

DOES LARGE SIZE ALWAYS SLOW DOWN LEARNING AND IMPLEMENTATION?

THE ROLE OF MOTIVATION AND CULTURE

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ABSTRACT

Are large organizations faster or slower than small organizations at learning to implement a new system or innovation *after* officially adopting it? We find that, among hospitals implementing total quality management (TQM), large organizations have less desire to learn but, ironically, have more ability to learn. As a result, those few large organizations that *do* possess a strong motivation to learn and implement TQM have the best implementation success of all.

Are large organizations faster or slower than small organizations at learning to implement a new management system or innovation after officially adopting it? For many people, the answer is obvious: large organizations are not only slow learners, they are downright sluggish, bordering on inert. “Some observers [even] argue that older, larger companies must die off, like dinosaurs, to be succeeded by a new breed better adapted to its environment” (Kanter, 1989: 10). This image of big organizations as anything but nimble suggests that implementation by such organizations will be a slow and painful process at best. Yet even Hannan and Freeman (1984), in their seminal essay on structural inertia, argue solely that large firms are less likely to *begin* a reorganization; i.e., to adopt formally a new management system. However: “The relationship between size and the rate of structural change is indeterminate in our theory [in part because of the field’s] ignorance about the effects of size on rates of completing structural reorganization, conditional on having attempted it” (Hannan & Freeman, 1984: 159). In other words, when we look at firms adopting a new management system, structure, or innovation, it is unclear which ones will learn fastest when it comes to actual implementation: large or small organizations:

On the one hand, the greater inertia of large organizations might lower the rate of successes at reorganization. On the other hand, successes at reorganization might depend on the magnitude of resources applied to the task. Since large organizations typically have more resources than small ones, this line of reasoning suggests that the rate of achieving structural change increases with size. (Hannan & Freeman, 1984: 159)

We examine these two forces—the desire and the ability to learn—to show that the effect of size cuts both ways: large organizations are less motivated but, ironically, more able to implement major changes. As a result, having a desire to learn provides a stronger boost to implementation in large organizations, whereas in smaller firms, having this desire makes less of a difference.

## THE DESIRE TO LEARN

Much of the internal resistance to learning—even *after* officially adopting an innovation—in large organizations can be traced back to a lack of desire (or, motivation) for full and speedy implementation. That is, some would argue that large organizations simply lack enough motivation to overcome their own inertia. After all, just because a change has been adopted formally does not mean it has been, or necessarily ever will be, implemented fully in practice. For example, as many as 45% of the companies that announced their “adoption” of a long-term incentive plan for executives never actually used it within two years (Westphal & Zajac, 1994). Since implementing long-term incentives is essentially just a matter of accounting, well within the capability of any large corporation, we can reasonably conclude that these companies, or their boards of directors, did not really *want* to implement the change after all. This instance is an example of “decoupling”—a lack of alignment between formal structures and actual activities—where implementation is neglected (Meyer & Rowan, 1977).

But since we are only discussing adopters, why would an organization adopt something that it did not want to implement fully? That is, why would firms only pretend to learn? In the case of total quality management (TQM), the focus of this research, the primary reason is that “as TQM has spread, its adoption has begun to be driven increasingly by concerns for managerial and firm legitimacy, rather than by instrumental task requirements” (Sitkin, Sutcliffe, & Schroeder, 1994: 560). In the case of hospitals, the industry context for this research, the powerful Joint Commission on Accreditation of Healthcare Organizations (JCAHO)—an independent body whose stamp of approval is required by most sources of hospital revenue, including Medicare—has pushed all hospitals to institute a continuous quality improvement effort such as TQM (Reeves & Bednar, 1993). The resulting institutional forces of conformity (DiMaggio & Powell, 1983) may therefore tempt some hospitals that do not really want a TQM effort to just adopt

TQM's outward form and pay it "lip service" without implementing its substance (Westphal, Gulati, & Shortell, 1997). The opportunity for such decoupling is especially strong in the case of complex systems like TQM. In the first place, discovering any adoption/implementation decoupling is considerably more difficult than for a straightforward change like an incentive plan. Secondly, even if detected, any such decoupling can always be attributed to difficulties in the firm's ability to learn and would thus likely still be seen as a good faith effort. After all, TQM *is* in fact hard to implement (Reger, Gustafson, DeMarie, & Mullane, 1994).

