana, 1994) in the Republic of China (Taiwan) — The QCs were launched in the latter half of the sixties with emphasis on statistical techniques. Next to Japan, it was Taiwan who took the lead and the QCs were introduced initially with co-operation from Japan. The QC movement was led by the QCC Headquarters, the Pioneer Quality Circle Research Association and the Pioneer Enterprise Think Tank in the private sector. In the mid-seventies, the training materials were revised to suit the needs of the country. Gradually, studies were conducted on Industrial Engineering and Value Engineering techniques. The need for linkage between the QCs and the CWQC also gained much importance. The 1980s witnessed fantastic growth of the QCs. Also, Dr. Ishikawa Award was instituted for recognising the QCs with outstanding performance. Improved quality, efficiency and cost reduction have been cited by many organisations as direct outcomes. The Pioneer Quality Circle Research Association has got a Promoting Commission and an Executive Commission under which there are four committees for (a) Activities, (b) Promotion, (c) Publications and (d) Award and Evaluation. (Narayana, 1994)
At the end of 1993, there were 1,74,190 QCs covering 3,500 companies (of which the manufacturing and the service sectors accounted 60% and 40% respectively).

People's Republic of China — The QCs started in 1978 and the number of registered QCs by the end of 1993 was 1.2 million. The QCs are taking care of the activities relating to development of new product, cost reduction, transformation of technology, customer service, etc., in different industrial organisations all over the country. Achievements, in terms of the economic benefits, were to the tune of 20 million US dollars by the end of 1993. The reason for such fantastic achievements is the growth strategy adopted to tap the employees' potential and help them becoming creative by using a number of scientific methods. Gradual transformation of the traditional socialist economy and introduction of the Law of Product Quality along with adoption of the International Quality Assurance Management Standards have resulted in a lot of change in the functioning and activities of the QCs. This change is reflected in the adoption of the famous guideline for the QCs, i.e., Everyone is responsible for making our country prosperous by Quality. The objective is to improve the overall quality of the organisations and provide economic benefits to the masses. China Quality Control
Association, founded in 1979, is playing a significant role in Quality Control. Its objectives are to carry out the State Quality Policy for economic reconstruction for the entire society and the organisations and to improve quality of products and services by initiating TQM and promoting technical progress. The impact of this Association can be felt in the birth of more than 1000 regional, departmental and enterprise quality associations. The Prime Minister gives awards to the selected QCs for their outstanding performance. The nation-wide training programmes, inter alia, consist of a TV programme (covering 10 lessons for the QCs as a part of the TQC) which reached an audience of more than 10 million people even in the mid-eighties. (Narayana, 1994)

**Philippines** — Promotion of the QCs is spearheaded by the Philippines Productivity Centre. Initially, training for QCs in an organisation was given by the Quality Control department. As the introduction of the QCs created some misunderstanding, the QCs were promoted as Productivity Improvement Circles. Following the Government-led campaign for 'Increased Productivity' from 1980, the number of QCs has increased. While the exact number of the QCs is not available immediately,
it is reported that several big companies and Philippine-Japanese joint venture companies are having many QCs which have generated positive results to a considerable extent.

Singapore — The QC movement started in 1981. There are 14,000 QCs (with 1,06,000 members) registered with the National Productivity Board (NPB). This membership strength constitutes 6.9% of Singapore’s workforce and 2.4% of them belong to the private sector.

The NPB is leading the QC movement at the national level through promotion, training and surveys. The promotional activities cover bringing out publications, newsletters, organising study clubs and study missions, preparing audio-visual materials, etc. National Conventions on QCCs have been a big success since 1982. These conventions provide an excellent opportunity to the QCs to present their projects, share experiences and gain recognition at the national level. The savings reported as a result of operationalisation of the QCs have increased from 1.60 million US dollars in 1985 to 23 million US dollars in 1993, thus, establishing the fact that QCs can help reduce costs and enable the organisations to be more competitive. The attendance at these conventions has touched the figure of 3,000 QCs and work-improvement teams.
The International Exposure of QCCs (IEQCC) is a unique event started in 1984 to enable the practitioners and the members of the QCs in Singapore to learn new ideas and techniques from their foreign counterparts. The popularity of these events can be seen by the impressive attendance of 20,000 QC activists from 21 countries so far. The tenth anniversary of the IEQCC was celebrated in 1993. Awards were instituted in 1984 to give recognition to the QCs, facilitators, managers and organisations for outstanding achievements.

