TQM as a management strategy for the next millennia

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**Abstract** Total quality management (TQM) has been acclaimed as an organizational philosophy to enhance global competitiveness. Will TQM continue to be a management philosophy of the future in same shape, size, and design? This paper, through literature search and using field experts, identifies the future role of TQM in businesses facing global markets.

**Introduction**

It was in the 1980s that the quality revolution got a serious look by companies attempting to increase profitability. At the time, no one questioned the results that were supposedly achievable by using quality techniques. Alternatively, no one dared to ask why are we using the quality systems as planned. All quality improvement efforts were supposed to end in good results and nothing was expected to go wrong. Very little was discussed about the differences between quality assurance, quality management, total quality etc., etc. As time progressed, quality revolution made some businesses happy while others were quite disillusioned. In management meetings, finger pointing took over from the common rationale of business analysis. So, finally, began the phase of analyzing quality improvement efforts.

Managing total quality, in recent years, has taken a different meaning as is evident by numerous articles published on the subject of total quality management (TQM). What is TQM and how does it differ from the quality management practices of the past? These remain key questions in various arenas. Some find the two approaches similar while many others see them differently. In general, TQM is looked on as a process-oriented philosophy of enhancing customer satisfaction through the production of higher quality goods and services. Quality management practices of the past, however, are regarded as “after the fact” control techniques to detect defective items that require reworking. Hence, past practices focused on quality control rather than quality management. Past practices were result-oriented compared to today’s process-oriented philosophy.

TQM can also be viewed as an organization-wide philosophy requiring all employees at every level of an organization to focus his/her efforts to help
improve each business activity of the organization. The job of improving and ensuring quality is no longer solely the responsibility of certain people or for departments of the organization. It is the responsibility of everyone. The people in the organization are required to make quality a culture in their daily lives. Furthermore, it is also important to understand that TQM is a long-term perpetual improvement process requiring significant resources, both financial and human. It is a dynamic process – not a static one. It is a continuous effort with no deadlines or target dates. The process can never be considered complete since there is no goal or destination. Hence, TQM becomes a way of life.

TQM of tomorrow presents a different scenario. Market dynamics are changing on a continuous basis. New global markets are presenting newer challenges that change constantly, causing stressful competitive environments. Various authors have suggested a new role of TQM philosophy for businesses operating in the next century. Suazo (1998) proposes TQM as a holistics approach to managing organizations. Forrest (1998) has suggested that TQM concepts be applied to implement sustainable developments that provide competitiveness. Wong (1996) also alluded to the future of TQM by questioning its role for the twenty-first century.

**Research objectives and goals**

This paper examines the future role of TQM and its implications for managerial thinking processes in coming years. It will be a two-step process. In the first phase, we will analyze what has been written by many authors as to what is TQM and how to implement TQM. This phase will require researching the literature to document, and synthesize, the views of others regarding TQM. Second, through a panel of experts (from the practising world), we will attempt a refinement of findings of the previous phase, and furthermore, establish a path of future trends in the TQM arena. Finally, we will report on the views of the expert panel as to the future use of TQM ideals.

**TQM and its implementation aspects**

Much has been written about TQM. The quality literature mainly consists of case studies and analyses of specific aspects of the TQM system. With few exceptions (Benson, 1992; Saraph *et al.*, 1989), no systematic attempt has been made to define the critical elements of TQM implementation. In order to evaluate the critical elements of TQM implementation, we conducted a literature review. A preliminary list of elements, identified by authors, who have written directly about TQM implementation or a TQM system, was developed. The literature review suggested that there are at least 45 elements that affect TQM implementation. These elements and their sources (listed in the Appendix) are presented in Table I.
<table>
<thead>
<tr>
<th>Proposed elements of TQM implementation</th>
<th>Authors and Years</th>
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9. Human resources

10. Management style

11. Organizational structure
    Bounds, G. and Hebert, F. (1993), Schonberger, R. (1992), Shani, A., Grant, R., Krishnan, R.

