

The performance impact of context in TQM implementation: the nursing facility industry

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This study develops a model and empirically assesses how organizational context mediates the impact of total quality management (TQM) implementation on perceived performance in the nursing facility industry. Outcomes are analysed for financial, human resources and resident-care performance. Contextual factors related to TQM implementation include managerial control, reward systems, organizational structure and the extent of implementation. Duration of TQM implementation is included as a control variable. Benchmarking has a positive impact on financial outcomes, and the extent of TQM implementation and required reporting of quality improvement activity results have a positive impact on both financial and human resources performance. The presence of a Quality Steering Council has a positive impact on financial performance, but only among larger facilities.

Introduction

Total quality management (TQM) refers to 'a structured system for creating organization-wide participation in planning and implementing a continuous improvement process to meet and exceed customer needs' (Wilson, 1992

[p. 227]). This definition incorporates three TQM principles: customer focus, continuous improvement and teamwork (Dean & Bowen, 1994; Deming, 1986).

Firms may pursue either cost leadership or differentiation as business-level strategies (Porter, 1985). Adoption of TQM can be a means to achieve differentiation based on quality (Reed *et al.*, 1996). We take the position that TQM, as an element of an organization's business-level strategy, requires the development of an appropriate model of implementation variables.

Relatively few studies have examined the impact on performance of contextual differences in TQM implementation (Carman *et al.*, 1996; Powell, 1995; Shortell *et al.*, 1995b). Powell (1995) found that organizational elements, such as an open culture, employee empowerment and executive commitment, were significant

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determinants of TQM performance. In the hospital industry, Carman *et al.* (1996) and Shortell *et al.* (1995b) analysed the impact of implementation approach, culture, physician participation and size on quality improvement (QI) implementation and performance. In general, these studies have found that organizations that use structures and processes that facilitate TQM implementation outperform other firms.

This study makes a contribution to the literature along multiple dimensions. Its primary contribution is as an empirical effort addressing the void of data-driven TQM studies noted above. The second contribution is its development of a conceptual model that captures the implementation components that can influence the impact of TQM implementation on performance. The implementation variables examined include control systems, reward systems and organizational structure.

This paper is organized in the following order. The first section provides an overview of TQM in the nursing facility industry — the industry selected for this study. This section is followed by a review of the strategy implementation literature and development of the model of TQM implementation. We believe that TQM, as an element of an organization's business-level strategy, requires the development of an appropriate model of implementation variables. The data and methodology employed are then outlined. A review of the results, a discussion of the research findings and an analysis of the study limitations follow these sections. An assessment of future research directions concludes the research effort.

Total quality management in the nursing facility industry

TQM, an increasingly common management practice in the healthcare industry, has particular relevance in the nursing facility setting (Carman *et al.*, 1996; Zinn *et al.*, 1997; 1998). Nursing facilities are facing rapid environmental change. First, passage of the Nursing Facility Reform Act as a title of the Omnibus Budget Reconciliation Act (OBRA) of 1987 resulted in greater regulatory emphasis on the clinical outcomes of nursing facility care in addition to measures of capacity or capability to provide care. Second, in 1998 the Health Care Financing Administration (HCFA) started the implementation of a prospective payment system (PPS) and

case-mix adjustment for Medicare reimbursement for nursing facilities. In addition, the emergence of managed care as a source of referrals is growing increasingly in importance. These system changes have in common an increased emphasis on the improvement of processes contributing to quality and efficiency of care. As a result, TQM, with its emphasis on process improvement, can be of particular importance to the nursing facility industry. Finally, nursing facilities are facing increasing competition from substitutes, such as home health agencies and hospitals (Zinn *et al.*, 1992). Increased competitive pressures suggest that nursing facilities must be more responsive to the demands of both internal (e.g. residents, nursing staff and physicians) and external customers (e.g. families, regulators and payers). In addition, nursing facility care involves a broad range of medical, social and support services requiring multidisciplinary teamwork. TQM's customer focus can serve as a response to competitive pressures, while its team emphasis can facilitate the coordination of professional effort.

