
Understanding the Obstacles to TQM Success

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Data were gathered from a national survey of quality managers to examine the obstacles associated with managing a successful quality transformation. Factor analysis on managers' ratings of frequently cited barriers to TQM revealed five underlying constructs: 1) inadequate human resources development and management; 2) lack of planning for quality; 3) lack of leadership for quality; 4) inadequate resources for TQM; and 5) lack of customer focus. Moreover, these empirically derived obstacles were found to be significantly related, in varying degrees, to specific potential outcomes that can be used to measure TQM success (or failure). The potential outcomes considered were frequent turnover of employees, frequent turnover of management, the high cost/benefit ratio of implementing TQM, and quality improvement results rarely meeting expectations. This provides a useful framework for evaluating the relative significance of management-related obstacles to TQM success, and, consequently, for providing direction and guidance in developing strategies for an effective quality transformation.

Key words: quality managers, survey, TQM barriers, U. S. firms

INTRODUCTION

Over the last decade, the number of survey-based research studies focused on total quality management (TQM) has increased dramatically. Prior to 1993, most research in this area was conceptual or based on case studies. One of the first studies to use a survey-based approach, that of Saraph, Benson, and Schroeder published in 1989, focused on scale development for operationalizing the critical factors of quality management. According to Sila and Ebrahimpour (2002), an examination of the quality literature since then through 2000 reveals that there have been 347 survey-based research articles published. These studies are categorized along several main research objectives that include identifying critical TQM factors, examining issues in the implementation of TQM, and investigating the link between TQM factors and performance.

Of primary interest among researchers has been addressing the question "What makes TQM work?" Since most would agree that the philosophy and principles of TQM are sound, instances of failed TQM initiatives have led researchers to direct their attention to problems associated with its implementation. Consequently, several major research themes concerned with the successful implementation of TQM have emerged. There have been many studies that have focused on the obstacles to TQM (for example, Matta et al. 1996; Ngai and Cheng 1997; Salegna and Fazel 2000). Others have narrowed their view to concentrate on specific barriers to TQM, such as organizational culture (for example, Olian and Rynes 1992; Kuei et al. 1997), management style (for example, Mann and Kehoe 1995), employee factors (for example, Fok et al. 2000), and ineffective project management (for example, Hides et al. 2000). And in order to assess whether

TQM does work, some studies have emphasized the measurement of TQM outcomes (for example, Ahmadi and Helms 1995; Guimaraes 1997).

While some may consider TQM outdated, organizations still pursue competitive advantage through improved quality and satisfied customers. One strong indication of the continued relevance of quality management to companies competing in the global market is the recent revision of the ISO 9000 series of quality standards. The 2000 version of ISO 9000—ISO 9000:2000—represents a fundamental shift from quality assurance to quality management, a significant change in approach to quality from one that is totally compliance based to one that includes the evaluation of management techniques. This change has been described as moving the standard away from a technical-practical tool toward a management tool (Larsen and Haversjo 2000). ISO 9000:2000 is based on eight principles that are easily recognizable as the key elements of quality management: 1) customer focus, 2) leadership, 3) involvement of people, 4) process approach, 5) systems approach to management, 6) continuous improvement, 7) factual approach to decision making, and 8) mutually beneficial supplier relationships. With some 300,000 organizations worldwide holding ISO 9000 certification, and with certificates based on the old version of the standard becoming invalid at the end of 2003, a renewed interest in the question “What makes quality management work?” is more than just likely.

Aside from the mandate to adopt quality management practices as a result of ISO 9000:2000, it appears that many organizations have continued in their efforts to transform the way they do business, whether it's called TQM, reengineering, or cultural change. Some have argued, quite convincingly, that the recent focus on “business excellence” is really quality management by another name (Foley 2003). Moreover, researchers are still interested in the quality transformation, with some of the more recent studies addressing issues such as the long-term sustainability of TQM (Van der Wiele and Brown 2002), using work-development strategies to reach TQM objectives (Ljungstrom and Klefsjo 2002), and strategic quality management (Leonard and McAdam 2002). Future directions for

TQM research continue to be articulated. Examining the implementation of TQM around the world, as well as in different industries such as hospitality, tourism, and health care, are possible future directions. New research trends also include examining the causal relationships among TQM factors and between TQM factors and various outcome measures (Sila and Ebrahimpour 2002).

