
TOTAL QUALITY MANAGEMENT

Experience of Four Transit Systems

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TOTAL QUALITY MANAGEMENT (TQM) is a concept concerned with people and work processes that focuses on customer satisfaction. The following description of the key elements of TQM and its application to four transit systems offers a fresh perspective on ways to improve public transportation performance.

The customer-supplier model, shown in Figure 1, applies to all levels of an organization. The model begins with customer requirements and focuses on measures of customer satisfaction to provide ongoing feedback for process improvement.

A process can be contained within a functional group or it can be cross-functional, spanning several functional areas. Process improvement reduces waste and re-work, lowers cost, and increases productivity. Achieving improvement requires ensuring that quality is built into the work process, rather than inspecting or measuring the end result.

Elements of Total Quality Management

TQM is achieved through persistence, integrity, and patience. Consequently, many organizations have shied away from it or have started the process and then backed out. Those who have made the commitment typically seek to reap the benefits of improved performance, reduced cost, greater profit, and increased customer satisfaction.

There are nine key elements to TQM. Each is a necessary ingredient for success in the transit industry.

Customer Satisfaction

TQM operates on the premise that everyone has customers and suppliers—either inside or outside the organization—who use the outputs of their suppliers and provide inputs to their customers. From the start of the work process to the delivery of the service or product, the goal is to satisfy the customer. The focus has changed from a market orientation to a customer orientation.

Leadership

Quality begins at the top. The success of TQM is grounded in leadership commit-

ment. Top management must want, support, and become actively involved in TQM. A written policy should be adopted and communicated that includes all elements of the quality improvement program.

Managers must actively implement the policy as owners of work processes linked to produce quality services. They must be concerned with the work processes that produce service, not just the end results. Ownership ensures responsibility. Transit systems must recognize that efficient and effective service delivery and customer satisfaction require committed and involved leadership with clear vision providing system-wide direction.

Organization Culture

TQM requires most organizations, including transit systems, to change their culture. Hierarchical organizations that stress discipline rather than recognition and foster divisions between labor and management are counter to TQM priorities. The work environment, organizational structure, relationships among employees, and feedback should all support effective problem solving, process improvement, and greater customer satisfaction.

U.S. companies are often criticized for not trusting their employees. This is evi-

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dent because employees are not given the responsibility to solve problems or address matters affecting the welfare of the organization. It is up to the organization to realize that employees know the needs of customers and how the work is done. They should thereby effectively participate in problem solving.

Empowerment

One of the seminal works on TQM, *Kaisen*, written by Masaaki Imai, states that the three building blocks of a business are hardware, software, and humanware. Only after the humanware is squarely in place should the hardware and software of a business be considered.

Authority for improvement must be pushed to the front ranks of the organization so that all workers can identify and solve problems. All employees should be responsible for meeting the expectations of their customers, their management, and themselves.

Management by Fact and Benchmarking

The concept "If you can't measure it, you can't manage it" underlies TQM. Organizations must rigorously collect and monitor data to obtain feedback on actual performance. Data on customer priorities should be regularly evaluated to ensure that efforts for improvement are meaningful.

Benchmarking is a management concept in which the best performers are identified and emulated. This is a basis for improvement and moving forward to perform, in all respects, like the leaders of world-class organizations.

Training

Quality starts and ends with training. There should be continual retraining to meet the ever-changing requirements of the future. Ongoing training creates a knowledgeable work force that has flexible skills and the ability to engage in multiple jobs. Ultimately this permits fewer job categories.

Training should be directed toward problem identification and problem solving for functional and cross-functional work processes. Managers must be trained to communicate better and improve their personal involvement as facilitators for quality.

Team Building

Management should encourage cooperation rather than competition within the organization. Employees need to work together to improve work processes, solve problems, and meet customer needs. Teams should be flexible and can often be short-lived. They should be formed to address specific matters, find solutions, and disband. Cross-functional problem solving should not create an unwieldy organization. The question often raised is: "How can managers, who are department heads with functional responsibilities, become the owners of work processes that are principally cross-functional?" The answer is that middle managers should become facilitators, managing cross-functional work processes and improving quality. Ultimately, first-line supervisors should give way to self-managed teams.