Implementation theory and model development

The strategic management process is generally divided into strategy formulation and strategy implementation. Whereas strategy formulation involves deciding the future direction of the firm, strategy implementation involves the modification of structures and processes to ensure the desired end results (Alexander, 1991; Egelhoff, 1999; Eisenhardt, 1985; O'Reilly, 1989; Preble, 1992; Schreyogg and Steinmann, 1987; Snodgrass and Szewczak, 1990; Walsh and Seward, 1990). In this section, we develop a model of strategy implementation that posits that those firms which use structures and processes that match their strategy can outperform other firms. Specifically, implementation variables of control systems, reward systems and organizational structure mediate the impact of strategy on performance (Figure 1). This contingency model follows a behavioural perspective which argues that different strategies require different behaviours and, as a result, different structures and processes to elicit and reinforce the required behaviours (Snell, 1992; Wright and Snell, 1998). All of the variables are operationalized and applied to TQM implementation in the nursing facility

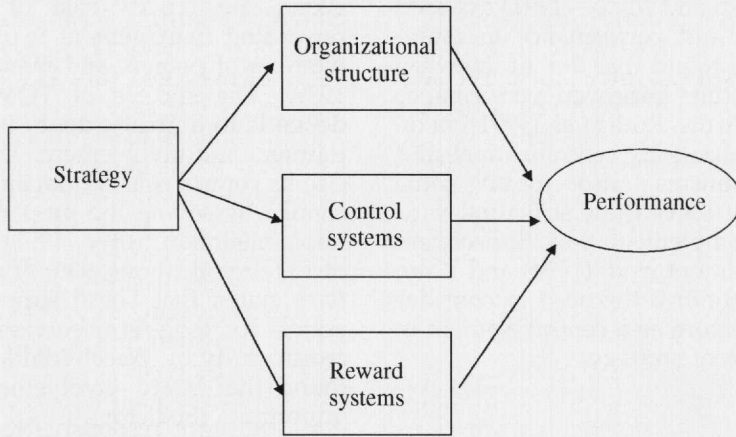


Fig. 1 Strategy implementation and performance.

industry in the section following the development of the theoretical model.

Control systems

Ouchi (1977; 1980) conceptualizes control as an evaluation process. He proposes two distinct parts to the control process: the antecedent conditions and the various forms of control. The antecedent conditions include the following: (1) the availability of output measures, and (2) an organizational understanding of how inputs are converted into outputs. The primary forms of control include output control where managers are measured on final performance indicators such as revenues, market share and profitability, and behaviour control where managerial decisions are guided by policies and procedures. Agency theory has suggested both output and behaviour orientations as alternative, appropriate forms of profit-maximizing control (Eisenhardt, 1985; 1989). The most appropriate form of control depends on the antecedent conditions. Subsequent studies by Govindarajan and Fisher (1990) and Simons (1990) use both behavioural and agency theory to support the centrality of this variable.

Reward systems

Utilitarian, rational theories, such as agency theory, posit that incentives help align the organizational members' goals with those of the organization. Appropriate incentives reinforce the required behaviours that are consistent with strategy or intended outcomes (Hrebiniak and Joyce, 1984). Kerr (1975) examined empirically

the dysfunctional effects of incentives that rewarded inappropriate behaviours. Banker *et al.* (1996) assessed the positive impact of outcomes-based assessments on sales customer satisfaction and profitability. Other studies have analysed the impact of reward systems on the fit of compensation systems on corporate or strategic business unit strategies (Balkin and Gomez-Mejia, 1990; Bloom and Milkovich, 1998; Butterfield and Klebe-Trevino, 1996; Luthans and Stajkovic, 1999). The review of these particular studies offers a conceptual and empirical foundation for inclusion of this variable in the model.

Organizational structure

Choice of strategy determines the information processing requirements needed to manage uncertainty (Galbraith, 1973). Organizational structures, however, vary in their capacity to handle information processing demands. Galbraith (1977) argued that effective strategy implementation requires a fit between strategy and structure. The implication is that the basic operating structure of the business must be supplemented by additional structural mechanisms that will provide support and monitor progress in the implementation of strategy (Hrebiniak and Joyce, 1984). For example, the use of integrating mechanisms becomes crucial as the need for greater coordination increases (Lawrence and Lorsch, 1967).

