

**TOTAL QUALITY MANAGEMENT IN MALAYSIAN
GOVERNMENT AGENCIES:
CONDITIONS FOR SUCCESSFUL
IMPLEMENTATION OF ORGANIZATIONAL
CHANGE**

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ABSTRACT: *A major total quality management initiative by the Malaysian government provided the opportunity to survey over 400 managers in twelve of the twenty-four government agencies about the implementation and impact of TQM, and to compare agencies that have won quality awards to those that have not. Managers from award-winning agencies gave higher ratings of their agency's implementation of TQM, their agency head's emphasis on quality-related objectives, and on leadership behaviors such as clear vision, trust, communication, involvement, and encouragement. They also reported higher levels of emphasis on communication and innovation in their organization's culture. Regression analysis further shows that the managers' perceptions of effective implementation of TQM are related to these leadership behaviors and cultural conditions. The results support many of the prescriptions of TQM proponents and change management experts about conditions for successful change, and indicate that they have applicability across nations and cultures, and to the public sector. The conceptual framework for the study and the survey scales should be of interest to researchers on TQM and organizational change.*

The government of Malaysia undertook a major total quality management (TQM) initiative during the 1990s. The TQM program included quality awards for which Malaysian national government agencies could compete. The agencies varied in their success at implementing TQM and in competing for awards. This situation provided an opportunity to compare winners and nonwinners of these awards, and to examine

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relationships between organizational variables and successful implementation. Below, we report the results of a survey of managers and supervisors in twelve of the twenty-four national government agencies, about their perceptions of TQM and related matters. The results indicate that, even though Malaysian organizational cultures tend toward emphasis on hierarchical authority, organizations with more success at implementing TQM showed characteristics similar to those that TQM experts would call for anywhere in the world. In award-winning organizations as compared to nonwinners, managers and supervisors perceived that their leaders placed more emphasis on a clear vision, trust, communication, involvement, and encouragement. They also perceived that their leaders placed a strong emphasis on objectives for the quality program. Members of award-winning organizations also perceived stronger emphasis on communication and innovation. A regression analysis further shows that perceptions of effective implementation of TQM are related to the leadership style and quality emphasis just described, and to an organizational culture that emphasizes innovativeness, trust, and challenging jobs. These results suggest that TQM proponents' prescriptions about conditions for success have applicability across nations and cultures, and to the public sector. They also apply to other forms of change and innovation similar to TQM.

TOTAL QUALITY MANAGEMENT IN MALAYSIA

Malaysia, a constitutional monarchy in Southeast Asia, has a federal system of government with thirteen states, each with their own legislature. The federal government is made up of three branches: the executive, the legislature, and the judiciary. The majority party that controls the federal Parliament chooses its own prime minister and other cabinet ministers.

Quality implementation started in the Malaysian public sector in 1989, with the launching of the Excellent Work Culture Movement. In 1991, an administrative directive entitled "Guidelines for Strategies for Quality Improvement in the Public Service" highlighted the various activities and programs to introduce an emphasis on quality into the public service. The activities were:

- (1) Introduction of the Prime Minister's Quality Award, which is given annually to agencies in recognition of excellence in quality management practice and performance.
- (2) Introduction of a manual on quality management and improvement in the public service, which provides a basic reference for public agencies in their efforts to produce quality service and outputs.
- (3) Provision of training workshops on quality management and improvement for quality and productivity coordinators and their task force members from all ministries.
- (4) Provision of talks and discussions on quality management to increase awareness of the importance of quality in the public service.
- (5) Production of videotapes on quality for use in quality management workshops.
- (6) Promotion, through various media, of slogans stressing the importance of quality, such as "quality is conformance to customer requirements," and "quality through prevention."

- (7) Circulation of a series of guidelines on quality implementation to all agencies by the Prime Minister's Department.

Additional directives followed, establishing quality control circles (QCCs) in public agencies, describing ways to improve the quality of over-the-counter services, directing implementation of TQM in the public service, and mandating the preparation of clients' charters in public agencies. Since 1996, agencies have been required to implement quality management systems in line with MS ISO 9000.

The Malaysian Administrative Modernization and Management Planning Unit (MAMPU) oversees implementation of quality management in the Malaysian civil service, and administers several award programs. The Prime Minister's Quality Award, introduced in 1990, is the premier national quality award. Given out annually, it is the highest award given to agencies in the public, private, and socioeconomic sectors. Agencies that wish to be considered for the award submit an entry form and a report about the agency's quality management. The report describes the organization's general and operating objectives, and its structure and outputs. It also provides information and data on the following criteria (MAMPU 2001):

- the role of leadership in support for quality;
- analysis and use of data in quality efforts;
- the strategic management process for achieving quality;
- utilization of human resources;
- quality assurance standards and procedures;
- evidence of success in quality efforts;
- customer satisfaction; and,
- important innovations.

The selection process for the award is highly competitive. The initial pool of roughly thirty nominees from the public sector is reduced to just one winner. Agencies submit reports to the panel of examiners, which consists of a chairman and three members. The panel visits each agency to verify the contents of its report, and then prepares a report for consideration of an assessment panel, that recommends the agencies to be considered for the Prime Minister's Quality Award to a panel of judges, chaired by the chief secretary to the government.¹ The panel of judges makes the final decisions on the winners (MAMPU 2001). Agencies that demonstrate a high degree of commitment to quality but do not win the Prime Minister's Quality Award automatically qualify for the three Public Service Quality Awards that are offered every year.

The Quality Control Circles Award was introduced in 1984. It is a national award that recognizes quality circles that develop creative solutions to agency problems. Winners are selected based on their presentations of new and creative ideas. Each of the thirteen states sends two quality circles to the national convention each year, where the twenty-six teams compete for the three awards. The Public Service Innovation Award, introduced in 1991, goes to the agency (or to a unit within an agency) that introduces an innovation that increases customer satisfaction. Agencies must demonstrate the

innovativeness of their ideas to two panels in MAMPU to be considered for the award (MAMPU 2001).

