

## “AIMING TO BECOME A LEADING FIRM IN LSI DEVELOPMENT”

Mr. Mitsuo SAKAI, President  
NEC IC Microcomputer System Company

from “An Interview with Top management”,  
*Total Quality Control*, Vol.42, No.1 January 1991 pp.4-5.



*What is your opinion concerning the role of TQC in corporate management?*

**Sakai:** I think TQC is an effective means to bring about better management strategy. TQC is not merely an exercise carried out by management, and it can produce

the desired effect only when all employees join hands to promote it. It's been a year and a half since I took office as president, and I can say that I've been deeply impressed seeing everyone in our firm, from top management right down to the workers at the jobsite, functioning in harmony within a TQC-oriented corporate climate.

*We understand that when introducing TQC you began with policy management? In your firm, that was where you started, wasn't it?*

**Sakai:** Yes, it was. Diagnosis by top management will clarify whatever the problems or questions there are at the jobsite, and I consider it of the utmost importance that we know these things.

Also, when we try to analyze work inefficiency at the jobsite through diagnosis by top management, then project our findings in policies to be observed in the next phase, diagnostic success depends heavily on whether what we call the PDCA circle is or not revolving. This too is of major importance.

Judging from the tangible effects brought about by actual results, I can safely say that our PDCA circle is revolving and very well, at that.

*Can you tell us how you plan to develop your business strategy, and the role TQC will play during the coming years in a rapidly changing corporate environment?*

**Sakai:** As a subsidiary of NEC and taking the lead in manufacturing LSI throughout the world, we take care of something like seventy percent of the design work. It stands to reason that we can't be a full-fledged member of the entire NEC group, not merely in name but in fact, unless we can present ourselves as the world's number one company in the field of LSI design.

We've developed various types of business with the aim of becoming just a corporation.

Let me now introduce four kinds of activities we're carrying out as part of TQC.

The first is to boost the ratio of consistent design and make each SBU assume responsibility for its own business, in other words, to increase self-support.

In order to accomplish this, development and design must eventually result in a produce. We want to firmly grasp how much each SBU contributes to increased sales profits among NEC's business divisions. To that end, we would like to boost the rate of consistent designing to, say, sixty percent by 1995... the program extending from market research to product planning, and from development to mass production.

The second activity is to perfect quality assurance by increasing problem sensitivity (PS) and establishing whatever devices are required to achieve it.

Now firmly built into policy management, this activity has been enforced ever since we won the Deming Prize, and it tends to be technology-oriented. We would like to extend the scope of problem sensitivity to cover other management methods, tools, individual attributes, things like that; and perfect quality assurance in which emphasis is placed on precluding difficulties by developing devices and management means to consider counterplans in advance.

The third activity is to foster market-orientedness among personnel with talent.

During the years to come will be increasingly important to grasp the needs of the market exactly. For this reason we wish to rear employees who are wholly capable of thinking in a market-oriented way.

Fourth is to structure a corporate wide-information system.

With more and more of our branches scattered throughout the nation, we plan to build a corporate-wide information system which gives us immediate access to every part of the company and provides prompt feedback.

These, then, are our four activities. We would like to develop our business strategy based on TQC. ★

# CHARACTERISTICS OF COMPANIES WHICH HAVE WON THE DEMING PRIZE OVER THE PAST FIVE YEARS

This article was reprinted from a special issue "Deming Prize 40" by JUSE

Shoichi SHIMIZU  
Professor Emeritus  
Nagoya University



It is universally agreed that the Deming Prize has greatly contributed to the advancement of quality control in Japan, and it might be said that corporations

which have received the prize have carried out superb quality control activities in their respective forms of industry.

Table shows the numbers of companies, classified according to type of industry and the prize received, which were awarded during two five-year periods, 1980 to 1984, and 1985 to 1989. Recently more and more firms have diversified, and some of those which won the prize operate two or more businesses. The figures in parentheses indicate the number of companies in a plurality of businesses.

As seen by the table, prizewinning firms engaged in the construction trade have increased remarkably, two being general contractors and engineers, and two in the medium-size range; and four are engaged in interior finish work or the supply of materials or equipment.

The increase in the number of metal-related and chemical firms might be regarded as their "revival": It appears that industries in which advanced quality control in Japan was formerly seen have enjoyed revitalization.