Govindarajan (1988) examined the relationship between administrative mechanisms, such as locus of control and decentralization, and the firm's strategy, and found that superior performance ensued when there was a 'fit' with the

firm strategy. Habib and Victor (1991) assessed strategy, structure and performance in multi-nationals, and also found that the 'fit' between strategy and structure improved performance of manufacturing firms. Roth *et al.* (1991), in an analysis of formalization, centralization and integrating mechanisms, also found some support for the impact of these structural variables in strategy implementation. Subsequent studies, such as Lamont *et al.* (1994) and Kahn and Kram (1992) confirm the need to consider organizational structure as a central element in the implementation of strategy.

Operationalization of the variables/ hypotheses development

In summary, the strategic management literature has shown that those organizations that use structures and processes that match their strategy can outperform other firms. This study employs the same logic when we posit our model: firms that use control systems, reward systems and organizational structure that facilitate TQM implementation will experience better performance.

Control systems

The underlying rationale of a control system is 'to ensure that the organization is achieving what it intends to accomplish' (Hrebiniak and Joyce, 1984; p. 195). Organizations can use different mechanisms to monitor and evaluate the progress of TQM implementation. Benchmarking can be used to compare the organization's performance with that of 'best practices' organizations (Plsek, 1995). In addition, organizations can require teams to report their progress in improving quality. These mechanisms can be considered a form of output control, and it is expected that TQM facilities using them will outperform other facilities:

- *Hypothesis 1:* TQM facilities that practise benchmarking will outperform other TQM facilities.
- *Hypothesis 2:* TQM facilities where project teams are required to report results related to QI will outperform other TQM facilities.

Given the fragmentation of ownership that characterizes many publicly held corporations, managers have considerable latitude and power. In this context, the corporate board

exerts the crucial role of monitoring and rewarding management in order to align the interests of owners and managers (Eisenhardt, 1989). The success of TQM implementation depends to a great extent on the board's commitment and involvement. The board can exercise its control role and facilitate organizational change by setting the proper climate for TQM implementation (Ritvo, 1993). In a 1991 survey of 139 organizations, 93% of responding executives stated that board support for TQM was critical for long-term success (Bader, 1992). A recent study by Weech-Maldonado *et al.* (1999) found that board involvement in QI was an important predictor of QI outcomes. Consequently, it is expected that nursing facilities with boards that are more involved in quality-related activities will experience better performance:

- *Hypothesis 3:* The greater the board involvement in QI, the better the performance of TQM facilities.

Reward systems

Incentives help align the organizational members goals with those of the organization. Thorndike's law of effect states that behaviour or performance that is reinforced tends to be repeated (Hrebiniak and Joyce, 1984). Therefore, it is expected that those TQM facilities that have incorporated TQM criteria into their reward and performance appraisal systems will outperform other TQM facilities:

- *Hypothesis 4:* TQM facilities that have incorporated TQM performance criteria into their reward and performance appraisal system will outperform other TQM facilities.

Organizational structure

The structural component of TQM includes the coordinating mechanisms that facilitate the process of implementation (O'Brien *et al.*, 1995; Shortell *et al.*, 1995a). One such structural mechanism is the designation of an individual responsible for TQM implementation. Another coordinating mechanism is the formation of a Quality Steering Council (QSC) whose role is to prepare the organization for TQM, design the plan, and oversee the process. The QSC typically is made up of eight to 12 management personnel representing all functions within the organization (JCAHO, 1992). It is expected that

organizations implementing TQM will have increased need for coordination, and that these structural mechanisms will facilitate the implementation process, which would result in better outcomes. Furthermore, it is expected that larger facilities will benefit most from the use of structural mechanisms in TQM implementation. As facilities increase in size and complexity, there is a greater need for coordinating mechanisms (Hrebiniak and Joyce, 1984).

