JUSE

Societās Quālitātis

Vol 4 No 1 Mar/Apr 1990

Union of Japanese Scientists and Engineers 5-10-11 Sendagaya, Shibuya-ku, Tokyo 151 JAPAN

DEVELOPMENT OF JAPANESE TQC

This article is a excerption from the "Movement of Japanese TQC" Quality Month QC Text, No. 205, 1989.

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1. The Rise of the Japanese-Style TQC (In the 1960's)

(1) Developments

As we entered the 1960's, the method and approach of QC (Quality Control) began to be used more and more as a method of business management that was suited to the soil and climate of Japan. That is, we had the rise of the Japanese-style TQC. And the role of the guiding pilot for this development was served by the Deming Application Prize.

In order for a business enterprise to win a Deming Prize, the effective method is to use the latest QC techniques to demonstrate a QC system which is clearly differentiated from that of other countries.

Owing to this situation, new QC systems were developed and implemented in various ways through the close cooperation between the staff responsible for QC who had the task of winning the Deming Prize and scholars at famous universities who were burning with various ideals on "the way a business enterprise should be," on the other.

There were also following events which promoted and encouraged this movement.

1958: A productivity study mission on QC was dispatched by the Japan Productivity Center to the United States, and the actual state of QC in the United States was introduced to Japan.

1960: Every November was decided as the Quality Month, with month-long themes and slogans decided and posted, and the pamphlet for the month published, and Q (Quality) flag-hoisted, etc.

1962: Union Japanese of Scientists and Engineers (JUSE) started to publish "Genba to QC" (which has since become "QC Circle"), and called to form QC Circles widely.

1969: ICQC '69 – Tokyo (the first International Conference on QC) was held in Tokyo.

(2) Background

The liberalization of trade which began in 1959 frightened the business and industrial circles in Japan. If companies could not realize to "produce quality products cheaply", they would go out of business. For this reason, they rushed to build plants with the latest equipment on new sites with the aim of achieving "the innovation of the entire plant." Investments aimed at rationalization were made in the small and middle-size businesses, processing industries, and physical distribution and sales areas, where modernization was considered late in coming. In this way, modernization of the Japanese industry progressed rapidly, and Japan's GNP increased to No. 2 in the Free World.

Progress in technological innovation lead to raise the income standards which connected to the production of mass consumption goods which encouraged the consumption revolution; these economic and social change greatly influenced QC.

(3) Methods of Promoting QC

Nevertheless, changes tend to create problems. The rapid changes in the production system have shown the effectiveness of the design of experiment method in various ways. The orthogonal array was devised and the design of experiment method left the hands of experts and began to be used for day-to-day work of production engineers and technicians.

Also, the QC-style problem-solving method, in which a

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given problem is solved with the use of QC techniques in accordance with a set of procedures was more or less established. All of these developments contributed significantly in upgrading the technical levels in Japan.

Through the rapid development of the heavy and chemical industries and the machine and processing industries, labor force shifted from agriculture and trandi-tional industries to secondary-sector (manufacturing) industries in a quick tempo. However, even though it may be easy to supply labor power, it is not so simple to bring up supervisors. Then, it became clear that educating and training in QC methods was effective in developing supervisors, and in solving problems at the work place. Thus, the publication of "Genba to QC" and the call it made on formation of QC circle activity was really timely.

As the distance between the producer and user becomes in products such as washing machine, television, and automobile, the more difficult it becomes to assure quality. And precisely for this reason, there was a strong demand for establishing an integrated quality assurance system encompassing design, manufacture and after-service.

Also, in order for businesses to survive through the severe competition among various companies, it becomes imperative for all the personnel, from president to the production line workers to decide on the objectives and to practice the measures for achieving those targets based upon a consistent approach and thinking. Thus, What is called policy management was born during this time.

In this manner, so called the Japanese-style TQC was created.

2. Establishment of the Japanese-Style TAC (In the 1970's)

(1) Developments

1970 was the year in which Japan's rapid economic growth reached its peak. On the other hand, the distortions of the Japanese economy created during the decade of the 1960's became manifest in various spheres as well. The pollution problem, many defective products appearing one after another, and the first oil schock in 1973, followed by the crazy and chaotic rise in prices, the biggest recession of the postwar period, that is, a bill on the negative consequences of the 30 years of high-rate of economic growth in the postwar period.

In response to these changes, Japan's QC underwent some changes as well. While QC was applied to all aspects during the 1960's in the 1970's, a question was posed as to what was the really essential kind of QC. As a result, the highly efficient and helpful TQC of Japan was firmly established.