This study involves survey-based research on the obstacles associated with managing a successful quality transformation. The extent to which those barriers to TQM, routinely cited in the quality literature, are perceived as real obstacles by quality managers is examined. Like previous research in this area, factor analysis is used to empirically derive obstacles from scale items that represent commonly cited barriers. However, this study extends previous work by examining the causal relationships between these derived obstacles and the perceived success of TQM. The aim is to better understand the relative impact of various obstacles on effective TQM transformation. This should not only be useful to those organizations implementing TQM, but also to those trying to sustain quality management. Relevant literature is reviewed in the next section to help provide both the context and motivation for this study.

LITERATURE REVIEW

Identification of TQM Factors

One major objective of survey-based research in the area of quality management has been the development of scales to measure the key dimensions of quality management. As already noted, Saraph, Benson, and Schroeder (1989) wrote one of the first papers to address scale development. Their work provided a model and measures for assessing managers' perceptions of quality management practices at the organizational level. Their instrument consisted of the following scales: the role of top management leadership, the role of the quality department, training, product/service design, supplier quality management, process management, quality data and reporting, and employee relations.

Flynn, Schroeder, and Sakakibara (1994; 1995) extended this line of research by developing a scale for use at the plant level with various categories of job titles such as direct laborers as well as quality managers. Their scale measured seven core dimensions of quality: 1) top management support; 2) quality information; 3) process management; 4) product design; 5) work force management; 6) supplier involvement; and 7) customer involvement. Moreover, their studies attempted to link quality management practices to quality performance. They found that “quality leadership” had the strongest relationship to quality performance (1994) and that employee involvement was the best differentiator among low-, intermediate-, and high-performing plants (1995). Similarly, Yavas (1995) surveyed employees from different departments within one company about factors that contribute to product quality in their firm. Eight employee-related factors emerged that included, among others, communication, internal and external customer expectations, and employee commitment to quality.

In their synthesis of the survey-based quality management research published between 1989 and 2000, Sila and Ebrahimpour (2002) determined that 76 studies (including those cited previously) involved identifying TQM factors, most of which were empirically derived using factor analysis. They used a framework of the 25 most commonly extracted TQM factors from these 76 studies in order to categorize all 347 survey-based research articles included in their review. The 25 most commonly extracted TQM factors are listed in Figure 1. The particularly salient studies upon which these factors were based include Ahire, Golhar, and Waller (1996); Badri, Davis, and Davis (1995); Black and Porter (1996); Quazi et al. (1998); Rao, Solis, and Raghunathan (1999); and Tamimi (1995; 1998). The factors receiving the highest coverage in the articles surveyed were issues related to customer focus and satisfaction, employee training, leadership and top management commitment, teamwork, employee involvement, continuous improvement and innovation, and quality information and performance measurement (Sila and Ebrahimpour 2002, 923).

Figure 1 The 25 most commonly extracted TQM factors from survey-based research.

1. **Top management commitment**
2. **Social responsibility**
3. **Strategic planning**
4. **Customer focus and satisfaction**
5. **Quality information and performance**
6. **Benchmarking**
7. **Human resources management**
8. **Training**
9. **Employee involvement**
10. **Employee empowerment**
11. **Employee satisfaction**
12. **Teamwork**
13. **Employee appraisal, rewards, and recognition**
14. **Process management**
15. **Process control**
16. **Product/service design**
17. **Supplier management**
18. **Continuous improvement**
19. **Quality assurance**
20. **Zero defects**
21. **Quality culture**
22. **Communication**
23. **Quality systems**
24. **Just-in-time**
25. **Flexibility**

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Obstacles to Quality Transformation

Several researchers have focused more directly on the obstacles that hinder the ability of organizations to make a successful transformation to TQM or quality management. In an early paper on the topic, Glover (1993) argues that TQM failures follow one of three patterns: conceptual weakness, design flaws, or ineffective implementation. Recognizing that TQM requires a true organizational transformation, Glover explains conceptual weakness as failures occurring because organizations make only “superficial” attempts at change. Design flaws occur when TQM systems are not designed to fit the cultural circumstances of the organization. And the most common reason for failure—ineffective implementation—results when “TQM becomes so much extra work instead of a new way of doing things” (p. 50). Glover also argues that without a change in management evaluation and reward policy,

TQM cannot be taken seriously. He advocates “managers will need to know that their evaluations, and subsequent pay increases and bonuses, are dependent on having high levels of quality, satisfied staff and consumers, and successful TQM implementation in their respective areas of responsibility” (p. 63).

