Working Paper

Total Quality Management (TQM) in Hungary II

J. Jirásek and B. Péceli, Editors

WP-90-65
October 1990

IIASA

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Hungarian Preamble

Since the first IIASA Working Paper on "Total Quality Management (TQM) in Hungary" (January 1990), free elections have taken place in Hungary, its political system has changed, and the total changeover of the economic life from centrally-planned to market economy has begun. In this situation, *quality* in industry and in life in general has a prominent role with the goal to improve the industry's competitiveness in the international as well as domestic markets.

For Hungary to attach itself to Europe – to the "European Household" – it is inevitable from industry's point of view to get a higher level of quality to assure a reliable system of producing marketable goods, both in the international and domestic markets. For these reasons, Total Quality Management – the utilization of up-to-date managerial methods and systems – is a must.

The implementation and utilization of Total Quality Management, initiated and supported by IIASA and Professor Shiba, is spreading in the Hungarian industry. As of September 1990, there are 33 industrial companies participating in the action and making use of TQM in their activities. The Hungarian economy needs more and more companies exploiting TQM to develop their total activity, to improve their quality, and there is an increasing number of private firms whose owners are looking for the most modern management systems, among them the Management of Quality.

In the framework of the Hungarian–Japanese bilateral collaboration, the Japanese Government sent Professor Shiba to continue the development of TQM in Hungary, to improve the "Hungarian Way". Besides him, several Japanese training/educational institutions take part in the training of Hungarian experts in Industrial Management, in the Management of Quality. Among these, the Association of Overseas Technical Scholarship (AOTS) is participating rather seriously in the training and education of Hungarian industrial experts. In 1990 alone, 56 young managers will be trained; about half of them are consultants and industrial experts dealing with the implementation of TQM in Hungary.

The Hungarian industry needs Total Quality Management of a higher level. We hope that, among other arrangements, the spreading of TQM in Hungary supported by IIASA and the Japanese Institutions, personally by Professor Shiba, will assist us to achieve our goal of becoming a competitive, high quality and value-generating Hungarian Industry.

Henrik Auth
Under-Secretary of the
Hungarian Ministry of
Industry and Trade

Co-Authorship and Acknowledgements

Co-authorship of this paper is divided among J. Jirásek, IIASA, Laxenburg (editor, Appendix D), B. Péceli (co-editor, Chapters 1–4, Appendix A), É. Ács (Chapter 3), T. Asbóth (together with B. Péceli), P. Bodo (Appendix B), K. Budai (Appendix C), T. Fodor (Appendix B), and A. Petneházy (Appendix C). Z. Zamori was most helpful in administrative assistance.

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Total Quality Management (TQM) in Hungary II

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Since 1987, Hungary has been adopting the concept of total quality management (TQM) to improve its competitive outlook in world markets. The concept originated in studies carried out by Professor S. Shiba at IIASA in 1986–1987. The key prerequisite was the draft of a comprehensive national program of quality promotion as explained in the first issue of this Working Paper.[1] The Hungarian Industry developed a potential for gradual quality improvement. Selected companies apply the TQM systems approach corresponding to the advanced knowledge and experience of quality promotion.

The results achieved so far surpass the initial expectations, both in enhancing the competitive advantage of exported goods as well as in encouraging the management commitment to quality issues.

The response of the Hungarian industry triggered enlivened interest for TQM in other East European countries. Neighboring Czechoslovakia is adopting the Hungarian experience and inviting Hungarian experts. Other countries begin to take incentives, information and examples.

1 The Second Year of TQM Implementation in the Hungarian Industry

There were 24 companies implementing TQM in the Hungarian industry as of November 1989. In September 1990, this number is 33 (see Table 1 and Appendix A). To tell the truth, this number is less than expected; however, the present economic constraints precluded several companies from new initiatives. At the same time, the obligatory standards of quality performance have been increased and the entry of some companies to the TQM club are postponed.

TQM is spreading among Hungarian companies, and there is growing interest expressed from the part of non-industrial companies, too. Some of the companies that have achieved success in the implementation, have begun practicing TQM in their daily work and found their creative potential develop. A number of companies begin to refer to TQM to overcome their basic problems (as a component of their crisis-management).

The utility of TQM is being positively tested in diverse segments and situation of the Hungarian economy. At the end of 1989, 20 companies – among them beginners in TQM – after a few months of implementation reported about 150 million Fts of benefits related to quality promotion. The costs of the implementation during the same period amounted to about 70 million Fts – the payback of the invested capital is considerable. In the meantime, comprehensive experience has been collected from the first survey to be passed on to companies before beginning implementation.

Practice has proved that all the recommended principles and methods are essential to implementing and disseminating TQM among companies. It became clear among the companies

[1] Since basic principles of TQM and the initial implementation program are not repeated in this issue, the reader is strongly recommended to refer to J. Jirásek, et al.: *Total Quality Management (TQM) in Hungary*, WP-90-004, IIASA, January, 1990.

Table 1: Number of TQM-implementing companies in Hungary.

Year/half of year	New companies	Total companies
1988/1	4	4
1988/2	3	7
1989/1	8	15
1989/2	7	22
1990/1	8	30
1990/2 (as of September)	3	33

that the implementation of TQM and the whole TQM activity needed a special infrastructure in the company as a massive background (see Figure 1). The build-up of such an elementary infrastructure is indispensable for the start of TQM; however, it corresponds to the demand of rather "lower classes" of TQM. To enter "higher classes", a more advanced set of knowledge and skills has to be developed.