- *Hypothesis 5:* TQM facilities that designate TQM functions to a specific individual will outperform other TQM facilities.
- *Hypothesis 6:* The larger the size of the TQM facility, the better the performance associated with designating TQM functions to a specific individual.
- *Hypothesis 7:* TQM facilities that have a QSC will outperform other TQM facilities.
- *Hypothesis 8:* The larger the size of the TQM facility, the better the performance associated with having a QSC.

Extent of implementation

Adopters of TQM will differ with respect to the facility-wide TQM dissemination. Shortell *et al.* (1995b), in their study of TQM implementation in the hospital industry, found that the degree of QI implementation based on Baldrige Award criteria was associated with better perceived patient care outcomes and human resource development. Like hospital care, nursing facility care requires the coordination of multiple functions or departments, working harmoniously to achieve optimal care outcomes. Therefore, it is expected that performance in nursing facilities will be similarly related to the pervasiveness of TQM implementation:

- *Hypothesis 9:* The more pervasive TQM implementation throughout the facility, the better the performance of TQM facilities.

Data and methodology

The primary source of data for this study is a survey of QI practices conducted among nursing facility administrators in Pennsylvania, USA, during 1994 and 1995. Of the 615 facilities to which surveys were posted, 241 (39.2%) returned completed questionnaires. *t*-Tests were performed to compare the mean characteristics of respondents with those of all

Medicare/Medicaid-certified facilities in Pennsylvania. No significant response bias related to bed size, for-profit status, system membership, Medicare census, and Medicaid census was found.

The study sample for the research described here were 66 facilities (27% of respondents) that met the following criteria for classification as TQM adopters:

1. A written statement of philosophy or commitment to TQM.
2. Use of a structured problem-solving approach incorporating statistical methods and measurement to identify quality problems and monitor improvements.
3. Use of teams involving employees from multiple departments and from different organizational levels as the major mechanism for analysing and improving processes.
4. Systematic assessment of satisfaction data from residents and those who provide care to residents.
5. Empowerment of employees to identify and take action on QI problems and opportunities.

The five characteristics defining a formal TQM programme were chosen for their relevance in the context of the nursing facility industry and for their consistency with criteria used in other industrial contexts, including the hospital industry (Barness *et al.*, 1990; Nohria and Green, 1999; Shortell *et al.*, 1995b). Consistency of criteria facilitates comparison with different healthcare providers as well as across industries.

Data on other nursing facility characteristics were obtained from the Medicare and Medicaid Annual Certification Survey (MMACS) data file. The information contained in the MMACS is collected routinely through the Medicare and Medicaid certification process conducted by state licensure and certification agencies.

Performance was measured subjectively by asking respondents to rate the impact of their QI programme on each of 16 items using a seven-point Likert-like scale. Objective measures would not have been appropriate for evaluation of the impact of TQM in this study, since baseline measures of performance were not available. (Obtaining baseline measures would have been very difficult given the different time frames of TQM implementation). The use of perceptual measures of performance is consistent with prior research (Dess, 1987;

Table 1 Factor analysis of measures of performance

Measure of performance	Finance	Human resources	Service quality	Regulatory compliance
Reduce costs	0.80	0.13	0.07	0.02
Improve productivity	0.51	0.48	0.32	-0.09
Increase market share	0.81	0.12	0.18	0.17
Improve financial position	0.84	0.16	0.15	0.20
Reduce employee turnover	0.61	0.52	0.15	-0.18
Improve management skills/practices	0.23	0.78	0.19	0.12
Improve relationships with physicians	0.20	0.67	0.17	0.23
Increase employee satisfaction	0.41	0.64	0.22	0.01
Empower employees	0.16	0.69	0.16	0.30
Recruit/retain employees	0.66	0.42	0.09	0.11
Improve resident outcomes	0.21	0.30	0.80	-0.16
Increase resident satisfaction	0.17	0.22	0.79	-0.17
Reduce errors/inappropriate treatment	0.07	0.59	0.48	-0.22
Meet OBRA criteria	0.21	-0.04	0.67	0.39
Improve quality of life	0.05	0.32	0.80	0.20
Meet regulatory requirements (JCAHO)	0.17	0.26	-0.04	0.79
Eigenvalues	3.51	3.33	2.93	1.20

Boldface statistics indicate factor loadings on the proposed constructs.