Subsequent research, based on both case studies and surveys, has led to similar conclusions regarding the role management plays in the success of TQM. Using a structured approach, Mann and Kehoe (1995) interviewed the managing directors at 21 leading TQM organizations about organizational characteristics affecting the success of TQM. Of the seven quality-critical organizational characteristics (QCOCs) considered, they found that management style and shared values were the two QCOCs having the most impact on the successful implementation of TQM; process factors were reported to have the least effect. Kanji (1996) identified management’s failure to lead as the primary obstacle to successful TQM. Based on several company case studies, he compiled a list of 12 poor management practices that contribute to failed TQM initiatives. These include a management style that inhibits a learning culture, is based on fear or intimidation, and creates barriers between departments. Matta et al. (1996), in a study of Malcolm Baldrige National Quality Award (MBNQA) winners, found that difficulties in implementing TQM are rooted in three causes: 1) the holistic change of corporate culture; 2) achieving and maintaining employee buy-in and acceptance of TQM; and 3) integration with suppliers and customers. However, the only factor that 100 percent of the MBNQA winners considered critical to the success of TQM was top management’s commitment and involvement. Examining middle managers’ perceptions about the relationship between quality management practices and organizational climate at Taiwan’s top manufacturing companies, Kuei et al. (1997) found a stronger emphasis on top management leadership at higher quality organizations.

Recent studies continue to find that management plays a critical role in an organization’s successful quality transformation. Gunasekaran (1999) examined the enablers of TQM implementation in a British manufacturing company using structured interviews

of employees from different functional areas of the organization. Emphasizing people-oriented factors, such as teamwork and empowerment, he found that the major enabler of TQM implementation was communication between managers/supervisors and staff, and that poor communication between departments was a real barrier to implementing TQM. Based on the earlier work of Mann and Kehoe (1995), Zhang (2000) conducted structured interviews of managers at 10 manufacturing companies in the Netherlands. He found that top management commitment had the greatest effect on product quality. And in a recent longitudinal study of five organizations, Van der Wiele and Brown (2002) still find management-related factors at the core of what affects the longer-term sustainability of quality management. The company cases studied reveal that the tenure of the CEO and executive board, as well as the management system and extent to which quality is integrated into the system, impact the continuity of quality management over time.

The success of TQM depends largely on management’s ability to lead the organization’s quality transformation. In addressing why transformation efforts fail, Kotter (1995) identified eight common management errors: 1) not establishing a sense of urgency; 2) not creating a powerful enough guiding coalition; 3) lacking a vision; 4) not communicating the vision; 5) not empowering others to act on the vision; 6) not planning for short-term wins; 7) not consolidating improvements and producing more change; and 8) not institutionalizing new approaches. In a study of companies that won the Australia Quality Award, Abraham, Crawford, and Fisher (1999) found the key factor in achieving a successful change to a quality culture was management support. They state “managers must be clearly perceived to support the change through communication, resource allocation, and recognition/reward” (p. 127). Recently, Leonard and McAdam (2002) reiterated the importance of upper management participation in the quality transformation through their exploration of strategic quality management.

From this review of the literature, it is apparent that many of the obstacles found to hinder TQM efforts (such as poor communication, lack of employee

empowerment, inadequate resources, employee resistance to change, inadequate performance evaluation and reward systems, and so on) are linked to how effectively the quality transformation is managed. Ultimately, it is management's responsibility to plan for, lead, and effect the organizational change required for TQM success.

RESEARCH OBJECTIVES

In this study survey-based research is conducted that focuses on the obstacles associated with managing the TQM transformation. Scale items, based on the obstacles cited in the literature, as well as personal interviews with local managers, include many of the same items used in similar studies (Ngai and Cheng 1997; Salegna and Fazel 2000). Ngai and Cheng (1997) used a 17-item scale to survey quality managers in Hong Kong; Salegna and Fazel (2000) used a 12-item scale to survey company presidents and CEOs in the United States. In this study quality managers in the United States are surveyed using a 25-item scale, similar to those used by these researchers, that includes items dealing with employee empowerment, resistance to change, employee training, resources, strategic planning, and customer focus. This scale also includes some additional items on benchmarking, joint planning with suppliers, and management's compensation. Like previous research, factor analysis is used on the scale items to empirically derive obstacles to TQM.

