

The Relationship of Organizational Culture and the Implementation of Total Quality Management in Construction Firms

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ABSTRACT

Various researchers have alleged that organizational culture affects the performance of total quality management (TQM) and further suggest that failure in the implementation of TQM is caused by a mismatch with organizational culture. In order to implement successful TQM, organization members should have a clear understanding and agreed approach in achieving the quality goals. This study seeks to examine the relationship between organizational culture and the implementation of TQM in construction firms.

KEYWORDS

construction firms
organizational culture
total quality management

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INTRODUCTION

The emphasis on quality building products has been a focus of the Hong Kong construction industry since the 1980s. From the 1990's, the Hong Kong Housing Authority has been implementing quality assessment schemes, notably, PASS (Performance Assessment Scoring System), to foster improvement of the building quality in public projects. The Government ensures public housing meets the required standard by enforcing mandatory ISO 9000 Certification System for contractors. Many contractors have, consequently, begun to incorporate TQM (Total Quality Management) for continuous improvement, e.g., MTRC (Mass Transit Railway Corporation) projects, and sought ISO 9000 certification.

Various researchers, such as Cameron and Quinn (1999), Dellana and Hauser (1999), allege that organizational culture affects the performance of total quality management. Kekale and Kekale (1995), Al-Khalifa and Aspinwall (2001) and Dellana Hauser (1999) further suggest that failure in the implementation of TQM is caused by a mismatch of organizational goals with culture. Since organizational culture can be regarded as the shared values or beliefs among the people in an organization, organizational culture will affect people's belief in the implementation of TQM. In order to implement successful TQM, organization members should have a clear understanding and agreed approach in achieving the quality goals.

This study seeks to understand the contractors' adoption of TQM and their organizational cultures. The research objective is to examine the relationship between organizational culture and the implementation of TQM in construction firms.

QUALITY CONCEPTS AND TOTAL QUALITY MANAGEMENT

Defining quality is fundamental to the understanding of TQM. There are various

interpretations of *quality*. Generally, quality is the standard of a product or service which meets the customers' (reasonable) expectations. Juran (1999) defines quality as *fitness for use* which encompasses quality of design, quality of conformance, the availability and adequacy of service. Feigenbaum (1983) defines quality as the total composite product and service characteristics of marketing, engineering, manufacture, and maintenance through which the product and service in use will *meet the expectations of the customer*. The International Organization for Standardization, ISO (1994), defines quality as the totality of characteristics of an entity that bears on its ability to satisfy stated and implied needs.

The competitive global market demands companies to consistently provide high quality and reliable products at a low cost. In order to keep up with the pace, technological, political and social skills must be improved constantly. Corporations must have long term goals and TQM is an organized way to manage for total quality, effectiveness and competitiveness involving everyone, at all levels, in an organization.

Principles of quality management are put forward by various researchers such as Deming (1986), Juran (1999), Crosby (1979), Feigenbaum (1983) and Imai (1986). Such principles include the Deming triangle, the Juran Trilogy, Concept of Zero Defects, Kaizen approach etc. It can be concluded that there are significant common elements in the various quality philosophies. The most important point is not in selecting/implementing the appropriate managing principles, but to ensure all participants understand and believe in the reasons for applying such quality management philosophies and tools. The emphasis on beliefs and commitment of the individuals points to the principles of TQM.

Total Quality Management focuses on a continuous improvement process (Amrik

and O'Neill 1999) with an emphasis on people and their involvement and receptivity to continuous change. Thus, TQM is an integrated effort for gaining competitive advantage by continuously improving every facet of an organization's activities (see Lindsay and Petrick, 1997; Ho, 1999; Irwin, 1990; Logothetis, 1992). ISO officially defines TQM as a way of managing an organization which aims at continuous participation and co-operation of all its members in the improvement of quality in order to achieve customers' satisfaction, long-term profitability of the organization and benefit of its members, in accordance with the requirements of society.

Commitment, knowledge and involvement are the three fundamental characteristics of TQM that form the TQM (isosceles) triangle. These three characteristics are of equal importance and are interdependent. All three are required to achieve successful, long-term, sustainable improvement of the company.

Since the Hong Kong Housing Authority enforces ISO 9000 certification on contractors for public housing projects, the contractors have embraced the idea of TQM to various extents. However, Chu (2002) concludes that the management understanding towards total quality in Hong Kong is immature. Gryna and Watson (2001) suggest several factors to develop a positive quality culture; i.e., creation and maintaining the awareness of quality at all levels, presence of management leadership on quality, encouragement of self-development and empowerment, providing opportunities for employee participation to inspire action and providing recognition and rewards.

As TQM is a management approach which concerns the common values and beliefs of all the people in the organization, an understanding of the organizational culture of construction firms is of paramount importance.