Lammers *et al.*, 1994; Lawrence and Lorsh, 1967; Powell, 1992; 1995; Shortell *et al.*, 1995b).

Four performance impact scales (i.e. financial impact, resident care impact, human resources impact and regulatory compliance impact) were derived from the 16 items. The four performance constructs were confirmed through factor analysis using components analysis with varimax rotation (Table 1). Four factors were extracted with eigenvalues of 1.0. All items had factor loadings of at least 0.40. In addition, Cronbach alphas greater than 0.80 were obtained for all the performance scales. This approach to measuring performance accounts for the objectives of the major stakeholders in nursing facility care (i.e. shareholders, customers, employees and regulatory agencies), and is consistent with the Baldrige Healthcare award criteria (Kaplan and Norton, 1992; NIST, 1999).¹ Three of the four derived performance impact categories were used in this study: financial outcomes, resident care outcomes and human resources outcomes. The regulatory compliance construct was not included since it is specific to JCAHO (Joint Commission on Accreditation of Healthcare Organizations) accreditation, which was not applicable for many of the nursing facilities in this sample.

¹The Malcolm Baldrige Award is an annual award given to organizations in the United States that excel in their quality efforts and performance. The programme is managed by the US Department of Commerce.

The independent variables used in the analysis are summarized in Table 2. The first set of variables reflects the programmatic structure of TQM in the nursing facility. Respondents were asked whether they had instituted the following: benchmarking (Hypothesis 1), teams reporting QI results (Hypothesis 2), incorporating TQM criteria into a reward and performance appraisal system (Hypothesis 4), designation of an individual with TQM role (Hypothesis 5), formation of a QSC (Hypothesis 7). The variables were coded as binary values — '0' signifying the absence of the structural element and '1' its presence. Multiplicative interaction terms are entered to model the impact of facility size (number of beds) on the designation of an individual with TQM role (Hypothesis 6) and having a QSC (Hypothesis 8).

The board's involvement in QI (Hypothesis 3) was measured by asking respondents whether the facility's governing board had pursued the following QI initiatives over the past 12 months:

1. Directed the facility to initiate a special study of a specific quality problem.
2. Directed the facility to take specific corrective action on an identified problem.
3. Requested that additional quality of care data be collected.

The measure was constructed as an additive scale (0–3) comprising the number of QI

Table 2 Definitions of independent variables used in multiple regression analysis

Variable	Definition
Individual with TQM role	Assigned individual with responsibilities for TQM (0,1).
Quality Steering Council	The facility formed a Quality Steering Council or Improvement Council (0,1).
Benchmarking	Benchmarking QI results against those of other organizations (0,1).
Teams report QI results	Reporting of QI results by project teams (0,1).
Incentives	Incorporating TQM criteria into reward and performance appraisal system (0,1).
Board initiates QI activities	Number of initiatives undertaken by the board related to quality improvement (0–3).
Degree of TQM implementation	Administrator's assessment of extent of TQM implementation in their facility (scale: 0–10).
Duration of TQM implementation	Logarithm of number of months since TQM adoption.
Facility size	Logarithm of number of beds in facility.

0: absence of the structural element; 1: presence of the structural element.

initiatives taken by the board. Weiner *et al.* (1996) used a similar construct to measure board activity in QI.

The extent of TQM implementation (Hypothesis 9) was measured by asking respondents about the pervasiveness of TQM implementation in the facility. The measure consisted of a 10-point scale, with a rating of five representing that about half of the organization is using TQM actively.

Duration of TQM implementation is included as a control variable. The performance impact of TQM may not be realized until after the third year of implementation (Powell, 1995). A recent study found that long-term TQM adopters (i.e. four years or more since TQM adoption) were more satisfied with their TQM programmes than short-term adopters (Powell, 1995). The duration of TQM implementation consists of a continuous variable representing the number of months TQM has been practised in the facility.