The main developments in the world of QC in Japan during the decade of the 1970's were the following:

1970: QC Circle Headquarters published "QC Circle Koryo" (The General Principles of the QC Circle).

1971: Japanese Society for Quality Control established.

1976: Takenaka Komuten Co. introduced TQC, which marked a wide dissemination of TQC in the construction industry.

1977: QC Circle began to be introduced in the banking, financial and insurance industries such as The Sanwa Bank.

(2) Background

The 1960's was the period in which mass consumption emerged out of the large scale mass production and mass distribution. Along with this development, the consciousness of the amsses underwent changes gradually as well. The values of thriftiness in consumption, working hard and saving, persevering in study and work, became weaker in influence, to be replaced by a stronger trend centered around private life, and self-assertion as represented by the phrase "My home papa",; and the feeling of pride toward work was no longer as strong as before. It was during the 1970's that this kind of trend became noticeable in businesses.

The owners and managers of business enterprises of that period who grew up under the prewar moral education were bewildered when they were faced with subordinates who did not have a sense of responsibility toward work, and who put more emphasis on family life than on work, and at loss as to how to handle them. The ideas about "fulfilment in life" and "the team method of thinking" came upon the scene in response with this trend.

(3) Methods of Promoting QC

The development of QC during the 1970's can be summarized as (a) the QC which pursues rationalization under the approach of looking upon the product and human beings as one system, with the central aim of QA, and (b) more mundane "down-to-earth QC with the smell of people" directed toward people who work in business enterprises, such as QC Circle and policy management.

As the environment changed drastically from high economic growth to low economic growth, the QC summarized in (a) showed its potential effectiveness fully. The increased reliability centered around FMEA, the quality assurance which incorporates this kind of thinking, the development of new techniques called quality function deployment, and the development of new products with the use of these — with all of these developments, the point that by doing QC, business enterprises can get rid of the superfluous fat, and that unless a company implements QC, it will not become strong, began to be recognized in many circles.

As for the "more down-to-earth QC with the smell of people;," of (b), results far beyond the anticipation were achieved. Initailly, the QC Circle was looked upon as performing a helping role ion promoting QC inside the company, but it soon became clear that it has an unexpected kind of potent power. For it could serve not only to upgrade the quality of the products, but also to upgrade the motivation of the people at the work place and their sense of responsibility, and to draw together the work place more closely and harmoniously, and so on.

It also proved to be far more effective than expected in the area of policy management vis-a-vis managers. Up to now, while it was recognized that the manager is the key person in a business enterprise, and the upgrading of his ability was advocated, no appropraiate method could be found. However, it now became clear that by implementing policy management, a type of OJT closely

linked with the actual work can be carried out, and that through this, the problem-solving ability of managers can be improved. It also happened that the Seven Management Tools for QC (NEW Seven Tools) which was just developed were very effective techniques in promoting policy management.

Thus, during the 1970's, the way QC was implemented up to that time was reexamined through practice, and what was superfluous was cut away, inadequate parts were supplemented, and the effectiveness of each aspect was evaluated objectively. Within business enterprises, it was recognized that quality assurance, development of new products, QC Circle, and policy management have to be promoted, and promoted in an overall way. And through the concrete implementation of these, the Japanese-style TQC was established.

2. The Further Development of the Japanese-Style TQC (In the 1980's)

(1) Developments

When the decade of the 1970's ended, Japan had made a clear and sharp impression on the rest of the world regarding the strengthen of its technological and economic capability. In one field after another such as the steel, shipbuilding and automobile industries, Japan reached the top class in the world in terms of quality, cost, and delivery time. Japan was also the quickest in recovering from the aftereffects of the oil shocks. Under the floating exchange system, business enterprises in Japan recovered their vitality, and succeeded in turning their export products into high-value added products. What was the secret behind this achievement?

In June 1980, NBC Network in the United States broadcasted a program entitled "If Japan Can, Why Can't We?" This created a big response among the American public, and this program was also put on air by NHK.

With the perception that the secret behind the growth of the Japanese economy lies in the Japanese-style TQC, study missions came to Japan from various parts of the world to learn more about Japan's TQC. This, in turn, exerted a big impact on the industrial world in Japan. Now, with the feeling that "We are not real businessmen unless we do TQC," a boom over TQC spread throughout Japan. In particular, even the construction industry, the "network areas" such as the banks, supermarkets, transportation, and communications, as well as the service areas including the medical care and leisure-related industries began to introduce TQC.