LITERATURE REVIEW: DETERMINANTS OF SUCCESSFUL IMPLEMENTATION OF TQM

The Malaysian quality management program raises the question of why some agencies will win the awards and achieve success in implementing TQM, while other agencies will be less successful. We drew from the literature on TQM, managing change, implementation theory, and leadership to develop or locate measures of TQM implementation and impact. We also drew on this review to identify potential determinants of such outcomes, and to develop a framework for studying these potential determinants and the implementation and impact of TQM. One step involved examining literature on critical success factors for TQM, as a basis for developing the dependent variables of TQM implementation and impact (e.g., Black and Porter 1996; Flynn, Schroeder, and Sakakibara 1994; Saraph, Benson, and Schroeder 1989; Zeitz, Johannesson, and Ritchie 1997). This and other research also indicated that the determinants of effective implementation of TQM would include employee characteristics, leadership characteristics, organizational variables, and environmental variables. The conceptual framework in figure 1 shows the variables included in the analysis.

The Importance of Employee Attitudes and Perceptions

Since the study reported here concentrates on the attitudes and perceptions of managers and supervisors in the Malaysian agencies, before describing the variables in figure 1 we need to consider the importance of such individual responses. Researchers have frequently emphasized the importance of such reactions from organizational members. For example, Gunasekaran (1999) found employee attitudes to be an important variable in determining the success of TQM implementation. Damanpour (1991) found that positive managerial attitudes produced a climate beneficial to organizational innovation.

Managers' and supervisors' attitudes figure importantly in change initiatives for a number of reasons. First, the success of major change efforts usually depends on the commitment and behavior of agency heads, managers, and employees. Realizing this, many researchers have emphasized the need to understand perceptions of TQM implementation (Connor 1997; Gunasekaran 1999; Dooley and Flor 1998; Shea and Howell 1998; Syed Kadir, Abdullah, and Agus 2000; Zeitz 1996). Second, previous research has shown that employee perceptions correlate with desired organizational outcomes (Vroom 1964; Mann and Kehoe 1995; Coyle-Shapiro 1999; Schneider 1990; Schneider, Brief, and Guzzo 1996; Schneider and Bowen 1993; Ajzen and Fishbein 1980; Rokeach and Kliejunas 1972). Third, efforts at improving management practices often include attempts to improve employee perceptions of their environments as a way of encouraging employees to support change efforts, such as TQM programs (Costigan 1995; Prince 1994; Schneider and Bowen 1993). For all these reasons, managers' responses about the variables in the framework in figure 1 should be of value to those interested in TQM and organizational change in public management.

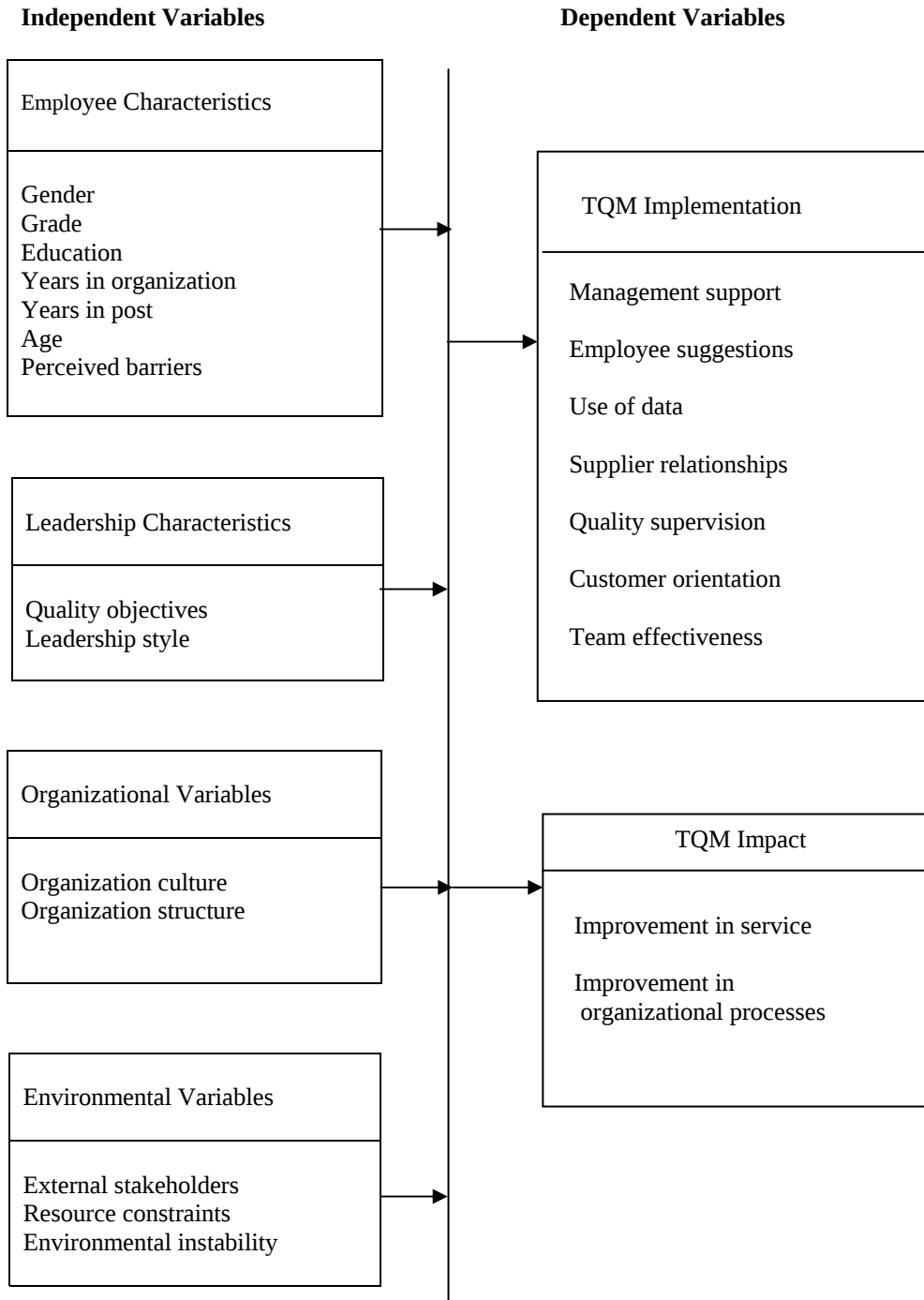


FIGURE 1. Conceptual Framework for Analysis of TQM Implementation and Impact

The Dependent Variables: TQM Implementation and Impact

To assess managers' and supervisors' perception of the implementation of TQM, we drew on the background literature to develop the set of dimensions indicated in figure 1. (The methods section below describes the questionnaire items for the variables

in the framework.) The available research and literature suggest that TQM has been conscientiously and extensively implemented when members of the organization perceive high levels of the following conditions: management support for TQM (management support), use of employee suggestions in decisions about improvements in work (employee suggestions), use of data about quality of work and products and services (use of data), availability of high quality supplies and materials (supplier relationships), high quality supervision (quality supervision), team effectiveness (team effectiveness), and a customer orientation (customer orientation) in defining and pursuing quality. To assess TQM impact, the survey asked the respondents to rate the degree to which TQM has led to improvements in service and improvements in organizational processes.

