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**Solutions Manual**

**QUALITY MANAGEMENT**

for Organizational Excellence

##### Seventh Edition

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**Chapter One**

THE TOTAL QUALITY APPROACH TO QUALITY MANAGEMENT ACHIEVING ORGANIZATIONAL EXCELLENCE

**1. Define the term quality.**

Quality is a dynamic state associated with products, services, people, processes, and environments that meets or exceeds expectations.

**2. What is total quality?**

Total quality is an approach to doing business that attempts to maximize the competitiveness of an organization through the continual improvement of the quality of its products, services, people, processes, and environments.

**3. List and explain the key elements of total quality.**

**Strategically-based**

Total quality organizations have a comprehensive strategic plan that contains at least the following elements: vision, mission, broad objectives, and activities that must be completed to accomplish the broad objectives. The strategic plan for a total quality organization is designed to give it a sustainable competitive advantage in the marketplace.

**Customer Focus**

In a total quality setting, the customer is the driver. This applies to both internal and external customers.

**Obsession with Quality**

This means all personnel at all levels approach all aspects of the job from the perspective of "How can we do this better?" When an organization is obsessed with quality, good enough is never good enough.

**Scientific Approach**

While it is true that people skills, involvement, and empowerment are important in a total quality setting, they represent only a part of the equation. Another important part of the equation is the use of the scientific approach in structuring work and in decision making and problem solving that relates to the work.

**Long-Term Commitment**

Organizations that implement management innovations after attending short-term seminars often fail in their initial attempt to adopt the total quality approach. This is because they approach total quality as just another management innovation rather than as a whole new way of doing business that requires a whole new corporate culture.

**Teamwork**

Internal competition tends to use energy that should be focused on improving quality, and, in turn, external competitiveness.

Continual Improvement of Systems

In order to continually improve the quality of products or services: which is a fundamental goal in a total quality setting. It is necessary to continually improve systems.

**Continual Process Improvement**

Products are developed and services are delivered by people using processes within environments (systems). To continually improve the quality of products and services—which is a fundamental goal in a total quality setting—it is necessary to continually improve the processes that make up the organization’s systems.

**Education and Training**

Education and training are fundamental to total quality because they represent the best way to improve people on a continual basis. In a total quality organization, everyone is constantly learning.

**Freedom through Control**

Involving and empowering employees is fundamental to total quality as a way to simultaneously bring more minds to bear on the decision making process and increase the ownership employees feel in decisions that are made. The freedoms enjoyed in a total quality setting are actually the result of well-planned and carried out controls.

**Unity of Purpose**

In order to apply the total quality approach, organizations must have unity of purpose. Collective bargaining is about wages, benefits, and working conditions, not about corporate purpose and vision. Employees should feel more involved and empowered in a total quality setting than in a traditionally managed situation, but the goal of total quality is to enhance competitiveness not to eliminate unions.

**Employee involvement**

The basis for involving employees increases the likelihood of a good decision1 a better plan, or a more effective improvement by bring more minds to bear on the situation: not just any minds, but the minds of the people who are closest to the work in quest. It also promotes ownership of decisions by involving the people who will have to implement them. Empowerment means not just involving people but involving them in ways that give them a real voice.

**Peak Performance**

When effectively practiced, total quality allows every aspect of an organization to operate at peak levels. This means that personnel and processes operate at their best. Peak performance is essential to organizations that operate in a global environment where competition is intense, constant, and unforgiving.

**4. Explain the rationale for the total quality approach to doing business.**

Total quality is not just one individual concept. It is a number of related concepts pulled together to create a comprehensive approach to doing business. Many people contributed in meaningful ways to the development of the various concepts that are known collectively as total quality.

**5.** **Describe the following concepts:**

**Deming's Fourteen Points**

His Fourteen Points describe what is necessary for a business to survive and be competitive today. They summarize what a company must do to effect a positive transition from business-as-usual to world-class performance. They contain the essence of all of Dr. Deming's teachings and are the heart of his philosophy.