Before continuing any further, it may be helpful to define what exactly total quality management (TQM) is. TQM is a collection of management practices and routines that form a structured approach for controlling variability and continuously improving an organization's products and services (Hackman & Wageman, 1995). In recent years, "TQM may have lost some of its faddish allure, but its core message remains relevant" (Victor, Boynton, & Stephens-Jahng, 2000: 115). The most comprehensive and widely accepted definition of what management practices constitute implementation of TQM is the Malcolm Baldrige National Quality Award's framework, issued annually by the U.S. Department of Commerce (2004). This framework covers the topics of leadership, strategic planning, a customer focus, operational results, and the management of information, people, and processes. Though detailed, the Baldrige Award criteria are intentionally generic and designed to apply to any organization. Although some support does exist for TQM's positive effect on various aspects of organizational performance (Hendricks & Singhal, 2001; Powell, 1995; Shortell, Levin, O'Brien, & Hughes, 1995; Shortell, O'Brien et al., 1995; Westphal et al., 1997), the focus of this paper is on those forces affecting how thoroughly an organization learns to implement TQM after deciding to adopt it.

So in discussing the motivation of a large or small organization towards learning to implement a major innovation like TQM, what exactly does it mean to say that a company is

“motivated”? In the case of TQM, where changes need to be made in all parts of the organization (U.S. Department of Commerce, 2004), to say that the organization is motivated is really to say that the organization’s members, in both their individual and collective efforts, want to implement the change. Measuring this kind of organizationwide motivation directly, however, can be problematic. After all, employees may claim to be motivated, even if they are not, if they know it is expected of them. Using indirect measures of an organization’s motivation, however, can help get around this problem, although we acknowledge that such behavioral inferences can themselves sometimes be open to interpretation.

One approach, used in our first data set, for inferring an organization’s motivation is to say that an organization’s members will be more motivated to implement TQM if they see their chief executive officer (CEO) personally following TQM’s dictates. Indeed, it is almost a cliché to say that TQM, like all change efforts, requires senior management commitment (Reeves & Bednar, 1993). Thus, a CEO who “walks the talk” in everyday interactions (e.g., with his or her management team, secretary, strategic planning, and professional life) is more likely to convince the rest of the organization that they, too, should be motivated to learn to implement TQM.

Another, more broadly based approach, used in our second data set, for inferring an organization’s desire to learn in a particular domain is to say that any organization whose current culture is compatible with the new innovation will have a greater desire to implement it. After all, some management ideas may be new, and require changes in order to be implemented, but they are still consistent with the basic culture and approach of the organization that has adopted it. In the case of TQM, what sort of organizational culture might be most intrinsically motivated and sympathetic towards TQM implementation? According to Spencer (1994), TQM draws largely on the “organic” model of organizations—which emphasizes such qualities as teamwork, employee empowerment, and risk-taking (Quinn & Kimberly, 1984; Shortell, O’Brien et al.,

1995; Zammuto & Krakower, 1991)—but does also include a few elements of the mechanistic paradigm, which emphasizes “stability, control, and order” (Denison & Spreitzer, 1991: 3). Note that we use the term *organic* here not to mean a lack of structure (Burns & Stalker, 1961), but rather in terms of organizational culture; i.e., “it represents an emphasis on flexibility and spontaneity” (Denison & Spreitzer, 1991: 3).