The TQC that were taken by these newcomers including those overseas was, for the most part, QC Circle activity which was relatively easy to catch on to, which gave a rather misleading impression that TQC was QC Circle activity. This boom went away after two or three years. However, it did leave a strong impression about the strengths of this Japanese-style TQC which the Japanese manufacturing industry was putting into practice. And through this development, leading business enterprises in what is called the tertiary-sector industries such as power companies, supermarkets, NTT (Nippon Telegraph and Telephone Corp.) and JR (Japan Railway) began to implement TQC in a full way.

In the spring of 1987, the celebration to commemorate the 25th anniversary of QC Circle activity was held. In autumn, ICQC '87 was held in Tokyo. It appeared as if the whole world was celebrating the growth of the Japanese-style TQC and was looking expectantly toward the development for its future growth and development.

(2) Background

What sustained this impressive development and progress of the Japanese-style TQC? One key factor is said to be the export of industrial production plant and equipment, consumer durables, and high-technology products, which is the economic aspect. Another key factor is said to be the social environment with a high educational standard, a hardworking workforce with a strong loyalty to the business enterprise, the uniformity and evenness in society (in terms of racenationality, and the language), freedom of the press, highly developed information service, etc.

The development of industry in the 1970's brought about changes in the industrial structure; the relative weight shifted from the heavy and chemical industries to the machinery industries with high valued added character such as the precision and advanced processing types of industry. Then, the relative weight shifted to high-tech products such as computers. And, we also must note the growth of the tertiary industries represented by the service industries.

Now, the secondary-sector industries have managed to maintain a high level of productivity through TQC, and have managed to survive through a fierce competitive struggle.

In contrast, the productivity of industries in the tertiary sector is rather low. A large proportion of the people who work in these industries are younger people under 30, of which a large proportion are women. These persons are precisely those who were impacted by, and part of, the changes in the life-related consciousness in the postwar period in Japan. (In one sense, then,) TQC was taken up as a quick, potent remedy to handle these persons whose (consciousness) was geared mainly to their private lives, and who had a weak sense of loyalty to their respective company.

(3) Methods of Promoting QC

Here, we have an effort to apply the TQC which proved effective with things to people, that is, to the task of managing human beings with hearts and feelings. As we know, human beings have large elements of ambiguity and unclarity which resists simplistic or clearcut understanding possible with "things." Thus, in this realm, the "more down-to-earth QC with the smell of people" gained in influence. QC Circle activity and policy management were incorporated stock-and-barrel as tools for management. And the Seven Management Tools for QC (which can be interpreted and assessed in different ways depending upon the human will) were much used with affection, over methods that are more troublesome like statistical evaluation.

Here, we saw the dawn of the type of QC which responds to the needs of a consumer society. ★

SQC Techniques in Quality Evaluation with Focus on Sensory Evaluation

This article was presented as keynote leature of JSQC Symposium held in March 1990.

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1. Sensory Testing and Sensory Evaluation

It was in the middle of the 1950's that the Union of Japanese Scientists and Engineers (JUSE) organized the Sensory Testing Study Committee. At that time, the term "sensory testing" was used and as we passed around the papers published in American scientific journals among us, we gradually developed up a system of our own. Thus, a large number of persons took part in adding to, and modifying, the seminar text, to the point that it is difficult to identify the exact authorship of it. This is the reason why the "Kanno kensa handbook" (The Sensory Evaluation Handbook) (1962) was published under the editorial responsibility of the committee.

As it was already pointed out at that time, there was the viewpoint pushed by Kant, I. Plank, which said that transferring as much of the parts, which depended on sense and human judgment, to physical and chemical types of measurement will raise the scientific and scholarly standards. Nevertheless, it was held that there were still many areas where measuring instruments did not exist, and areas where instruments did exist, but due to the limitations in terms of money, time, and difficulties, we could not help continue the conventional type of human effort. In the subsequent thirty years, most of these have been covered by the wave of (achieved in the area of) instrumental measurement, but there are still areas which cannot be handled in that manner. Around the time that the handbook named above was published, "Shokuhin kanno hyoka genri" (The Principles of Sensory Evaluation of Food Products) (1965) was published by Pangborn, R.M., of the United States.

In the United States, which we have taken regarded as the model, this area was already developing as "sensory evaluation," and with the scientific and technological progress and changes in the socioeconomic conditions, Professor Taro Indo gave the translated title of "Sensory Evaluation Hand-book" to the revised "Kaiteiban kanno kensa handbook" (1973) which re-systematized the newly introduced technology. The change in the title shows the gradual change in the relative weight of the various areas within business enterprise activity, the techniques used, and the aims.