Employee Characteristics

Personal characteristics. The literature on TQM and on organizational change attaches great importance to the leader of the organization, but also to management teams or coalitions (O'Reilly, Snyder, and Boothe 1993). Since the study reported here focused on the views of managers and supervisors, whose involvement is crucial to initiatives such as TQM, one needs to assess whether their personal characteristics influence their reactions. As figure 1 indicates, these characteristics include the pay grade of their position, their years of education, years of service in the organization, years of service in the current position, age, and gender. Previous research did not always provide conclusive evidence about the way these variables would influence perceptions of TQM, and we did not have firm predictions or hypotheses about them, but they need to be taken into account, at least as statistical control variables.

Grade level. Zeitz (1996) found that the lowest-ranking employees in an Environmental Protection Agency (EPA) office had the most favorable attitudes toward TQM. Managers at lower pay grades might support TQM implementation since they would benefit from it by gaining greater control over their jobs. On the other hand, those at higher grades may feel more confident and therefore more receptive to change.

Education. More highly educated employees generally show more receptiveness to new ideas, so we expected education to relate to perceived success at implementing TQM (Kimberly and Evanisko 1981; Hua, Chin, Sun, and Xu 2000). However, it was equally plausible that more highly educated employees would anticipate difficulties in implementing TQM in a public-sector environment where political demands might conflict with the objectives of TQM (Morgan and Murgatroyd 1994), customer demands conflict with each other (Swiss 1992), and improvements take a long time to materialize (Hunt 1992; Mani 1996).

Years of service. Huber, Sutcliffe, Miller, and Glick (1993) and Miller (1991) concluded that top managers with long tenures become set in their ways and resist changes, while top managers new to their posts implement more changes than those who have been in their posts longer. Managers and supervisors below the top may show a similar tendency. As with pay grade, however, those with longer tenure may feel more confident and more receptive to change.

Age. Age has often shown negative relations to risk-taking, (Hambrick and Mason 1984). On the other hand, Huber et al. (1993) did not find a significant relationship between age and organizational change.

Gender. Hosseini (1995) and Currie (1997) did not find any significant relationship between gender and TQM implementation. We, nevertheless, considered gender an important variable to include.

Perceived barriers. The literature on TQM emphasizes employees' perceptions of barriers as one of the major potential impediments to quality implementation. These barriers may include loss of control by managers and failure to include quality activities in performance standards (Zeitz 1996). Tamimi and Sebastianelli (1998) also found that managers perceived many barriers to implementation, such as lack of a linkage between TQM and reward systems, lack of benchmarking, inadequate training in quality procedures, and resistance to change. Connor (1997) found that negative attitudes towards TQM were mainly due to failure to address the needs and fears of employees during implementation.

Leadership Characteristics

Quality objectives. Management scholars emphasize the imperative that top management set objectives to determine the focus of an organization's activities (e.g., Daft 1998). We hypothesized that the more managers perceive that their agency heads place importance on quality objectives such as customer satisfaction and quality of supplies and services, the more managers would report higher levels of TQM implementation and impact.

Leadership style. The literature on managing change emphasizes the role of high-level leaders in guiding the development of a vision for change and the efforts to fulfill the vision (Burke and Litwin 1992; Greiner 1967; Jick 1993; Kotter 1995). The Federal Quality Institute (1994) noted that leaders of high-performing public organizations show high commitment to public service and their organization's mission; they empower employees and communicate effectively with them. The stream of literature on transformational leadership has similar implications, concluding that transformational leaders make their followers more aware of the importance of their tasks, motivate personal sacrifices in achieving objectives, develop visions, obtain commitment to them, and facilitate learning (Burns 1978; Bass 1985; Bennis and Nanus 1985). Avolio (1994) highlighted the roles of transformational leaders in harnessing employee commitment to TQM through building trust, providing inspiration and motivation, challenging accepted ways of doing things, and taking into account needs for personal development. West, Berman, and Milakovich (1998) found that transformational leadership strategies were significantly related to TQM implementation, and Masi and Cooke (2000) reported similar results.

As described below, the survey measured leadership style with questions about transformational leadership characteristics, using an existing scale (Carless, Weaving, and Mann 2000). The questions asked the managers to assess the agency head's vision, competence, staff development, encouragement, recognition, innovative thinking, and clear values, as well as the leader's ability to foster trust, involvement, and pride. We hypothesized that where managers and supervisors report higher levels of such behaviors, they will report higher levels of TQM implementation and impact.

Organizational Factors

Organization culture. Management scholars have increasingly noted the importance of organizational culture as an influence on organizational change processes (Hennessey 1998; Kotter and Heskett 1992; Mintzberg 1983; Peters and Waterman 1982; Schneider, Brief, and Guzzo 1996). Schneider (1990), Schneider and Bowen (1993), and Allen and Brady (1997) found that perceptions of employees concerning organizational policies and environment are positively related to organizational outcomes such as quality and productivity. Dellana and Hauser (1999) found that an adhocracy culture characterized by flexibility and innovation was more strongly linked to TQM success than hierarchical, rational, or group cultures. Others have emphasized the need to ensure that the organization's culture supported TQM implementation (Shin, Kalinowski, and El-Enein 1998; Wong 1998; Westbrook 1993; Berry 1991).

The survey asked managers and supervisors about their perceptions of cultural elements that Zeitz, Johannesson, and Ritchie (1997) identified as relevant to TQM implementation and impact. These cultural elements include communication, job challenge, receptivity to innovation, trust, and social cohesion. Allen and Brady (1997) found communication to be positively related to TQM implementation. Job challenge will facilitate TQM implementation, since employees who are accustomed to challenging jobs should be more receptive to further enrichment through working in teams, utilizing data to solve problems, and responding to customer needs. An innovative culture will support TQM ideas about reexamining the way things are done in organizations. Trust between management and employees is necessary since managers need to delegate greater responsibility to their subordinates. Finally, social cohesion will contribute to better teamwork and thereby facilitate TQM. We hypothesized that when managers and supervisors perceive higher levels of these cultural elements, they will report higher levels of TQM implementation and impact.