There appears to be a numerical decrease among awarded concerns engaged in machine manufacture, including automotive builders, and those in the electrical power industry; but if the numbers in parentheses are added, we find that the totals among such companies have remained pretty much the same. In general, no noteworthy changes occurred throughout the first and second halves of the 1980s, but the characteristics outlined below might be cited if considered individually over the past five years.

To begin with, a company producing software was awarded. It marked the first occasion for this. In our information-oriented society of today, computers have evolved as indispensable to both production and consumption. It goes without saying that hardware will not function by itself, thus importance is placed

on software. That the awarded concern specialized in developing software carried out excellent quality control activities provides another example testifying to the fact that quality control is also beneficial to companies which do not produce goods per se. In the first of these examples we have an electric company that generates power, a commodity which cannot be neatly packaged and sold over a counter, while the second is a firm producing software which emanates from mainly the human mind rather than from an assembly line.

Another characteristic of award recipients is the fact that a foreign company received the prize, which marks another "first." For a whole decade the Deming Prize Committee had hoped-and expected-that individuals and/or companies from lands beyond Japan would apply for the award, and accordingly had made preparations for processing such applications. In this context it is indeed significant that the feted corporation was not established abroad as a subsidiary of a Japanese parent firm, but the American Florida Power & Light Company. Examination of the US concern was conducted almost entirely as it is usually done in Japan, which created much difficulty for the examiners. But they came through shining, and it might be said that the awardee, having carried out truly excellent quality control activities, proved that foreign companies too can effectively conduct Japanese-style TQC.

Third among our characteristics is that leisure and service companies won the prize for the first time, making it obvious that quality control, initiated in the realm of manufacturing, has gradually expanded to other forms of endeavor. It is remarkable that firms representing tertiary industries, notably those related to leisure or resorts, eventually qualified for the Deming Prize. It is expected that during the coming years one company after another in the service industry will apply for this coveted award. In this respect the Deming Prize Committee, as a means to contribute further to the development of quality control not only in Japan but elsewhere as well, is contemplating various matters from assorted viewpoints, including methods for processing such applications, so that it

more effectively can respond to changes of the times and maintain the well-established and honorable tradition of the award.

Fourth, there have been a growing number of companies which have merited the award for the second time.

Quality control has great value only when it lasts. Unfortunately quality control tends to decline once a firm wins the award. This seems to be underscored by the fact that, although companies in an effort to upgrade their quality control activities may apply for the Japan Quality Control Medal five years after winning the Deming Application Prize, very few have done so. Thus it is most gratifying that some of the companies awarded the Deming Application Prize for Small Enterprise later received the Deming Application Prize after expanding their operation.

Fifth among the characteristics to be cited is that the Deming Prize has extended its influence among corporate groups, to their subsidiaries and affiliates. One company of this type after another has won the prize, showing that group-wide TQC is advancing at a healthy pace, with winning, firms setting the example.

Lastly, apart from the characteristics presented in the fore-

going, let me review some features of the contents of quality control as carried out by firms which have been awarded the prize.

That awardees have given top priority to establishing a system of consistent quality assurance has remained unchanged, and it might be said that more importance has been placed on prior technological development and the evolution of new products, particularly in the order-receiving industry. By investigating the latent requests of consumers and trends among order-receiving corporations, and anticipating future demands, awardees are making efforts to perfect systems capable of responding to such requests, trends and demands. It is both natural and favorable that, with the perfection of such systems, policy management has been based on long-term plans instead of revolving the cycle of management on a year to year basis. In terms of methods, the seven new tools of TQC and the reliability period, as well as advanced statistical analysis aided by computers, have come into use on a daily basis. But most important has been the appearance of management methods created by individual firms to suit their own corporate climate. Only management methods such as these can bring about truly impressive results.

**TABLE: COMPARISON BY INDUSTRY AND DIVISION AMONG COMPANIES WHICH HAVE WON THE DEMING PRIZE**

Upper figures: 1985-1989, Lower figures: 1980-1984

Industry Types of Prizes	Machinery (automobiles & parts included)	Electric (software included)	Metal (processing included)	Chemical (cosmetics & food included)	Construction (interior finish work, materials, equipment included)	Service (electric power)	Total
Japan Quality Control Medal	0 (1) 3	0 0	1 0	0 0	0 0	0 0	1 3
Deming application Prize:							
Prize:	5 (6)	3 (4)	4	3	4	1	20
Application Prize	4 (2)	4 (1)	2	0	2	1	13
Application Prize for small Enterprise	1 4	1 3	0 1	0 0	3 0	0 0	5 8
Application Prize for Division	0 0	1 2	1 0	0 1	1 0	1 0	4 3
Quality Control Award for Factories	0 0	0 1	0 0	1 0	0 0	0 0	1 1
Total	6 (7) 11 (2)	5 (4) 10 (1)	6 3	4 1	8 2	2 1	31 28