Let us introduce the table of contents for "Sensory Evaluation" by Kobayashi and Masuyama (1989) and "Kanno hyoka no giho" by M. Meilgaard, et al. While we cannot get into the specific techniques due to the space limitations, if we look into the background for the necessity for this type of various methods and the changes in a schematic form, we get the following picture.

As for the problems in the evaluation system and with the reliance on human sensory perception, there are: (1) individual differences, (2) changes between days and between hours, (3) psychological and physiological conditions related to exhaustion and comparison, and (4) lies and the know-it-all (connoiseur) attitude. Now, precisely because various measures have been devised for each of these problems, this method is still being used in various fields to this day. Broadly speaking, these measures fall in the following categories: Selection, training, and management of panel with regard to (1), experimental planning methods with regard to (2), making use of substantive scientific knowledge with regard to (3), and randomization with regard to (4).

2. Progress and Changes in Techniques

Around 1950, H. Scheffe of the United States and A. Bradley of the United Kingdom, published articles dealing with statistical handling of the pair comparison method. The method of pair comparison itself was introduced in 1860 by G.T. Fechner, and around 1930 or so, L.L. Thursone proposed the method of quantification, but it was Scheffe's achievement to apply the theory of dispersal analysis, and introduced the theory of evaluation. Then, Bredley introduced new ways of quantification and theory of evaluation in relatioin to rank-ordering. Even the theory of elementary mathematical statistics which is commonly used, today, had not yet taken root generally. So, when these developments came into the picture at once, there was naturally some confusion on those who were on the receiving end. While the quantity dealt with by orthodox statistical science is quantative measurement, in the realm of sensory evaluation, there are many areas where only rank-ordering and classification can be used. Therefore, work began on the development of statistical techniques that are suitable for this was started. One characteristic is that techniques that are not seen much in general textbooks such as paired preference test and paired difference test premised on binominal distribution are described in great deal. (For example, aside from the work by Meilgaard cited above, there are works such as "Kanno kensa nyumon (1979)" and "Kanno kensaho" (1985) both by Shin Sato.

In addition, various types of multi-variate analysis that was just introduced in name only in the first edition of "Kanno kensa handbook," began to become a part of the commonsense in this area, along with the dissemination of computers and dissemination of advanced statistical science. The semantic differential method, which is an application of the factor analysis method, is also used widely, while multidimensional sealing method is used in many

areas, even in those areas that are distant from the original application field of the basic theory of color. Today, these methods are incorporated into the standard program package, and there is a tendency for them to be abused by people who do not necessary have an adequate understanding of the purpose and significance of them. The starting point of the two-item distribution was to use ingenuity to figure out a means of analysis of a situation where there can only be a qualitative judgment as to yes or no. This was expanded to multivariate analysis by Chikio Hayashi's 3 quantification classification. The same effect was achieved by "Corespondence analysis" by the French, and by "Dual Scaling" by Professor Shizuhiko Nishizato. It was toward the end of the 1970's that the verification and comparison of the techniques that were developed within the dofferent (technical) cultures of various countries was carried out. (For example, at the symposium in Versailles.)

Now, what was the situation with regard to quality control? It was during World War II that we first heard the term "QC" (in Japan). However, we did not yet know the actual situation. In the late 1940's, the elementary statistical concepts were introduced for the first time, on the basis of the work on reliability of telecommunication equipment. (This was one of the contributions made by Dr. Deming.) To have this method take root solidly within the production system (which we see today) was the contribution made by the forerunners in Japan (namely, the late Professor Kaoru Ishikawa and Dr. Eizaburo Nishibori). It was the creativity of the Japanese which gave rise to what is commonly called the "7 Tools of QC" and which has given rise to the form of QC Circle (although this is not central to the topic today).

Now, when the Japanese learned the various techniques of QC from the United States and have them take root, the biggest difference between the way it is implemented in the United States and in Japan lies in the question of who is the central body in promoting QC. In both Europe and the United States, only a few QC experts who are generally college graduates carry out various types of testing and evaluation, while for workers at large, it is perceived only as something extra. This, in a sense, is the drawback of a class society. In Japan, however, which took off from the state of nothing in the immediate postwar ruins, the basic concepts were hammered into the heads of the production line workers, too, and they, in turn, managed to master and implement these techniques. Precisely because of this achievement, it was possible for the rates of defects to be reduced drastically in the past 20 to 30 years.

Now, we will go into the parts that overlap and do not overlap between the various techniques of sensory evaluation system and various techniques of QC system.