Organization structure. Organization structure should also influence the implementation and impact of TQM. Organically structured organizations will be more flexible and decentralized, with fewer levels (Burns and Stalker 1961; Mintzberg and Quinn 1992). Tata, Prasad, and Thorn (1999) provide empirical support to show that organic structures aid in TQM implementation. Mechanistic organizations rely on hierarchy, formal authority, and written rules to conduct business. Such organizations constrain employee freedom and flexibility and are more suitable for stable environments (Mintzberg and Quinn 1992; Damanpour 1991). On the other hand, Spencer (1994) and Shea and Howell (1998) contend that TQM implementation is facilitated by both mechanistic and organic elements. In a similar vein, Sitkin, Sutcliffe, and Schroeder (1994) emphasize the need for managers to balance control and learning in implementing TQM. These conflicting views make it important to examine the role of structural differences in relation to managers' views of TQM implementation and impact. The survey included a scale of "organicity" (Khandawalla 1977) that assessed perceptions of the degree to which an organization is organically structured as opposed to mechanistically structured. We hypothesized that higher perceived organicity would be associated with higher levels of perceived TQM implementation and impact.

Environmental Factors

External stakeholders. The literature on strategic management (Freeman 1984; Bryson 1995; Certo and Peter 1990) and public policy implementation (Mazmanian and Sabatier 1989; Sabatier and Jenkins-Smith 1993) emphasizes the important role of external groups and advocacy coalitions in bringing about change. External stakeholders can support TQM or debilitate it. In the Malaysian context, stakeholders such as MAMPU, Parliament, and interest groups can influence TQM implementation. The survey included questions asking how strong an influence such stakeholders exert on quality practices in the agency.

Resource constraints. Resource availability plays an important role in organizational change (Aldrich 1979; Dess and Beard 1984; Miles 1980). Slack resources help an organization to cope with environmental uncertainties and to sustain innovation (Cyert and March 1963; Damanpour 1991). Conversely, resource constraints impede innovation, flexibility, and TQM implementation (Longo and Cox 2000; Berman and West 1995). Hunt (1992) stresses the need to ensure adequate resources for TQM implementation. The European model for total quality management (Zink 1997; Tang and Zairi 1998) clearly specifies resources as an enabler of TQM. A scale on the survey included questions about resource constraints, and we expected that more perceived resource constraints would be associated with lower levels of the independent variables of implementation and impact.

Environmental instability. Organization theorists tend to regard environmental instability as inducing more organic structures and more change-oriented cultures among organizations that survive in such conditions (Aldrich 1979; Dess and Beard 1984; Huber et al. 1993). On the other hand, jolts from the environment, such as drastic personnel reductions, can have adverse consequences for staff morale that in turn can impede initiatives such as TQM (Ban 1995; Durant and Wilson 1993). Since the literature thus contains an implicit controversy among scholars and experts, the role of environmental instability is an important factor to control for, or take into account, in the analysis.

METHOD

Sample

Twelve Malaysian national government agencies were selected for the study. While their selection was not random, the agencies were chosen to represent winners and non-winners in the award competition, and to represent a range of sizes and of governmental services and activities. Eight of the agencies were small (with 500 or fewer employees), one medium (with 501–1,000 employees), and three were large (with 1,001 or more employees). Seven of the agencies had won one of the quality awards. Five had won the Prime Minister's/Public Service Quality Awards, one had won the Quality Control Circles Award and one had won the Public Service Innovation Award. The other five organizations were not quality award winners but were actively implementing quality programs.

The questionnaire was administered to 1,003 managers and supervisors in the twelve organizations through the quality manager in the organization. A total of 563 questionnaires were returned, which represented a response rate of 56 percent.

However, due to the use of listwise treatment of missing values, a final dataset of 413 responses was utilized for data analyses.

Measures

Please see appendix A for the questionnaire items and response choices that served as measures for the variables in the framework in figure 1, and appendix B for the reliability coefficients for each scale.²

Employee Characteristics

Personal characteristics of respondents. Respondents were asked to provide information concerning grade of position, years of education, years in the present organization, years in the present post, age, and gender.

Perceived barriers. The measure for perceived barriers included six of the ten items developed by Zeitz (1996). The mean score of the six items constituted the index of employee-perceived barriers.

Leadership Characteristics

Quality objectives. We developed three items to measure perceptions of the importance that the agency head attaches to the quality indicators of customer satisfaction, quality of supplies, and assessment of quality of products/services. A mean score was calculated for the three items.

Leadership style. The survey included the Global Transformational Leadership (GTL) scale developed by Carless, Weaving, and Mann (2000), described earlier, as the measure of leadership style. Leadership style was calculated as the mean of the seven characteristics.

Organizational Variables

Organization culture. Organization culture was measured with scales developed by Zeitz, Johannesson, and Ritchie (1997) to measure communication, job challenge, trust, innovation, and social cohesion. The scale scores were calculated by averaging the score of the items in each scale.

Organization structure. Organization structure was measured using four items from the seven-item organicity scale developed by Khandwalla (1977) and measures the extent to which organization is structured mechanistically versus organically. An organization's mean score on the four items was used as its organicity index. Higher scores indicate more organic structure.

Environmental Variables

External stakeholders. We developed a scale to assess the respondents' perceptions of the influence of external stakeholders in the Malaysian public sector on TQM implementation and impact. A mean score was calculated for the seven items.

Resource constraints. Six items were used to assess the perceived effects of resource constraints on TQM implementation and impact. A mean score was calculated for the six items.

Environmental instability. Five items were used to assess the severity of changes associated with the budget, organizational policies, personnel, customer demands, and organizational structure. These items were selected from a list of changes often encountered by organizations (Huber et al. 1993; O'Reilly, Snyder, and Boothe 1993). A mean score was calculated for the five items.

TQM Implementation

TQM implementation was measured using seven scales for the seven dimensions listed in figure 1. The questionnaire included seven scales developed by Zeitz, Johannesson, and Ritchie (1997) to measure management support, employee suggestions, use of data, supplier relationships, quality supervision, continuous improvement, and customer orientation. We added two scales measuring training, with items from Ahire, Golhar, and Waller (1996) and Saraph, Benson, and Schroeder (1989), and measuring perceived teamwork with items from Morrow (1997). After factor analysis and other forms of item analysis, we used the seven scales described in appendix A for the dimensions of implementation listed in figure 1. Items in each of the scales were averaged to obtain the score for that scale. Scale scores were totaled to obtain an overall TQM implementation score.