12. Ownership

13. Continuous improvement process

14. Consultants

15. Business culture

16. Process-oriented

17. Statistical tools

18. Quality audit

19. Empowerment

20. Quality planning

21. Quality data

Table I. (Continued)
22. **Mechanism to set priorities**  

23. **Mechanism to coordinate activities**  

24. **Quality council or steering committee**  

25. **Written policy on quality**  

26. **Measurement of key results areas**  

27. **Reward system tied to key measures**  

28. **Customer-oriented reward system**  

29. **Recognition and celebration**  

30. **Deployment of key information to all employees**  

31. **Quality-related goals**  

32. **Flatter organizations**  

33. **Group incentive systems**  

34. **Decentralization of operational decisions**  

35. **Lateral communication**  

36. **Decisions based on data**  

37. **Benchmarking**  

(Continued)
In order to better understand the nature of these elements, we grouped them into five factors. These groups were formed on the basis of commonality of elements to the operations area of a business. These five key factors are as follows:

(1) Human resources focus.
(2) Management structure.
(3) Quality tools.
(4) Supplier support.
(5) Customer orientation.

Within each factor, the elements are listed in an hierarchical order as shown in Table II. This study considers the frequency of citation of a particular element as an indication of the element’s criticality to the TQM implementation process. In Table II, this frequency is listed in parenthesis next to each element. It should be mentioned that, in the factoring process, all 45 elements from Table I were not used. Elements with less than four citations were deleted from any grouping. Next, let us discuss the five factors and their implication for the TQM process.

1. Human resource focus.
   Good human resource management and practices seem to have a large impact on the quality movement in organizations. In this factor, we grouped six
elements that relate people and their reward system. This factor recognizes the need for developing a good workforce that is well trained and properly rewarded. Let us look into each element grouped into this factor.

Due to the complexity of the problems companies now face, “teams” have become a necessity, rather than a choice. The nature of the problems today require a multidisciplinary approach, and teams represent a viable alternative to deal with such a complex environment. There are various forms of teams such as quality circles, multi-functional, and self-directed teams. These types of teams differ on the level of power and involvement that the members have in the different aspects of their jobs. Companies must be careful when selecting the type of teams to adopt. Self-directed teams, for example, require heavy preparation and should not be adopted by “novices” (Port, 1992). Also, the reward system should be team-based. This suggests, as an immediate result, the need to switch the incentive systems from individual- to group-oriented.

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<td>Empowerment and ownership (18)</td>
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<td>Continuous improvement process (9)</td>
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<td>Customer oriented product development (5)</td>
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**Table II.**
Hierarchical structure of TQM elements within factors
The hypothesis of the use of “group incentive systems” under a TQM system was tested by Becker et al. (1994). They found that there is a trend to change from an individual-based system before TQM to a group-based incentive system after adopting TQM principles.

“Training” is the next element within this factor. This is not a surprise because TQM demands that people change working practices. For example, working in “teams” requires skills such as problem-solving, human relations, mathematics, statistics, writing and oral expression. Acquiring these skills usually requires heavy training. Since training is usually very expensive, focus should be placed on the immediate needs. Weintraub (1993) suggests using a just-in-time (JIT) approach to training. Also, businesses are well advised to develop training materials/manuals that assist in the enhancement of “process knowledge” of an employee (Deming, 1981-82).

“Total employee involvement” is vital for successful TQM implementation. Quality has different dimensions such as design, production, sale, delivery, after-the-sale, safety and security, and perceived quality (Sparks and Legault, 1993). Total employee involvement is necessary to ensure excellence for all quality dimensions. In other words, quality must become the responsibility of everyone in the organization in order to succeed in the marketplace.

Next on the list are “empowerment and ownership”. Employees' empowerment has many advantages. First, the need for supervisors is reduced, which results in lower costs (Becker et al., 1994). Also, empowerment gives a sense of “ownership” which is also a critical element found in the literature. When employees are empowered, there is a sense that “everyone owns his/her piece of the business [which] unleashes the talent and energy of our people” (Ackers, 1991, p. 27).

Another element cited was “reward systems tied to key measures.” Examples showed that employees act according to how they are measured and rewarded regardless of the effect their actions have on the overall performance of the firm. Cases have been found where people acted completely against companies' strategic priorities just because of a poorly designed reward system. As a result, reward systems must be designed so that they promote behaviors that contribute to firms’ wellbeing.