ORGANIZATIONAL CULTURE

According to Hofstede (2001), organizational culture is the collective programming of the mind that distinguishes the members of one organization from another. Schein (2004) defines organizational culture as a pattern of shared basic assumptions that was learned by the organization as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems.

Researchers often use different dimensions to describe organizational culture. For instance, Caldwell, Chatman and O'Reilly (1991) identify seven dimensions to develop their Organizational Culture Profile (OCP), i.e., innovative, stable, respecting people, outcome oriented, detail oriented, team oriented and aggressive. Some researchers allege that there are principal factors that influence the choice of culture and structure, for instance, Handy (1993) suggests these principal factors to be history, ownership, size, technology, goals, the environment and the people; and in Hofstede's (2001) culture dimensions, there are three dimensions (power distance, uncertainty avoidance and individualism—collectivism) which may particularly influence organizational culture.

Definitions from most scholars, e.g., Hofstede (2001), Schein (2004), Cameron and Quinn (1999), Beyer and Trice (1993), suggest that organizational culture is a pattern of shared basic assumptions and values within an organization which allow the organization to operate. Values are implicit. In order to identify the individuals' perceptions of their working environment, Quinn (1988) suggests that values, motives, and problem-solving styles could reflect four notions of organizing, which emerge

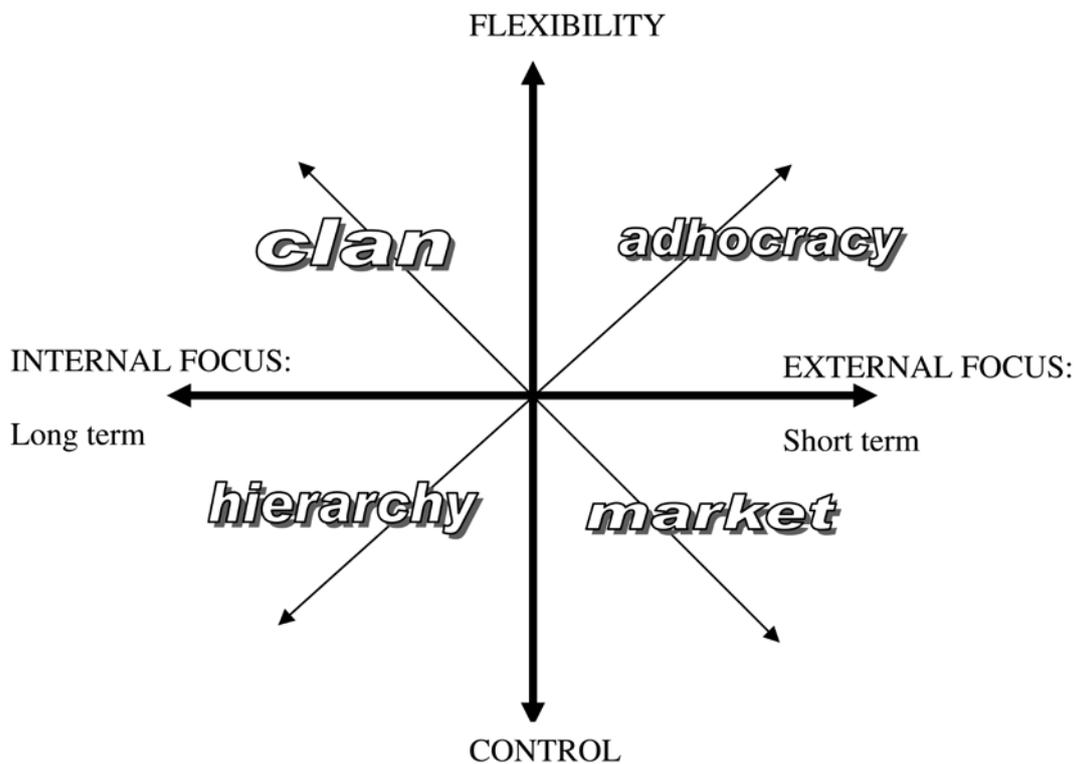
to a close parallel of four information-processing orientations, to form the basis of a competing values framework. The competing values framework is also applied in the study of sustainable development (Liu 2006) and organizational culture of construction firms in China (Liu, Zhang and Leung 2006).

The competing values framework is used to determine organizational effectiveness. Campbell (1974) creates a list of indicators for organizational effectiveness, which

Quinn and Rohrbaugh (1983) then analyze to form two major dimensions splitting the indicators into four main clusters. In these two dimensions, one differentiates effective organizing criteria from *flexibility* to *stability* while the other one differentiates from *internal focus and integration* to *external focus and differentiation*. The ends of these x and y axes (figure 1) represent competing values and the four quadrants each represents a distinct organizational culture type, i.e., hierarchy, market, clan and adhocracy.