3. Assessment of Sensory Evaluation in the Production System

Out of the thirty-odd years in review, the developments such as (a) progress in sensor technology, (b) progress in electronics engineering device from TR → IC → to LSI, and (c) dissemination of computers and program packages, are blessings provided by progress in science. In the area of technological changes which is normally mentioned in a parallel manner in academic technology, we can point to the dramatic expansion in production volume. Also, we should mention the careful selection from the stage of purchase of raw materials to the reduction of the defect rate at the time of shipment, which have occurred along with the kind of progress referred to earlier. (These may be regarded as direct results of QC.) However, in addition to this, we must consider the changes in socioeconomic conditions. To put it in a nutshell, it is the trends in the comparative value of labor wages and machinery price.

As is true in developing countries everywhere, plants in Japan in the latter half of the 1940's (which was the period when she absorbed all the repatriates from overseas) had a few machines (to deal with machining and other types of work) surrounded by a large number of workers, and a number of work processes of this type were going on in a irregular manner. (This is what we often see today in China.) The raw materials used at that time, both imported and domestic, had an extremely rough and irregular quality, and it was possible to judge good and bad qualities by sensory evaluation (centered around visual inspection). At the time of the shipping inspection of the finished product, there were just a large number of inspectors (who were not necessarily evaluated highly) watching carefully. So, the only improvement was some improvement of lighting. Even then, there were R&D department and market research department, and even though detailed and complex techniques that we have today were not yet developed, the embryos and primitive forms of most of the techniques we have today were there.

Just around the time that Japanese products began to be evaluated positively as "cheaper and better," as a result of the effort of the QC forces, the Japanese economy was hit hard by the oil shocks. As a result, during the 1970's, rational reallocation of personnel and work force was carried out in the form of sharp increase in prices leading to sharp rise in wages. Then, too, the process of automation which had been making headway gradually up to then served to cut down the role of human beings in the work stages drastically, and the content of work underwent big changes as well. (From sensory and muscle work, more work shifted to monitoring of centralized control instruments, which then made vigilance a key guestion.) In Europe and the United states, the workers who became unnecessary would have been laid-off or terminated (in most cases), but in the case of Japan, efforts were made to shift them to the inspection and evaluation areas in many cases. Now, as long as we are dependent on inspection based upon visual apeparance, it is impossible to monitor a large volume of products, and the lines have to be divided several times over. When manufactured items are rolled up in coil at a very rapid speed as in the case of the steel industry, for example, it is no longer possible to inspect with human eyes. From about 1980 or so, the use of instrumentation at the time of doing shipment-related work began to be introduced more and more, especially in the beer and steel industries. This was a response to the change from the poverty-based economy in which there are a surplus of workers to (continued on page 7)

REPORTS OF QC CIRCLE ACTIVITIES IN JAPAN

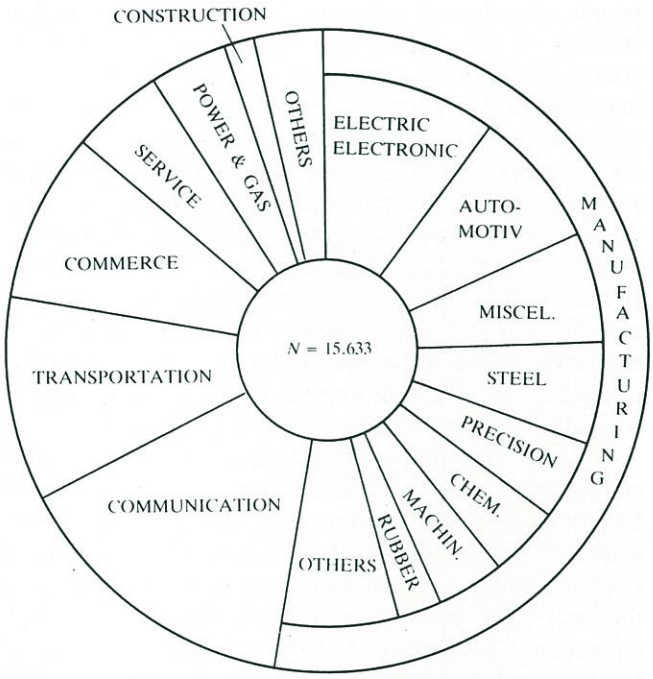
A Circle Graph on the right hand shows the number of 15,633 QC Circles registered at JUSE QC Circle Center during 9 months from June 1989 to February 1990 classified by "the type of Industry of QC Circle". ("the type of Industry of QC Circle" means the industry type of the firm which QC Circle belongs to.)