In order to reduce the skewness of both facility size and duration of TQM implementation, the logarithms of both variables were used in the analysis.

A model was estimated using ordinary least squares regression analysis to test the impact of TQM implementation variables on performance. We executed individual regression models for each of the three performance areas: financial, resident care and human resources.

Results

Table 3 presents means, standard deviations and correlations for the independent variables used in the regression analysis. A key assumption in regression analysis is the independence of the predictor variables. An examination of the correlation matrix indicated that all of the

Table 3 Means, standard deviation and correlations for independent variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
Individual with TQM role	0.89	0.31	1.00								
Quality Steering Council	0.82	0.39	-0.03	1.00							
Benchmarking	0.45	0.50	-0.18	-0.04	1.00						
Teams report QI results	0.92	0.27	0.09	0.16	-0.08	1.00					
Incentives	0.45	0.50	-0.08	0.19	0.02	-0.08	1.00				
Board initiates QI activities	1.35	1.22	-0.15	-0.05	0.25*	-0.03	-0.06	1.00			
Degree of TQM implementation	6.20	1.55	-0.05	0.11	0.12	-0.04	0.30*	0.10	1.00		
Duration of TQM implementation	3.17	0.65	0.16	-0.03	0.05	-0.00	-0.11	-0.22 [†]	0.12	1.00	
Facility size	4.59	0.67	0.26*	0.23 [†]	-0.03	0.01	-0.15	0.14	-0.04	-0.01	1.00

* $P < 0.05$; [†] $P < 0.10$.

Table 4 Results of multiple regression analysis for performance measures

	Financial performance	Human resources performance	Resident care performance
Intercept	3.87 [§] (1.07)	3.35 [§] (0.93)	5.45 [§] (0.84)
Individual with TQM role	1.95 (1.93)	-0.28 (1.69)	0.62 (1.53)
Individual with TQM role* size	-0.72 (0.45)	-0.20 (0.39)	-0.30 (0.36)
Quality Steering Council	-5.39 [†] (2.12)	-3.09 (1.85)	-2.59 (1.67)
Quality Steering Council* size	1.05 [†] (0.47)	0.51 (0.41)	0.47 (0.37)
Benchmarking	0.50* (0.29)	0.05 (0.25)	0.06 (0.22)
Teams report QI results	1.74 [‡] (0.60)	2.06 [§] (0.52)	0.55 (0.47)
Incentives	-0.15 (0.31)	0.28 (0.27)	0.03 (0.25)
Board initiates QI activities	0.09 (0.12)	-0.10 (0.11)	-0.11 (0.10)
Degree of TQM implementation	0.27 [‡] (0.10)	0.22 [†] (0.08)	0.12 (0.08)
Duration of TQM implementation	-0.40* (0.22)	-0.04 (0.20)	0.07 (0.18)
R ²	0.42	0.39	0.15
F value	3.68 [‡]	3.21 [‡]	1.01

Unstandardized regression coefficients are reported with standard errors in parentheses.

* $P < 0.10$; [†] $P < 0.05$; [‡] $P < 0.01$; [§] $P < 0.001$.

correlation coefficients are less than 0.8 in absolute value, a threshold used commonly for the detection of multicollinearity (Kennedy, 1992).

Table 4 shows the regression results for the three performance variables. The models fitted the data reasonably well for financial performance ($R^2 = 0.42$, F value = 3.68, $P < 0.01$) and human resources performance ($R^2 = 0.39$, F value = 3.21, $P < 0.01$). However, the regression model for resident care performance was not statistically significant. With respect to financial performance, having teams reporting QI results ($P < 0.01$), use of benchmarking ($P < 0.10$), and degree of TQM implementation ($P < 0.01$) are positively related to performance. Having a QSC is negatively related to financial performance ($P < 0.05$), but it related to better performance in larger facilities ($P < 0.05$). In the case of human resources performance, having teams report QI results ($P < 0.001$) and degree of TQM implementation ($P < 0.05$) are positively related to performance. This represented support for Hypotheses 1, 2, 8 and 9.