The final element within this factor is “recognition.” Being recognized by peers greatly motivates people to improve their processes and become more effective. Deployment of success stories can be done through newspapers and fliers. Also, tools such as videos and visual displays can be used to recognize and celebrate work well done. The results of these promotional activities are two-fold:

(1) They increase the level of motivation among workers.

(2) They can be used as a training device to deploy solutions that have been proven to work (the learning organization concept (Garvin, 1993)).
Human resource could not excel in any business without good management structure, which we discuss next.

2. Management structure
Organizations should have a management structure that acts as a facilitator for TQM deployment. Here, we group those elements that create and foster quality vision. Hence, top management involvement becomes a necessity.

Top management occupies a special place in a TQM implementation. Top management provides both the physical and leadership needs of the organization, and most organizational changes and training needs require top management approval. In addition, top management behavior signals all employees as to the importance of TQM implementation. Hence, “top management involvement” is a critical element of TQM implementation and this was validated by our literature review. Top management involvement is more a matter of coaching and facilitating the work rather than directing it.

Deployment of “key information to all employees” is the next critical element within this factor. Employees need to have vital information in order to make good decisions. Several papers mentioned that unsuccessful TQM implementations showed lack of focus in the different activities of teams that employees embarked upon. Having the right information coupled with an adequate reward system is part of the solution. Leadership plays a vital role in communicating such information.

“Leadership”, which is another way to express top management involvement, is an important element. Some of the activities top management can participate in are “speeches, meeting with employees, meeting with customers, giving formal and informal recognition, receiving training, and training others” (Easton, 1993, p. 35).

Business culture is also mentioned in the literature as a critical element of TQM implementation. Culture is defined as “the holistic summation of individual community members’ habitual attitudes and behaviors” (Shuster, 1994, p. 9). Culture can be analyzed from the point of view of different countries’ abilities to adopt TQM practices (Benson et al., 1991; Hammond, 1991; Holmes, 1993). Also, business culture can be an indicator of the readiness of a firm to adopt a TQM philosophy (Emery and Summers, 1994). Because failures in TQM implementation are usually attributed to resistance to change, cultural change theory is becoming an important discipline for research (Emery and Summers, 1994).

Since companies have an infinite number of processes and problems to be solved, it is vital to have a “mechanism to set priorities.” As mentioned earlier, some companies try to improve everything that can be improved and the result is lack of focus. Shiba et al. (1993) recommend following a chain of cause and effect relationships. If the problem leads you to any of the five “evils” (defects, mistakes, delays, waste, accidents), the problem should be
solved. Another suggestion is to focus on either reducing cycle time or attacking the main bottlenecks of the system (Port, 1992). However, there seems to be no agreement as to which are the best mechanisms and/or tools to set priorities.

A “mechanism to coordinate activities” is highly related to quality planning. In addition to the lack of focus, companies often try to optimize their operations by optimizing every department independently. It is well known that optimum of a system is rarely equal to the sum of the local optimums. Using the wrong approach results in the lack of coordination among departments and, hence, resources are wasted. The technique that is often mentioned is Hoshin management (Fuchs, 1994; Neilson, 1991; Takeuchi and Quelch, 1983). The Hoshin management process results in the coordination and deployment of the key activities throughout the firm.

3. Quality tools
One cannot adopt total quality management concepts without the knowledge and practice of quality associated tools. In this factor, we grouped those elements that provide the basis of quality tools.

Developing “quality-related goals” is highly recommended. Analyses of common practices indicate that US firms mainly concentrate on achieving production quotas. This practice has been highly criticized in Deming’s 14 points (Deming, 1981) because of its damaging effect on quality. Carson and Carson (1993) suggest setting both quantity and quality goals to encourage improvements in both parameters. Quality planning, therefore, becomes a necessity. “Quality planning” basically implies the developing of a plan in which quality objectives and programs are integrated with the corporate strategy of the firm. Easton (1993) suggests including not only goals and objectives but also addressing implementation issues in the quality plan. He also suggests preparing a written plan to make the issue more formal.