In the first quarter of 1990, IIASA organized a round-table on the reassessment of the "Hungarian Way of TQM". Principal ideas extended by IIASA met a widespread consensus and invigorated the determination to enhance the level of TQM development.

During Professor S. Shiba's latest stay in Hungary (May 1990), a second Plan of Action was worked out (with a horizon of 1991) in order to proceed to a more advanced setting of TQM implementation.

The second year of TQM implementation considerably enriched the ability to make use of quality analysis and perfection procedures. TQM is being used broadly in management development as an organic part of any offensive approach to the market.

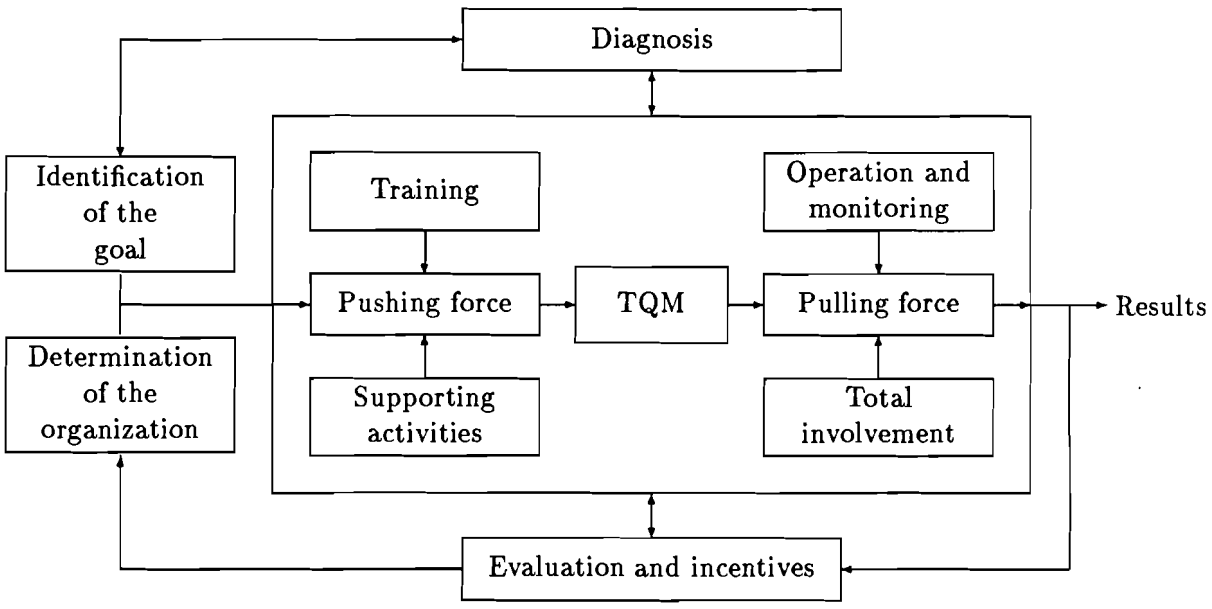


Figure 1: Elements of TQM infrastructure.

1.1 Quality Promotion Awards for Achievements in 1989

For the second time the "IIASA–Shiba Award" for outstanding results in quality promotion and merits for TQM expansion were ceremonially handed over in the presence of the Hungarian Minister of Industry and Trade on May 30, 1990. The ceremony was followed by a presentation of the appraised results. They displayed a multitude of contributions of TQM, not only to direct quality improvements, but also to the whole management, product development, work performance, economy of resources, etc.

1. Companies: *Videoton Automation Joint Co.*

   The decision was based on the following criteria:

   - the participation of the top management
   - the grade of maturity of TQM at the company
   - the methods and the utilization of them
   - the visible results
     - The presentation of the general director was excellent. He displayed, in his own person, considerable TQM inventiveness and practical skills.
     - They used TQM in solving their crisis situation.
     - TQM was the key method for the company to survive, and the company achieved a considerable profit out of TQM (see Appendix B).

2. Working Groups: *Gardenia Lace Curtain Factory*

   The applications of the working groups were judged by their ability, practice and skill in the "Seven Steps of Problem Solving". All groups that didn't comply with the seventh step fell out of the competition. Gardenia was the most outstanding in all of them (see Appendix C).

3. Individuals: *No presentation awarded*

4. Special Awards: *Working Group for the Second Plan of Action*

   The implementation of TQM in Hungary began in 1987. After three years it was felt necessary to develop a new Plan of Action. Under the auspices of the Ministry of Industry and Trade, about 30 volunteer experts worked with great enthusiasm. The Plan of Action brings about a higher overall consensus and helps to develop concerted action toward an advanced and accelerated quality promotion.

2 The TQM Methodology in the Hungarian Implementation Framework

The main philosophy of continuous quality improvement is the "PDCA (Plan–Do–Check–Action) Cycle". The practical mode of operation is the "Seven Steps of Problem Solving", and the means to achieve the results is the "Two × Seven Tools" of management.

