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A MANIFESTO OF TQM (3)

— Quest for a Respectable Organizational Presence —

The TQM Committee

Union of Japanese Scientists and Engineers

Examples of Building-Block Technologies that TQM Can Develop

(1) Integration of management strategies and Policy Management
(2) Integration of marketing technology and new product development system
(3) Comprehensive management of Q, C, and D in new product development
(4) Quality assurance in a global community
(5) Coordination, fusion, and integration with international quality trends
(6) Quality and technology information systems using latest information technologies
(7) Strengthened planning in equipment management
(8) TQM methodology for technology improvement
(9) New SQC for process analysis and management
(10) Methodologies for solving various problems and achieving various tasks
(11) Human resources that support changes in production workplace
(12) Human resources development that emphasizes creativity and respect for people

The list above provides some examples of necessary building-block technologies that TQM should develop in response to what is expected of TQM.

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(1) Integration of management strategies and Policy Management

Policy Management has proved to be an excellent management tool in TQC, and is undoubtedly an effective tool for achieving annual business policies and objectives. However, there's still room for improvement in defining policies and objectives, the most crucial step in the Policy Management process. Good methods for setting business management strategies, on which annual policies and objectives are based, need to be identified and then improved. From the outset, Policy Management has aimed to address strategic planning. In practice, however, TQC's involvement in this aspect was limited. TQM needs to incorporate the concepts and methodologies for business management strategies, which were developed mainly in the United States, and develop them further as a strategic planning methodology with total employee involvement. Thus, TQM should infuse Policy Management with strategic planning.

(2) Integration of marketing technology and new product development systems

Understanding customer needs is the central issue of quality management. However, the TQC did not have a thorough knowledge of intrinsic marketing technologies, which were indispensable in understanding customer needs. On the one hand, TQC made use of the Quality Table. This is a powerful tool that supports activities to correctly understand the relationship between customer quality requirements and product quality characteristics, and thus it helps rationally determine appropriate product quality specifications. On the other hand, TQC lacked a sound methodology to guide activities in listing quality requirements, which were inputs to the Quality Table, and to help structure them. In the field of marketing, there are many methods that TQM may learn from, including those for understanding market structure, market research, and research data analysis. The importance of product planning, as an upstream management of new product development, has been discussed for more than 10 years. TQM should revisit this discussion and incorporate marketing technology into its fold.

(3) Comprehensive management of Q, C, and D in new product development

In the midst of a sluggish economy, people raise questions against the concept of quality supremacy. They say, for example, "Isn't cost more important than quality?" "Why can't we sell our products even after we improved their quality?" Quality expressed in such questions only refers to the products' technical characteristics translated from customer needs, but does not relate to customer satisfaction. Since quality of products are determined by customers, it is contradictory to say that a product won't sell even as its quality has improved. If the term, quality is misleading, TQM needs to reestablish the concept of quality that is defined as a product's value based on factors such as price, timing, and services. Furthermore, TQM must develop and present methodologies for optimizing quality and cost, especially methodologies for comprehensive management of Q, C, and D in new product development.

(4) Quality assurance in a global community

The trend toward globalization raises the question as to how quality assurance should be practiced in this new situation. The methodologies for quality assurance developed in Japan have been effective and efficient in domestic applications. These methodologies must be now adapted for global applications. The following , therefore, needs to be considered: effective utilization of ISO 9000 from a buyer's perspective; know-how in procuring good materials at low cost even for one-time purchase; engineering technology for designing and manufacturing products that meets quality requirements even with use of sub-standard materials and parts; decentralization of development activities including those overseas; and cooperative development efforts with foreigners.