TQM Impact

TQM impact was measured with a scale for improvement in service and another for improvement in organizational processes, based on the work of Berman and West (1995). As appendix A shows, improvement in service concerned such matters as productivity and cost reduction, whereas improvement in organizational processes concerned such matters as commitment to stakeholders, group decision-making capabilities, and timeliness of internal processes. Mean scores on the items were used as scale scores. Scale scores were totaled to obtain the TQM impact score.

Interviews with Organizational Leaders

In addition to the survey, the study involved interviews with agency heads and quality managers that produced some more qualitative evidence about the TQM programs and their contexts that merits brief attention. These agency representatives were asked about: 1) how many years the agency had been implementing TQM; 2) whether the implementation approach was top-down, bottom-up, or mixed; 3) whether TQM affected both core activities (such as road construction or law enforcement) and support activities (such as personnel administration); and, 4) whether TQM requires modification for adoption in the public sector.

Results

Table 1 reports a comparison of the mean scores on the variables in the framework in figure 1 for the Quality Award Winners and for the nonwinners. The responses about TQM implementation and impact, and about leadership and culture in the agencies,

TABLE 1
Comparison of Mean Responses from Managers in Quality Award-winning Agencies to
Responses from Managers in Nonwinning Agencies

<i>Variables</i>	<i>Award Winners</i>	<i>Nonwinners</i>	
	<i>M (SD)</i>	<i>M (SD)</i>	<i>t-value</i>
Employee Characteristics			
Gender (F=O, M=1)	0.75 (0.43)	0.71 (0.46)	na
Grade	5.10 (1.28)	4.65 (1.53)	3.23***
Education	15.53 (2.32)	15.58 (2.01)	-.22
Years of service in organization	13.62 (8.44)	14.67 (9.25)	-1.19
Years of service in post	8.04 (7.32)	8.75 (7.88)	-.94
Age	38.20 (7.69)	39.73 (8.18)	-1.93
Perceived barriers	2.49 (0.86)	2.72 (0.72)	-2.87**
Leadership Characteristics			
Quality Objectives	4.01 (0.80)	3.80 (0.73)	2.67**
Leadership style	3.27 (0.81)	3.02 (0.90)	2.91**
Organizational Variables			
Organization culture			
Job Challenge	3.41 (0.82)	3.26 (0.87)	1.62
Communication	3.22 (0.84)	3.05 (0.90)	2.00*
Trust	3.09 (0.90)	2.95 (0.89)	1.51
Innovation	3.47 (0.81)	3.16 (0.91)	3.62**
Social cohesion	3.49 (0.78)	3.41 (0.89)	.89
Organization structure	3.86 (1.21)	3.73 (0.94)	1.28
Environmental Variables			
External stakeholders	3.05 (0.73)	3.07 (0.77)	-.25
Resource constraints	2.60 (0.88)	2.77 (0.82)	-1.87
Environmental instability	2.69 (0.72)	2.79 (0.68)	-1.44
TQM Implementation			
Management support	3.58 (0.75)	3.28 (0.82)	3.73**
Employee suggestions	2.58 (0.91)	2.48 (0.94)	1.09
Use of data	2.82 (0.94)	2.72 (0.93)	1.03
Supplier relationships	3.04 (0.79)	2.83 (0.76)	2.71**
Quality supervision	2.99 (0.92)	2.79 (0.95)	2.03*
Customer orientation	2.82 (0.71)	2.70 (0.79)	1.58
Team effectiveness	3.35 (0.73)	3.17 (0.84)	2.26**
TQM Impact			
Improvement in service	1.02 (0.49)	0.93 (0.49)	1.78
Improvement in organizational processes	0.85 (0.54)	0.77 (0.52)	1.36

Note: * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

The n for respondents from quality award-winning agencies is 255 and for nonwinners is 158 (listwise deletion of missing data).

T-tests are not computed for gender because it is a nominal level variable.

tend to be positive, and more positive for the award-winning agencies. Note that, due to the response choices, an average score of 3 or above for the implementation, impact, leadership, and culture variables is positive. A response choice of 3 for the items in these scales meant “often,” so a mean response between 3 and 4 indicated a response between “often” and “very often.” At the same time, the mean responses are not so positive that they suggest that the responding managers felt under pressure to express highly favorable attitudes about their agency leaders, cultures, and TQM programs. In addition, the survey also asked managers to express concerns about TQM, over such matters as the inadequacy of leadership, resources, training, and incentives. As one might realistically expect, a small number of employees expressed such concerns. Thus, the responses about TQM were generally positive, and more so in the award-winning organizations, but not to an apparently inflated degree.

For the comparisons on variables where we hypothesized a relationship between that variable and TQM implementation and impact, the comparisons were virtually all in the expected direction. The respondents from award-winning organizations reported higher average levels of all the variables that the literature would predict to relate positively to TQM implementation and impact.³ The winning organizations also had uniformly higher levels on all the subscales for TQM implementation and impact. While the mean differences are not all extremely large, that could result from the existence of active TQM programs in the organizations that have not yet won an award, but may actually have a good program underway. The differences are certainly uniform and consistent. Using statistical significance of the t-test as an indication of the largest differences between the winners and nonwinners, one notes that the winners had higher average grade levels and lower perceived barriers to implementation of TQM. (Grade did not figure prominently in additional analyses reported below, and thus does not appear to justify efforts at interpretation of this difference.) The respondents from award-winning organizations also perceived higher levels of leadership emphasis on quality objectives and higher levels of the positive leadership style that TQM proponents would recommend (involving more emphasis on positive vision, encouragement, staff development, trust, cooperation, thinking in new ways, adherence to clear values, and pride and respect). Among the organizational variables, the award-winning organizations were most distinct from the others on perceived emphasis on communication and innovation in the organization. The award-winners show the largest differences on management support, supplier relationships, quality supervision, and team effectiveness. A series of pairwise comparisons of pairs of the agencies indicated that the mean differences between the winner and nonwinners tended to be consistent across comparisons between individual organizations from the two categories.

Using statistical significance as a criterion for the strongest results is consistent with advice from Cook and Campbell (1979) in their authoritative discussion of research design. They expressed approval of reporting significance tests even where assumptions of random sampling are not met, as evidence that the analysis would have achieved statistical significance if such assumptions were met, and therefore as evidence of the strength of the relationship between the variables. As in most research on organizations and management, the sample for this study is not random, so the study does not meet the assumption of random sampling, and other assumptions could be debated as well.