A QCC college was established by the NPB on 1st April, 1984. The College so far has trained more than 30,000 managers, supervisors and workers. Consultancy services are offered through the QCC Resource Centre (set up in April, 1993) which provides advice and diagnostic service to the companies which do not have QCs. Other initiatives taken for the promotion of QCs include:

1) involving productivity activists in the formation of QCs,
2) educating the CEOs, senior-and middle-management executives and productivity experts on the functioning of QCs and their benefits through visits to the companies having effective QCs, and
iii) selecting the member-companies which have experimented with QCs to coach and guide the other companies.

Malaysia — The National Productivity Centre (NPC) and the National Institute of Public Administration have spearheaded the QC movement which is reinforced by the government measures. "Look East Policy" was formulated in 1981. This policy has encouraged Malaysia to examine the managerial practices and systems of Japan and South Korea. A directive from the Prime Minister's Office has made QCs compulsory in the public sector. The QCs started in 1971 in the Matsushita Electric Company Ltd. The first QCC Convention was organised by the Institute of Quality Control Malaysia (IQCM) in 1982. A full-fledged QCC secretariat was set up in 1983 and it became the secretariat for the TQC in 1987. The number of registered QCs was 1,850 (with a membership of 14,788) up to September, 1993. The sector-wise break up of the QCs is: manufacturing (40%), electric/electronics (45.5%) and services (14.4%). The number of participants at the national convention was 166 in 1984 which rose to 593 in 1993. The total number of conventions, seminars, etc., during the 10-year period (1983-1992) was 493 and the participants in those programmes totalled 27,273. The
NPC organised the first Quality Management Seminar concurrently with the 9th National QCC Convention in 1992. The NPC has instituted the best QC Organisation award since 1985. The achievements are impressive and the concentration of the QCs is the highest in central Malaysia.

In many companies, the definition of QC has been modified; participation is not 'voluntary' there. A group of people, belonging to the same starta or having the same role, come together regularly and apply their technical knowledge to solve problems for improving upon the existing standards. If the participation does not remain voluntary, one cannot come and go at one's will and there comes a compulsion. Many organisations have made the 'joining a QC' obligatory in their conditions of employment.

In Malaysia, the Japanese version (i.e., spontaneous participation; implementing the solution(s) by the QC) and the American version (voluntary participation; recommending the solution(s) to the management by the QC) co-exist. The NPC has adopted the Japanese version, whereas the multinationals have adopted the American version. And, this state of affairs has caused problems in the context of nation-wide contests. (Narayana, 1994)
Thailand — The Technological Promotion Association (together with other associations in the private sector) has provided guidance to the QCs as a part of the technology transfer movement. Today, the National Productivity Council (NPC) is taking care of this movement. During 1974-79, the progress was very slow and only a few companies were able to start the QCs of their own. The QC movement finally gained momentum after 1980. In 1985, it was estimated that there were more than 2,500 QCs with 17,500 members. Today, as a part of the TQC movement, the QCs are doing very well. Another major achievement is that the QCs have been introduced in the small-scale industries where as many as 2000 companies are having well-functioning QCs. An award — The President Medal — has been instituted which is given to the QCs based on their performance as well as application of the PDCA cycle. The activities of the QCs are audited on the basis of the PDCA approach. Thailand is also working towards the introduction of the QCs in the educational sector.

The QC Headquarters of Thailand was established in 1985 with the following objectives:

1) to encourage co-operation among the institutions within the country and abroad,
ii) to extend support to the institutions to help organisations launch QCs as a part of the HRD function, and

iii) to develop a centre for dissemination of knowledge on QC.

