

Influence of Organizational Factors on Total Quality Management Implementation in the Ghanaian Construction Industry

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Abstract

The implementation of Total Quality Management (TQM) in construction has been the subject of arguments. Different writers have disagreeing opinions on the factors affecting its implementation in the construction industry. The purpose of the study was to establish the organizational factors affecting TQM implementation in the Ghanaian construction industry. The study adopted Delphi survey method of data collection. Views of experts (construction project management professionals) were sought on organizational factors towards TQM implementation. The questionnaires were completed by the experts, based on the impact of other factors in predicting successful TQM implementation in the construction industry. Data obtained was analyzed with Microsoft EXCEL, spread-sheet software and results were presented in a table. Findings from the study showed that twelve (12) out of twenty (20) organizational factors identified were considered by the experts to be the major determinants of TQM implementation in the construction industry. These factors are Leadership and top management commitment, Top management support, Project manager competence, Quality policy, Supplier management, Limited cash flow to manage TQM, Employee involvement, Client involvement, Feedback by project participants, Design quality management, Strategic quality management, Quality data and reporting. These factors were considered by the experts to have achieved consensus with Interquartile Deviation less or equal to one (1). Six of the organizational factors as considered by the experts had very high influence (VHI: 9-10) while the remaining fourteen (14) of the organizational factors had high influence (HI: 7-8.99) on TQM in the construction industry. It can be concluded from the findings that organizational factors have high impact on TQM implementation in Ghanaian construction. It is recommended that questionnaire survey instrument should be used to validate the measurement variables.

Keywords

Construction industry, Organisational factors, Total Quality Management

1. Introduction

Different writers have disagreeing opinions on the concept of TQM and its basic elements and principles since its inception in 1920. Quality pioneers such as Deming (1986), Juran (Juran and Gryna 1993), Crosby (1979), Feigenbaum (1991), and Ishikawa (1985) in advanced countries, have given some suggestions in the TQM field, which have achieved considerable recognition throughout the globe. The details of their works give a better appreciation of the TQM principles, philosophy, and practices. It should however, be noted that quality pioneers also have dissimilar opinions about TQM, though some resemblances can be found in their studies. An enormous of research has been carried out in the field of TQM and its implementation to address these differences. Sila and Ebrahimpour (2002) established twenty five TQM factors which are extensively used by researchers to measure TQM implementation. Their research discovered eight common cores of the factors including: leadership and top management commitment, employee training, customer focus and satisfaction, teamwork, employee involvement,

continuous improvement and innovation, and quality information and performance. Hassin et al. (2007) also recommend that training and education are key factors in the implementation of TQM. Other factors include customer satisfaction, employee participation and quality policy. Nawaz and Ikram (2013) approved that though TQM can be applied in the Construction Sector, there is a lack of consensus on the implementation process and lack of understanding of the critical success factors (CSF's) as well. Hence, it should be noted that for a successful implementation of TQM, it is very important that construction companies understand the TQM constructs and the critical factors that affect its implementation.

2. Literature Review

To successfully implement TQM it is important to identify the critical success factors required for the implementation process. Saraph et al. (1989) defined critical success factors as critical areas of managerial planning and action that must be practiced to achieve effective quality management in a business unit. These factors may be constructs with latent variables which cannot be measured directly but can still be assessed indirectly from their manifestation. Saraph et al. (1989) in a pioneering study developed a quality management instrument, identifying eight (8) critical success factors of TQM: Role of divisional top management and quality policy, Role of quality department, Training, Product/service design, Supplier quality management, Process management/operating, Quality data and reporting and Employee relations. Their study had considerable influence on later studies, and subsequent research has resulted in the development of different frameworks and constructs based on varying perceptions and objectives (Zhang 2000). Although these frameworks or models have different TQM approaches, they all lay emphasis on leadership, strategic planning, customer and market focus, human resources focus, process management, continuous improvement, supplier management and business results in one way or the other (Ritchie and Dale 2000; Conca et al. 2003; Hughes et al. 2021; Ahmed et al. 2021).