Continuous Improvement

Continuous improvement and problem prevention are at the heart of TQM. "If it ain't broke don't fix it" is not in the TQM vocabulary. Instead, organizations are asked to look beyond quick-fix solutions by making gradual, unending improvements—doing "little things" better, and setting and achieving ever higher standards. TQM requires sustained commitment and daily persistence from all employees.

Management tends to think of rewards and recognition in terms of money. For example, gainsharing ties performance and productivity to financial rewards linked to a formula. Despite some successes, many experts believe that management needs to reward employees through nonfinancial mechanisms including increased responsibility, more satisfying work, and greater decision making.

Labor Involvement

TQM is not possible without the involvement of labor. Labor and management must make trade-offs and commitments to each other. Management may need to commit to job protection and retraining, and labor to job enlargement, reduced specialization, and the reduction of job categories so that a more flexible work force performs multiple jobs. Fear that improvement necessarily re-

sults in employee layoffs and organizational downsizing must be allayed.

TQM must be a win-win-win situation, benefitting customers, employees, and the public owners of transit systems.

Transit Industry Successes

Four transit systems that have made great strides toward TQM are highlighted in the following sections. The information is based on presentations at the 1992 Transportation Research Board Annual Meeting session on Total Quality Management in Transit. This was a jointly sponsored session by the committees on Transit Management and Performance and on Management and Productivity. Speakers were Paul J. Larrousse, of the Madison Metro Transit System; Tracy E. Peterson, of the Municipality of Metropolitan Seattle; Ronald J. Hartman, of Maryland Mass Transit Administration; and William W. Millar, Port Authority of Allegheny County.

Madison Metro Transit System

The transit system in Madison, Wisconsin (Madison Metro), has a long-standing commitment to a comprehensive TQM program. The initiative began in 1985 as a city-based program sponsored by the Mayor of Madison and supported by the University of Wisconsin. The city's quality activities, founded on the principles of Edwards Deming—a pioneer of TQM—stressed four points: employee worth, training, data-based decision making, and continuous improvement.

At the outset, the program was not highly structured or organized. Teams were formed to make improvements and streamline processes with no comprehensive strategy. Some successes were achieved. In 1988, the city selected the Transit Department to receive special attention as part of the city's quality program.

At that time, a grant was received from the federal government. This enabled a more comprehensive and structured effort to be made in which a firm was hired to provide training to top management, some middle managers, and all union stewards. A quality work program was developed and a

manager was designated to direct the program.

Unfortunately, this initiative floundered with a change in city administration. A third and more successful effort was made in 1991 when the Madison Metro initiated its TQM effort, modeled after the successful TQM program at Florida Power and Light Company, the 1989 overseas winner of Japan's coveted Deming Award.

The current TQM program began with an organization-wide survey of employee attitudes and perspectives. The program at

- **Functional Teams.** There are seven functional teams, one for each functional area of Metro, which address daily work-life matters. These teams include first-line supervisors, line workers, and a member of the Cross-Functional Team.

All of the teams identify issues and projects, rank their efforts according to priority, and decide what they will do. Although they are supported by the Coordinating Team, they act on their own and are not controlled by it.

Service routes and schedules were revised for the first time in 11 years to better meet the current travel needs, achieving increased ridership.