(5) Coordination, fusion, and integration with international quality trends

ISO 9000 has made a great impact on those concerned with quality all over the world. TQM, more specifically Japanese-style management, should incorporate the western style management introduced by ISO 9000, universalize its quality management methodologies, and present them to the world. Some considerations are: the proper span of management (i.e., to what extent management functions such as planning, implementation, and validation should be divided, and how large should be the scope of responsibility and authority); appropriate communication systems (utilization of both the quality management system that exclusively relies on document-based communications, not face-to face, and one based on close human relations); methods for incorporating ISO 9000 form of "quality assurance" into TQM; and understanding the significance of documentation as well as setting guidelines for proper levels of documentation.

(6) Quality and technology information systems using latest information technologies

Today's progress in information technology is spectacular. Not only the quantity and speed of information that can be handled by technology is rapidly increasing, but its mode of usage is changing as clearly indicated in a catchword of preset day business, NODM (network, open access, downsizing, and multi-media). Although the quality community has often discussed quality information systems, today's information technology development provides an opportunity to develop new quality information systems that have never before existed. Some examples may be integration of quality information and technological information; integration of information regarding Q, C, and D; promotion of closer customer relations; and effective utilization of databases as networks. Also, with highly sophisticated calculation capabilities, the information technology must allow us to integrate product design with process design as well as automation equipment; and it also must allow us to develop information networks for improved operational efficiency through information sharing. In this vein, the expansion and possibility of information technology is immeasurable.

(7) Strengthened planning in equipment management

It can be safely said that manufacturing quality today is mostly determined by equipment. Therefore, TPM (Total Productive Maintenance) has greatly contributed to manufacturing quality and productivity improvement. However, TPM is still not strong enough in the planning function for equipment management. TQM needs to develop a methodology for examining at what conditions equipment should be maintained from a viewpoint different from the existing QC Process Table, which develops plans for confirming whether quality is built in step-by-step according to the flow of its manufacturing processes. Such a methodology would promote better review and validation of equipment designs, and thus would allow us to develop more rational equipment management plans.

(8) TQM methodology for technology improvement

TQM is often referred to as "management technology," meaning technology that deals with management systems to make the best use of product specific technology. Securing quality requires both technology intrinsic to products and management systems for effectively utilizing the technology. Future TQM should strengthen its capability to assist efforts to increase the level of product specific technology in any given field. In this vein, TQM possesses an infrastructure of improvement activities through total employee involvement.

(9) New SQC for process analysis and management

The progress of information technology is also pressing the need to rethink quality management methodologies for manufacturing processes. As processes become more automated, massive data are automatically collected and used for control in a black-box manner or simply accumulated as records. Likewise, automated inspection devices are used for sorting out semi-finished and finished products. Taking up such information technology, TQM should propose new process management methodologies from a quality management perspective. To effectively use on-line, real-time data for process management and analysis, TQM is expected to develop and apply new statistical methods including an applied time-series data analysis method.

(10) Methodologies for solving various problems and achieving various tasks

There are various types of problems and issues that need to be addressed in quality management. "The QC Story" is a scientific problem-solving method most suitable for solving problems which have already occurred and of which cause-and-effect structures are quite complex and require in-depth analyses. Recently, "the QC Story for Achieving Tasks," which are the steps to tackle different types of problems and issues, has been introduced. Some questions that TQM can answer are: How many different types of problems should TQM address? What should be the standard procedure for addressing each type of problem or task?

(11) Human resources that support changes in production workplace

Introduction of many different pieces of equipment to manufacturing workplaces compels first-line employees to acquire high levels of skill and technique including a wide knowledge of equipment structures and their operational principles as well as abilities in inspection and maintenance. Today's manufacturing workplaces are highly armed with information processing equipment, and first-line employees not only use such equipment as an operational hardware but process "management data." In response to the environmental changes, TQM must address a number of issues, including proper education and training as well as organizational structure in these workplaces.