## SUMMARIES OF REPORTS

### Presented at Consumers Conference 1990

Tokyo Meeting\* on Nov. 2 at JUSE

from "Total Quality Control", Vol.42, No.1 January 1991 pp.56-60.  
reported by Mr. Kiyoshi HIROSE

#### Presentation 1:

##### CONSUMERS' THROWAWAY SENSE

Junko Tanaka  
Chiba Housewives Union

A survey conducted to look into the throwaway sense of consumers and their consciousness of garbage according to age bracket reveals that they become more critical regarding what is disposed of and how as they grow older. Seventy-two percent of the housewives polled replied that, so far as products whose content is refillable are concerned, they would buy the content only. A great deal of valuable information was gained through the survey, and the results have prompted taking countermeasures in the future.

In conclusion the research asks manufacturers not to pack their products unnecessarily and recommends that consumers buy new products without undue hesitation. It urges administrative bodies to establish recycling systems and conduct more thorough consumer education, and consumers to develop a more critical mind.

#### Presentation 2:

##### SURVEY ON PRICES OF DAILY NEEDS AND FOODSTUFFS

Chisato Ishiguro  
One Mile Society

A survey conducted to clarify how living needs are priced by selection seventeen items embracing twelve basic types from among daily necessities and foods shows the actual situation of pricing in detail according to the kind of retailer patronized-large-or medium-scale, small shop, district, etc

The survey produced many interesting facts, such as prices not always being lower at supermarkets. Also, for example, in Tokyo, as expected, the prices in the lower east end of the city are lower than in the more posh districts. In addition the survey clarified the characteristics of the items polled; for instance, some items are often picked as a leader, and others are not priced low enough even though they can be purchased in large

quality.

A great amount of data was obtained, and most of it is highly useful. There were many surprises which aroused the interest of participants at the meeting.

#### Presentation 3:

##### THE IDEAL WASHING MACHINE

Kazue Tsujii  
Consumer Life Adviser

The research performed clarifies the actual situation surrounding the use of washing machines and laundry detergents in detail and in relation environmental problems from the standpoint of environmental destruction and preservation of resources.

Investigation proceeded according to typed of washing machines and detergents used, the problematic points that the machines themselves had (including those seen from the viewpoint of users), and the results of research proposed nine separate conditions for the ideal washing machine, for example that it consumes less water, detergent and electricity. It requests manufacturers to develop less-costly, power-saving, drum-type machines easily operative with soap.

The research was unique in that it investigated and compared the performance of major washing machines, their prices, lifetime, effects of washing, etc., and presented the ideal future image of washing machines.

#### Presentation 4:

##### USE OF CEREAL FOR BREAKFAST

Hiroko Kuniyara  
"Maapo" Consumer Life Adviser Group

The research investigated in detail how cereals, such as corn flakes, were consumed particularly for breakfast, and the manner in which families ate their morning meal, that is, whether all members of the family enjoyed the same menu or not and ate together or at different times. Research proceeded according to age bracket, the composition of family members,

\* Osaka Meeting of Consumers Conference 1990 on Nov. 1 at "Chuo Denki Club" shall be printed on the next issue.

profession and the like, and it made clear the actual status as well as the consciousness of consumers who preferred breakfast cereals and those who did not.

Also, by calculating the caloric intake of foods using computer among the cases surveyed and examining the results from a general point of view, the research proposed ways of utilizing cereals in more ingenious ways. While manufacturers stress that cereals are nutritively well-balanced, the research warns that even when eaten with milk they are not up to the level manufacturers would have us believe.

## **Presentation 5:**

### **THINKING ABOUT ENVIRONMENTAL PROBLEMS - PART I**

A Survey concerning the actual condition of waste water from the kitchen

Kinue Ogawa  
Seseragi Circle

Focusing on people's awareness regarding the effect of waste water from household kitchens on environmental destruction, the survey showed that, while most of the persons polled knew how kitchen waste water polluted rivers, they were not positive when it came to cooperating in the disposal of waste water. According to the results of research, it is necessary to improve ways of washing tableware and the basic structure of kitchen sinks. It urged emphasizing the importance of environmental problems and taking needed counter-measures.