The results did not provide support for Hypotheses 3, 4, 5 and 6. A board's involvement in

quality improvement, the use of incentives, and designating an individual with TQM roles were not significant predictors for any of the performance indicators. Contrary to Hypothesis 7, the establishment of a QSC was associated with poorer financial performance.

Discussion

This study examined how organizational context mediates the impact of TQM implementation on performance in the nursing facility industry. Contextual factors related to TQM implementation included control, rewards, organizational structure and degree of implementation.

The study incorporated three different performance variables reflecting the interests of major nursing facility stakeholders (Kaplan and Norton, 1992). However, only the regression models estimating human resources and financial performance were significant. It may be the case that these areas of performance are more immediately responsive to TQM efforts

than are changes in the quality of resident care. Alternatively, the extensive regulatory requirements governing resident care in nursing facilities may obfuscate the perceived impact of TQM. However, since results varied according to the type of performance indicator used, using only one type of indicator or an average across indicators would have been misleading in assessing the impact on performance.

This study found that contextual factors related to TQM implementation affect performance. Facilities with more extensive TQM implementation and those where teams report QI results experienced better human resources and financial outcomes, while those that practise benchmarking achieved better financial outcomes. This suggests that nursing facilities must commit fully to this practice on an organization-wide basis to achieve better human resources and financial performance. More limited approaches may not have the same impact. Nursing facility care requires the coordination of multiple functions or departments, working harmoniously to achieve optimal care outcomes. Therefore, it is expected that performance in nursing facilities will be related to the pervasiveness of TQM implementation. Required reporting is an effective control mechanism because it makes team efforts publicly accountable. This may motivate teams to select TQM projects likely to have a performance impact, and it may increase their sense of empowerment. On the other hand, visibility may promote avoidance of worthwhile projects with a higher risk of failure.

Benchmarking was positively related to financial outcomes, but not significantly related to human resources outcomes. This suggests that benchmarking with other organizations can be particularly useful in implementing processes that improve efficiency by reducing facility costs.

While establishing a QSC was associated with worst financial performance, it was related to better financial performance among larger facilities. This suggests that structural mechanisms, such as having a QSC, can be appropriate coordinating mechanisms for larger facilities, but may be too stifling for smaller ones.

Designating a person with TQM roles was not associated with performance among TQM facilities. Quality directors may be appropriate coordinating mechanisms in the early stages of TQM implementation. However, they may become unnecessary or even an impediment to

the internalization of a quality culture throughout the organization.

Incentives and board involvement were not significantly associated with performance. It seems that not all control mechanisms in TQM implementation have the same effect on outcomes. Output control mechanisms aimed at monitoring teams performance and benchmarking can have the greatest impact on performance. On the other hand, the lack of significance for the incentives and board involvement variables may be a result of how the variables were operationalized. The incentives variable consisted of a survey item asking the facility whether or not it had incorporated TQM criteria into the reward and performance appraisal system. This may not measure adequately whether the facility has implemented reward and performance appraisal systems that provide incentives for teamwork and interdisciplinary collaboration. Similarly, the board initiating QI activities may not capture the true involvement of boards in QI. Assessing whether the board ties the TQM process to the facility's strategic planning and whether it supports TQM activities in terms of resource allocation may be more appropriate measures of board commitment. Boards initiating QI activities may do so as a result of external pressures to improve quality as opposed to a true commitment to quality improvement.

Limitations of the study and future directions

This study was limited to nursing facilities in the state of Pennsylvania, USA. It may be that Pennsylvania facilities are unique in ways that limit generalization to states with similar regulatory and competitive environments. For example, states differ with respect to nursing facility reimbursement mechanisms under the Medicaid programme. Furthermore, this study has focused only on a limited range of TQM implementation issues.