Having a “process-oriented” approach, as opposed to a results-oriented one, is heavily recommended in the literature. Authors strongly suggest concentrating on improving processes, usually through simplification, and attacking the root cause of the problems. The usual way to “improve” processes is by covering up the symptoms of the problems with short-term solutions. A process-oriented philosophy strongly disagrees with that approach.

An emerging way to improve processes can be accomplished by reengineering. Fuchs (1994) suggests applying reengineering when processes are at their peak level and only a breakthrough solution can increase their output. In addition, Fuchs argues that reengineering can be used when the gap between the output of the process and what is needed from it is too large.

Within this factor, “measurement of key result areas” was another element cited often in literature. Even though few papers give a methodology to determine the key areas to be measured, there seems to be
an agreement that measures must be customer-related. Common measurements mentioned in the literature are complaints, customer and employee satisfaction indexes, cycle time, and quality cost. Conversely, some measurements that might look good but do not provide useful information should not be used to evaluate a TQM program. Such measurements include number of hours spent on training, number of meetings per team, etc. These measurements do not provide information to determine if the company is going in the right direction.

One caution: companies should not overemphasize the measurement aspect. Measurement of key areas should be as simple as possible. Harari (1993) reported cases where companies created cumbersome bureaucracies just to keep up with all indexes and little measurements. On the other hand, Luther (1992) showed a case where index reports consisted of only one page with only the basic information necessary to make decisions. The latter was more focused and had better results.

“SPC tools” occupy an important place in the TQM literature. These basic tools are fairly easy to use, and hence, can be learned by everyone in the organization. These tools can be used to solve the daily problems employees face in their jobs. As problems become more difficult to solve, sophisticated techniques such as experimental design and regression might be added to the statistical toolbox.

“Data-based decision” is the next critical element. The complexity of the problems faced by managers makes it almost impossible to rely solely on “intuition.” Goodman (1993) presents several examples where intuition yielded different results than those obtained using hard data. Careful data collection and analyses would provide scientific bases to make sound decisions. Data analyses should be part of both determining customer needs and improving processes. This also supports statistical control of the process that requires quality improvement. Additionally, data-based analysis will ensure the achievement of quality levels through quality audit.

“Quality audit” is a “systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives” (Walton, 1991, p. 1). Quality audits basically have a preventive nature by identifying activities that can create future problems.

4. Supplier support
Japanese businesses have proved that supplier involvement is essential for increases in productivity and quality through process improvements (Deming, 1981-82). In addition to a process improvement approach, “supplier involvement” is critical for TQM implementation. It is believed that “50 percent of a company’s nonconformances are caused by defective purchased materials” (Lascelles and Dales, 1989, p. 10). Therefore, it is
important to have a mechanism that ensures a good incoming quality from suppliers. A change in the buyer-supplier relationship in the form of a partnership has been offered as a solution. Since developing partnerships with suppliers usually requires heavy preparation, a reduction in the supplier base is usually necessary. This was validated by the literature because “small supplier base” followed as an important element within this factor. There are some advantages and disadvantages associated with reducing a company’s supplier base. However, discussion of this topic is out of the scope of this paper, nonetheless it must be mentioned that forming strategic alliances with suppliers (e.g. in the cases of Wal-Mart, Nabisco) can be beneficial and that requires a small base of suppliers.

5. Customer orientation
TQM ideals must keep a close eye on market dynamics, specifically, customer(s) and competitor(s). In this factor, we group those elements that affect the market side of a business.

Companies must shift their focus toward customer satisfaction. This element, “customer focus,” is the most heavily mentioned in the literature. Since TQM is, by definition, a customer-oriented philosophy, customer focus is expected to occupy a predominant place in the literature. Focusing on customers requires identifying the customers, their current and future expectations, and their level of satisfaction. Having a profound knowledge of customers is the most important aspect of TQM because every activity is driven by this knowledge. TQM subsystems are designed with the customer’s needs in mind. Therefore, a failure in identifying the right information can lead the organization toward the wrong direction.