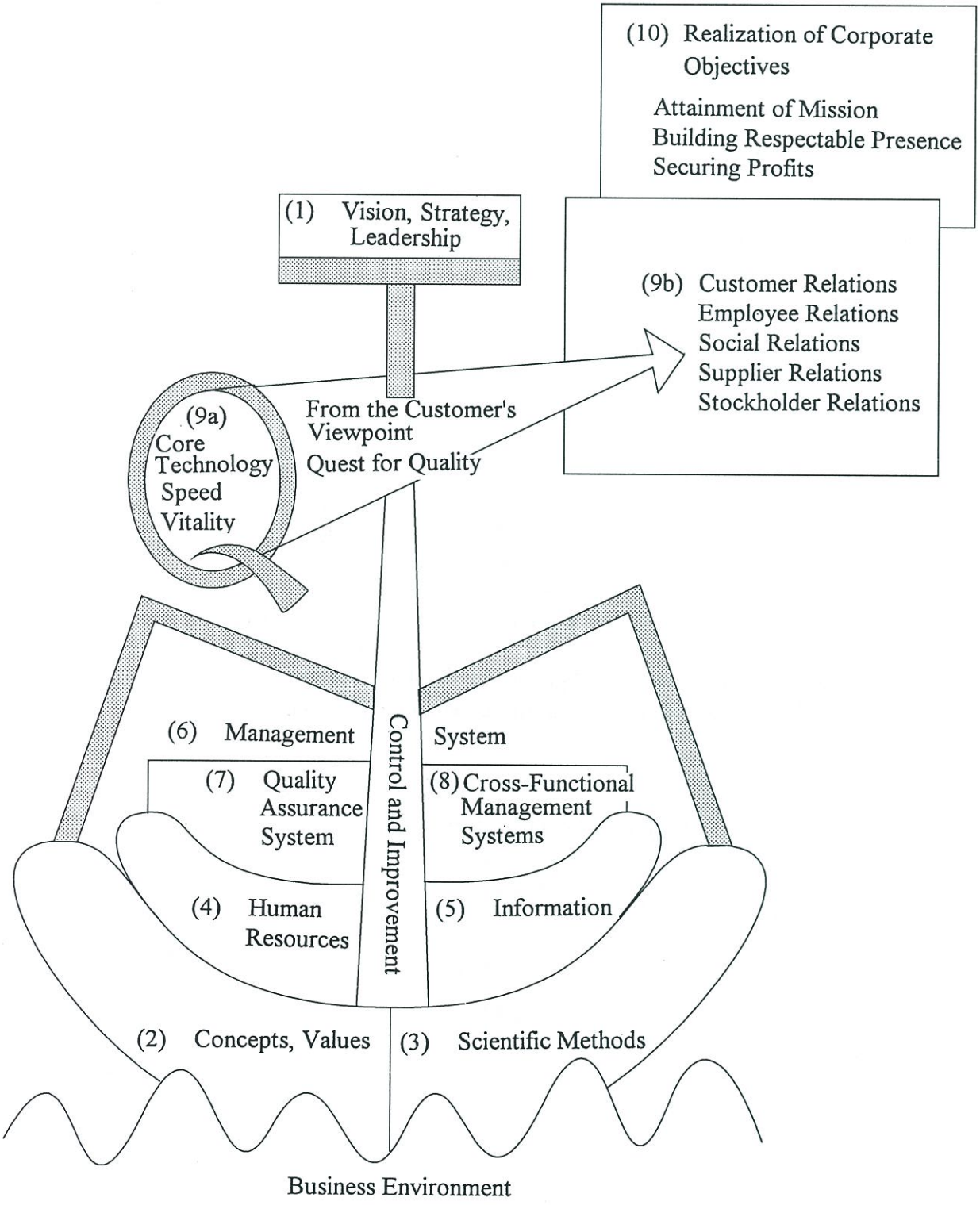
(12) Human resources development that emphasizes creativity and respect for people

As society matures, labor environment and people's views toward work change. This change can be summarized as a higher respect for people. Employee development must be provided from a place quite different from where it came in the past, if it is to respond to a subtle change in the meaning and significance of "labor," positioning of "individuality" within a group, a shift in people's view toward involvement and roles in business management, and awareness for higher respect and more opportunities for creativity. In this vein, TQM must examine what future QC Circles should be.