Fig. 1 Competing values framework

Source: Adapted from Cameron and Quinn (1999)



Hierarchy Culture

In the 1950s-60s, organizations set rules and policies for employees to govern their work procedures; leaders would ensure smooth running of the operation. In the long term, the hierarchy culture is to facilitate a stable, predictable and efficient environment for the organization. (The seven characteristics stated by Weber (1974) are rules, specialization, meritocracy, hierarchy, separate ownership, impersonality and accountability.)

Market Culture

Popular in the late 1960s due to a very hostile and competitive market, organizations focused on their transaction costs with external constituencies aiming to create competitive advantages over their competitors. It is a results-oriented workplace driving towards profitability and productivity using aggressive strategies. In the long term, such a culture focuses on competitive actions and achieving stated goals and targets.

Clan Culture

People working in such an organization have shared values and emphasize teamwork. They develop an environment stressing human relationships where managers empower their staff and facilitate them to participate and commit. In the long term, such a culture will lead to an organization focussing on individual development with high cohesion and morale.

Adhocracy Culture

These organizations like to be adaptive, flexible and innovative so they can use new resources to gain further profit. However they bear high risks and greater uncertainties. Emphasis is on individuality, risk taking and anticipating the future.

ORGANIZATIONAL CULTURE AND TQM

Understanding the dominant culture of an organization before implementing TQM is important. Environmental changes produce different emphases within an organization, thus, new approaches in learning and adaptation are required. Schein (2005) regards cultural dynamics as a natural evolution because there is constant pressure exerted on any culture for growth and evolution. Beyer and Trice (1993) propose that cultural change can be initiated by top management. Leaders should pay attention to what the objectives of the organization are and implement different but appropriate strategies for their followers for continuous success.

Kekale and Kekale (1995) allege that the mismatch of organizational culture with TQM implementation principles is a reason for the failure of implementing TQM, while Doyle (1992) blames lack of management leadership and inadequate training. Al-Khalifa and Aspinwall (2000) discover that the clan and adhocracy cultures provided the best working environment for successful implementation of TQM; this is also supported by Dellana and Hauser (1999). However, organizations differ in their backgrounds (history/leadership style) and, thus, there is no unique way of implementing TQM.

Cameron and Quinn (1999) reveal that many companies failed in implementing TQM because they did not acknowledge that the implementation procedures might constitute a fundamental change from the direction, values and culture of their companies. Hence, an appreciation of the need for culture (change) to match the TQM approach is fundamental to successful TQM implementation.

DATA COLLECTION

In order to examine the relationship between TQM and organizational culture in construction firms, questionnaires designed to collect data on organizational culture profiles and TQM implementation are sent to 51 building contractors from the Hong Kong Housing Authority approved contractors list. All these companies have obtained the ISO certificates and possess their own quality management policies and systems. A collection of opinions (10 respondents in each construction firm) from different organization members is assembled instead of a single respondent from each firm.

Organizational Culture Assessment Instrument (OCAI), as developed by Cameron and Quinn (1999) based on the Competing Values Framework, is used to measure organizational culture. Six dimensions (dominant characteristics, leadership style and approach, management of employees, organizational glue, strategic emphases and criteria of success) are used to identify the underlying assumptions and values of an organization. The OCAI is modified to elicit responses on a 5 point Likert scale.

ECI Measurement Matrix (European Construction Institute 1993) is adapted to determine the construction firm's progress towards the achievement of Total Quality.

There are twelve considerations for attaining the goal, each with six levels of attainment, scoring from 0-5. The total score is used to determine the quality management understanding of the company. There are six levels of achievement in management understanding: none, uncertainty, awakening, enlightenment, empowerment and wisdom.

DATA ANALYSIS

Nine contractors responded to the questionnaire and their OCAI scores are summarized in Table 1. The results suggest that out of the six dimensions, dominant characteristic, organizational leadership, management of employee and criteria of success are strongest in the clan culture, while organization glue and strategic emphases are strongest in the hierarchy culture.

The average organizational culture profile tends to be biased towards a mix of clan and hierarchy, with characteristics of high commitment and morale, emphasis on human resource development, information management and communication, as well as focus on stability and control. The construction industry in Hong Kong is well established for many years, and the results show that construction firms opt for a stable and efficient working environment.