1. Create constancy of purpose toward the improvement of products and services in order to become competitive, stay in business, and provide jobs.
2. Adopt the new philosophy. Management must learn that it is a new economic age and awaken to the challenge, learn their responsibilities, and take on leadership for change.
3. Stop depending on inspection to achieve quality. Build in quality from the start.
4. Stop awarding contracts on the basis of low bids.
5. Improve continuously and forever the system of production and service, to improve quality and productivity, and thus constantly reduce costs.
6. Institute training on the job.
7. Institute leadership. The purpose of leadership should be to help people and technology work better.
8. Drive out fear so that everyone may work effectively.
9. Break down barriers between departments so that people can work as a team.
10. Eliminate slogans, exhortations, and targets for the workforce. They create adversarial relationships.
11. Eliminate quotas and management by objectives. Substitute leadership.
12. Remove barriers that rob employees of their pride of workmanship.
13. Institute a vigorous program of education and self-improvement.
14. Make the transformation everyone's job and put everyone to work on it.

**The Deming Cycle**

The Deming Cycle was developed to link the production of a product with consumer needs and focusing the resources of all departments (research, design, production, and marketing) in a cooperative effort to meet those needs.

1. Conduct consumer research and use it in planning the product (plan).
2. Produce the product (do).
3. Check the product to make sure it was produced in accordance with the plan (Check).
4. Market the product (act).
5. Analyze how the product is received in the marketplace in terms of quality, cost, and other criteria, or how it measures up against expectations (analyze).

**The Seven Deadly Sins**

The Seven Deadly Sins summarize Dr. Deming's views on what can inhibit the transformation from business-as-usual to worldclass quality.

1. Lack of constancy of purpose to pan products and services that have a market sufficient to keep the company n business and provide jobs.
2. Emphasis on short-term profits; short4erm thinking that is driven by a fear of unfriendly takeover attempts and pressure from bankers and shareholders to produce dividends.
3. Personal review systems for managers and management by objectives without providing methods of resources to accomplish objectives. Performance evaluations, merit ratings, and annual appraisals are all part of it - its disease.
4. Job hopping by managers.
5. Using only visible data and information in decision making with little or no consideration given to what is not known or cannot be known.
6. Excessive medical costs.
7. Excessive costs of liability driven up by lawyers who work on contingency fees.
8. **List and explain Juran's main contributions to the quality movement.**

**Juran's three Basic Steps to Progress.**

These are broad steps that, in Juran's opinion, companies must take if they are to achieve world-class quality. He also believes there is a point of diminishing return that applies to quality and competitiveness.

1. Achieve structured improvements on a continual basis combined with dedication and a sense of urgency.
2. Establish an extensive training program.
3. Establish commitment and leadership on the part of higher management

**Juran’s Ten Steps to Quality Improvement**

Ten steps which overlap with Deming's Fourteen Points. They mesh well with the philosophy of quality experts.

1. Build awareness of both the need for improvement and opportunities for improvement.
2. Set goals for improvement.
3. Organize to meet the goals that have been set.
4. Provide training.
5. Implement projects aimed at solving problems.
6. Report progress.
7. Give recognition.
8. Communicate results.
9. Keep score.
10. Maintain momentum by building improvement into the company's regular systems.

**The Pareto Principle**

According to this principle, organizations should concentrate their energy on eliminating the vital few sources that cause the majority of problems. This principle is sometimes called the 80/20 rule. 80% of the trouble comes from 20% of the problems. Though named for turn-of-the-century economist, Vilfredo Pareto, it was Dr. Juran who applied this idea to management. Dr. Juran advises us to concentrate on the vital few sources of problems and not be distracted by those of lesser importance.