The PDCA Cycle and the Seven Steps of Problem Solving are in a tight organic relation, as depicted in Figure 2. The "Seven Steps of Problem Solving" became the obligatory basic approach of solving quality problems. Its main advantages are:

- the procedure teaches people to think logically
- following this system, important steps to achieving the best solution are not left out

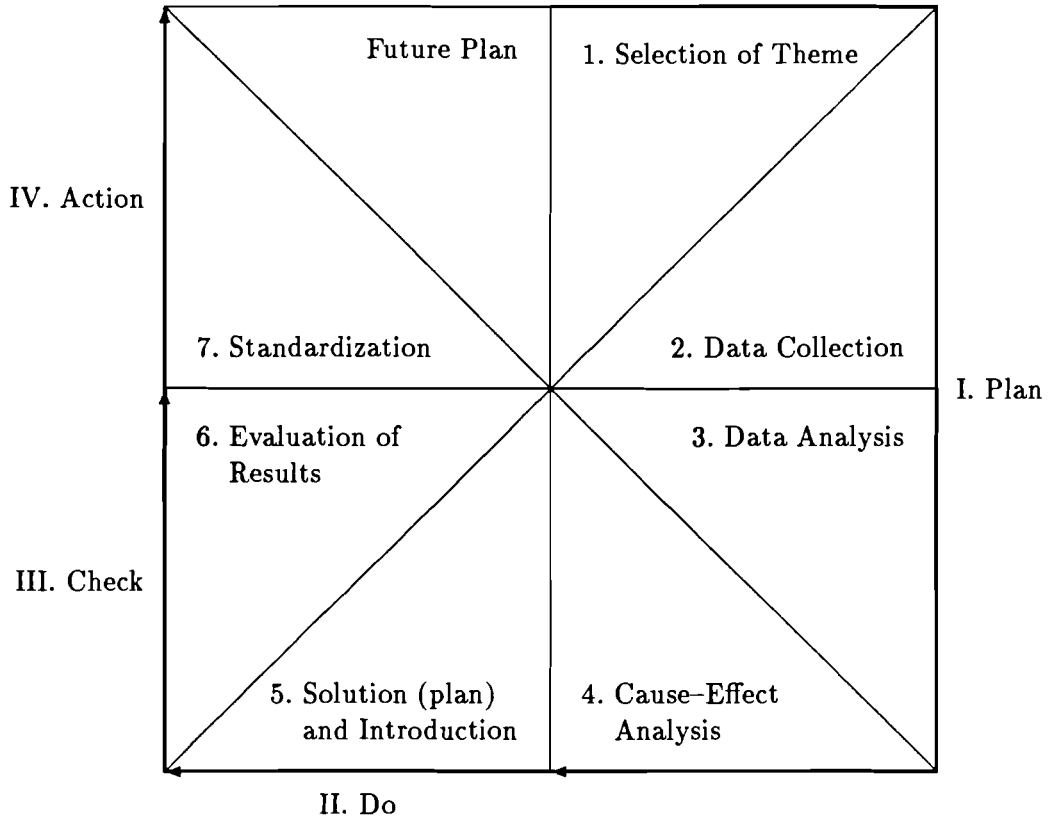


Figure 2: Problem solving cycle (I–IV = stages of the PDCA cycle; 1–7 = operational steps).

- not the imaginations but the real *facts* conduct people to find the next task
- solutions are found not by chance, but by serious analysis of the data collected
- steps 6 and 7 assure that the solution found be correct; and if so, its future utilization will be obligatory.[2]

The operational mechanism of the "Seven Steps of Problem Solving" relies on the "Two × Seven Quality Management Tools" (see Tables 2 and 3)[3].

All of the above-mentioned management tools are known to be useful methods for different analyses, but here in the quality management they have their special importance. The most used tools in the quality improvement in Hungary were:

- Brain-storming
- KJ-Shiba analysis
- Ishikawa diagram
- Pareto analysis
- Tree diagrams

[2]According to S. Shiba's experiences in Europe, although the seven steps of problem solving are well-known in many countries, people become satisfied after step 5, having found the solution, and little care is taken to implement the solution. In Japan, says S. Shiba, the cycle always will be finished after step 7; only in this case can it be presented.

[3]For more details, see the first issue of *Total Quality Management (TQM) in Hungary*, IIASA, 1990.

Table 2: Seven tools (older set).

1.	Brain-storming
2.	Cause–effect or Ishikawa
3.	Pareto analysis
4.	Histograms
5.	Control chart
6.	Regression correlation
7.	Graphs

Table 3: Seven tools (newer set).

1.	KJ-Shiba Analysis (special procedure for detailed quality analysis)
2.	Cause–effect (Ishikawa or fishbone analysis)
3.	Tree diagram
4.	Matrix diagram
5.	Arrow diagram
6.	"If–then" analysis
7.	Factor analysis

- Correlation and regression
- Arrow diagram
- Histograms
- Control charts

The interdependence of the cycle stages, steps and tools, can be seen in Table 4. Not in every case, but sometimes the consultants, experts and working group members used other useful helping methods and tools of their choice. In the future extension and sophistication of TQM in Hungary, consultants have to be trained to use the following methods:

- Factor analysis
- Experimental design
- Quality function deployment
- Multivariate analysis
- Statistical process control (SPC)
- Computer software

Table 4: Relations between the steps of problem solving and the management tools.

