Contact:
Jim Ayers, Principal
Phone: (310) 922-6720
jayers@cgrmc.com
www.ayerrs-consulting.com

TQM and Information Technology: Partners for Profit

A 10 Year Update

James B. Ayers
Principal, CGR Management Consultants LLC

Jim Ayers has consulted to manufacturing and service clients for more than 40 years. He is a Certified Management Consultant (CMC) by the Institute of Management Consultants (IMC). He has written several books and articles on supply chain management, operations strategy, and profit improvement. These include the Handbook of Supply Chain Management and Supply Chain Project Management. He also edits the Encyclopedia of Supply Chain Management.

Jim holds a BS from the US Naval Academy with distinction and MBA and MS Industrial Engineering degrees from Stanford University. In the US Navy, Jim served aboard submarines.

Preface

The invitation to write this article, an update to a 10-year-old article ("TQM and Information Technology: Partners for Profit"), came in May 2004. I was happy to take on the task for two reasons. First someone, namely Sarthak Kumar Rath of ICFAI Books, had judged the article, ancient by most standards, still relevant. With the churn in management concepts and fads, can any piece written 10 year ago be relevant -- particularly in the fast-changing art of technology management? A second reason for my willingness to review the article is the chance to review what has changed and what has remained the same over the years.

Certainly things have changed. TQM, short for "Total Quality Management," was in fashion in 1993. However, one hardly ever hears the term these days. Since then, other flavors have pushed poor TQM aside. These include "reengineering" – which has met the same fate as TQM -- and "six sigma," an approach backed by prominent CEO's. Other embodiments include "lean" and "agile" manufacturing. The consultant practitioners would likely claim that these incarnations are new stuff. However, after all is said and done these are really extensions of basic process management that dates back many decades. So advice offered 10 years ago applies as much, if not more, today.

Another trend that was nearly invisible 10 years ago is globalization. Today globalization has led to widespread professional and technical skill outsourcing and "offshoring." "If you sit at a desk all day, your job is going elsewhere," is a potent warning to workers in high cost countries like the US. This is particularly true in IT. In the US, many of those who labor in IT fear job loss to low cost locales in India, Eastern Europe, and beyond. The imperative for all is to find other ways to add value beyond pure technical, behind-the-desk contributions. This was the central theme of the original article.

Survival, in brief, requires getting out from behind the desk. Pure technical skills are too easily duplicated in faraway places. However, insight and wisdom, the ability to persuade, and "make it happen" enthusiasm are all too scarce everywhere. Applying them requires proximity to the processes you are trying to change, enhancing job security for those with the skills.

With these trends in mind, here is updated advice for IT professionals seeking to widen their skills and increase their value.

Introduction

Many will agree that information technology often fails to live up to its promise. The experts' and vendors' pledges of improvements in productivity and processes as well as increased efficiency and effectiveness have simply not materialized in many cases. What is now clear is that technology cannot stand alone. It must be coupled with an evaluation of and changes in the broader organizational environment. The concepts of total quality, which is basically a focus on process improvement and putting in place an organization to run the redesigned process, will help the organization realize the potential gains from information technology.

In these times of financial stress and global competition, organizations of all sizes must reevaluate their investments in information technology. Despite considerable outlays to deal with Y2K issues and implement technical advances, promised productivity improvement has not materialized. Wasteful technology spending leads to lost profits, dissatisfied customers, and worrisome erosion of competitive position.

For example, in a large integrated health maintenance organization, the information services department developed and installed a new system for making patient appointments over the telephone with physicians. The mission of the new system was to increase doctor productivity by reducing no-shows for appointments. However, the new procedure required the appointment-maker to gather many information items about the caller. This doubled the time required by the appointment staff to set an appointment. The resulting logjam of angry patients who couldn't get through not only did nothing to improve physician productivity, but also decreased customer service, which previously wasn't even a problem. However, the systems staff claimed success because the new system was installed with no staff additions.

In another example, an aircraft manufacturer designing a new plane for the US government made a large investment in engineering workstations. The goal of the system was to reduce time and cost. Substantial financial penalties would be assessed if the design weren't completed on schedule or within a fixed cost budget. The workstation vendor promised extraordinary productivity gains, but after one year no increase was traceable to the investment in technology. The manufacturer had overlooked shortcomings in the overall design process, particularly in areas not touched by the automation. Unfortunately, these had more to do with management practice than technology.

The lesson learned from these examples is that new technology can't stand alone. In each case, the information technology staff evaluated only the technology, neglecting the broader process environment that includes customer service, timeliness of the process, and cost from a total resource point of view. More technology implementations would be more successful if they were approached in a fundamentally different way. In this article, we explore applying the concepts behind total quality to help organizations realize the promise of information technology.

The total quality environment

Cutting the costs of doing business never goes out of style. Just as CEOs embraced systems solutions in the 1980s and 1990s, many are now hotly pursuing the latest version of process improvement. This takes the form of a back to basics movement emphasizing execution of business processes. Labels include TQM, continuous improvement or *Kaizen*, lean manufacturing, the Toyota Production System, process reengineering, or six sigma. The philosophy and tools of these and other movements are common. They have a great deal to offer those charged with designing and implementing information systems strategies. The information systems strategist and technologist should be increasingly prepared to work within this environment.