**The Juran Trilogy**

The Juran Trilogy summarizes the three primary managerial functions. They are: Quality Planning, Quality Control, and Quality Improvement

1. **Why do some quality initiatives fail?**

When organizations approach total quality as just another management innovation or, even worse, as a quick fix, their efforts are doomed to fail from the start.

1. **What contributions to the quality movement is Philip B. Crosby known for?**

Philip B. Crosby is best known for his advocacy of zero-effects management and prevention as opposed to statistically acceptable levels of quality. He is also known for his Quality Vaccine and Crosby's Fourteen Steps to Quality Improvement. Crosby's Quality Vaccine consists of 1) Determination, 2) Education, and 3) Implementation. Crosby's Fourteen Steps to Quality Improvement are as follows:

1. Make it dear that management is committed to quality for the long term.
2. Form cross-departmental quality teams.
3. Identify where current and potential problems exist
4. Assess the cost of quality and explain how it is used as a management tool.
5. Increase the quality awareness and personal commitment of all employees.
6. Take immediate action to correct problems identified.
7. Establish a zero defects program.
8. Train supervisors to carry out their responsibilities in the quality program.
9. Hold a Zero Defects Day to ensure all employees are aware there is a new direction.
10. Encourage individuals and teams to establish both personal and team improvement goals.
11. Encourage employees to tell management about obstacles they face in trying to meet quality goals.
12. Recognize employees who participate.
13. Implement quality councils to promote continual communication.
14. Repeat everything to illustrate that quality improvement is a never-ending process.
15. **Summarize the most common errors made when starting quality initiatives.**

Senior management delegation and poor leadership

Team mania

Deployment process

Taking a narrow dogmatic approach

Confusion about the differences among education, awareness, inspiration, and skill building.

**9. Explain the trends that are affecting the future of quality management are as follows:**

Increasing global competition. Today’s customers share two common characteristics: 1) they are part of regional trade alliances and 2) they expect both high quality and added value.

Increasing customer expectations. Customers want an excellent product or service from an organization that also provides accurate billing, reliable delivery, and after purchase support.

Opposing economic pressures. The global marketplace exerts enormous unrelenting pressure on organizations to continually improve quality while simultaneously reducing the prices they charge for goods and services.

New approaches to management. Companies that succeed in the global marketplace have learned that you manage budgets, but lead people.

**Chapter Two**

QUALITY AND GLOBAL COMPETIVENESS

**1. Explain the relationship between quality and competitiveness.**

Companies that used to compete only on a local, regional, or national level now find themselves competing against companies from throughout the world. Some of these companies find the competition to be more intense than any they have ever encountered. Those who are able to produce world-class quality can compete at this level.

**2. Explain how the cost of poor quality can affect competitiveness.**

The need to improve an organization’s financial condition correlates directly with the process of making and measuring quality improvements. Lower deficiencies will lead to lower total costs. Improvements in product or service features can lead to higher market share at a better price, which means higher revenue.

**3. Describe the evolution of the rebuilding effort undertaken by Japan and Germany** following World War II.

As Japanese and German manufacturers rebuilt, two things became apparent to them: 1) In order to succeed, they would have to compete globally; and 2) In order to compete globally; they would have to produce goods of world-class quality. This meant producing better goods but at reasonable competitive prices.

**4. Explain the actions of U.S. manufacturers during the same period on which Japan and** Germany were rebuilding following World War II.

The U.S. came out of World War II as the only major industrialized nation with its manufacturing sector completely intact. A well-oiled manufacturing sector and the availability of abundant raw materials helped the U.S. become the world leader in the production and export of durable goods. This resulted in a period of unparalleled prosperity and one of the highest standards of living ever experienced by any country. While the U.S. was enjoying its position as the world's preeminent economic superpower, the other industrialized nations of the world, particularly Japan and Germany, were busy rebuilding their manufacturing sectors. The U.S. manufacturers were slow to catch on that the game had changed from mass production with acceptable levels of waste to quality production with things done right the first time every time. With foreign companies, through a combination of better people, better technology, and better management began to eat away at markets, U.S. companies, mistakenly seeing cost rather than quality as the issue, learned that quality was the key to success in the global marketplace, Japan, Germany, Taiwan, and Korea had made major inroads into global markets previously dominated by U.S. manufacturers (i.e., steel, automobiles, computers, and consumer electronics).