PDCA Stages	Steps of problem solving	Methods used
Plan	1. Specifying the problem	KJ-S, Ishikawa, brain-storming, tree diagram, Pareto
	2. Data collection	Control charts, histogram, Pareto
	3. Data analysis	Pareto, histogram, correlation
	4. Cause-effect analysis	Ishikawa, Pareto
Do	5. Planning and introduction	Arrow diagram, presentation to the boss
Check	6. Evaluation of results	Control charts, technical methods
Action	7. Standardization	Technical (engineering) methods
	Feedback to the process (to the first step of problem solving)	Brain-storming, KJ-S

3 The Second Action Plan for 1990–1991

3.1 Evaluation of TQM Activities in 1987–1989

TQM consultants and leaders of nation-wide TQM activities analyzed problems and results of the previous three years in a workshop on May 5, 1990.

Problems:

- leaders of nation-wide TQM program cannot coordinate all efforts
- consultants have insufficient knowledge about advanced management techniques and methods
- TQM needs more support and guidance from the governmental level

Results:

- problem-solving skills of consultants and companies' experts improved
- beneficial economic results reached in each TQM-implementing company
- Hungarian way of TQM has been recognized in Hungary as well as abroad.

3.2 The Second Action Plan Breakdown

New goals and tasks were worked out for the following five main fields of TQM activities:

1. Organization of a nation-wide TQM program.
2. Implementation of TQM in companies.
3. Qualification of consultants.
4. Networking.
5. Research and training.

3.2.1 TQM Organization

TQM consultants set the goal that an independent, nation-wide, non-profit organization should direct and spread TQM after October 1, 1990. This organization should be specified by the Ministry of Industry and Trade. Representatives of TQM consulting companies, supporting organizations, and TQM-implementing companies should take part in the leadership of this organization.

3.2.2 Implementation of TQM in Companies

The goal is to increase the economic effect of quality improvement, the number of companies implementing TQM, and the number of publications about the Hungarian Way of TQM.

3.2.3 Qualification

Qualification of consultants and consulting firms starts this year based on objective criteria of the facts of TQM implementation in the company.

3.2.4 Networking

The target is to build a network of TQM consultants and people from TQM-implementing companies, and to create different forms of cooperation with national and foreign organizations in this field.

Practical TQM experience from industry should be spread among agricultural organizations, small-size companies, and services.

Advancement in quality promotion is to be consulted and coordinated with other East European countries on their way to market economy.

3.2.5 Research and Training

Research and training efforts will concentrate on the following topics:

- connection between TQM and the ISO 9000 Standards
- methods of Statistical Process Control
- consulting TQM in small-size companies

3.3 Permanent Reassessment

The Action Plan should be actualized each year.

4 International Perception of the Hungarian Example

During the past year, experts from neighboring countries in middle East Europe were keenly interested in the Hungarian Way of TQM.

The first issue of the IIASA Working Paper *Total Quality Management in Hungary* has been distributed to all IIASA member countries. As a consequence, experts from Bulgaria, Poland, and the Soviet Union took part in Professor Shiba's workshop in May, 1990.

Hungary is being looked at as a source of knowledge and experience; foreign experts are visiting Hungary and Hungarian experts are being invited abroad. In particular, collaboration with Czechoslovak managers has achieved a large and ever-growing scope.

Protagonists of the Hungarian approach, together with IIASA experts, have been invited to give presentations on the occasion of the founding of a National Quality Center in Považská Bystrica (northwest Slovakia). Repeatedly, groups of Soviet (Russian and Georgian) managers visit Hungary and then IIASA in Laxenburg to get acquainted with up-to-date quality policy and management. The Hungarian breakthrough and some company accomplishments have been publicized in the professional press and other media abroad.

International expectations effectuate an increase of activity and responsibility on the part of many leading Hungarian leaders and experts. At the same time, the internationalization of quality promotion increases the opportunities for mutual assistance.

Appendices

A Industrial Companies Implementing TQM in Hungary (1990)

	Name	Location
1.	Tungsram Light Sources	Budapest
2.	Rábatext Textile Industry	Győr
3.	Medicor Medical Instruments	Debrecen
4.	FORTE Photochemical Works	Vác
5.	Rekard Mechanical Works for Agriculture and Mechatronics	Győr
6.	Alföldi Porcelán, Porcelain	Hódmezóvásárhely
7.	MIKROMED Medical Instruments Joint Venture	Esztergom
8.	Beton-Vasbetonipari Müvek, Concrete	Dunaújváros
9.	Videoton Automation	Székesfehérvár
10.	Hungarian Ball-bearings Factory	Diósd
11.	Gardénia Lace Curtains	Győr
12.	DDGÁZ Company, Natural Gas Distribution	Pécs
13.	Magyar Selyemipari V. Silk Industry	Budapest
14.	Romhányi Kerámiagyár, Ceramics	Romhány
15.	Csepel Factory for Individual Machinery	Budapest
16.	Hollóházi Porcelán, Porcelain	Hollóháza
17.	KÖBAL Aluminium Industry	Budapest
18.	Solgótarjáni Öblösüveggyár Factory for Glass Bottles	Salgótarján
19.	Lenta Asztalosipari V. Woodindustry	Nagykanizsa
20.	Remix Elektronikai V. Electronics	Tiszakécske
21.	Bakony Müvek Mechanical Industry	Veszprém
22.	KÖFÉM Light Metal Works	Székesfehérvár
23.	SZKIV Glória Rt Furniture Industry	Kecskemét
24.	Köollajipari Gépgyár Mechanical Factory for the Petroleum Industry	Budapest
25.	Gear Rt, Car Industry	Eger
26.	Aluszerkezetek Gyára Factory for Aluminium Constructions	Hódmezővásárhely
27.	Hódgép Mechanical Factory	Hódmezővásárhely
28.	Inotai Aluminiumkohó Aluminium Foundry	Várpalota
29.	December 4. Drótmüvek Wire Factory	Miskolc
30.	Hungarian Ball-bearing Factory	Debrecen
31.	Olympos Ltd Fruit-juice Bottling	Nyárlőrinc
32.	Rubicon Ltd Bicycle and Sewing Machine Factory	Sárospatak
33.	Fémipari V. Metalworking Co.	Balassogyarmat