Its activities cover holding of national QCC conventions, seminars, winter competitions for the members of the QCs, holding IEQCC meetings, publishing journal for the QCs, conducting training programmes for the QC institutes and offering advanced courses for the leaders, instructors and members of the QCs. (Narayana, 1994)

Indonesia: The Indonesian reports focus on the development of the QCs in the public sector. The QCs in Indonesia started in 1982 with the introduction of the concept to the senior public-sector executives. The first convention on QCC was organised in 1984 by the National Institute for Public Administration and since then it is held every year. The National Quality Exposition was organised in 1992.

A very interesting development is the activity of the Productivity and Quality Club (P&Q Club). The P&Q Club's activities started in 1990 in one school which increased to 6 in 1992 with a membership of 489
students. The objectives of the P&Q Club are: (i) to generate awareness and communicate knowledge on the productivity and quality concepts, (ii) to cultivate a positive attitude towards excellence among the students, (iii) to help develop a sense of co-operation and responsibility, and (iv) to help develop leadership and pro-active qualities necessary for excellence.

The strategy adopted by the P&Q Club consists of the plan mentioned below.

<table>
<thead>
<tr>
<th>Programmes</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talks during lunch on P&amp;Q (School level)</td>
<td>to generate more awareness; to increase the students' knowledge of managerial aspects</td>
</tr>
<tr>
<td>Workshops/Camps</td>
<td>orientation-building; management games; discussions; action learning</td>
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<tr>
<td>Competitions</td>
<td>to increase competitive ability among the students</td>
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(Narayana, 1994)

Sri Lanka — The QCs are promoted by the Quality Circle Association of Sri Lanka which was established in 1989. The Association is well recognised. The current membership (inclusive of the institutions) is quite impressive. The Association's activities cover
organising national conventions, seminars, talks, lectures, video presentations, clinics, assistance to the companies and publication of newsletters. It also co-ordinates participation in the IEQCC. The Chief Guest at the 1992 convention was no less than the Prime Minister of Sri Lanka. The Association was able to send a delegation comprising 54 members to the IEQCC 1993. (Narayana, 1994)

Europe:

Sweden — The QCs first started in 1977 in Sweden. It took a long time before the attempt was made due to the belief that the QC is a product of the Japanese culture and the perceived absence of quality-related problems in Sweden. One of the problems encountered during introduction of the QCs was the managers' and the supervisors' perceptions that they are responsible for making the QCs work because they possess the
authority. It has been suggested that the role of the middle-level managers and the supervisors should be well defined and they should be provided with the information regarding functioning of the QCs and decisions taken in the meetings of the QCs.

The formation of the QCs in Sweden reflects the country's thrust on industrial democracy. The QCs are formed based on voting. If the vote is for the QCs, participation, is mandatory. Another interesting feature in the earmarking of a fund in the budget for the purpose of investigating into the consequences of the decisions the QCs take.

Finland — The Central organisation for the Finish Metal and Engineering industries took a leading role in the introduction of the QCs. The training programmes have been initiated by the Finish Society for Quality. Most of the QCs are in the metal and electronic industries. It was estimated some time back that there were around 1000 QCs in around 250 companies. Finland is the second in Europe (after Italy) in terms of time lost (4.2 hours per employee per year on an average) due to strike. About 90% of the country's work is organised. The Federation of Blue-collar Workers' Unions has stipulated
a set of conditions (mentioned below) under which the unions would support the activities of the QCs.

1) Employees shall have the right to choose their own representatives for the QCs.
2) The QCs shall make their own choice of problems they want to solve.
3) The employees chosen as members of the QCs are to be given the necessary training.
4) Non-payment for QC activities outside the working hours shall not be accepted.
5) The employer is to guarantee the continued employment of the workers.
6) The activities of the QCs should also help improve the working conditions and job satisfaction of the employees.
7) A reasonable portion of the profits achieved through such activities is to be distributed to the workers.
8) Such activities shall not ignore the stipulations of the collective agreements made by the trade unions.

The QCs have been mentioned as a form of co-operation (in the activities relating to rationalisation) in other central organisations' agreements. The QCs have earned a status within the labour-management co-operation system in Finland.
It is interesting to note that, in more than one enterprise, the shopfloor workers have asked the board of directors to start QCs.