A hospital that also fits the TQM profile identified by Spencer (1994)—mostly organic but still somewhat mechanistic—is thus likely to have a stronger desire to implement TQM. The mechanistic model probably exists at least to some extent in all modern-day hospitals. Yet even if they must have certain minimal elements of a mechanistic approach, some hospitals will have a culture that is more organic than others. Within this population of organizations, then, one would expect those with a more organic culture to be more compatible with implementing TQM. While we do not go so far as to argue that, since organic cultures are more likely to adopt an innovation, they are therefore always more likely than mechanistic cultures to *implement* whatever they adopt, nevertheless, our argument is that they will certainly do so if the innovation is culturally compatible. Moreover, repetition and routinization, which are common in mechanistic cultures, are unlikely to be of benefit during TQM implementation, because the new routines demanded by TQM are usually so totally different that many of the old and familiar habits must be unlearned and abandoned (Gersick & Hackman, 1990; Hackman & Wageman, 1995). In contrast, a hospital with a more organic culture or one where the CEO “walks the talk,” will likely, on its own, *want* to implement a change like TQM since this change would flow out of and be grounded in the basic culture of the hospital.

*Hypothesis 1 (H1): The greater the (indirectly measured) organizationwide desire to learn to implement TQM, the greater the degree of TQM implementation.*

In general, larger organizations tend to be more mechanistic (Haveman, 1993; Shortell,

O'Brien et al., 1995; Zammuto & Krakower, 1991). So if we return to the original issue of learning by large versus small organizations, we might therefore conclude that, on average, large organizations will learn more slowly when it comes to TQM implementation.

*Hypothesis 2 (H2): Most large organizations will be slower to implement TQM.*

Concluding that *all* large organizations are slow to learn (i.e., that their degree of implementation will be lower after a given amount of time has elapsed since adoption), however, would be premature, since the desire to learn is not the only factor we must consider.

### **THE ABILITY TO LEARN**

Even if large organizations, on average, are less motivated to overcome their inertia to learn faster, what about those few large organizations that are uncommonly motivated to implement TQM? Given the strong negative correlation between size and an organic culture (Shortell, O'Brien et al., 1995), such an organization might be unusual, but it might nonetheless be better able to draw on its greater resources to implement TQM more fully. So, too, the CEO of a large firm who "walks the talk" may inspire others to apply the greater resources at their disposal to implementing TQM more thoroughly. In other words, a strong motivation and commitment may overcome bureaucratic inertia in a large organization to the point that the organization's superior resources and ability are unleashed.

Larger-sized organizations usually have more resources at their disposal to help implement a major change (Hannan & Freeman, 1984; Zajac & Kraatz, 1993). And implementing a major organizational shift like TQM does require, at least initially, spending a good deal of resources for such expenses as consultants, employee training, information systems, and team meetings. Large organizations, because of their economies of scale, may be better equipped to handle these up-front investment demands; e.g., they can more easily hire full-time experts. Moreover, larger organizations often have greater power to exert their will over any



outside obstacles in implementing a major change (Haveman, 1993). TQM, for example, encourages close cooperation between a company and its suppliers (U.S. Department of Commerce, 2004). In forging these new partnerships, large and powerful firms are in a better position than are smaller firms to demand the necessary changes in behavior from uncooperative suppliers.

By a similar logic, the benefit to a small organization of having a desire to implement a new management system like TQM would not be as pronounced, since small organizations, on average, possess no great untapped ability waiting to be unleashed. Meanwhile, a large organization that does not want to learn might actually use its greater resources and abilities to *avoid* full implementation. After all, bigger “organizations may be buffered from the need to change” (Havemen, 1993: 25). Preferred access to customers, capital markets, and the labor market—some of the perks of a large organizational size—might therefore make it less necessary for large bureaucratic organizations to implement TQM fully once they have “adopted” it. So besides the main effects proposed in H1 and H2, an interaction between size and desire may also exist:

*Hypothesis 3 (H3): The positive effect that the desire to learn to implement TQM has on the degree of TQM implementation will be stronger in larger hospitals than in smaller ones.*

## **METHODS**

We examine these hypotheses using two sets of data involving related investigations.

### **Data Set 1**

**Sample.** As part of the National Survey of Hospital Quality Improvement (Barsness et al., 1993), all non-federal, non-specialty U.S. hospitals were mailed a survey, and 3,303 CEOs, in cooperation with the person in charge of quality improvement, responded (60% response rate).