Too few organizations have recognized the link between process and systems improvement and the need to integrate information systems and total quality efforts. For example, in the health maintenance organization described above, a total quality management environment would dictate that implementation of the new system be examined from the customer's viewpoint. This would have revealed the problems with keeping people on the phone too long. For the aircraft manufacturer, the process

orientation of a total quality approach would have compelled the company to examine the entire design process.

The following sections describe five elements present in successful total quality environments and the overlap total quality has with systems improvement.

Dissatisfaction with the status quo. When senior management strives to improve, a continuous improvement mentality takes hold. The CEO has dispensed with the "if it isn't broke, don't fix it" mentality. Change is encouraged; there is no finish line; and any feasible way to better meet customer needs is implemented, and the sponsors are rewarded. Senior management must promulgate a vision of the future for the organization. This vision should describe the organization and its environment in 5 to 10 years. This is enormously important when attempts are made to gauge how an improvement effort will contribute to fulfilling the vision.

My experience is that lack of vision is the single greatest obstacle to improvement. It is hard to track your progress if you don't know where you're going. Ironically, creation of a vision is often the least expensive tool available for achieving better performance.

Customer-driven philosophy. The total quality philosophy is customer driven. The customer universe should definitely include internal end users to whom the information systems department supplies its services. In fact, a "supply chain" is in place since the immediate users serve downstream internal and external customers. With this philosophy, every proposal is justified in terms of immediate customer – or customers' customer -- needs. This is the essence of total quality because customers define quality. Techniques like Quality Function Deployment (QFD) match the processes and systems to be deployed to specific customer requirements. The techniques define the two vectors of quality in customer terms: doing the right thing and doing things right. The first refers to the need for the product or service (i.e., making the right product). The second refers to the execution of the process (i.e., making the best possible version of the product).

Benchmarking, which brings an outside perspective, explains how other companies perform similar functions and if they perform them better, assess why they do and what can be learned from their experience. Without examples of what others have achieved, claims for success may have little credibility in an organization, particularly one set in its ways. Benchmarking can break down resistance to change and the all-too-prevalent resistance to fresh ideas.

Process orientation. Organizations should view their operations as a network of processes that provides products and services for the benefit of customers. The enterprise is not a group of functional departments, though functional organizations are created to support the network of processes. For example, such functional departments as engineering, marketing, and procurement may support the process of new product design.

In traditional companies, organizations are developed first and processes are designed around them. On the other hand, the total quality organization changes structure frequently as old processes are changed or new processes are devised to satisfy changing customer needs. To drive the point home, these companies often appoint process owners. Owners are senior executives accountable for the effectiveness, efficiency, and maintenance of their processes, not just their departments. An effective owner measures process performance, ensures that the

process is constantly improved, tracks the needs of internal and external customers, and introduces new technology when it's needed.

Information technology specialists have many skills to offer in such an environment because most are trained in process thinking. They also are accustomed to working with the statistical data necessary to engineer process improvement. Organizations focusing on processes look at process performance in expanded terms that include not only cost but also quality, timeliness, and capital required. In manufacturing, a common solution is decentralization of production into cells for more responsiveness to customers. This places the total process in a small, autonomous work unit. In service organizations and in overhead functions of manufacturers, the cell concept is advancing to white-collar areas. Implementers cite closeness to customers, flexibility, elimination of hand-offs, and employee satisfaction as benefits. In some cases these cells achieve the aims sought from technology faster and cheaper.

Team-driven change. To make changes, total quality companies assemble multi-disciplined teams. This is especially appropriate for supply chain initiatives that cross company boundaries. These teams bring a range of perspectives, including those of the customer or user, suppliers, operators, technical specialists (e.g., systems analysts or manufacturing engineers), accountants, consultants, and line managers. Teams join in training to develop the skills required to design and implement process changes. They work together to dissect processes, to examine the value of each step in terms of customer needs, and to reassemble the process and supporting organization.

Two sets of skills are required to implement these changes. The first is the analytical set: the ability to critically analyze current practice and to build alternative models. The second set is the ability to work as team members. This is a much more difficult set to train for; but, over time, practice improves this ability. In the early phases, many companies rely on trained facilitators or consultants to make progress. As managers gain these skills, change becomes a natural part of everyone's job.

Teams are more effective because they capture the knowledge of process participants and assure ownership of the results. The information technologist can be a valuable participant for two reasons. First, he or she shows how technology can contribute to improving a process under examination. Second, as an outsider, the technologist helps the team address more delicate issues like current performance, organization charters in a new process environment, and customer requirements.

New metrics. Industry is criticized for its shortsighted approach of measuring only financial health. Despite good short-term financial numbers, customer quality can degenerate unseen unless other metrics are applied. This is the concept behind the Balanced Scorecard, an approach that goes beyond financial measures. Dimensions of the Balanced Scorecard incorporate customer requirements, internal process improvement, and employee innovation and learning. Companies embracing total quality also use broader measures like these: customer satisfaction, process performance, and competitive comparisons.