TABLE 2
Regression of TQM Implementation on the Independent Variables

<i>Independent Variables</i>	<i>Beta (β)</i>	<i>t-value</i>
Employee Characteristics		
Gender	.08	2.64**
Grade	-.01	-.28
Years of education	-.07	-2.43*
Years of service in post	-.03	-.75
Age	.01	.16
Perceived barriers	.01	.17
Leadership Characteristics		
Quality objectives	.08	2.32*
Leadership style	.25	5.84***
Organizational Variables		
Organization culture		
job challenge	.20	6.30***
trust	.19	4.34***
innovation	.20	4.40***
social cohesion	.06	1.46
Organization structure	.07	2.10*
Environmental Variables		
External stakeholders	.05	1.51
Resource constraints	.02	.68
Environmental instability	.01	.25
R ² = .704		
Adjusted R ² = .692		
DF = 16, 396		
F = 58.975		
N = 413		

Note: *p< .05 **p< .01 ***p< .001

Still, the overall pattern of relationships in table 1 and the results described below present a pattern consistent with the literature on successful implementation of TQM. It is noteworthy that this pattern appears in public agencies and in a particular national setting where organization and management often involve emphasis on hierarchical authority.

Table 2 reports the results of a regression of the mean score for the TQM implementation scales on the other variables in the conceptual framework for the study. These results generally coincide with those of table 1. Again using statistical significance as an indication of the strongest results, one notes that where respondents perceive higher levels of the dimensions of TQM implementation, they also report higher levels of leadership emphasis on quality objectives and of the leadership style described above. They also perceive higher levels of job challenge, trust, and innovation in their organizations, and higher levels of structural organicity. In addition, the statistically significant relationship for gender indicates that males were more likely to perceive higher levels of implementation, a result for which we have no ready interpretation. Education is negatively related to TQM implementation. As discussed earlier, this may reflect greater concerns about challenges that TQM raises, or that more

educated managers feel that the highly participative and team-oriented TQM processes diminish their educational advantages. The independent variables communication, and years of service in the organization were not included in this regression because they correlated highly with other variables. They were removed to eliminate multicollinearity.⁴

Table 3 reports a regression of the perceptions of TQM impact on the other variables in the framework. This analysis also indicates that the relationships for impact are not as strong as are those for implementation. Again, however, education is negatively related to perceived impact and the leader's emphasis on quality objectives is positively related to perceived impact. Again, leadership style (emphasizing positive vision, trust, encouragement, development, new ways of thinking, and adherence to clear values) shows a particularly strong relationship to the dependent variable, in this case TQM impact.

The results in tables 2 and 3 show the relations between variables such as leadership, organizational culture, and TQM implementation and impact across all the agencies. Various additional analyses (available from the authors) indicate that these relations reported above are stronger in the award-winning agencies.

TABLE 3
Regression of TQM Impact on the Independent Variables

<i>Independent Variables</i>	<i>(β)</i>	<i>t-value</i>
Employee Characteristics		
Gender	.05	1.21
Grade	-.02	-.53
Years of education	-.12	-2.91**
Years of service in post	-.05	-1.10
Age	-.04	-.75
Perceived Barriers	-.05	-1.07
Leadership Characteristics		
Quality objectives	.11	2.25*
Leadership style	.24	3.84***
Organizational Variables		
Organization culture		
job challenge	.01	.20
trust	.11	1.73
innovation	.09	1.40
social cohesion	.10	1.65
Organization structure	.09	1.86
Environmental Variables		
External stakeholders	.05	1.11
Resource constraints	.06	1.24
Environmental instability	-.03	-.63
R ² = .408		
Adjusted R ² = .384 DF = 16, 393		
F = 16.936		
N = 410		

Note: * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Information from Interviews with Agency Leaders

The results of the interviews indicated that award-winning agencies tended to be early adopters of TQM, a finding consistent with findings of other researchers (Mohr-Jackson 1994). All of the award winners had been implementing TQM for at least five years, while only two of the five nonwinners had TQM programs going on for that long. Representatives of five of the award winners reported that their approach to implementation was a mixture of top-down and bottom-up approaches, with the other two reporting a top-down approach. Among the nonwinners, all reported a top-down approach except one, whose representatives reported a bottom-up approach. While this is limited evidence, it tends to support the conclusion that success at implementing an initiative such as TQM requires both firm commitment from top leadership, and as much participation and involvement of all levels as possible. This is certainly consistent with many observations about successful, large-scale organizational transformations (e.g., Deming 1986; Greiner 1967; Kotter 1995). Concerning implementation in core and support activities, representatives for four of the winners reported implementation in both, while for the other three winners representatives reported implementation in core activities only. Among the nonwinners, four reported implementation in the core only, and one reported implementation in both. Thus, the representative of the award winners showed a greater tendency to report comprehensive implementation. Finally, most of the agency representatives reported no apparent need for modifications to TQM for the public sector, but there was a slightly greater tendency among the winners to report no need for modifications (i.e., five of the seven winners reported no need, while three of the five nonwinners did). Thus, the award-winning agencies tended to be earlier adopters, to employ approaches mixing top leadership commitment to TQM with participation of other levels, reported more comprehensive implementation of TQM to more aspects of the agency's activities, and showed somewhat less of a tendency to perceive a need for modifications for the public sector.

CONCLUSIONS AND DISCUSSION

The Malaysian national government undertook a comprehensive initiative in total quality management that led to extensive implementation of TQM processes in many of the government agencies. The framework, variables, and questionnaire items in this study provide an example of a method for assessing implementation of such a program, at least according to the views of managers and supervisors within such an administrative system. While the study relies mainly on the perceptions of the managers, such perceptions and attitudes are usually vital to the successful implementation of TQM programs and other change initiatives.

One might expect Malaysian government agencies to show high levels of emphasis on hierarchical authority, with leadership patterns to match. The survey found, however, that while firm leadership commitment figured importantly as an influence on perceptions about TQM implementation and impact, the agencies more successful at implementing TQM show leadership patterns and organizational cultural features very consistent with those espoused by TQM experts and proponents. The results support the conclusion that such patterns of leadership and cultural orientation apply in different

nations and in the public and private sectors. Where managers perceived the agency head as strongly committed to quality-related objectives, they reported higher levels of TQM implementation and impact. That is, they perceived higher levels of the conditions and factors that experts on TQM consider critical to effective implementation, such as management support for quality processes, effective relations with suppliers, high quality supervision of the quality process, and effective teams.