Responding hospitals were somewhat larger (220 versus 170 beds); more likely to be teaching hospitals (8.8% versus 4.2%); and somewhat more likely to be members of health care systems (41% versus 35%) than non-responding hospitals. Of these 3,303 respondents, 2,277 (69%) claimed to have adopted a continuous quality improvement/total quality management (CQI/TQM) effort, defined as adherence to all of five different items (continuous improvement philosophy; structured problem solving; use of teams; employee empowerment; and customer focus). Only the survey responses from these 2,277 CQI/TQM hospitals were included in the regression analysis, since this study's focus is on TQM implementation after adoption.

**Dependent (Outcome) Variable.** The degree of TQM implementation, identified by factor analysis, is based on z-scores for a question on overall implementation (1-10 scale: 1 = not at all implemented, 10 = 100% of the organization actively using CQI/TQM) and separate questions on the percentage of employees and of physicians participating in quality improvement teams and in training. The initial range of this five-item measure (Cronbach's alpha = .74) is -1.13 to 3.70, with a mean of zero; however, its skewness and kurtosis leads to a problem of heteroscedasticity (unequal variance), a violation of one of the assumptions of linear regression. To make this scale's distribution more normal, we have transformed it using a logarithm. To do so, we have to add a constant to make all initial values positive. Of several possible constants (1.13, 1.20, 2.00), the most normal-producing transformation is the "log of (Implementation score + 1.2)." This transformed measure, which solves the heteroscedasticity problem, can be interpreted as saying that a small increase at the lower end of the scale (say, from 5% to 6% on the percentage items) is equivalent to a large increase at the upper end (say, 50% to 60%).

**Independent (Predictor) Variables.** We use CEO role model behaviors as an indicator of the desire to learn. A CEO "walks the talk" by using TQM techniques with his or her own senior management team, secretary, strategic planning, and professional life. These four yes/no

questions all load highly (above .4) onto a single factor (Collins, Cliff, McCormick, & Zatkin, 1986), and the z-scores form a reliable scale ( $\alpha = .73$ ).

Organizational size is based here on the number of staffed hospital beds. As in most research on organizational size, we use the logarithm of size (Haveman, 1993), in part because the differences between a 40-bed and a 50-bed hospital are more equivalent to the differences between a 400-bed and a 500-bed facility. Among TQM adopters in the sample, the average for this log measure is 160 beds. To measure the interaction between organizational size and CEO role model behaviors, we multiply the two variables together to create a new variable, size \* CEO role model.

**Control Variables.** With all else equal, it stands to reason that some organizations will be farther along in implementation if they have had more time to do so. We avoid this “artifact” by using two dummy variables to consider how long ago a hospital began its TQM effort: 2-4 years since adoption and 4+ years since adoption.

**Analysis Techniques.** The data are analyzed using ordinary least squares (OLS) linear regression. After excluding hospitals that did not answer every relevant question, the sample size is 1,898 hospitals. Once we logarithmically transform the implementation measure, we find no relevant violations of the five assumptions of linear regression (linear model, independence, homoscedasticity, normality, and reliable measures). To avoid a problem of multicollinearity between the interaction term and the two main predictor variables, we mean-center size and CEO role model behaviors by subtracting the mean from every data point. As a result, both transformed variables have a mean of zero but the same standard deviation as before.

## **Data Set 2**

**Sample.** Survey data from hospitals participating in the Center for Health Management Research of the Network for Health Management Education (Shortell, O’Brien et al., 1995) were

combined with data from the same time period from the National Survey of Hospital Quality Improvement (Barsness et al., 1993). Among the 61 hospitals participating in this research network with selected universities, 7,337 employees from a stratified sample returned a mailed survey—which measured items related to TQM implementation and organizational culture—for a response rate of 72%. These hospitals were generally comparable to ones nationally, but were a bit larger (223 beds versus 181) and had a somewhat greater proportion of teaching hospitals (35% versus 18%). Of the 61 hospitals, 37 CEOs (61%), in cooperation with the person in charge of quality improvement, claimed to have adopted TQM using the first data set’s criteria. Only responses from these 37 TQM-adopting hospitals were included in the regression analysis.