The UK: The concept first came to the limelight in the conference on the 'Japanese Approach to Product Quality Management' at the Institute of Directors in London in 1979. Initially, there were doubts as to whether the Japanese concept could be applied in the UK (Hutchins, 1981). But the idea gradually gained ground. As back as in 1985, more than 1,500 QCs were operating in about 200 companies.

A survey covering 130 companies (Dale, 1984) revealed that certain positive results (like cost savings, coming out with the solutions to manufacturing problems, greater job satisfaction and increased management commitment) flow as a result of functioning of the QCs. At the same time, the survey also indicated the difficulty of running the QCs in the UK where 80% of the companies experienced failure at the beginning.

In the companies where the QCs started well, the trade unions are generally in favour of the QCs and have not raised issues like payment for the QCs' achievements. This may be due to the fear of generating inequity.
The traditional emphasis on differences in terms of rank in the organisations has been identified as a major factor that impedes the smooth running of the QCs.

**Italy** — A survey has indicated that around 40 companies, mostly large-scale manufacturing ones, have introduced 325 QCs. The slow growth of the QCs in big companies has largely been due to labour-management conflict and the erosion of the position of middle-level executives due to the presence of powerful unions. Other factors that impede the development of the QCs include the high degree of industrial disputes, the low status of the middle-level executives, personnel reduction plans in many companies and the resistance of the unions due to the fear of losing power.

**Germany** — The Association of German Engineers in Stuttgart started the training of the leaders and the members of the QCs. More than 350 firms have started QCs. As back as in 1985, there were 2,300-2,500 workers' teams comprising about 12,000 workers.

Problems encountered in running the QCs include high expectation of the managerial people regarding the tangible outcomes in terms of efficiency and cost.
reduction, a time gap before the QCs take root and come up with substantial contributions, inadequate support from the middle-level executives and fall in interest after some years.

The USA — In recent times, a good number of companies in the USA have been plagued with the problems of stagnating productivity, unemployment and job insecurity, consumer dissatisfaction, workers' alienation and loss of morale. On the surface none of these problems seem to be
directly related to the product quality.

The 'catching up with the Japanese' syndrome serves as one of the major catalysts to the QC movement. As the US industries lag in productivity (especially in the automobile industry), the US managers have started to search for reasons by trying to understand the techniques used by their Japanese competitors. The Japanese organisations with their stable labour-management relations, high labour productivity and superb quality control system have drawn the attention of the US managers. The US managers have recognised the underlying benefits of involving the blue-collar employees in the work place and the implications of such involvement for motivation. On the surface, it becomes sensible to follow Japan for productivity improvement. Many US observers are still sceptical about the practicability of the QCs in the US industries. Many of them think that the QC movement is another fad. As E.H. Schein (1981), a leading organisation scientist, explains:

One of the greatest strengths of the US society is our flexibility, our ability to learn. When we see a problem, we think about it until we have it solved, and we seem to be willing to try anything and everything. One of our greatest weaknesses, on the other hand, is our impatience and short-run orientation. This leads to fads, a pre-occupation with instant solutions, a blind faith that if we put in enough effort and money anything is possible.
Institutionalisation of QCs requires long-term commitment, sincere implementation and patience. Although the QCs are rapidly gaining momentum in the US industries, literature regarding the concept is more available than documents relating to real functioning of the QCs. The first US firms to adopt the QC concept fully were Lockheed Missile & Space Co., Inc., California Division of the Lockheed Aircraft Corporation and Honeywell Corporation.

In the Lockheed Missile Space Co., Inc., after learning about the concept from a visiting Japanese team and consulting with Dr. Juran, the Missile System Division's Manufacturing Manager, Wayne Ricker, arranged for a tour to eight Japanese firms by a number of employees. They were impressed and reported that the QCs are effective in motivating the workers by enriching their jobs and increasing their sense of participation. The report also noted a strong support which the senior managerial people gave to the programme and the involvement and commitment of the workers in the plants. As a result, the Lockheed formed the first QC in October, 1974. By the end of 1975, there were 15 QCs and, by 1977, 30 QCs were there in production, research and development, and the machine, electronic
and composite shops.