B Videoton Automation Joint Enterprise (VAJE): TQM as a Crisis Management Tool – An Enterprise Case Study

Videoton Automation Joint Enterprise (VAJE) was founded in July 1988. Its main products are control systems and printers. Its 1,000 employees produced in 1989 approximately 500 million US$ income. VAJE started the implementation of TQM in March, 1989.

B.1 TQM Program

B.1.1 Enterprise Quality Board

- Members: director, deputy directors, two heads of department
- Meetings: every 1–2 months for 1.5–4 hours.

B.1.2 Coordinators

- Four executives
- Task 5: k training, preparing methodological materials, team-work advising
- Involvement: a total of 645 hours last year

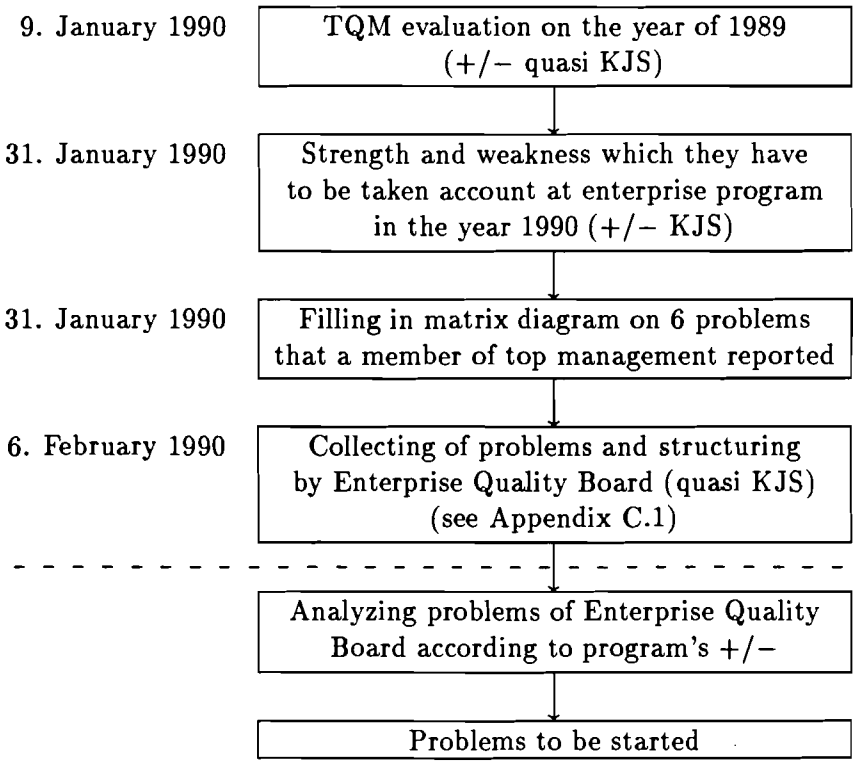
B.1.3 Program Circulation

- TQM teams have used the TQM methods, two of them having reached the seventh step
- 70 persons participated in the program to date

B.2 Use of the TQM Method

B.2.1 Sequence of Basic Activities

The scheme of selecting aspects of the system of problems to be solved in the second years of TQM is presented in the following matrix diagram:



B.2.2 World-related Inquiries

Evaluation according to buyers' aspects At a meeting in May 1989, we asked the employees who participated in the International Fair of Budapest the question: "What were the strengths and weaknesses of our exhibition?" We structured the obtained replies in KJS-form.