**Dependent (Outcome) Variable.** The degree of TQM implementation is measured using a 76-item questionnaire, on a 1 to 5 scale, reflecting the Baldrige Award criteria of TQM implementation. Factor analysis reveals six factors, which closely mirror the implementation-related categories of the Baldrige framework. Each factor’s scale is reliable ( $\alpha > .75$ ). Since our theoretical interest here is not in any one specific implementation category, however, and since the six category scores are also highly inter-correlated (average  $r = .76$ ), we follow Korsgaard, Brodt, and Whitener (2002) in creating an average score for each category and then averaging these six scores to create a composite measure of TQM implementation.

**Independent (Predictor) Variables.** The extent of an organization’s organic culture is measured using the 20-item “competing values” culture survey developed by Zammuto and Krakower (1991) based on the original typology of Quinn and Kimberly (1984). Respondents distribute 100 points between various descriptions of what constitutes a group culture ( $\alpha = .79$ ), a developmental culture ( $\alpha = .77$ ), a hierarchical culture ( $\alpha = .70$ ), and a rational culture ( $\alpha = .47$ ). Since the rational culture scale’s reliability is somewhat low, and all four culture scales add up to

100, the point allocations for the group culture and developmental culture scales are combined to form a measure of organic (versus mechanistic) organizational culture. Among hospitals adopting TQM, the organic culture score ranges from 34 to 69 (out of 100), with an average of 47. As in Data Set 1, organizational size is measured as the log of the number of staffed beds, with an average of 173 beds among TQM adopters. We multiply the two independent variables to get size \* organic culture.

**Control Variables.** We again use 2-4 years since adoption and 4+ years since adoption. Although not part of this study's hypotheses, prior research identified the strategic orientation of the change effort as a predictor of TQM implementation that may also be correlated with our predictor variables. Drawing on the Miles and Snow (1978) typology of generic strategies, a defender approach to implementation involves narrowly incorporating any new techniques or methods into pre-existing quality assurance/improvement. A prospector approach emphasizes seizing opportunities as they arise, although within an overall planned framework of change. This variable is the average of five survey items, on a scale of 1 (defender-like) to 7 (prospector-like).

**Analysis Techniques.** We mean-center both size and organic culture. Thirty one hospitals answered every question for the regression analysis. None of the five assumptions of linear regression are violated in a way that affects the overall results.

## RESULTS

### Data Set 1

[ Insert Tables 1 and 2 about here ]

Equation 2 in Table 2 indicates that, controlling for everything else, and as predicted by H1, the more a CEO exhibits role model behaviors, the more progress that that CEO's hospital makes in implementing TQM. In addition, equation 1 confirms H2: on average, large hospitals have worse TQM implementation. In the interaction regression model (equation 3), however, the

interaction between organizational size and CEO role model behaviors is marginally statistically significant ( $p = .057$ ). By inserting a high, average, and low value for size into equation 3, we can see the specific nature of this interaction. A high value is defined here as one standard deviation above the mean; a low value, one standard deviation below the mean (Jaccard, Turrisi, & Wan, 1990). The results support the interaction effect hypothesized in H3: CEO role model behaviors appear to have a greater influence on TQM implementation in large organizations (slope = .154,  $p < .001$ ) than in average-sized (slope = .129,  $p < .001$ ) or small ones (slope = .104,  $p < .001$ ). Moreover, consistent with H1, increased CEO role model behaviors are associated with higher TQM implementation for all hospital sizes; i.e., all three simple slopes are positive.

Note that, even after controlling for the other variables in Table 2, there is still a negative relationship between size and TQM implementation. Among several possible explanations, we believe that CEO role model behaviors may be too indirect a measure of the organizationwide desire to learn to implement TQM. A more broadly based measure of organizational motivation—such as cultural compatibility with TQM (see below)—may be a better proxy for this construct.

## **Data Set 2**

[ Insert Table 3 about here ]

Equation 2 of Table 3 indicates that, as predicted by H1, the more a TQM-adopting hospital has an organic culture, the more progress it makes in implementing TQM. Equation 1 generally confirms H2: on average, TQM implementation is worst in large hospitals ( $p = .053$ ). In equation 3, the interaction between organizational size and an organic culture is statistically significant ( $p = .005$ ). As shown in figure 1, H3 is again supported: the larger the hospital, the greater the (positive) effect of organic culture on TQM implementation.