Stronger still were the results for leadership style. Managers in the award-winning agencies were more likely to report that their agency head displayed transformational types of leadership behaviors. They rated their agency heads higher on positive vision, encouragement, staff development, trust, cooperation, thinking in new ways, adherence to clear values, pride and respect. Higher ratings of agency heads on such behaviors and orientations were strongly related to higher perceived levels of the critical TQM implementation factors, and to perceptions of TQM impact.

Cultural and structural factors also showed relations to greater success in TQM implementation. Managers in award-winning organizations reported higher levels on the cultural dimensions of job challenge, communication, trust, and innovation, with particularly large differences on communication and innovation. They reported higher levels of organicity of structure. Higher levels on all these dimensions were significantly related to TQM implementation. These results add evidence to support the observations in the literature on TQM and organizational change about the greater likelihood of success in organizations that have fostered, or can foster, higher emphasis on such processes and conditions as communication, trust, and innovativeness. Researchers and experts on other forms of organizational change often emphasize the need to work on the culture first, or to ensure that the right conditions of trust and communication are in place.

The negative relations between education and perceptions of TQM implementation and impact proves somewhat troubling. It may indicate more skepticism about TQM on the part of more highly educated managers, or more frustration over the more participative procedures that may erode the advantages of more education, as might be the case when a manager or supervisor with advanced education feels that his or her expertise is not getting proper respect. While the evidence available from the survey does not provide a clear interpretation, a constructive conclusion involves suggesting that TQM implementers remain sensitive to the possibility that more educated managers may experience more skepticism or frustration with the program.

The absence of effects for environmental variables indicates a lack of support for suggestions that the public-sector context, involving such conditions as potential influence by external political authorities, has a strong effect on TQM implementation. One can debate many issues about whether techniques such as TQM or other management procedures or programs require adaptation for the public sector. Respondents in this survey and in the interviews, however, did not express a strong sense of the public sector as a distinctive context for implementation of TQM. Of course, the results may be influenced by the particularly comprehensive and sustained TQM program in the Malaysian national government that supports agencies with strong programs and insulates them from interventions and disruptions which might occur more often in other public sector contexts. Nevertheless, the survey and interview evidence here supports a more generic conclusion in this instance. They support the

conclusion that TQM and similar change initiatives fare best where top leadership shows firm commitment to objectives, but also emphasizes vision and clear values, encouragement, development, trust, cooperation, innovative thinking, pride and respect. In a similar vein, successful implementation appears more likely in organizations with cultural conditions emphasizing challenge, communication, trust, and innovation.

APPENDIX A. QUESTIONNAIRE ITEMS AND SCALES USED IN THE SURVEY OF MANAGERS AND SUPERVISORS IN MALAYSIAN GOVERNMENT AGENCIES

Employee Characteristics

Questionnaire items are available from the authors for the variables of gender, pay grade, years of education, years of service in the organization, years of service in the position, and age.

Perceived Barriers

How much are the following matters barriers in your work?

- Our program commitments are focused on quantity versus quality.
- Managers are threatened by the amount of control TQ gives employees.
- Performance standards do not reflect TQ activities.
- Management lacks the knowledge to move a quality improvement program forward.
- Supervisors discourage the use of quality improvement techniques.
- The TQ approach may be a passing fad, so why put much effort into it.

(Response choices: 1 = Not at all, through 5 = Very much)

Leadership Characteristics

Quality Objectives

Please assess the importance of the following items to your agency head:

- Customer satisfaction.
- Quality of supplies.
- Assessment of quality of products/services.

(Response choices: 1 = Very low importance, through 5 = Very high importance)

Leadership Style

How often does your agency head perform each of the following:

- Communicates a clear and positive vision of the future.
- Treats staff as individuals, supports and encourages their development.
- Gives encouragement and recognition to staff.

- Fosters trust, involvement, and cooperation among team members.
 - Encourages thinking about problems in new ways and questions assumptions.
 - Clear about his/her values and practices what he/she preaches.
 - Instills pride and respect in others and inspires me by being highly competent.
- (Response choices: 1 = Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5 = Almost always)

Organizational Variables

Organization Culture

(Response choices for the following five subscales: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Job challenge

- My job requires me to use a number of complex or high-level skills.
- I have new and interesting things to do in my work.
- My work challenges me.

Communication

- Management here does a good job of communicating with employees.
- This organization gives praise and recognition for outstanding performance.

Trust

- All in all, you can have trust and confidence in higher management in this organization.
- My supervisor shows complete trust in employees' ability to perform their job well.
- I feel free to discuss problems or negative feelings with my supervisor.
- Within reason, people in this organization can say what they want without fear of punishment.

Innovation

- We are encouraged to make suggestions for improvements in our work.
- People in my work unit are encouraged to try new and better ways of doing the job.
- Creativity is actively encouraged in this organization.

Social cohesion

- People in my work unit like their coworkers.
- Coworkers in my work unit are like a family.
- Coworkers work well together.
- I trust my coworkers to do what is in the best interests of the organization.

Organization Structure

This scale contained four items that called on respondents to rate, on a seven-point semantic differential scale, whether the management philosophy of the organizations favors: 1) highly structured channels of communication versus open communication, 2) a uniform management style versus managers having freedom to vary their style, 3) giving most decision-making authority to line managers versus giving it to the expert in a given situation, and 4) holding fast to management principles versus adapting freely to changing circumstances. Items available from author or from Khandawalla (1977).

Environmental Variables

External Stakeholders

To what extent do external parties influence your agency's decisions concerning quality practices?

- MAMPU, Prime Minister's Department
- INTAN
- Other government departments
- The public
- Politicians
- The media (newspapers, TV, radio, magazines, Internet)
- Private organizations

(Response choices: 1 = Very low influence....5 = Very high influence)

Resource Constraints

To what extent has your agency been affected by the following in the last three years?

- Budget reductions that prevented TQM training
- Lack of funds for TQM activities (such as quality control circles)
- Lack of TQM reference materials
- A reduction in the budget
- Inability to obtain additional financial resources
- Restrictions on spending

(Response choices: 1 = Not at all....5 = A very great deal)

Environmental Instability

Please indicate how severe the changes associated with each of the following are in your organization.