Because changes that accompany a total quality program can disrupt the organization, successful attainment of these new success goals should be publicized throughout the company. This keeps employees focused on new objectives and encourages them to strive for improvement.

Gaining competitive advantage with IT

As simple as these concepts sound, they are difficult to implement in many organizations. Two to five years may be needed to make a transformation from the traditional to a total quality environment. Of course, it depends on where you start.

In organizations that have successfully adopted a total quality philosophy, constant practice has been required to change the corporate culture; and total quality can be successful only if it is a way of life for all employees in the organization. The companies seen as leaders in establishing this culture will say it's a journey rather than a destination. The Malcolm Baldrige National Quality Award in the US has increased awareness of quality issues. For the uninitiated, the evaluation criteria, available publicly, are an excellent standard for self-assessment.

For systems strategists struggling to justify investments in technology and seeking to use information technology to its best advantage, total quality is a natural fit. Systems improvements and accompanying process changes will have a powerful impact when merged into coordinated efforts. Although this link is not made in many companies, executives and IT management should realize that information technology departments have much to offer a company undertaking a total quality initiative.

Because most information applications cover multiple departments, IT technologists are familiar with the working of these separate units, many of which have their own cultures and ways of working. This familiarity is valuable when such key elements of total quality management as process orientation and team-driven change are initiated in the organization. Both require cross-functional perspectives and participation. IT groups will probably understand the practical implications of major change better than others. Their experience with documenting user needs, outlining systems performance requirements, and training users in new technology can be easily applied to total quality components including customer orientation, new metrics, and teaching employees how to revise their work habits and attitudes.

In addition, information technology itself has evolved beyond just accounting and financial systems. The hand-held devices now used by delivery services and rental car agencies were adopted to fulfill such total quality goals as process improvements and a customer focus. They cut paperwork and speed customer transactions. Expert systems, data warehouses, and simulation applications also contribute to total quality approaches.

Information technologists face limitations when it comes to taking a total quality leadership role. Others in their organizations may see them as too narrow and technology-oriented. They may also have had trouble in the past communicating in user terms or in not meeting user expectations. The users also may view systems as part of the problem, not the solution.

Unfortunately, it's difficult to participate if you're unwelcome. After all, respect must be earned, not dictated by higher authority. Information services organizations that are successful partners for profit with line organizations share common traits. First, they are easy to deal with. Their customers have ready access to the organization, even if resource constraints make it hard to do everything requested. Second, they start small and don't over-commit in terms of schedule and benefits. Thus, they build credibility with users. Finally, they focus on projects with high strategic value, complete them according to their commitments, and track the benefits of implementation.

In a poorly performing department, this is not done overnight. But once credibility has been achieved, information services managers become integral to the management team. Among the roles they should play are the following:

■ Helping senior management develop visions. Any 5- or 10-year vision needs a technology perspective. Hardly any enterprise will be untouched by the fast-changing pace of technology.

■ Helping select processes for improvement teams. The top processes should be those that are closest to the customer, have higher-than-needed costs, take too long, or represent a strategic advantage in the marketplace.

■ Participating on improvement teams. Practically all will, or should, involve technology improvements. The IT manager can be a member part-time or full-time on major teams.

■ Reevaluating the IT budget. Most IT managers are committed to both new development and maintenance efforts. Any efforts that don't fit the vision should be dropped, and development work should be coordinated with process improvement teams.

■ Educating teams regarding technology. The IT manager should become an internal consultant to teams, showing how their process improvements can be enhanced by software and hardware developments.

■ Showing how technology supports performance metrics. Most data for measuring operating performance resides in some form in current information systems. The IT manager can help financial and operations managers identify the measures, the source of data, and the reporting requirements for the new metrics.

Building competence

Many total quality efforts start with the best of intentions but make little real change. Reasons for the lack of success vary, but some common pitfalls include:

■ Lack of measurable success. Savings or improvements in customer satisfaction are elusive. Often the wrong projects have been undertaken, and no one is responsibility for the result.

■ Conflicts with the traditional organization. New process design almost always requires shifts in responsibility and power. Most organizations don't recognize this at the outset, and mechanisms to deal with the situation aren't in place.

■ Lack of senior management follow-through. After the initial euphoria, senior management neglects the myriad details necessary to make changes stick. The new process doesn't take root, and the organization reverts to its prior state.

■ Environmental instability. Today's markets, competitors, and financial constraints change rapidly. Long-term planning is difficult at best. The pace of external change is unlikely to slow and must be accepted as a given in the business environment. But an agile

organization that can flex with these changes is best equipped for survival. So in a real sense, there is little choice but to adopt total quality.

Although there are many obstacles, these difficulties make total quality efforts, closely coordinated with new systems development, more necessary than ever. Indeed, a total quality program, by creating a vision for the future, should enlist information technology to enable the organization to manage its future rather than be forced to react to events.

---

[i] Ayers, James B., TQM and Information Technology: Partners for Profit, *Information Strategy: the Executive's Journal,* (9/3), pp. 26-31. Spring 1993.