A second objective of this study is a further analysis of the data to examine the relationships between obstacles and several different measures of the perceived success (or failure) of TQM. Four of the items included in this scale can be considered potential outcomes of failed TQM. Other researchers have used two of these items, employee turnover and the high cost/benefit ratio of implementing TQM, to measure TQM success (see Ahmadi and Helms 1995; Guimaraes 1997). The other two items deal with management turnover and perceptions of whether quality improvement results meet expectations. Establishing a link between various obstacles and specific measures of perceived TQM success helps to provide some insight on how to better manage the quality transformation process.

Therefore, the research questions to be addressed in this study are:

1. What obstacles associated with managing the quality transformation are perceived as real barriers to TQM success?
2. How do these obstacles relate to specific outcomes that measure the perceived success (or failure) of TQM efforts?

METHODOLOGY

Sample

Data for this study were gathered using a mail questionnaire. A national sample of quality control and quality managers was randomly selected from the membership listing of the American Society for Quality (ASQ). A total of 872 questionnaires were mailed (1000 names were initially selected, but those affiliated with firms located outside the United States were eliminated).

Survey Instrument

The questionnaire consisted of four sections, two of which were relevant for this study. The first section dealt with gathering background information, such as job title of the respondent, size of the organization, and whether the firm was involved in TQM. The other section involved obtaining respondents' opinions about a series of statements representing both barriers to TQM as well as potential undesirable outcomes (see Figure 2).

Respondents to the survey were asked to indicate how true each of these statements was about their organization using a five-point scale (1 = not at all true, 2 = slightly true, 3 = somewhat true, 4 = mostly true, 5 = completely true). These statements were worded both positively and negatively to safeguard against response bias in a specific direction. In order for the results to be comparable across statements, ratings for the positively worded items were recoded before analyzing the data. Thus, a higher mean rating implies a more significant barrier to (or undesirable outcome of) TQM.

Figure 2 Items on the questionnaire.

Item number	Statement
<i>Statements representing potential barriers to TQM:</i>	
1	Strategic plans do not include quality goals.
2	The best practices and/or products of other companies are benchmarked.
3	There are excess layers of management.
4	Quality is treated as a separate initiative.
5	Quality is not everyone's responsibility.
6	Employees are trained in problem identification and problem-solving techniques.
7	There is no joint planning with suppliers.
8	Quality is not effectively measured.
9	Quality is defined by the customer.
10	Employees are not trained in group-discussion and communication techniques.
11	Quality action plans are often vague.
12	The strategic plan is customer driven.
13	Employees are empowered to implement quality improvement efforts.
14	There are adequate resources to effectively employ TQM.
15	Cross-functional teams are not employed.
16	Employees and/or teams are recognized for achievements in quality improvement.
17	Employees are trained in quality improvement skills.
18	Top management is visibly and explicitly committed to quality.
20	Management's compensation is linked to achieving quality goals.
22	The constraints prohibit effective TQM implementation.
23	Employees are resistant to change.
<i>Statements representing potential undesirable outcomes from failed TQM:</i>	
19	Quality improvement efforts rarely meet expectations in terms of desired results.
21	There is frequent turnover of employees.
24	The high costs of implementing TQM outweigh the benefits.
25	There is frequent turnover of management.

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Data Analysis

Exploratory principal components factor analysis was used to determine whether the observed correlations among the 21 items representing barriers to TQM could be explained by the existence of a smaller number of underlying obstacles. Only factors that accounted for a variance greater than one (that is, eigenvalues > 1) were extracted. The rationale behind this approach is that factors with a variance less than one are no better than a single variable, since every variable was standardized and has a variance of one. Varimax rotation, an algorithm that minimizes the number of variables that have high loadings on the orthogonal factors, was used to improve interpretability.

To determine how these obstacles relate to the TQM outcome measures, factor scores from the factor

solution were used as input for regression analysis. That is, regression analysis was used to determine which obstacles (independent variables) were perceived as significant in explaining specific potential undesirable TQM outcomes (dependent variables).