Table 1: Organizational culture scores of the nine construction firms

Organizational culture dimensions	Culture type			
	Clan	Adhocracy	Market	Hierarchy
Dominant Characteristic	3.51	3.23	3.32	3.34
Organizational Leadership	3.39	3.17	3.20	3.36
Management of Employee	3.47	3.11	3.26	3.27
Organizational Glue	3.19	3.23	3.10	3.30
Strategic Emphases	3.40	3.49	3.31	3.57
Criteria of Success	3.37	3.33	3.24	3.23
Overall organization culture profile	3.39	3.26	3.24	3.34

Out of the nine contractors, eight have reached a stage of enlightenment or empowerment, with one company at the stage of uncertainty. The company at the stage of *uncertainty* is informed about the importance of quality management but has taken no action for the implementation of TQM because it is not certain about the real benefits. The three companies at the stage of *enlightenment* realize the benefits of implementing TQM, and are trying to enhance such a program for further gain by careful monitoring. The five companies at the stage of *empowerment* have a good knowledge of TQM and learn and apply the principles in their projects practically, with good team work, communication and understanding of customer value. Leadership commitment is what is missing to reach

the stage of wisdom. The result reveals the situation that construction firms in Hong Kong are well on their way towards total quality.

Table 2 shows the association between the four types of culture and the stage of management achievement towards total quality. Correlation analysis is further carried out to examine the culture dimensions that affect TQM significantly (See Table 3).

In Table 2, it is found that the stage of empowerment has the highest coefficient of correlation with the clan and hierarchy culture, while there is no relation with the stage of empowerment for the market culture and the adhocracy culture. Table 3 shows the contribution of various culture dimensions

Table 2: Spearman's rho correlation coefficients of TQM achievement and culture types

	Clan		Adhocracy		Market		Hierarchy	
empowerment	0.870	(0.002)	0.609	(0.082)	0.000	(1.000)	0.870	(0.002)
enlightenment	-0.550	(0.125)	-0.275	(0.474)	0.274	(0.476)	-0.550	(0.125)
uncertainty	-0.550	(0.125)	-0.550	(0.125)	-0.411	(0.272)	-0.550	(0.125)

Figures in parentheses denote significant levels.

Table 3: Spearman's rho correlation coefficients of TQM achievement and culture dimensions

Culture Dimension	Dominant Characteristic	Organizational Leadership	Management of Employee	Organizational Glue	Strategic Emphases	Criteria of Success
<i>Culture Type: Clan</i>						
TQM	0.375 (0.321)	0.571 (0.108)	0.831 (0.006)	0.770 (0.015)	0.848 (0.004)	0.599 (0.088)
<i>Adhocracy</i>						
TQM	-0.288 (0.452)	0.126 (0.748)	0.234 (0.544)	0.454 (0.220)	0.924 (0.000)	0.481 (0.190)
<i>Market</i>						
TQM	-0.092 (0.813)	0.247 (0.522)	-0.276 (0.472)	0.220 (0.569)	0.000 (1.000)	0.407 (0.277)
<i>Hierarchy</i>						
TQM	0.593 (0.092)	0.957 (0.000)	0.698 (0.037)	0.895 (0.001)	0.826 (0.006)	0.928 (0.000)

Figures in parentheses denote significant levels.

to TQM. It is shown that strategic emphases, management of employees and organizational glue have a significant attribution to TQM in the clan culture; for adhocracy culture, strategic emphasis is significant. Most of the culture dimensions in the hierarchy culture attribute to the TQM score – with organizational leadership having the highest correlation coefficient.

The results imply that the management style (leadership and employee management) and the way to hold the organization together (organization glue and strategic emphases) are important factors in determining the success of TQM implementation. As it is a management approach seeking continuous improvement to satisfy all stakeholders, TQM is found to be more successful in companies with a long term and internal focus in managing aspects.

Furthermore, *management of employees* in the market culture is negatively associated with the TQM achievement level which suggests that TQM may be implemented more successfully in a working environment emphasizing on customer-orientation rather than one which is highly work goal-oriented.

CONCLUSION

Organizations have different working environments, work attitudes and leadership styles, which influence the implementation of the TQM approach. It is therefore important that companies understand their organizational culture profiles to integrate the TQM approach.

Generally, the ideal culture profile for TQM implementation is one which supports a friendly working environment with leaders acting as advisors to allow smooth operation of the organization under a long term concern for growth and acquisition of new resources. At the same time, the organization

should be held together by high commitment and morale from the participants in order for TQM to be implemented successfully within a set period.

From the results, an ideal organizational culture for TQM in the Hong Kong construction industry is best to have the dominant characteristics, organizational leadership, organization glue and criteria of success of a hierarchy culture; the management of employees of a clan culture; and the strategic emphases of an adhocracy culture. This verifies Quinn's (1988) allegation that no organization would reflect only one value system for it to perform well, values in all the four cultures should be obtained.

ACKNOWLEDGEMENT

This paper is partially supported by RGC CERG HKU7122/03E funding.

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