Based on its experience, Madison Metro learned that there must be commitment from the top that permeates the organization and effects a transformation in the structure of the organization. The other key ingredients are an adequate budget; the commitment of sufficient resources; employee training; a designated manager; adequate time for teams to collect information,

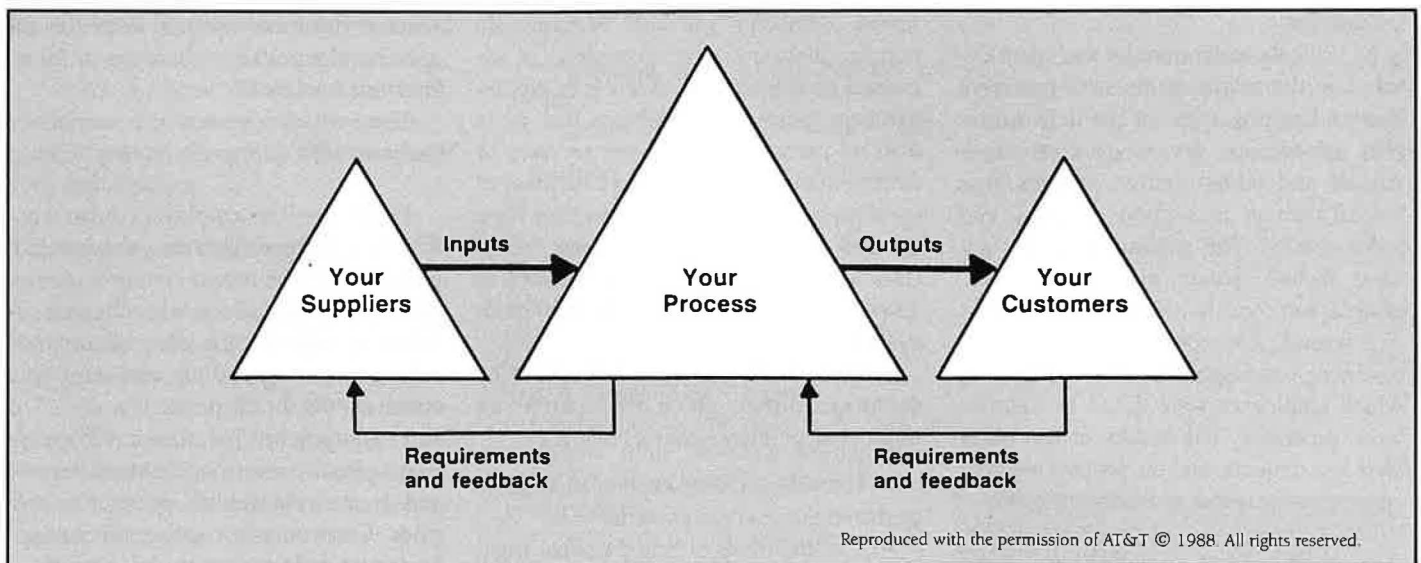


FIGURE 1 Customer-supplier model of how requirements and feedback drive the TQM process as it converts supplier inputs into outputs delivered to customers.

Madison Metro is now more structured and includes

- **Coordinating Team.** This includes top management and union stewards who re-wrote Metro's mission statement. Team members set long-range policies and develop the annual work program. They also support other TQM teams and the overall program when it faces organizational resistance.

- **Cross-Functional Team.** The team addresses cross-functional matters and deals with daily work-life situations. The team includes first-line supervisors, line workers, and one top management member of the Coordinating Team.

To date, the Madison Metro TQM program has achieved a number of successes. For example, the employee teams

- **Improved customer satisfaction.** Operator complaints have been reduced by about 50 percent through a program that identifies operators who are the source of most complaints and training rather than disciplining these employees.

- **Improved vehicle maintenance performance.** The vehicle inspection process was improved and a comprehensive maintenance training program was formalized. As a result, the vehicle miles per road call have improved.

- **Reversed a declining ridership trend.**

analyze problems, and develop solutions; and continuous union participation.

Finally, for those pursuing TQM, Madison Metro has found that patience and persistence are required. Selecting projects with achievable goals has maintained interest in the program. Metro is enthusiastic about its success and about the future.

Seattle METRO Finance Department

Seattle METRO is responsible for regional waste water treatment and public transportation services for Seattle/King County, Washington. The Finance Department provides financial and administrative services to the organization.