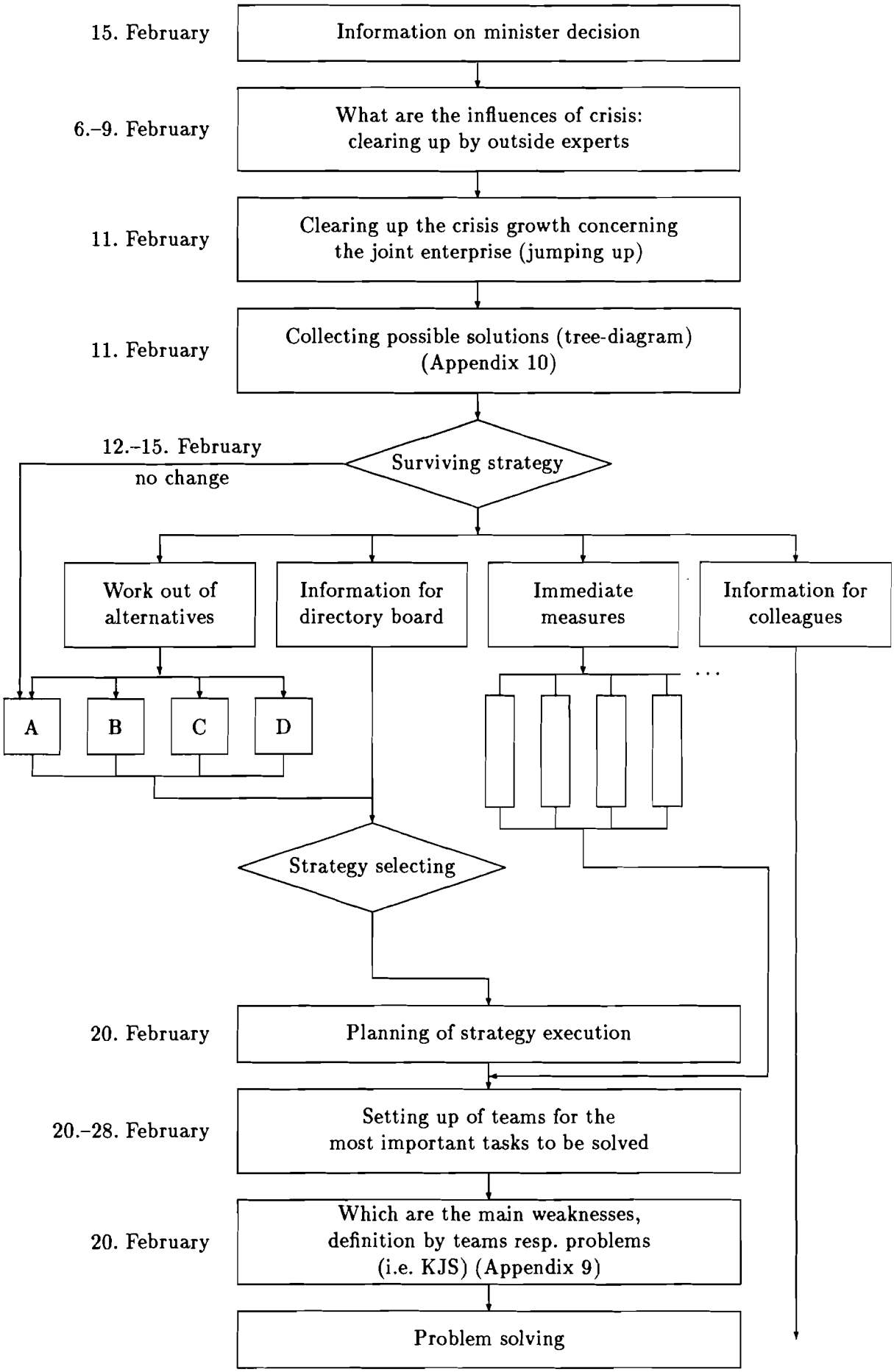
We asked leaders of foreign offices who are representatives abroad the question: "What are the weak factors of our trade and after sale service activity?" We ordered the representatives' replies using quasi KJS diagrams.

Preparation of structural planning At a team meeting of first strategic planning, we made a KJS diagram in order to commonly understand our strategy; top management defines as its strategy our conclusion.

B.2.3 Precedents and Process of Crisis Handling

According to the information of 5 February 1990, the Minister for Trade Affairs stopped permission for export on the contingent which concerned more than 70% of our income; thus we had to make substantial modifications to enable the enterprise to survive.

Planning of crisis handling was made by five directors; later several colleagues were involved in this matter. The process of crisis handling used is depicted in the following flow chart:


15. February
Information on minister decision
6.–9. February
What are the influences of crisis:
clearing up by outside experts
11. February
Clearing up the crisis growth concerning
the joint enterprise (jumping up)
11. February
Collecting possible solutions (tree-diagram)
(Appendix 10)
12.–15. February
no change
Surviving strategy
Work out of
alternatives
Information for
directory board
Immediate
measures
Information for
colleagues
A
B
C
D
Strategy selecting
20. February
Planning of strategy execution
20.–28. February
Setting up of teams for the
most important tasks to be solved
20. February
Which are the main weaknesses,
definition by teams resp. problems
(i.e. KJS) (Appendix 9)
Problem solving

B.3 Experience in the Use of TQM Methods

B.3.1 Strengths

- Focusing helped us to handle complex problems. The "results" concerning the planning of crisis handling should remain as an example of a list of problems to be launched at once and on a short-term basis.

  Under the pressure of handling problems according to the facts meant handling the types of problems that were previously very difficult to evaluate, i.e.: working out aspects for selecting problems to be launched in the second phase, evaluating TQM and the economic meeting at the end of the year as well as interpreting the strategy.

- The strengths helped us understand the concept *work according to buyers' aspects*, i.e. the buyers should be in the center. An example of this is our work in accordance to the evaluation of our exhibition at the Budapest Fair and the evaluation of representatives on VAJE image.

B.3.2 Weaknesses

- Not every leader who was involved in the activity of TQM was able to learn the management methods used until now, as well as the old, non-management ones. For example, 2–3 persons from top management do not have the user capability of TQM management methods, i.e. they cannot make a KJS diagram or a tree diagram on their own.

- We did not have enough time for logical and consequent use of certain methods which time should have been necessary for learning and planning. For example, we could finish only 30% of a tree diagram for planning crisis handling.

- It took a long time to arrive at a conclusion or implement a solution. For making the tree diagram, more than seven hours were necessary. Only two teams arrived at the seventh step, but without great economic results.