[ Insert Figure 1 about here ]

That is, the “culture effect” is stronger in large hospitals (slope = .025,  $p < .001$ ) than in average-sized (slope = .016,  $p < .001$ ) or small ones (slope = .006,  $p = .075$ ).

## DISCUSSION AND CONCLUSION

So the answer to Hannan and Freeman’s (1984) question—whether large versus small organizations *implement* an organizational change faster after officially adopting it—appears to be that it depends on the organization’s desire to learn. Among organizations with *little* motivation to learn to implement TQM, large hospitals are more able to resist the institutional pressures to implement TQM, and so they implement TQM more slowly than do similarly unmotivated small organizations. Moreover, when it comes to implementing TQM, most large hospitals fit this low-motivation category; i.e., the larger the hospital, the less compatible the hospital’s culture tends to be with TQM, and, to a lesser extent, the fewer role model behaviors by the CEO. So, as predicted by H2, after a given amount of time since adoption, most large hospitals do in fact implement TQM less extensively than do smaller hospitals.

At the same time, however, we find in both data sets that an increased organizationwide desire to implement TQM influences actual implementation more strongly when it occurs in large organizations (confirming H3), presumably since they can draw on more resources and abilities to better put that motivation to work. In Data Set 1, when this desire to learn is measured (somewhat imperfectly) by CEO role model behaviors, the increased benefit to implementation does not appear to be enough to get these large but motivated organizations to reach the level of implementation achieved by their smaller peers. That is, it may be the case that CEO role model behaviors alone do not unleash enough organizational ability to undo fully a large organization’s inertia. In Data Set 2, however, organizationwide motivation is measured more broadly as cultural compatibility with TQM (i.e., mostly organic with some mechanistic elements). Among hospitals that fit this pro-TQM cultural profile—and a few large hospitals belong to this highly

motivated group—it is large organizations that achieve the best implementation success. That is, these large but motivated organizations have a greater ability to learn (due to greater resources), and when their strong ability is unleashed, their implementation surpasses everyone else's.

### **Limitations**

One caution in interpreting any self-reported survey data is the potential for bias. For example, Data Set 1's outcome measure may be only senior management's perception of implementation, and not actual implementation. On the other hand, though, the percentage questions are not entirely subjective, and senior managers do have the most relevant knowledge to answer many of the questions. Similarly for Data Set 2, survey respondents may claim that TQM implementation is high when it is not. However, only areas covering implementation, and not performance results, have been included here.

Another concern is that the sample size for Data Set 2 may seem on the low side by some standards. Nevertheless, it is important to keep in mind that, with thousands of overall survey respondents, each data point here represents approximately 120 respondents per hospital, thereby enhancing our confidence considerably in the overall accuracy and validity of each data point in the aggregated data set. Moreover, the statistical tests used here are designed so that the smaller the sample size, the harder it is to claim that any effects are statistically significant.

### **Implications for Organizational Theory**

Population ecologists have long emphasized that large organizations suffer from structural inertia and are therefore unlikely to change their structure, strategy, or systems (Hannan & Freeman, 1984). We find, however, that this inertia does not necessarily carry over into the implementation arena once the decision to adopt an innovation is made. Rather, the desire by members of the large organization to learn the innovation appears to be key: without the desire, implementation by large organizations is quite poor; but with it, implementation is unsurpassed.



Organizational learning theory, too, can benefit from incorporating a desire-and-ability model of behavior. This literature focuses mostly on the ability to learn, with the implicit assumption that all firms are motivated to learn; in many domains, however, this desire to learn is absent or diminished (Levin, 2000). By integrating insights from institutional theory (DiMaggio & Powell, 1991), especially the potential for decoupling between the adoption and implementation of an innovation (Meyer & Rowan, 1977; Westphal et al., 1997; Westphal & Zajac, 1994), we get a truer picture of how firms actually learn (Levin, 1999).