RESULTS

Respondent Profile

A total of 188 quality professionals, out of a sample of 872, returned completed questionnaires for an overall response rate of 22 percent. This compares very favorably with response rates obtained in similar studies (for example, the response rate for the Salegna and Fazel (2000) survey was 5 percent). Of the 188 quality managers responding, 150 (80 percent) were

with manufacturing firms and 38 (20 percent) were with service firms. Most of these firms (40 percent) were mid-sized, having between 100 to 499 employees. About 20 percent were large, having more than 1000 employees. One hundred and twenty-nine (69 percent) reported that their organizations were involved in TQM.

Descriptive Statistics

Prior to performing factor and regression analysis, standard descriptive statistics were used to summarize the responses for individual items. While these results have been published elsewhere (see Tamimi and Sebastianelli 1998), some findings are worth noting here.

Quality managers perceived “not tying management’s compensation to achieving quality goals” as the most significant barrier to TQM. About two-thirds of the respondents indicated that this was either “mostly or completely true” of their organizations. It received the highest mean rating of 3.89. This finding lends empirical support to the views articulated by Glover (1993). Receiving the second highest mean rating (3.16) was the item “best practices and/or products of other companies are (not) benchmarked.” Approximately 36 percent of all respondents replied that this was “mostly or completely true” of their organizations. It is interesting to note that these two items that received the highest mean ratings have not been included in previous survey-based research on TQM obstacles. The three remaining items rounding out the top five barriers to TQM relate to employees. Two directly involve employee training: “employees are not trained in quality improvement skills” and “employees are not trained in problem identification and problem-solving techniques.” These items received mean ratings of 3.11 and 3.08, respectively. The other represents a possible consequence of poor or no employee training: “employees are resistant to change.” This item received a mean rating of 3.02.

The outcome items received comparatively lower ratings. Only about 17 percent of respondents perceived that the statements “quality efforts rarely

meet expectations in terms of desired results” or “there is frequent turnover of employees” to be “mostly or completely true” of their organizations. The mean ratings for these two statements were 2.49 and 2.27, respectively. The other two outcome statements received even lower ratings. Fewer than 10 percent of the quality managers surveyed indicated that the statements “the high costs of implementing TQM outweigh the benefits” and “there is frequent turnover of management” were “mostly or completely true” of their firms. These two items had mean ratings of 1.98 and 1.89, respectively.

While quality managers perceived that barriers to TQM exist within their organizations, their responses suggest that the potential undesirable consequences from such barriers are not widespread. One possible explanation could be due to the population surveyed. Quality managers are likely to consider quality improvement efforts to be a good investment that leads to desirable results such as increased productivity and improved profitability. After all, quality managers would be the advocates for TQM and continuous improvement in their organizations. Yet in attempting to achieve their quality objectives, they probably confront a variety of barriers that they perceive to be caused by others. They are likely to rate statements about such barriers as being true. Conversely, they may be less likely to rate as true those statements that can be perceived as being more directly related to their own quality management efforts.

Factor Analysis

In order to exploit the intercorrelations among the 21 items representing barriers to TQM, factor analysis was performed to identify the underlying constructs. Five factors were extracted that accounted for about 58 percent of the total variation in the observed ratings. Table 1 shows the total and cumulative variance for each extracted factor. Table 2 shows the items that load strongly on each of the five factors. In developing this factor solution, items with loadings less than .35 (after varimax rotation) were dropped.

Table 1 Principal components statistics.

Factor	Eigenvalue	% of Variance	Cumulative % of variance
I	3.671	17.5	17.5
II	2.989	14.2	31.7
III	2.214	10.5	42.2
IV	1.848	8.8	51.0
V	1.428	6.8	57.8

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All of the items loading on Factor I involve employee training in quality-related skills or employee recognition for achieving quality goals. This composite obstacle is labeled as “inadequate human resources development and management.” The items that load on Factor II relate to management’s lack of quality planning. These items either refer explicitly to planning or to the collection of information and data that are necessary for an effective quality planning process (for example, the item that refers to the benchmarking of best practices and/or products). This factor is labeled “lack of planning for quality.” Factor III is interpreted as “lack of leadership for quality.” The items forming this composite seem to deal with the inability of top management to provide the vision and direction necessary for all members of the organization to become committed to quality. Factor IV is made up of items that all relate to the constraints on resources available for effectively implementing TQM. This obstacle is labeled as “inadequate resources for TQM.” And finally, Factor V comprises the two items that refer to one of the key elements of TQM, its emphasis on the customer. This final obstacle is interpreted as “lack of customer focus.”