VAJE won the 1990 IIASA–Shiba Award.

C Gardenia Lace Curtain Factory: Decreasing the Mending Cost in the Embroidery Shop – An Inter-Factory Case Study

C.1 Definition of the Problem

By taking the data of the fourth quarter of 1988 as a base, the total cost of mending in the embroidery shop, projected for a whole year, was 3,132 thousand HUF. This sum is very significant, making the ground to deal with the subject.

C.2 Data Acquisition

We used the data for October, November and December, processed by computer, and conducted a blank product qualification procedure between 1 and 10 August 1989, the data of which were also processed by computer.

C.3 Data Analysis

The defects occurring during the manufacture of embroidered draperies can be divided into two main groups:

- those that can be mended (e.g. breaking, missing stitch, etc.)
- those that cannot be mended (e.g. machine error, stretching, etc.)

It could be established that most of the defects were caused by *breaking*. Since in the shop many products were produced with different complexity of their manufacture, it seemed to be expedient to examine the question: *Is it true, for all product types, that the ratio of the breaking is excessively high compared to the other defects that can be mended?* (See Table C.1.)

Further statements of the data analysis, which were important with a view to stepping ahead:

- From the distribution of the embroidered product into production types and from the distribution of the number of breakings into product types,
- and taking into consideration the production shares, the *distribution of the total number of breakings into product types*,
- and also the total shop production, the occurrance of breakings is the most important in the case of one department and its machinery.

The team set up a target to decrease this defect by 20%, which would amount to 1,181 HUF (including incidental costs).

C.4 Analysis of the Cause and Effect

The members of the team defined (by the method of brain-storming) error causes which were most likely resulting in the breaking (total 33 causes). The error causes were subdivided into five main error cause groups (human factor, process, base material, environment, machine state), and the cause–effect (Ishikawa) diagram was drawn up, resulting in the following order:

- adjustment of the individual shuttle path

Table C.1: Distribution of operation defects (in %).

	Products/operations in the shop				
Type of Defect	1.	2.	3.	4.	5.
Breaking	76.2	71.8	81.4	77.3	71.3
Loose shuttle	12.0	14.4	12.2	15.0	23.1
Missing stitch	11.8	13.8	6.4	7.7	5.6

Table C.2: Breakdown of defects by machinery.

	Machine						
Breaks/mio. stitches	1.	2.	3.	4.	5.	6.	7.
Fall 1988	8.8	8.3	6.5	5.9	5.1	5.4	11.9

Table C.3: Summary of product/operation defects (in %).

Product/operation	Defects
Allover	41.7
Band	33.9
Kappe	24.3
Insertion	0.1

Table C.4: Breakdown of defects after the reassessment.

	Machine						
Breaks/mio. stitches	1.	2.	3.	4.	5.	6.	7.
Fall 1988	8.8	8.3	6.5	5.9	5.1	5.4	11.9
Aug. 1–10 1989	5.0	7.6	5.3	3.4	8.1	4.3	8.9
Oct. 18–Nov. 20 1989	2.0	2.7	3.5	1.7	4.7	8.2	6.1

- contamination of the shuttle path
- contamination caused by the cutting machine

To prove the enlisted errors true, we conducted a data acquisition procedure in the embroidery shop, based upon the Pareto diagrams for the allover product manufactured on machine number 7 (see Table C.2).

C.5 Solution (planning)

1. Significant decrease in the number of breaks could be achieved by the regular adjustment of the shuttle path (individually). The stipulations referring to the above should be included in the manufacturing process instructions.
2. In seven cases, modification of the manufacturing process instructions was needed:
   - tying of weaver's knot
   - control of the state of the needle
   - climatical control and air conditioning
   - method of the threading of the anterior yarn
   - alignment of the shuttles
   - quality of the machine oiling
3. It was shown that the frequency of the breaks was affected by innumerable human factors, therefore a comprehensive training course was to be organized again, which demand was justified by the fact that the personnel of the shop was replaced by new workers in 60% ratio from the training conducted in May 1987

   The team, taking into consideration the proposals of the Company's Quality Assurance Council, defined the introduction program and took the following measures in compliance with them:

   - *Machine adjustments – in particular, the individual shuttle path.* The machine adjustments and the adjustment of the individual shuttle paths were made on September 25–28 (except for machines 4 and 5, which were overhauled in the second half of May 1988).
   - *The employees in the shop were informed* in two stages:
     - A presentation of the analyses conducted, and the conclusions drawn from them,
       * The effect of the targeted 20% decrease in the number of breaks to the wages of the workers, a written information for the workers (see Attachment to Appendix C).
     - Publication of the schedules (handbook) to the "Manufacturing process of the embroidered draperies" (10 April 1987).
   - In a note to the Technical Department (dated 2 October 1989), we demanded measures to be taken to ensure the air-conditioning and the proper lubricating (oiling) of the machines.
   - Upon the approval of the Company's Quality Council, a full-scale blank drapery qualification procedure was initiated (as from 18 October 1989), which was terminated on 20 November 1989.
   - The demand for the repeated training of the workers was placed with the Personnel Department.

C.6 Checking the Results

The new data was processed the same way as the data of the fourth quarter of 1988 (see Table C.3).