Although some managers and workers were reluctant to participate, those who did were generally enthusiastic. The results were quite impressive. By 1977, the Lockheed estimated that the functioning of the QCs had resulted in a saving to the tune of 3 million US dollars. The number of defects per 1000 hours caused by the manufacturing process declined by two-thirds. In late 1976, the firm conducted a survey covering the members of 2 QCs. They found that morale and job satisfaction had improved.

The Honeywell too established its first QC in 1974. Since 1974, about 400 such QCs are operating mostly in an effort to improve the quality of working life (QWL). The results have indicated that both financial and non-financial gains have taken place (Zemke, 1980). An extensive study in 1982 of seven divisions of the company revealed that improvement in communication between the workers and the supervisors, interest in working towards the organisational goals, commitment towards the organisation, and sense of the individuals' self worth have taken place. The study also suggested that the professional QCs tend to be less successful and that the participants who have
experienced failure tend to be more reluctant to participate even in other QCs. On the whole the QCs at the Honeywell have worked well.

Since then many other companies of different sizes, belonging to different industries and having different technologies, have accepted the idea. Among the early starters were Metaframe Corporation, Smithline Instruments, Inc., and the United States Envelope. Growth of the QC movement in the USA was slow in the seventies and only about twenty five companies were found to be involved in 1978. The rate of growth increased and the number of organisations that started running the QCs also increased. By 1980, there were at least 6,000 QCs in the US and there were indications that many people were viewing the QCs as necessary.

The American Society of Quality Circles (ASQC) and the Technology Transfer Institute (TTI) are also increasingly supporting the QC movement. In particular, the TTI serves to facilitate the exchange of technical information and professional skills between the Japanese and the US business organisations and also sponsors international study missions to Japan to provide the US companies with first hand information on Quality Control activities and QCCs in Japan. In short, the
publicity campaign that promote QCs are gaining momentum.

Although more than 90% of the top companies listed with the New York Stock Exchange have started QCs, many experts do not consider that the QCs in the US have become successful (Lawler and Mohrman, 1985; Cole, 1980, 1988).

That apart, the US unions with a few exceptions, are suspicious about the role of the QCs. They consider QCs and other small-group activities (SGA) as management devices to get more production from the workers without sharing the increase in economic gains, to do work faster and to reduce human resource requirements. Unions also fear that running of the QCs might lead to allowing concessions during collective bargaining and the unionisation process will eventually be weakened as loyalty to the management may develop. However, recently, due to competition from the Japanese organisations, managements and unions are showing interest in QC and other types of SGA activity. This trend is particularly strong in the automobile and electronic industries which are emphasising cost and quality problems for long.

Canada — In Canada, the QC movement is a slow one. Many management consultants have come to the scene
to implement the idea and discussion on the QC philosophy has now become a regular feature of seminars offered by the leading management bodies. The International Association of Quality Circles was set up exclusively to promote the concept of QC. It has been recently restructured to help carry out the QC activities in a more professional manner with a board of directors comprising primarily the representatives from the user organisations. As back as in 1982, the said Association had about 5,400 members who represented individual member-companies and seventy three chapters. Its various training programmes, conferences, and publications have provided a major source of information to those who want to learn about QC.

A survey on 20 Canadian organisations was conducted to assess the functioning of the QCs in those companies. The results revealed that although the QCs had been portrayed as bottled change, most companies had to make many changes in the bottle and even in the label to get their programmes implemented and accepted by the managements and employees. These organisations had given considerable efforts (both the managements and the employees) to get these programmes in place and keep them running. Most of the companies surveyed had favourable sales and employment trends and could provide time and money required
for running the QCs there. Some companies later discontinued their QCs because of economic difficulties, usually unrelated to the programmes. There were also examples of companies that attracted more business or added new product lines because of improved productivity and quality. Data collected, from the 20 companies surveyed, showed that preparations for the QCs were really made at the local levels (i.e., the plant or office). Although the plant or office might have been requested by a corporate group to consider the idea of QC, nothing was accomplished until a local planning group was set up. Quite often the guiding force was the plant manager or the general manager of the office who was active in forming the planning committee and setting objectives for the programme. (Portis, 1987)