**5. How does a nation's ability to compete affect its quality of life?**

A nation's ability to compete in the global marketplace has a direct bearing on the quality of life of its citizens. Because the ability to compete translates into the ability to do a better job of producing quality goods, it is critical that nations and individual organizations within them focus their policies, systems, and resources in a coordinated way on continually improving both quality and competitiveness.

**6. Explain how education-related factors can inhibit competitiveness.**

The quality of a country's education system is a major determinant of the quality of its labor pool. The higher the quality of the labor pool, the higher the quality of entry-level employees. The higher the quality of entry-level employees, the faster they can become productive employees and contribute to the competitiveness of their employers. Consequently, a high-quality education system is an important component of the competitiveness equation. What all this means is that businesses in the U.S. are forced to spend money helping employees learn the basic skills of reading and writing while their competitors are able to devote their training dollars to developing advanced work-related skills. If international competition can be viewed as a footrace, this is the equivalent of forcing U.S. firms to start 100 yards behind the other competitor in a 200-yard race.

**7. Compare investment and manufacturing productivity in the U.S with investment and** **manufacturing productivity in Japan.**

Investment, from the perspective of global competitiveness, is the percent of gross national product spent on education, equipment, facilities, and research and development in the period of 1970-90, Japan led the list of competitive countries, with an investment level of approximately 30 percent. The U.S. invested just over 20 percent during this period. The other countries, taken as a group, invested slightly more than the U.S. when education is removed from the list of investments, the U.S. invested as much or more than all other countries except Canada. However, there is evidence that American dollars invested in education are not used as effectively as those invested by other competing nations. It should be noted also that Japanese investment in equipment began to decline in 1992. During the first three quarters of the twentieth century, the U.S. enjoyed the highest productivity levels in the world. For example, in 1972 U.S. manufacturing productivity was 56 percent better than that of Japan. By 1987, this lead had dwindled to just 6 percent. By 1993, Japan equaled the U.S. in productivity.

**8. List and briefly explain the basic philosophical constructs underlying the human resource aspects of the competitiveness of Japan and Germany.**

The basic philosophical constructs underlying the human-resource aspects of the competitiveness of both Japan and Germany are explained in the following list: **Cooperation among business, labor, and government.**

The term social partners is used in Japan just as it is in Germany. Prior to the war, this prevailing view among top business executives was very like that of the American rugged individualist. As in Germany, however, the crisis provoked by defeat shifted the balance toward those who believed that business must join with the other major economic actors in the task of rebuilding the society, tying its own goals with the larger interests of the nation as a whole.

**Cooperation**

Cooperation that was prompted by the devastation brought by war caught on and became the cornerstone of the competitiveness of both countries.

**High-quality education and training**

Germany and Japan take different routes, but they arrive at the same place regarding education and training. Germany uses a highly structured apprenticeship program that emphasizes both skills development and academic achievement. Japan relies on excellent primary and secondary education supplemented by industry-based training to prepare front-line employees.

**Employee involvement and empowerment**

In both Germany and Japan, employees are involved in functions traditionally viewed as management functions in the U.S. These functions include setting working hours, introducing new technologies, establishing compensation levels, human-resource planning, work design, and the provision of training.

**Leadership at all levels**

In both Germany and Japan, leadership occurs at all levels and leadership training is provided not just for managers but also for front-line employees. This is important in that it tends to improve the quality of employee involvement in continual improvement efforts.

**Teamwork**

In Germany and Japan, not only is work done by teams of employees, but the planning and designing of work, introduction of new technologies, and establishment of compensation levels are also done by teams that involve representatives from labor and management.