The distribution of the number of the breakings to machine types presents a basis for the planning of the action (see, again, Table C.2). Obviously, it is expedient to focus the further examinations to the embroidery machine.

A comparative analysis confirmed a rather high efficiency of the measures introduced by the team (see Table C.4). As a total, the defects were decreased to 49.0%.

C.7 Standardization

As a result of the work of the team, the following were standardized:

- Manufacturing process instructions: edited in a uniform system, with the necessary additions.
- A schedule was planned to regularly adjust the shuttle paths of the individual shuttles. (The 20% reduction in the number of breaks targeted by the team was achieved, even bettered, by the individual adjustment of the shuttle paths.)

Attachment to Appendix C

Dear Colleague,

In 1989 our company initiated the introduction of the Comprehensive Quality Management System (TQM) to improve the quality of our products and the working methods. For this purpose four different teams, dealing with subjects of importance for the company were formed. The subject of the team acting in the embroidery shop was the reduction of the mending costs. Thanks also to your contribution the working team could state that the reduction of the mending costs would be achieved first of all by the decrease of the number of breaks. According to our examinations this aim could be fulfilled with the regular adjustment and control of the individual shuttle paths, respectively.

Therefore we ask you, as embroiderers, to *stop* your *machine* in case you would experience a sharp increase in the number of breaks, and report it simultaneously without delay to your mechanic. It is our mutual interest to reduce the number of breaks, and the costs of the mending whereby!

What would it mean for you? According to our preliminary calculations paying greater heed to the number of breaks would result in a 350 HUF extra income per month for you from the wage of your full time job, without any special extra effort.

IS IT WORTH DOING ? YES !

Mrs. Attila Petneházy Dr.
Head of the Technical Department
Team Leader

D Towards an Advanced Quality Promotion: IIASA Presentation at the Hungarian Press Conference on TQM (given by J. Jirásek, Project Leader)

Whoever wants to enter the world market has to have a passport – an identification card of high quality. In this period of transition to market economy and re-entry of East European countries into the global business, one has to appreciate the prudent decision, taken by the Hungarian Ministry of Industry and Trade three years ago, to launch an up-to-date campaign for industrial quality promotion.

As has been demonstrated by Hungarian speakers, the results achieved so far are most encouraging. First, it has been proved that the advanced world knowledge of quality is compatible with the industrial culture of East European countries. Second, the value added by quality management exceeds the initial expenditures for quality promotion by a factor of 2 to 3 (double to triple); quality perfection is a profitable business. Third, several companies already enjoy an improved export market position. This is the practical yardstick of a decisive success.

After three years of experience, the time has come to reflect on another, more advanced step of the Hungarian way of improving quality. What are we supposed to do?

First of all, we have to re-assess the whole Hungarian way in order to make sure that we are advancing at a reasonable pace and utilizing all creative potential. Then it will be advisable to redefine the national quality policy and set some priorities of quality promotion under the rapidly changing pattern of economic and social relations.

In the aftermath, we will introduce improvements into all elements of the Hungarian way, i.e. into industrial policymaking, top management commitment, in-company quality programs, motivation of the shopfloor, perception of the quality issue by the public.

There are new factors that have impact on quality promotion, like technology transfer programs, joint ventures, advanced management centers, finance assistance from Western states and business communities. All have to be taken into consideration and enrich the Hungarian way.

The next stage of quality promotion in Hungary should endeavor a faster extension of the companies involved. Not ten's, but hundred's of them should participate in the contest for quality. In other words, we would like to see the Hungarian way to high quality as a Hungarian "broadway" to world quality objectives.

We feel compelled to judge the results achieved so far a modest ones. However, a perspicuous diversity of the companies' positions is already apparent. Most Hungarian companies are still trying to do away with defects and imperfections of industrial quality. They are operating, for the time being, in the "minus field" of world quality. However, some of them are already in a position to challenge the world quality standards.

Erudite companies are asking for more sophisticated supply of quality knowledge and for more advanced professional advice. Not only the Japanese have achieved new frontiers of quality; there are also new American initiatives. One of these has an attractive title: Quality Valley – the U.S.A. Attempts are undertaken to apply the innovation drive of the Silicon Valley to quality perfection. In Western Europe, a new European Foundation of Quality Management started non-conventional quality programs in order to enhance the competitive position of the unified Europe after 1992. On the whole, all these new departures declare quality promotion as a prerogative of management and increasingly a strategic management issue.

One remarkable option of the next stage of quality promotion in Hungary is to enlarge its international impact. The Hungarian experience should be appreciated as a pioneering deal, to be followed by other East European countries.

On Monday, the day before yesterday, we organized the first meeting to start a comprehensive quality management improvement in Czechoslovakia. Mr. B. Péceli and Mr. T. Asbóth were guest speakers and met an interested audience. The experience of the Hungarian neighbors enjoys a high esteem among experts in the Slovak industry.

Gradually, other East European countries should implement some advanced quality program. Possibly the next one will be the Soviet Union, especially the Moscow and Leningrad regions. Interest has been expressed also by Polish and Bulgarian experts.

Industrial quality is much more than a particular indicator of a company. As in a crystal one may follow all changes reflected in quality. It is a condensed expression of the industrial progress.

The public should also be more aware that industrial quality, and the quality of life, of the social and natural environment, are interdependent issues. It does not appeal to a restricted number of industrial experts, but more or less to everybody. Quality is a sign of our times.