The figure below shows the cumulative registered number of QC Circle by the year end of 1989. At the end of February 1990, the total registered number of QC Circle was 304,123 and QC circle members were 2,387,979. The number of QC Circle registered in 1989 was 17.517 and QC Circle members were 120,522.

The right side of the figures below indicates the number of participants of JUSE Courses and Seminar related to QC Circle which is the cumulative number at the end of fiscal year, March. The sum total of participant number up to 1989 can be seen as follows.

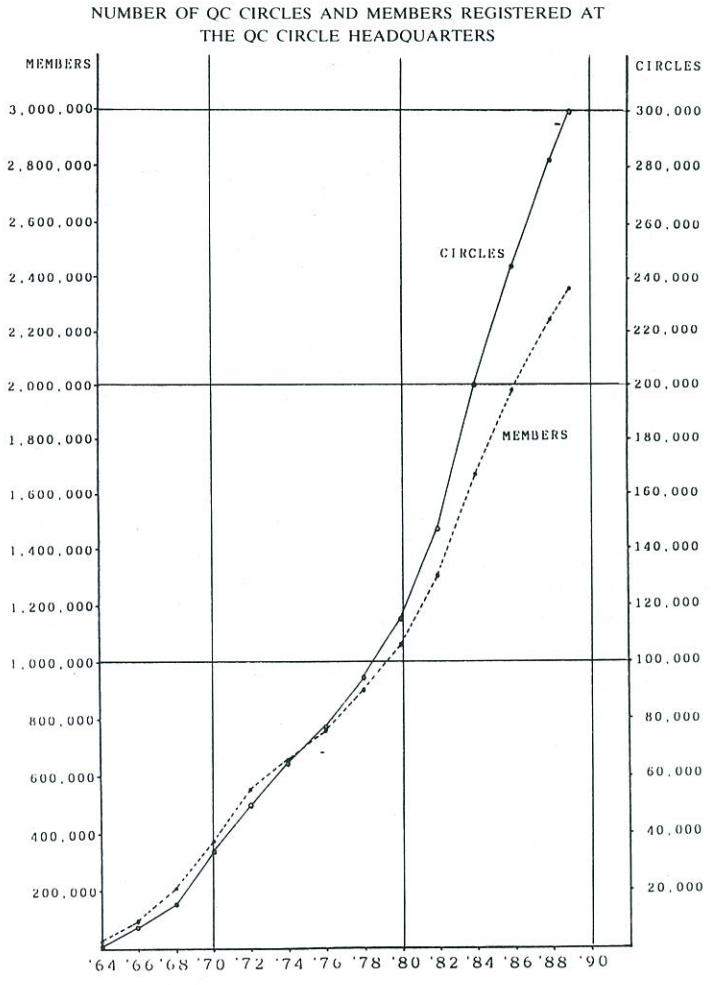
Course	A	31,882	(1,853)
	B	10,389	(917)
	C	18,461	(1,943)
	D	6,972	(742)
	E	34,642	(5,019)

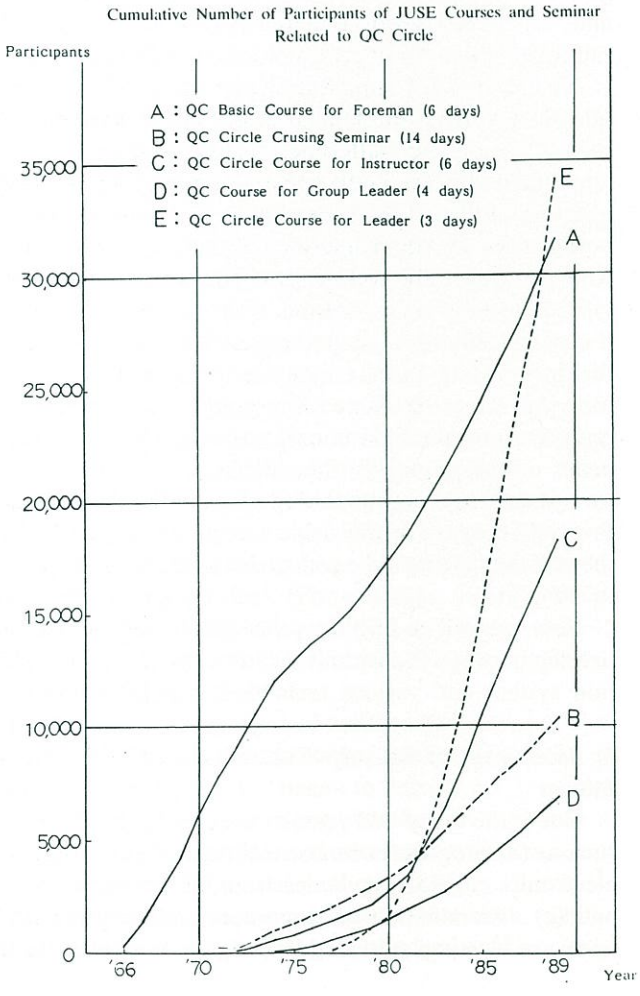
*( ) = total participant number only in 1989.