Future research might expand beyond the measures used here of an organizationwide desire to learn to implement a particular innovation—namely, the personal participation of the CEO as a role model and the organization’s cultural compatibility with the innovation. Other indicators might include market pressures as well. Future research might also explore how these indicators interact in different contexts (e.g., other types of innovations and industries), and the effect not just on implementation but on various aspects of performance as well. Finally, it may be interesting to explore *why* it is that some firms have a greater desire to learn than others.

### **Other Implications**

In a good deal of macro organizational research, organizational size is treated rather casually, as a control variable thrown in for good measure. Yet, in this research and others (e.g., Haveman, 1993; Zajac & Kraatz, 1993), size has been found to incorporate a combination of conflicting forces; ignoring these forces of desire and ability can only lead to inconsistent and confusing results across studies. Investigators, particularly in the areas of organizational learning, change, and implementation, would therefore be wise to carefully think through the different roles that indicators like size can play, in terms of both ability and motivation.

These findings also have implications for the design of future research in the area of organizational learning and implementation. As shown in figure 1, the positive effect of having

an organic culture on TQM implementation increases with organizational size. So entrepreneurship studies that sample from a population of smaller companies, for example, may find that the type of corporate culture does not have much effect on how much a managerial innovation like TQM gets implemented. Conversely, studies of large organizations may find that the type of culture makes all the difference in the world when it comes to implementation. In essence, our findings show that a larger organizational size *amplifies* the beneficial effects of a motivated, compatible culture on implementation. Researchers, then, should explicitly consider how this interaction will play out within their own particular sampling frame.

For managers, one potentially useful finding here is the varying need for culture change in different-sized organizations. Although it is always difficult to determine cause and effect in cross-sectional data, our results do suggest at least the possibility that having a small organization's CEO do more to "walk the talk" or making a small organization's culture more organic may not yield much greater implementation. In large firms, however, implementation gains might become quite dramatic if only the organization's motivation and culture could be made more compatible with the change effort. Alternatively, if the innovation itself can be made more compatible with an existing corporate culture—as may be possible to some extent with TQM (Sitkin et al., 1994)—then implementation may move especially quickly in a large organization, because the organization's strong ability to learn will have become unleashed.

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TABLE 1

## Descriptive Statistics and Simple Correlations

<u>Data Set 1 Variables</u> <sup>a</sup>	<u>Mean</u>	<u>S. D.</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1) Degree of TQM Implementation <sup>b</sup>	.017	.229					
2) Organizational Size	.000	.386	-.26				
3) CEO Role Model Behaviors	.000	.344	.25	-.04			
4) Size * CEO Role Model	-.005	.136	.07	-.03	.03		
5) 2-4 Years Since Adoption	.235	.424	.22	.14	.16	.04	
6) 4+ Years Since Adoption	.042	.200	.18	.05	.03	.04	-.12

<sup>a</sup> N = 1,898. Correlations of  $|\geq .05|$  or higher are statistically significant at the .05 level.

<sup>b</sup> Based on 5 items.

<u>Data Set 2 Variables</u> <sup>c</sup>	<u>Mean</u>	<u>S. D.</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
7) Degree of TQM Implementation <sup>d</sup>	3.340	.145						
8) Organizational Size	.000	.405	-.33					
9) Organic Culture	.000	7.587	.67	-.53				
10) Size * Organic Culture	-1.582	3.031	-.13	.12	-.37			
11) 2-4 Years Since Adoption	.452	.506	.22	.04	.05	.13		
12) 4+ Years Since Adoption	.064	.250	.31	-.12	.26	-.58	-.24	
13) Strategic Orientation	3.645	.839	.24	.25	-.13	-.27	.47	.11

<sup>c</sup> N = 31. Correlations of  $|\geq .35|$  or higher are statistically significant at the .05 level.

<sup>d</sup> Based on 76 items.