To assess the internal consistency of the scales (that is, factors), Cronbach’s alpha was computed as a measure of reliability of the derived obstacles. Although the generally acceptable minimum alpha is 0.70, Nunnally (1978) suggests allowing a somewhat lower threshold, such as 0.60 or even 0.50, for exploratory work involving the use of newly developed scales. Reliability analysis results are included in Table 2. All factors had a Cronbach’s alpha greater than 0.50.

Table 2 Factor solution: Items loading on each factor.

Factor I: “Inadequate human resources development and management”

Cronbach’s alpha = .81

- Employees are *not* trained in quality improvement skills.
- Employees and/or teams are *not* recognized for achievements in quality improvement.
- Employees are *not* trained in problem identification techniques.
- Employees are *not* trained in group discussion and communication techniques.
- Employees are *not* empowered to implement quality improvement efforts.
- Cross-functional teams are not employed.

Factor II: “Lack of planning for quality”

Cronbach’s alpha = .79

- Strategic plans do not include quality goals.
- Management’s compensation is not linked to achieving quality goals.
- Quality is not effectively measured.
- Quality action plans are often vague.
- There is no joint planning with suppliers.
- The best practices and/or products of other companies are *not* benchmarked.

Factor III: “Lack of leadership for quality”

Cronbach’s alpha = .75

- There are excess layers of management.
- Quality is not everyone’s responsibility.
- Quality is treated as a separate initiative.
- Top management is not visibly and explicitly committed to quality.

Factor IV: “Inadequate resources for TQM”

Cronbach’s alpha = .53

- Time constraints prohibit effective TQM implementation.
- Employees are resistant to change.
- There are inadequate resources to effectively employ TQM.

Factor V: “Lack of customer focus”

Cronbach’s alpha = .52

- The strategic plan is not customer driven.
- Quality is not defined by the customer.

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Regression Analysis

Four items on the questionnaire are considered potential undesirable outcomes of failed TQM (refer to Figure 2). As noted previously, regression analysis

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Table 3 Regression analysis results.

Dependent variable	Significant independent variables (at alpha < .05)	R-squared
There is frequent turnover of employees.	Factor I: Inadequate human resources development and management	.095
There is frequent turnover of management.	Factor IV: Inadequate resources for TQM Factor III: Lack of leadership for quality	.129
The high cost of implementing TQM outweighs the benefits.	Factor IV: Inadequate resources for TQM Factor I: Inadequate human resources development and management Factor III: Lack of leadership for quality	.190
Quality improvement efforts rarely meet expectations in terms of desired results.	Factor II: Lack of planning for quality Factor IV: Inadequate resources for TQM Factor III: Lack of leadership for quality Factor I: Inadequate human resources development and management Factor V: Lack of customer focus	.338

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was performed using the resulting factor scores as input (independent variables) for each of these four items. Table 3 summarizes the results for these four regressions, showing which obstacles are statistically significant in each case. The method of model building used was stepwise regression.

For the potential outcome “there is frequent turnover of employees,” only one obstacle was found to be statistically significant. It was Factor I, inadequate human resources development and management. This seems logical. Organizations that wish to pursue TQM and be successful in its implementation need to develop their employees accordingly. Employees need to be trained in group discussion and communication techniques, the basic tools of quality and process improvement, and problem-identification/problem-solving skills. Employees need to be empowered to implement quality improvement efforts, and, when successful, they need to receive appropriate recognition for their achievements. Without such opportunities and a supportive environment, employees might feel frustrated, thereby contributing to more frequent turnover.

Two obstacles were found to be significant in explaining “frequent turnover of management.” They were: 1) inadequate resources for TQM; and 2) lack of leadership for quality. It is difficult for managers to implement TQM practices without top management devoting the necessary resources to the effort. Without

commitment from above, commitment that translates into tangible resources such as time and money, most managers would find it impossible to carry out a TQM directive. TQM programs are often viewed with skepticism, and are destined to fail if they do not get the full support of the entire work force. Organizations that score highly on items such as “employees are resistant to change” and “quality is not everyone’s responsibility” most likely have leaders who have failed at communicating their commitment to quality in concrete ways (for example, preparing employees for changing roles and job responsibilities in a TQM environment). In such environments, managers might see little possibility of success leading to more frequent turnover.