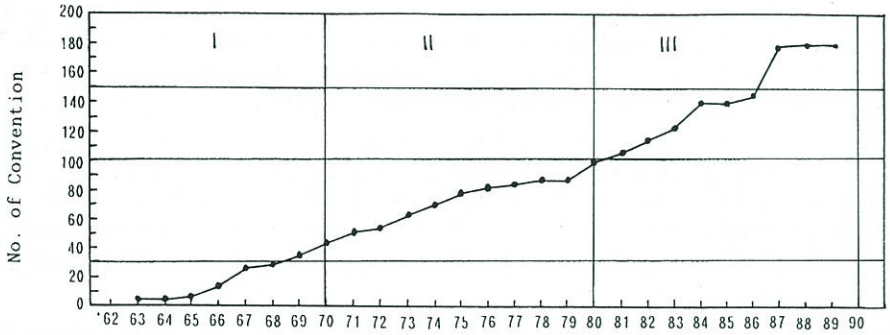
Registered Number of QC Circles by type of industry. (Jun. '89 – Feb. '90)

The three graphs on the right page are the total value from January to December of each year. The values of 1989 are 175 in figure (a), 144,415 in figure (b) and 4,007 in figure (c).



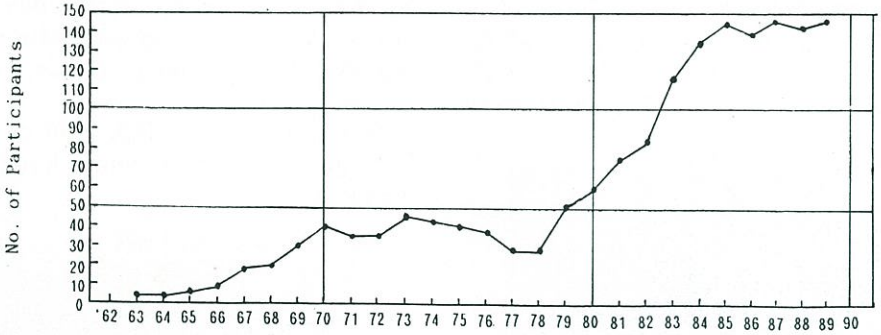


(a) No. of QC Circle Convention Held

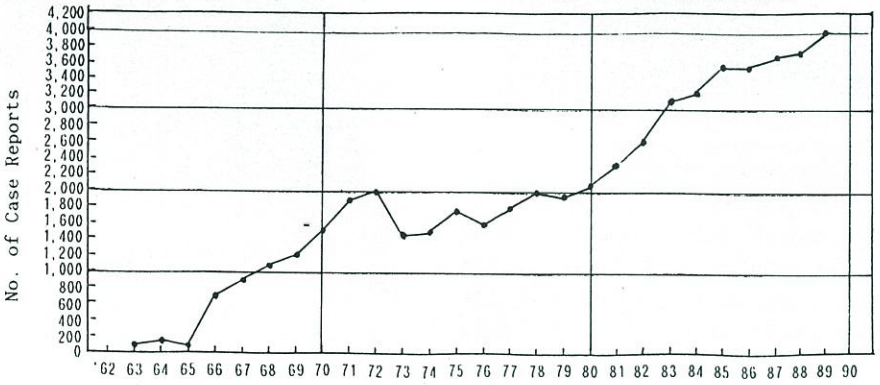


(thousands)

(b) No. of Participants in QC Circle Convention



(c) No. of Case Reports Presented at QC Circle Convention



(continued on page 5) an era where there are labor shortages. At the same time, in the area of receiving inspection, it became impossible to rank order raw materials and parts just with visual sense or sense of taste, and so instrumentation made headway here as well. It is no longer possible, for example, to discern the amount of iron in iron ore by color. and so the method of chemical analysis based upon analysis by instruments made progress. Today, chemistry has been integrated with computer (even though chemistry was regarded as a most distant area from computer before), and a new area called chemometrics has been created. In Europe and the United States, instrument-based analysis linked with computer is used to identify the producing area of olive oil, and specifying variety, etc. (although this is not yet implemented in Japan).