TABLE 2

Data Set 1: TQM Implementation Regression Results <sup>a</sup>

Dependent Variable = Degree of TQM Implementation <sup>b</sup>

<u>Independent Variables</u>	<u>Equation 1</u>		<u>Equation 2</u>		<u>Equation 3</u>	
	<u>B</u>	<u>(Std. Error)</u>	<u>B</u>	<u>(Std. Error)</u>	<u>B</u>	<u>(Std. Error)</u>
Organizational Size	-.183	(.012)***	-.176	(.012)***	-.175	(.012)***
CEO Role Model Behaviors			.129	(.014)***	.129	(.014)***
Size * CEO Role Model					.065	(.034)†
<u>Control Variables</u>						
2-4 Years Since Adoption	.156	(.011)***	.137	(.011)***	.136	(.011)***
4+ Years Since Adoption	.263	(.024)***	.250	(.023)***	.248	(.023)***
(Constant)	.374	(.027)***	-.025	(.005)***	-.025	(.005)***
adjusted-R <sup>2</sup> =	.184		.220		.221	
F =	143.22***		134.76***		108.68***	

<sup>a</sup> N = 1,898.

<sup>b</sup> Based on 5 items.

†  $p < .10$

\*\*\*  $p < .001$



TABLE 3

Data Set 2: TQM Implementation Regression Results <sup>a</sup>

Dependent Variable = Degree of TQM Implementation <sup>b</sup>

<u>Independent Variables</u>	<u>Equation 1</u>		<u>Equation 2</u>		<u>Equation 3</u>	
	<u>B</u>	<u>(Std. Error)</u>	<u>B</u>	<u>(Std. Error)</u>	<u>B</u>	<u>(Std. Error)</u>
Organizational Size	-.127	(.062)†	-.015	(.057)	-.011	(.049)
Organic Culture			.012	(.003)***	.016	(.003)***
Size * Organic Culture					.023	(.007)**
<u>Control Variables</u>						
2-4 Years Since Adoption	.058	(.057)	.024	(.046)	-.007	(.041)
4+ Years Since Adoption	.167	(.104)	.071	(.086)	.184	(.082)*
Strategic Orientation	.036	(.035)	.049	(.028)†	.080	(.026)**
(Constant)	3.173	(.117)***	3.146	(.093)***	3.078	(.083)***
	adjusted-R <sup>2</sup> =	.19		.49		.62
	F =	2.74*		6.77***		9.26***

<sup>a</sup> N = 31.

<sup>b</sup> Based on 76 items.

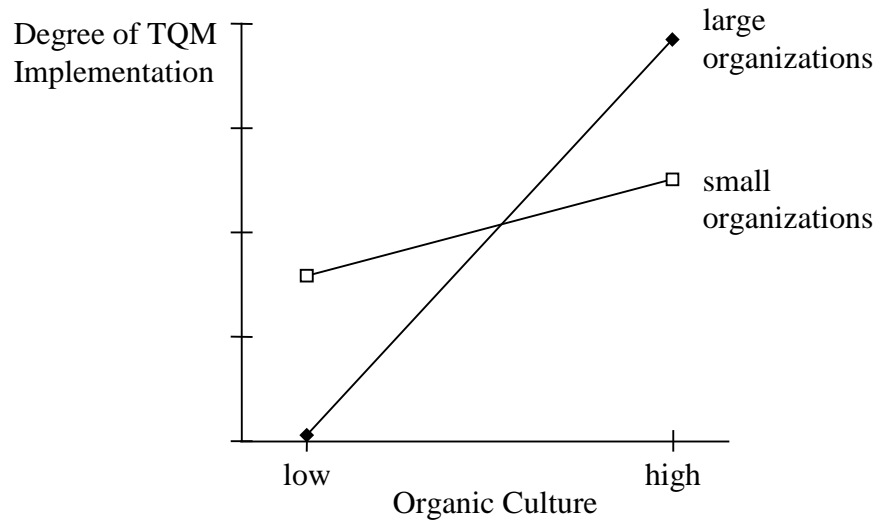
†  $p < .10$

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

FIGURE 1  
Interaction Effect of  
Organizational Size \* Organic Culture <sup>a</sup>



<sup>a</sup> Points shown are one standard deviation above or below the mean and are based on equation 3 in Table 3.