The Director of the Finance Department set a personal goal of creating a high-performance organization. In 1988 the correction of an internal financial fraud case involving a first-line supervisor presented an opportunity to involve employees in re-designing how the work unit was structured and run. Employees were relieved of their normal duties to spend time answering the question: "If this operation were your own business, what changes would you make?" The team's effort was highly successful. A wide variety of recommendations were made to change equipment and processes and to establish cost and quality standards with which the group could manage itself.

In 1989 about six months was spent developing the following mission statement and guiding principles for the department. "We provide fast, accurate, and useful financial and administrative services in a helpful manner in support of transit and water quality." The guiding principles address beliefs about trust, cooperation, growth, and contribution.

A second pilot project in the area of procurement management was formed in which employees were asked to improve work processes. The results of this effort were less dramatic and the process received some negative response from employees.

At this time, a consultant was retained to observe management meetings and interview the more than 50 employees who were involved in the pilot projects. The results of this process revealed that, despite the internal criticism, almost all of the employees liked being involved and challenged and, in particular, enjoyed the freedom and learning associated with their efforts.

As a result of the management review and survey findings, a decision was made to stay the course. Additional work redesign projects were undertaken. Over this same time period, some first-line supervisory personnel experienced "conversion" to their roles as coach and facilitator.

Part of the internal criticism for the program was directed toward management because some employees believed management was being too prescriptive. As a result, the finance director established the

following minimum criteria for managers and supervisors:

- Involve employees in why work is being done and the way it is being done;
- Eliminate unnecessary work and rework;
- Test new ideas;
- Increase productivity, employee satisfaction, and customer service; and
- Provide meaningful connections of management and work groups.

The performance of managers and supervisors is judged on the basis of these criteria.

In 1991 progress and the status of the improvement initiatives were again assessed. Although still not unanimously popular, there are now champions of increased participation at all levels in the department. Survey data indicate that more than 43 percent of employees are very or extremely satisfied with being a member of the organization. Overhead costs have been reduced by \$350,000 over three years, costs were reduced in two areas by 15 to 23 percent, and there were significant quality gains.

Some of the key insights highlighted by the finance director about her department's improvement initiative are as follows:

- The willingness to explore and engage in shared discovery is powerful.
- It is important to hear personal negative feedback and be willing to change as a means of moving an organization forward.
- Less-than-perfect execution does not mean that the vision is wrong; sometimes things do not go well.
- Reality checks are needed for staying power: take the time to look around outside your organization periodically.
- The best approach is to visualize your completed goals and relax.

The department is proud that in the past three years it has improved and attained a new organizational identity by reflecting clear values, being open to participation, and being able to respond to feedback.

Baltimore Mass Transit Administration

The Mass Transit Administration (MTA) of Maryland is part of the state Department of Transportation and the provider of public

transportation in Baltimore. MTA's TQM program has been neither highly organized nor overly structured, avoiding bureaucracy. It has taken on numerous projects as opportunities for improvement have been identified. The program is founded on a number of common-sense principles that address how the employees want to be treated; how they want to treat others; and how they want the organization to function.

The focus of the MTA's TQM program is to view its service as its product (which must be effectively marketed and appropriately priced); its farebox recovery ratio as its bottom line; and its riders as customers with travel options. With this perspective, the public sector looks much like the private sector.

There are four elements or resources that make up MTA's approach toward TQM:

1. **People.** The employees must know that they make a difference—they must be empowered. The transit system must have people who care about what they do and why they perform their jobs. All employees have a role in providing and supporting transit service for the public.

2. **Equipment.** The transit vehicle delivers a transit system's product and service and is also the vehicle operator's workplace. Consequently, vehicle cleanliness is important. MTA buses remain with a designated driver. Although this causes some inconvenience, it makes a significant difference in the quality of service because the driver has greater responsibility and concern for the vehicle.

3. **Organizational Culture.** An organization's culture is the key to change and the creation of an environment that rewards decision making. Although sometimes threatening, there are clear benefits to seeing decisions made differently and by other people.