Further research is needed that will incorporate other implementation factors, such as culture and leadership, into the analysis of TQM performance. Studies of the healthcare industry have shown a significant moderating effect of culture on QI outcomes. Sheridan *et al.* (1995) found that nursing facilities where employees shared values of concern for patients and of teamwork experienced the highest quality performance ratings based on Baldrige

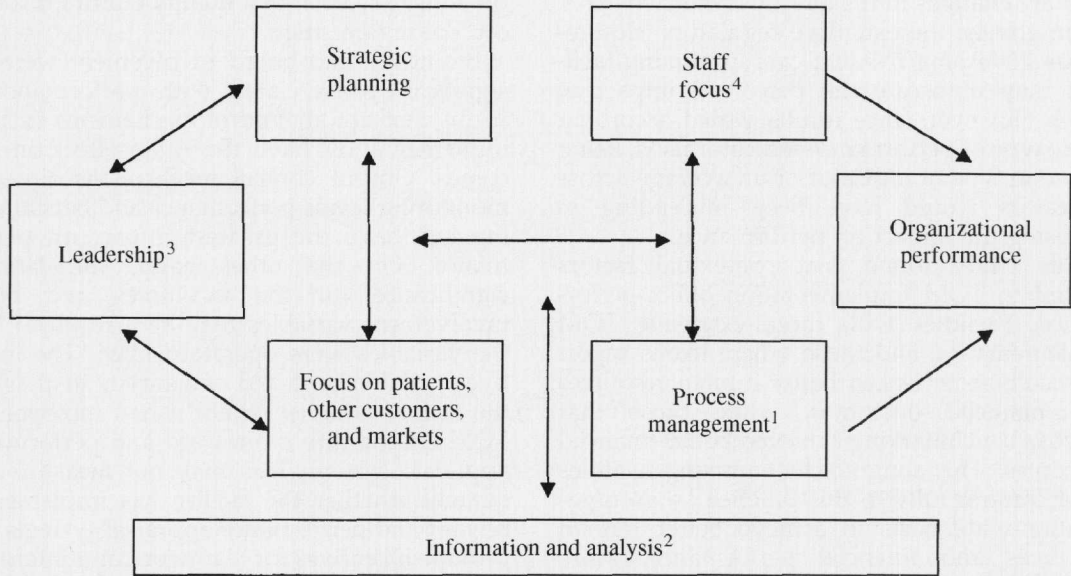


Fig. 2 Baldrige healthcare criteria for performance excellence. ¹Process management = individual with TQM role, Quality Steering Council, extent of implementation; ²Information and analysis = benchmarking, reporting results; ³Leadership = board participation; ⁴Staff focus = incentives.

Award criteria. Similarly, Shortell *et al.* (1995b) found that a participative, risk-taking organizational culture was positively related to QI implementation and that having a bureaucratic and hierarchical structure served as a barrier.

The theoretical framework used in this study has parallels with the Baldrige healthcare criteria for performance excellence framework (NIST, 1999). The Baldrige framework consists of seven categories (see Figure 2):

- Leadership
- Strategic planning
- Focus on patients, other customers and markets
- Information and analysis
- Staff focus
- Process management
- Organizational performance results.

The contextual TQM variables examined in this study can be related to the Baldrige criteria (Figure 2). Process management incorporates designating an individual with a TQM role, the use of a QSC and the degree of implementation. Information and analysis entails benchmarking and results reporting. Leadership is reflected in board participation. Finally, staff focus implies the use of appropriate awards and incentives. The results of this study suggest that some manifestations of the Baldrige criteria

may make a greater contribution to organizational performance than others. Future research in healthcare and other economic sectors evaluating these relative contributions would be useful in focusing managerial efforts in areas with the greatest potential impact on performance.

Despite its limitations, the findings of this study provide important insights into the understudied area of strategic implementation. In addition, this study represents a significant start in describing the key variables of TQM implementation in the nursing facility industry. Specifically, it helps identify the key enabling components for current practising managers and clarify the needs for future academic research.

Acknowledgements

The authors wish to thank Northwestern University's Center for Health Services and Policy Research and the J. L. Kellogg Graduate School of Management, in conjunction with the Hospital Research and Education Trust of the American Hospital Association, for permission to use and revise portions of their survey of TQM adoption in hospitals.

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