In conclusion the research stressed the need for a thorough education of administrative bodies and schools, for requesting manufacturers to improve kitchen sinks and market products with ecology logo, and for urging the media to report on water pollution and refrain from airing commercials touting the effects of cleaners only. It also called for consumers to enlighten both themselves and their neighbors and friends.

## **Presentation 6:**

### **SAVING ELECTRICITY AT HOME**

A survey on housewives' awareness and actual conditions

Chieko Kikuchi

"Slim" Consumer Life Adviser Group

This survey was conducted with respect to electrical power conservation to clarify the consciousness of housewives regarding the use of electricity. Research included degrees of living standards and ways of selecting and using electrical appliances.

In terms of age brackets, housewives in their twenties

have a much lower level of awareness of energy conservation than those of other age brackets. Only ten percent of the women surveyed answered that they wanted to save energy even if they had to lower their living standard. The research showed clearly that full public recognition of a need to conserve energy has yet to become established. In general, consumers sorely lack knowledge of how much electricity home appliances consume and have little interest in finding out.

While elucidating problematic points through the results of the survey and emphasizing the importance of energy conservation, the research asks administrative bodies, home appliance manufacturers and electric power companies to educate consumers and improve written instructions supplied with electrical appliances, and provide more information on meter examination and receipts. It calls on the general public to exert positive efforts to collect information useful for energy conservation and save power whenever possible.

## **Presentation 7:**

### **SURVEY ON THE ACTIVE AGED AND EATING OUT**

Midori Tadokoro

"Padrone" Consumer Life Adviser Group

The research conducted illuminated problematic points regarding eating out from the viewpoint of senior citizens and assembled requests directed at the food service industry by investigating the behavior of the "silver set" and the circumstances surrounding their patronizing of restaurants and the like.

Fifty-five percent among the seniors polled go out at least four times a week and many have opportunities for eating out. (1) Buckwheat noodle eateries, (2) Japanese-style restaurants, and (3) European-style restaurants account for places most often patronized by the silver set and in the order of preference enumerated; but the prevailing actual situation relating to food service establishments is not necessarily aged-oriented.

In the first place, one average serving is too much for senior citizens, and their failure to eat it all gives the impression they are being wasteful. The research suggests a partial solution to the problem by proposing that the leftovers can be brought home-the "doggy bag"-and asks the food service industry to cooperate by making suitable containers available. As an adjunct, it is expected that this measure can contribute to the reduction of garbage and more effective use of resources.

In addition, the survey assembled requests for restaurants where senior citizens can feel at ease, those featuring cuisine with milder tastes, etc.

## Presentation 8:

### SURVEY ON PREPAID CARDS

Yoko Sato

"Ten to Sen" Consumer Life  
Consultant Group

This survey focused on various types of prepaid cards as a means to learn the actual conditions and problematic points thereof by investigating the extent to which cards of this sort have become diffused, consumer awareness of them, and the manner in which they are used and abandoned.

As many as 95.8 percent of the individuals polled answered that they knew about prepaid cards, and 88.2 percent replied that they carried prepaid cards on their person. Prepaid cards issued by NTT (telephone cards), Japan Railways (JR), automotive service stations, stations, subway systems and a few others, in the order given, topped the list of prepaid cards in circulation.

While prepaid cards have the advantage of being easy to carry and eliminate the need to have currency in small denominations always available, a number of persons pointed out that the cards have demerits because the places where they can be used are limited and it is not easy to know their remaining monetary value. By collating the various opinions obtained, the research was able to advance several suggestions aimed at developing a more convenient prepaid card system.

The research requests that issuing firms make it easier for users to know what their card balance is, that NTT does not charge a handling fee when telephone payment is made per prepaid card, that JR permit prepaid card holders to purchase travel at Green (first-class) counters, and that administrative bodies revise laws to govern the balance which remains unused. The survey also made suggestions to consumers regarding the use of prepaid cards.

## Presentation 9:

### AUTOMOBILE SAFETY

Kiyomi Saito

National Association of Consumer  
Life Consultants

This research made clear the relationship between traffic accidents and the awareness of people by analyzing the minds of drivers as well persons who do not drive as regards the safety of automobiles from various aspects, including age bracket and sex. Persons in their twenties have a much lower

level of consciousness concerning safety. In terms of sex, women are more conscious of danger, but this keenness of mind does not necessarily lead to an awareness of safety and a desire to obey traffic laws. Few drivers comply with "stop" signs or speed restrictions. Concerning the safety of automobiles themselves, it is desired that, pursuant to the specifications imposed on cars exported to the United States, those marketed domestically should be equipped with an air bag, anti-lock brake system, and safety belts for rear seats too.