- Changes to the budget in the last three years
- Changes to organizational policies in the last three years
- Changes to personnel in the last three years
- Changes in customer demands in the last three years
- Changes in organizational structure in the last three years

(Response choices: 1 = Very low severity....5 = Very high severity)

TQM Implementation

Management Support

- There is a strong commitment to quality at all levels of this organization.
- Members of this organization show concern for the need for quality.
- Continuous quality improvement is an important goal of this organization.
- Our top management tries to make this organization a good place to work.
- Top managers in my department set clear goals for quality improvement.
- Managers here try to plan ahead for changes that might affect our performance.

(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Employee Suggestions

Concerning suggestions you may have made for your organization....

- In the past two years, how often have you made suggestions to your supervisor or another manager about improving conditions for employees (such as safety, treatment of employees, lunchroom conditions, rest rooms, etc.)?
- In the past two years, how often have your suggestions about employee conditions actually been put into practice in this organization?
- In the past two years, how often have your suggestions about better work methods actually been put into practice in this organization?
- In the past two years, how often have you made suggestions to your supervisor or other managers about ways of doing the job better or more efficiently?
- I make suggestions to management for ways of improving how we do our work.

(Response choices: 1 = Never...5 = Daily)

Use of Data

- In my work unit, we use statistical charts to check on the quality of our work or services.
- My work unit collects data on the quality of our work/services.
- My work unit keeps data to track work improvements.
- My work unit collects data on the amount of time it takes to get the job done.

(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Supplier Relationships

- The parts/supplies/materials that I receive from those outside this organization meet my work needs.
- The parts/supplies/materials that I receive from other units within this organization meet my work needs.
- The materials and supplies we need in my work unit are delivered on time and as ordered.

- I have supplies/tools/equipment I need to do my work well.
(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Quality Supervision

- My supervisor gives credit to people when they do a good job.
- My supervisor rewards being cooperative and a good team player.
- My supervisor gives me feedback on work I have done.
(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Team Effectiveness

- My work unit uses teams to solve problems.
- My organization has embraced the team concept.
- Many work problems are now being solved through team meetings.
- Resources are available for employee training in our organization.
- There is some kind of employee training going on in our organization.
- Managers are involved in quality training.
(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

Customer Orientation

- People in my work unit analyze their work products to look for ways of doing a better job.
- How often do members of your work group attempt to measure your external customers' needs (your customers outside this organization)?
- How often do members of your work group attempt to measure your internal customers' needs (your customers inside this organization)?
- How often do customers give feedback on the quality of services of your organization?
- How often do you get feedback on quality improvement efforts?
(Response choices: 1=Almost never, 2 = Sometimes, 3 = Often, 4 = Very often, 5=Almost always)

TQM Impact

- Have total quality management (TQM) or quality improvement efforts made any difference in your organization?
(Response choices: -2 = Very negative effect... +2 = Very positive effect)

Improvement in Service

- Productivity
- Cost reduction

- Quality of service
- Customer satisfaction
- Timeliness of service

Improvement in Organizational Processes

- Delegation of authority to lower levels
- Communication throughout units
- Availability of information for decision making
- Stimulation of high-quality performance
- Commitment to stakeholders
- Group decision-making capabilities
- Timeliness of internal processes
- Response to resource constraints

**APPENDIX B. CRONBACH'S ALPHA FOR
MEASURES IN THE STUDY (N = 413)**

<i>Variable</i>	<i>#Items</i>	<i>Cronbach's Alpha</i>
Employee Characteristics		
Gender, grade, years of education, years of service in organization, years of service in post, age	1 each	na
Perceived barriers	6	.85
Leadership Characteristics		
Quality objectives	3	.84
Leadership style	7	.95
Organizational Variables		
Organization culture		
job challenge	3	.84
communication	3	.84
trust	3	.84
innovation	4	.94
social cohesion	4	.83
Organization structure	4	.83
Environmental Variables		
External stakeholders	7	.76
Resource constraints	6	.90
Environmental instability	5	.81
TQM Implementation		
Management support	6	.90
Employee suggestions	5	.90
Use of data	4	.89
Supplier relationships	4	.83
Quality supervision	3	.82
Team effectiveness	6	.89
Customer orientation	5	.87

<i>Variable</i>	<i>#Items</i>	<i>Cronbach's Alpha</i>
TQM Impact		
Improvement in service	5	.81
Improvement in organizational processes	8	.88

NOTES

1. The assessment panel includes all members of the panel of examiners and is chaired by the director-general of MAMPU. It studies the report of the panel of examiners and visits the agency to verify facts if necessary.

2. Before the actual study was done, the questionnaire was pilot tested on thirty-five public managers from various government agencies. The pilot test revealed that a few scales had Cronbach's alpha below .70 because of the presence of inappropriate or insufficient items. Action was taken to delete inappropriate items or to insert additional items, where appropriate, with the objective of increasing coefficient alpha. An experienced translator at the National Institute of Public Administration translated the questionnaire into Bahasa Malaysia, the official language of Malaysia. After the translation, the first author, who is fluent in both English and Bahasa Malaysia, translated the Bahasa Malaysia version back into English to ensure that it conveyed the same meaning as the English version. Respondents could choose to answer either the English or Bahasa Malaysia version of the questionnaire.

3. In relation to these differences between the winners and nonwinners, a reviewer raised an important question about possible selection bias in the study, to which we can respond. This reviewer wondered whether the criteria for selection for the awards might be very similar to the hypotheses of the study. This might mean that the selection of the organizations made the hypotheses self-fulfilling, in that organizations were selected for the awards based on characteristics which we then hypothesized that they would have. In addition to the general comparisons of means for the winners and nonwinners, we also conducted ANOVA pairwise comparisons of each winner to each nonwinner. While table 1 shows significant differences between the two overall group means for winners and nonwinners on quality objectives, leadership style, communication, and innovation, the pairwise comparisons did not find significant differences on these variables when each winner was compared to each nonwinner. This supports the conclusion that among all the agencies in the study, higher perceived levels of these four variables were positively related to higher levels of TQM implementation, and that the levels of these four variables were generally higher in the winners than the nonwinners. The smaller pairwise differences between pairs of agencies, however, do not support the interpretation that the winners were selected in a way that guaranteed that the winners would have higher levels on the most important independent variables in the study. These results are available from the authors. We thank this reviewer for the opportunity to respond to his or her constructive question.

4. Communication correlated highly with leadership style ($r = .75$), and years of service in the organization correlated highly with age ($r = .87$). Communication and years of service in the organization were removed because they had higher variance inflation factors than, respectively, leadership style and age. As this implies, the standard examinations for multicollinearity, assumptions about error terms, and other assumptions were performed, with only these two instances of high correlations between variables as reasons for concern.

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