4. **Customer.** The customer must be the focus—almost an obsession—of all employees. Employees are expected to ride the system and to ask people how the service is performing. When it is not performing well, solutions for improvement must be found. When mistakes are made, apologies should follow.

A major project of MTA's TQM initiative has been to redesign one bus division and create a model or ideal division for the rest of the transit system. Teams have been formed that address organization structure, service delivery, scheduling, work rules, and the work environment. A special amendment to the labor contract may be pursued to operate this division on a pilot basis.

Setting up the division will take about six months. Employees will then have the opportunity to bid to work there and to determine how the new division performs from a variety of perspectives: financial, employee morale, service quality, and so on. The redesigned workplace may become a model for the balance of the organization.

The key guidance offered by the MTA Administrator to other transit systems is that the pursuit of quality requires hard work and vigilance.

Port Authority of Allegheny County Transit

The Port Authority of Allegheny County (PAT) is the principal provider of public transportation in Pittsburgh, Pennsylvania. In his pursuit of quality, PAT's executive director has concluded that passengers do not care about TQM or other management philosophies regarding employee participation and supervision. Customers care about the service they receive—without excuses. Transit is a product with no shelf life. Every day the transit system has the opportunity to succeed or fail at delivering its product the right way to its customers.

PAT, like most transit systems, has been a traditional organization that saw its job as "hauling" people. Unfortunately, some employees, at all levels, had a "customer be damned" attitude. Consequently, improving customer service has required the development of an employee relations policy as its foundation.

The cornerstone of PAT's program has been the development of two statements of philosophy that embody the organization's desired vision of its internal and external customer relations. The philosophy has been formulated from numerous discussions and small group meetings at which the executive director and other senior

leaders have met with and talked to employees and listened to their perspectives.

Drafts of the statement of philosophy have been reviewed and modified with the input of employees. The result is a collection of simple guidelines that will serve as the foundation for improved customer service. The guidelines, which address the needs of both customers and employees, are as follows:

Our customers deserve

- Prompt, courteous, convenient service.
- Safe, reliable, clean, convenient, comfortable transportation.
- Accurate, timely, responsive communications.
- Meaningful input to PAT decision making.
- Fairness, honesty and good value.

Employee relations philosophy. We believe in

- Being fair and honest in our relations with our employees.
- Encouraging effective communications among all employees through a management style based on trust, responsiveness, and a willingness to listen.
- Accomplishing the goals of the organization, while providing an opportunity for all employees to pursue their personal goals.
- Providing a safe, clean, suitable work environment for all employees.
- Providing a meaningful work experience that contributes to a feeling of worth and individual dignity for each of our employees.
- Providing for employee growth through appropriate training, development, and promotion opportunities.
- Providing competitive compensation and recognition for employee performance and contribution.
- Working together enthusiastically to provide excellent customer service.

PAT believes that it is at the beginning of a long and worthwhile process that will ultimately improve the quality of customer services as well as the environment for employees.

Summary

The four transit systems that reported their TQM progress reflect a number of the key TQM elements described earlier in this article. Although each organization is in the early stages of TQM implementation and each has taken a different approach, several common themes are present:

- Commitment from the top of the organization is essential;
- TQM is a long-term approach to management that often shows significant short-term results; and
- Commitment to customers will benefit transit performance in numerous ways.

TQM does not represent a slogan; it is a management philosophy that must permeate all levels of an organization. It is not a quick fix, nor is it easy—but it is worthwhile.

Transit Cooperative Research Program Plans Project on TQM

Total Quality Management in Public Transportation has been selected as a research project for the first year of the new Transit Cooperative Research Program. TCRP is sponsored by the Federal Transit Administration in cooperation with the Transit Development Corporation and administered by the Transportation Research Board. Research will focus on developing a compendium of outstanding TQM practices based on the transit and related service industries. A team of transit specialists and private sector examiners will conduct quality audits of outstanding systems to identify the principles and mechanisms for achieving quality performance. Emphasis will be on implementation of TQM in the transit environment.