In explaining the perception that “the high costs of implementing TQM outweigh the benefits,” three obstacles were found to be statistically significant. They were: 1) inadequate resources for TQM; 2) inadequate human resources development and management; and 3) lack of leadership for quality. An environment that does not invest in the resources necessary to make the implementation of TQM successful undoubtedly sends the message that the benefits derived from TQM are not worth the cost. This view represents a short-term focus. The benefits from a successful TQM transformation are longer range, and it is top management’s responsibility to set the stage for longer-term thinking when it comes to TQM. Improved quality results in

greater productivity, higher levels of customer satisfaction, and, ultimately, higher profitability for the organization (Deming 1986). This ensures its long-term survival in a constantly changing, competitive business environment. Failure to see the long-term benefits of improved quality leads to viewing the allocation of resources to TQM as “cost” rather than “investment” in the future viability of the organization.

Finally, all five obstacles were found to be statistically significant in explaining the somewhat more global statement “quality improvement efforts rarely meet expectations in terms of desired results.” It is interesting to note that the first independent variable to enter the model using the stepwise regression approach (and therefore the factor most correlated with this statement) was the obstacle “lack of planning for quality.” This factor was not significant in explaining any of the other three potential undesirable outcomes. Whether results meet expectations depends, to a great extent, on having clearly articulated expectations. Without an effective planning process, one that includes gathering the data necessary for formulating quality goals (that is, benchmarking data) and monitoring the progress in achieving these goals, it would be difficult to assess whether quality improvement efforts are yielding desired results. The fact that the four other factors are also statistically significant is logical given that inadequate resources, lack of leadership, inadequate human resources development and management, and lack of customer focus would all hinder a firm’s ability to achieve desired results from its quality improvement efforts.

DISCUSSION AND IMPLICATIONS

This survey-based research on the obstacles to successful TQM transformation extends previous research in this area in two ways. First, this survey of quality managers focuses on barriers that are associated with managing the quality transformation. This follows directly from a review of the relevant literature, which indicates that most obstacles to TQM can be linked directly to ineffective change management. Second, this study explores how these obstacles relate

to potential undesirable outcomes of failed TQM. This is in keeping with new research directions that include examining the causal relationships among TQM factors and outcomes.

Using data from a national sample of quality control and quality managers, five underlying obstacles associated with ineffective change management are identified: 1) inadequate human resources development and management; 2) lack of planning for quality; 3) lack of leadership for quality; 4) inadequate resources for TQM; and 5) lack of customer focus. Ngai and Cheng (1997) derived the following four factors from their 17-item scale: 1) cultural and employee barrier, 2) infrastructure barrier, 3) managerial barrier, and 4) organizational barrier. Because the scale used in this study emphasized barriers associated with managing the quality transformation, these five factors offer more refinement and, consequently, a better understanding of the various types of management-related obstacles to TQM.

In addition, using factor analysis to extract obstacles provides a useful framework for evaluating their relative impact on TQM success (or failure). By calculating the average mean for the items comprising each factor, the most significant obstacle to TQM success was found to be “inadequate resources,” followed by “inadequate human resources development and management” and then “lack of planning.” Considering the underlying obstacles rather than individual barriers yields a different ranking in terms of relative importance. Moreover, this type of ranking may prove to be more managerially useful in providing direction and guidance for developing strategies to increase the success of TQM.

Empirically derived constructs for barriers to TQM are also useful to researchers in the field. In their attempts to better understand the effects of TQM on other areas of the firm, researchers can use such constructs to build structural models and test hypotheses linking TQM barriers to performance measures such as productivity, profitability, quality levels, and organizational climate.

Finally, these five “underlying” obstacles have been found to exert differential influence on various potential undesirable outcomes. Outcomes may be

more easily observable than barriers in an organization. For example, it is easier to observe “frequent turnover of employees” than “employees not being empowered to implement quality improvement efforts.” Observable outcomes can point to the unobservable TQM obstacles in need of managerial attention. Moreover, by linking obstacles to outcomes, it is possible to determine which obstacles have the most impact on TQM success. For instance, the authors’ results show that “inadequate resources for TQM” has a significant effect on three of the four outcomes considered: turnover of management, the perception that costs outweigh the benefits of TQM, and the perception that quality improvement results rarely meet expectations. This can allow prioritization in how obstacles should be addressed to decrease the likelihood of failure. Therefore, future research directed at establishing relationships between observable outcomes and underlying obstacles may provide useful direction for managers leading a quality transformation.

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