Within this factor, “benchmarking” is the second most cited tool in the reviewed literature. Benchmarking is defined as the “act of finding out what the best practices and processes are in business – the best of the best, anywhere in the world – and adapting and implementing them, or even going them one better, in your own firm” (Westbrook, 1993, p. 13). Benchmarking provides goals that people can relate to and be motivated by because such goals have been proven to be achievable (also employees might say “if they can, why can’t we?”). However, Benson (1992), based on an international quality study by the American Quality Foundation, suggests that benchmarking should be used preferably by high performing companies as the study showed no correlation between using benchmarking and subsequent success in low and medium performing companies.

Third on the list was “continuous improvement process” (CIP). Statistical tools and continuous improvement process make a powerful combination. CIP demands improving all processes continuously and statistical tools provide the resources to systematically make those improvements. Continuous improvement process is better described by the
“Deming wheel,” also known as the PDCA (plan, do, check, act) cycle (Deming, 1991).

The last important element is “customer-oriented product development.” After knowing the TQM philosophy, it is common sense that new product development should focus on customer needs. Some of the tools mentioned in the literature that deal with the design process are quality function deployment (QFD) and simultaneous engineering. Furthermore, continuous improvement of a product must have its basis in customer orientation through feedback from consumer channels. An improved product without customer preference(s) is not improved at all.

**TQM – a reality check**

In order to check on the current reality of TQM implementation, we took the theoretical findings from the previous phase to the real world. Our objective was to assess the managerial perceptions of the quality revolution of the future. Our experiment was designed around senior manufacturing executives (director level or above) of large manufacturing businesses that included chemical, cosmetics, medical equipment, automobile, computer equipment, major household appliances, and aircraft parts. We believe that these manufacturing leaders offer two strong attributes. One, they are pace-setters by virtue of their financial standing and market size. Two, they are forward thinkers due to their global competitive environment. All information was collected through detailed one-to-one interviews and discussions with manufacturing executives.

First, we gathered general information about each business’s quality efforts and plans for the future. Second, we presented them with the findings of our investigation regarding TQM implementation. Finally, management views were solicited on the future of TQM. It took in all a total of three visits (per business) to complete our data gathering efforts. Comprehensive findings of the study were shared with all participants to arrive at consensus regarding the future of TQM, and these findings are discussed next.

**Critical element validation**

The expert panel, in near unanimity, confirmed the findings of our research relative to the critical elements of TQM use and implementation. It was pointed out that one cannot assign any priority to any of the elements within the factors or to the factors themselves. We were advised that a lot depends on the business, its products, and its markets. This is not a surprising detail given that our research base to identify the critical elements was the writing of numerous authors from varied environments over a wide time horizon. All participants agreed that the recent state of TQM implementation is well represented in our findings. However, the future could be a different story.
TQM of tomorrow

In our quest to envision the future of TQM, we explored the managerial thinking process in reference to incoming quality challenges and associated improvements. Our findings led us to conclude that the organizational emphasis of tomorrow will be shifting towards four main areas (called focuses here) for the improvement of quality. These focus areas are:

1. Customer focus;
2. Process focus;
3. Innovation focus;
4. Environmental focus.

A detailed analysis of these focus areas is presented in Table III, and we discuss them next.

Customer focus

In the coming years, the word “customer” will take on a different meaning. The customer side of any business will be a major force in tomorrow’s global markets. Dealing with these forces will require a new approach to designing managerial actions. Two major elements are expected to be the key focus of the future actions in regard to market dynamics. One is customer partnership, the other being reliable supplier source. Customer partnership will require that the business get closer to the customer, not just physically but in many other facets. This closeness should take the form of an enterprise wide sharing of ideas, actions, and other planning aspects. Essentially, it boils down to a business “virtually” sitting at the door steps of the customer. Both parties, buyers and sellers, are to assume ownership of all actions that occur in the supply chain.

Information, specifically the flow of information, will become an extremely crucial element for future success. All trading partners will have to facilitate synchronized flow of information in order to achieve a high degree of responsiveness to the ultimate customer. It is also expected, as suggested by our expert panel, that businesses will have to achieve a high degree of integration of processes between suppliers and their customers. This will call for a totally new management thinking, i.e. a focus on global thinking perspective. The future supplier-customer partnership will yield a “seamless entity” that will feel no pain in responding to changes because it will be a “seamless” change. Managing quality will be replaced by managing change with quality.