Based on the foregoing, this research requested automotive builders to give safety priority over style and equip cars sold domestically with the same safety features provided on export models. It also asked dealers to furnish their customers with precise information and adequate post-sales service, driving schools to instruct their students in such a way that they can fare safely in gradually worsening traffic congestion attended by higher speed, and administrative groups to strengthen the general safety requirements for automobile bodies.

### 1991 ANNUAL QUALITY CONTROL CONFERENCES QUALITY CONTROL CONFERENCES (QUALITY MONTH, NOVEMBER)

Conference venue: Tokyo

Oct.	29,30	Quality Control Conference for Service Industries
Nov.	1	Quality Control Conference for Consumer
	5	All Japan QC Circle Convention
	6 to 8	Quality Control Conference for Foreman
	11	Quality Control Conference for Top Management
	12 to 15	Quality Control Conference for Manager & Staff

### QUALITY CONTROL CONFERENCE (SPRING)

Conference venue: Fukui, Fukui

Date: May 29 to 31

### 1991 QC CIRCLE CONVENTIONS Organized by QC Circle Headquarters

(Date)	(city, prefecture)
Feb. 28, Mar. 1	Naha, Okinawa
Apr. 18, 19	Toyama, Toyama (Hokuriku area faced to the Japan Sea)
June. 20, 21	Sapporo, Hokkaido
Aug. 28, 29	Kurashiki, Okayama (Chugoku area faced to the Inland Sea)
Oct. 24, 25	Tagajo, Miyagi (Tohoku area faced to the Pacific Ocean)
Nov. 5	Tokyo (All Japan Convention)
Dec. 12, 13	Ginowan, Okinawa

\*All the above conventions except for the one on Nov.5 at Tokyo are able to have participants from overseas. For further information, please contact JUSE office.