4. Concepts of TQM

The diagram below shows the overall picture of TQM and the elements that make up TQM as it evolves to restructure itself as discussed in the previous chapter.

[Figure: The Overall Picture of TQM]



The Overall Picture of TQM

In other words,

TQM Definition

TQM is a management approach that strives for the following in any business environment:

- Under strong top management leadership (1), establish clear mid- and long-term vision and strategies (1).
- Properly utilize the concepts, values (2), and scientific methods (3) of TQM.
- Regard human resources (4) and information (5) as vital organizational infrastructures.
- Under an appropriate management system (6), effectively operate a quality assurance system (7) and other cross-functional management systems such as cost, delivery, environment, and safety (8).
- Supported by fundamental organizational powers such as core technology, speed, and vitality (9a), ensure sound relations with customers, employees, society, suppliers, and stockholders (9b).
- Continuously realize corporate objectives in the form of achieving an organization's mission, building an organization with a respectable presence, and continuously securing profits (10).

TQM Transformation

- Sound relations with customers, employees, society, suppliers, and stockholders
- Creation of an organization with a respectable presence by strengthening its core technology, speed, and vitality
- Emphasis on the importance of vision, strategy, and top management leadership
- Emphasis on people and information as important management resources

While the new TQM Model inherits the basic TQC concepts and methodologies, it aims to further enrich the contents of TQC in the areas discussed above.

While, TQM's core aim remains customer satisfaction through products and services, TQM also emphasizes developing sound relations with other stakeholders such as employees, society, suppliers, and stockholders.

To improve these relations, TQM aims to strengthen fundamental organizational powers such as core technology, speed, and vitality and to create an organization that has a respectable presence.

To respond better to changing times, TQM emphasizes the importance of mid- and long-term vision and strategies as well as top management leadership.

Among management resources, TQM emphasizes the importance of people and information and strives to build an organization that is excellent in autonomy, learning, speed, flexibility, and creativity.

Each element of the TQM Model, or framework, is outlined below.

(1) Vision, Strategy, Leadership

- Organizational vision and strategy: recognition of organizational mission and its clear expression; recognition of business environment; proactive response to changes; enterprising spirits; management principles; business policies, both long- and mid-term business plans (business/products); strategies (overall corporate strategies, business strategies, product strategies); and methods for strategy development
- Top management leadership: Recognition of top management's roles (sense of mission, roles, responsibilities, moral); commitment to establishing business plans and strategies; roles in establishing policies and resource allocation; and resources management (people, equipment, materials, money, information, technology)

(2) Concepts, Values

- Quality: Meaning of quality and its significance in business management; emphasis on "quality;" understanding and implementation of the concept "the next processes are our customers;" understanding of and response to the "quality" requirements as a corporate citizen; and response to diverse customers
- Management: Management of "quality;" understanding and implementation of PDCA; management by facts; process management; improvement; understanding and implementation of the concept of breakthrough; and promotion of standardization and use of standards
- Respect for people: Understanding of why and how people work (shared values, creation of corporate culture); self- and mutual-development (education and training); and self-directed participation

(3) Scientific Methods

- Understanding and effective utilization of methods: Understanding the purpose of using methods and their effective utilization; "technology" improvement; and identification of useful methods (the Seven Basic QC Tools, the Seven New QC Tools, statistical methods, Design of Experiment, Multivariate Analysis, QFD (Quality Function Deployment), FMEA (Failure Mode and Effects Analysis), FTA (Fault Tree Analysis), OR (Operations Research), VE (Value Engineering), system design techniques, planning techniques, etc.)
- Understanding and effective utilization of "problem-solving methods:" Importance of scientific problem solving; QC Story; and design-type problem-solving methods (QC Story for Achieving Tasks)