Process focus

Our research finds that quality organizations of tomorrow will face a shift in the management of process. This shift will require a true understanding of the process dynamics.
Quality management efforts will heavily emphasize self-assessment of three major capabilities, i.e. human resource capabilities, technical capabilities, and financial capabilities. This self-analysis will be crucial before forming any strategic alliance with customers to arrive at the seamless enterprise as discussed in the earlier section.

Credible and convincing self-assessment will become necessary to forge long-term relations with all trading partners having similar critical success factor niches. It is this aspect of the process focus which will form the platform for common improvements in the area of enterprise-wide quality. Such a platform will provide a basis of a seamless performance measurement system. A seamless performance measurement system will enable every enterprise partner to respond in a synchronized manner to meet the quality levels demanded by the ultimate customer.
Innovation/improvement/knowledge focus
Without fast paced responsiveness to changing customer demands will definitely cause the demise of a business in the coming years of the new millennia. This sentiment was expressed over and over again by the participants of this study. Efficient consumer response, successfully practised by the food and grocery industry, now comes to the door steps of manufacturers. The service component of their business takes on a different meaning, with after-sale service just a fading word.

To provide for customer satisfaction, businesses will have to plan perpetual growth processes based upon innovation, improvements, and knowledge creation. These efforts will require technological leadership in management ranks of all trading partners. These partners will become knowledge-creating organizations having synchronized knowledge workers moving in the same direction. Hence, the flow of information and timing of managerial actions will become critical in the quality decisions.

Environmental focus
The last missing puzzle in our quest for total quality organization of tomorrow revealed another focal point of attention, i.e. environmental focus. This is a three-dimensional focus comprising government regulations, social/ethical issues, and market dynamics.

Government regulations will stay a mystery in years to come due to the changing patterns of public opinions. The same will be true of social and ethical issues. However, such uncertainties will have to be dealt with through early partnerships between governmental organizations (e.g. FDA, EPA, etc.) and businesses. Such cooperative alliances will provide timely and correct information to all trading partners, and hence, affect the market dynamics through competition. It is in this respect that the continuous improvement process component of TQM will take on a new role. This role will be innovation-based, attempting to discover new knowledge (e.g. new technology to produce user friendly products of higher quality). Creating knowledge on a routine basis will replace the current mode of working that focuses on just doing the job.

Summary and conclusion
The new operating environment of the future will provide a set of challenges on various levels. A clear focus on defining and managing the customer side, process emphasis, and creating knowledge through innovation will comprise the new business environment. Under this new environment, TQM systems will shift towards a philosophy of quality based strategic management systems. In this new paradigm, this research predicts
formation of seamless organizations that will function in a very cohesive manner to deliver goods and services to global markets. Findings of this research are in line with the writings of recent authors (Suazo, 1998; Forrest, 1998; Wong, 1996).

In conclusion, this paper proposes that manufacturing businesses take a closer look at the TQM philosophy in general, and specifically, how is it to be used in their environment. We suggest that businesses use TQM ideals to forge new relationships with their trading partners. Furthermore, businesses must undertake a challenge to design operations using seamless boundaries in internal processes and external transactions. Our research finds that instantaneous response to changing market dynamics will be the single most important challenge of the future. It will require a new definition of quality and TQM alike. We offer the following working definitions:

For quality. Quality is what is dictated by the market dynamics and what is demanded by the ultimate customer.

For TQM. TQM is a quality-based management strategy that promotes enterprise-wide quality through a strong focus on customer orientation and environment and dynamics. Additionally, this strategic orientation relies heavily on synchronized processes among all trading partners to create knowledge through innovation in order to achieve global competitiveness.

Like any other research effort, our findings could not be all conclusive. Future research should focus on such topics as “how to provide organizational structure that facilitates innovation/knowledge creation process,” “how to foster trading partners through cooperative effort,” etc. We hope that research into these areas will provide the missing link necessary to move into the next millennia smoothly.

References


Appendix. TQM references