Thus, while on the level of concept, the flow of "receiving → processing → shipment" has not changed, the room for the involvement of human beings and intervention by sensory evaluation has become extremely small. At the same time, however, in the areas of R&D and market research which have existed from before, the aspect of evaluation has become increasingly important. And the techniques that are employed in that area have various aspects that are different from QC.

The reasons for this are:

(1) It is difficult to apply QC to the areas of creation-,planning, and control. Aspects of creation, on one hand, and control on the other, tend to contradict one another.

(2) For "historical aspects" and the aspect of taste and preference, it is necessary to apply a perspective which is based upon anther standpoint.

In the area of R&D, too, when there are changes in the work processes (which does not happen often) and changes in materials (which is often), the techniques that were used in the classical sensory evaluation method are effective even today in determining whether or not one can say "No difference" and/or "Impossible to recognize apart" from the old processing material and raw material.

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COME AND GO

JUSE 22nd QC Circle Study Team's visit to the United States and Mexico

JUSE 22nd QC Circle Study Team organized by 20 members, which had taken leadership by Mr. Kazuo Hirose (former Manager of System Control Division in Kobe Steel Ltd. and present Counselor of JUSE) had returned safely from their trip to the United States and Mexico on March 31 which had started on March 17.

Their visiting companies in the United States were Inter Corporation, Texas Instruments, Florida Power & Light Company, Nissan Motor Manufacturing Corp. USA, GKN and other one company. In Mexico, team members had a pleasure to attend Japan-Mexico QC Circle Conference organized by ITESM, Instituto Tecnologic y de Estudios Superiores de Monterrey, while visiting HYLSA.

Presentations given by team members received high response at each visiting place. Moreover, Japan-Mexico QC Circle Conference had deepened the friendship between both countries.

Deming Prize Study Mission from Taiwan

Under the purpose of learning the method of Deming Prize examination as to establish "Quality Grand Prix" in Taiwan which will be given to the companies which was excellent in Quality Control field, study mission of total 11 members visited Japan for 7 days starting from March 22.

Examination Committee (candidate) organized by 5 University professors and experts of Quality Control had learnt with eager about regulations, procedure and measure of examination of the Deming Prize from 5 Deming Prize examiners and the secretary. Moreover, they visited Komatsu Ltd. (head office and Kawasaki Plant) and Asmo Co., Ltd. to learn the correspondence of the company side such as preparations and condition to take the examination and the effect after the examination.

Colombian Top Managements' TQC Seminar in Japan

Main five enterprises in Colombia which are Carvajal (Printing), Icollantas (Tire & Rubber), Manuelita (Foods), Rica Rondo (Foods) and Uniroyal (Tire & Rubber) had sent total 12 top executives (1 Head, 4 Presidents, 4 Vice-Presidents, 2 Supervisors and 1 Advisor) as to participate in Colombian TQC Seminar specially organized by JUSE. They arrived Japan on March 3 and return to Colombia on March 17 after completion of their 2 weeks seminar.

This seminar of two weeks course for top executives was the first attempt in JUSE. The contents of this course were total 7 days lecture and 3 days company visits with having Group Discussion of 4 nights, divided into two groups. Their visited companies were Mitsui Bank, Snow Brand Foods, Toppan Printing, Daikin Co., Sunstar and Fuji Electric (Kobe).

It was reported from TQC Staff of the above companies that the great effect of seminar lectures can be seen by the participants.

Main visitors in February and March

Feb.	1	The Shell Co. of Thailand Ltd. (2)
	5	Bulgarian QC Study Mission (15)
	14, 26	Toyo Cement QC Study Mission – Korea (total 23)
	15	AT&T Consumer Products Pte. Ltd. – Singapore (4)
	21	AT&T Bell Laboratories – U.S.A. (3)
	21	ICI Brazil (3)
	27	Boeing Commercial AIRPLANES – U.S.A. (3)
	28	GKN Hardy SPICER Ltd. – U.K. (2)
Mar.	2	Nissan Motor Manufacturing U.K. Ltd. (4)
	3-16	Colombian Top Management TQC Study Mission (12)
	7	VDA Verband der Automobil Industrie E.V. – F.R.G. (18)
	7	Fiji National Training Council (2)
	12	New England Quality Management Center – U.S.A. (13)
	20	India Public Administration Mission (13)
	20	Telos Management Consulting – Italy (5)
	22-28	Taiwan Deming Prize Study Mission (11)
	28	Malaysia Industrial Relation Study Mission (4)
	29	Automobiles Citroen and others – France (4)
	29	Northwest Airline – U.S.A. (2)

*( ) = Number of visitors