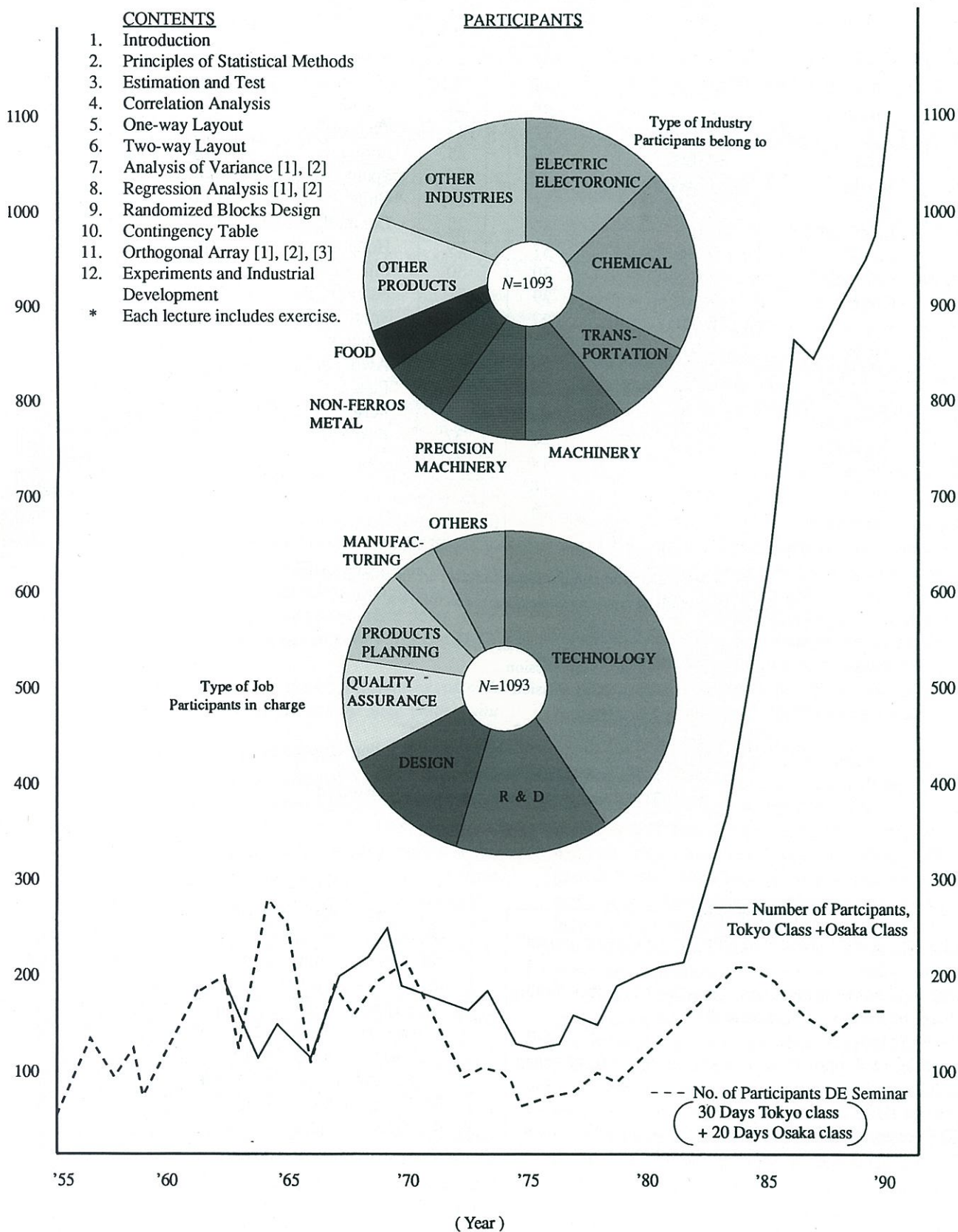
## REPORT ON JUSE SEMINARS

### DESIGN OF EXPERIMENTS EIGHT DAY COURSE

#### CONTENTS

1. Introduction
  2. Principles of Statistical Methods
  3. Estimation and Test
  4. Correlation Analysis
  5. One-way Layout
  6. Two-way Layout
  7. Analysis of Variance [1], [2]
  8. Regression Analysis [1], [2]
  9. Randomized Blocks Design
  10. Contingency Table
  11. Orthogonal Array [1], [2], [3]
  12. Experiments and Industrial Development
- \* Each lecture includes exercise.

#### PARTICIPANTS



## 1990 OVERSEAS VISITORS TO JUSE

January - December

No.	Country	No. of visits	No. of visitors	No.	Country	No. of visits	No. of visitors
1.	Korea	16	578	21.	Thailand	4 (f)	11
2.	U.S.A.	20 (bceg)	156	22.	Malaysia	3 (g)	10
3.	Taiwan	4	91	23.	Canada	1 (g)	10
4.	U.K.	13 (bcdgh)	77	24.	China	2	10
5.	India	4 (fg)	56	25.	Portugal	1 (gj)	9
6.	Mexico	3 (age)	53	26.	Spain	3 (bcd)	5
7.	Italy	5 (bdgh)	44	27.	Chile	1 (a)	3
8.	Indonesia	5 (g)	43	28.	Denmark	1	3
9.	Brazil	5 (agefg)	37	29.	Hong Kong	1 (g)	2
10.	Germany	2 (bcdh)	30	30.	Fiji	1	2
11.	Colombia	2 (gh)	29	31.	Netherlands	0 (d)	2
12.	France	6 (dch)	27	32.	South Africa	1	2
13.	Norway	2 (i)	26	33.	Algeria	1	2
14.	Hungary	1	25	34.	Awitzerland	1	2
15.	Philippines	1 (fg)	23	35.	Ecuador	2	2
16.	Argentina	1 (a)	22	36.	Peru	0 (a)	1
17.	Australia	1 (cg)	20	37.	Pakistan	0 (f)	1
18.	Singapore	3 (fg)	19	38.	Sudan	0 (f)	1
19.	Sweden	1 (bgi)	18	Total		117=(10)	1468
20.	U.S.S.R.	2	16			127	

note 1 - Alphabets and number in parentheses are of combined delegates.

note 2 - Details of combined delegates are as follows.

- a: JETRO trainee
- b, c: GKN TQC Study Mission
- d: Philips Study Mission
- e: Alcoa Study Mission
- f: JICA trainee
- g: JUSE International Seminar on TQC
- h: EC-Japan Center for Industrial Cooperation, Engineers Course
- i: Maynard QC Study Mission
- j: TQC Seminar for Brazil, Colombia and Portugal

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