Constructs or elements of critical success factors identified in frameworks for TQM point to two categories of factors: soft and hard dimensions of TQM (Kanji 1995; Powell 1995; Dow et al. 1999; Oakland 2000). Hard components of TQM concentrate on the tools and techniques, systems and the supplementary measurement and control of the work process, ensuring conformance to performance standards and the reduction of variability whereas soft components relate to areas of behavioural concerns such as increasing customer orientation, employee management, organizational and quality culture. These dimensions are interrelated and are very important for the successful implementation of TQM.

A great deal of research has been conducted in the field of TQM and its implementation. The study by Sila and Ebrahimpour (2002) reviewing 347 articles on TQM from 1989 to 2000 identified seventy-six studies that employed factor analysis to extract factors for successful implementation of TQM. Out of these, they compiled twenty-five TQM constructs which are widely used by researchers to measure TQM implementation. Their study revealed eight common cores of the factors viz: customer focus and satisfaction, employee training, leadership and top management commitment, teamwork, employee involvement, continuous improvement and innovation, and quality information and performance. Literature also reveals that different countries have adopted similar TQM factors as criteria for quality awards under different titles (Metri 2005). However, the criteria for all these quality awards are derived from three basic frameworks: the Malcolm Baldrige National Quality Award (MBNQA), the European Quality Award (EQA) now called European Foundation for Quality Management (EFQM) Excellence Award and the Deming Prize.

3. Methodology

The research was conducted with reference to existing theoretical literature, i.e. published and unpublished literature. This was followed up with Delphi survey method to collect data from experts (construction professionals) through email. A Delphi Study is a group decision mechanism requiring qualified experts who have deep understanding of the issues at hand (Okoli and Pawlowski 2004; Ellis et al. 2021; Mambwe 2021). The list of experts was generated from peer reviewed conference proceedings and journal articles. Seventeen invitation letters were sent to the experts through email to indicate their willingness to participate in the study. Thirteen experts showed their interest to participate in the study. During the first stage of the Delphi questionnaire administration, three experts were further dropped. The remaining ten experts concluded the survey. This number of panelists was considered adequate based on literature recommendations from scholars which have employed the technique previously. Hallowell and Gambatese (2010) suggested that since most studies incorporate between eight (8) and sixteen (16) panelists, a minimum of eight (8) is reasonable. Hallowell and Gambatese (2010) argued that the size of

a panel should be dictated by the study characteristics, number of available experts, the desired geographical representation and capacity of the facilitator. Views of experts in Ghana were sought on top management factors towards TQM implementation. The experts were asked specifically to rate the impact and influence of the factors in predicting the success of TQM implementation in the Ghanaian construction industry. An impact scale used is shown in Table 1 below. Data obtained from the Delphi survey was analysed with Microsoft EXCEL, spread-sheet software. The output from the analysis was a set of descriptive statistics such as means, median, standard deviations and derivatives of these statistics. The results were further presented in a table. The steps in conducting Delphi survey has not been discussed in this paper due to limited space.

Table 1. Impact scale

No impact / influence		Low impact / influence		Medium Impact / influence		High impact / influence		Very high impact / influence	
1	2	3	4	5	6	7	8	9	10

4. Findings and Discussion

From the twenty (20) organizational factors and issues that affect the implementation of Total Quality Management implementation, twelve (12) factors were considered to have reached consensus with IQD cut-off (IQD ≤ 1) score on Total Quality Management implementation in the construction industry (Table 2). Six (6) of the factors had very high impact (VHI: 9-10) on Total Quality Management implementation in the construction industry. The remaining fourteen (14) factors had high impact (HI: 7-8.99) on Total Quality Management implementation in the construction industry (Table 2).

Table 2. Organizational Factors and Issues that Affect Construction Companies in the Implementation of TQM

Organizational Factors and Issues that Affect Construction Companies in the Implementation of TQM	\bar{x}	M	SD	IQD
Leadership and top management commitment	9.40	9.00	0.52	1.00
Top management support	9.30	9.00	0.48	1.00
Project manager competence	8.80	9.00	0.79	0.25
Quality policy	8.90	9.00	0.88	0.50
Supplier management	8.00	8.00	0.82	0.25
Limited cash flow to manage TQM	7.70	8.00	1.64	0.75
Change in management behaviour/attitude	7.90	8.00	1.73	1.50
Change in status quo	7.80	8.00	1.69	1.50
Personnel to manage and monitor TQM application	7.50	8.00	1.58	1.25
Education and training	9.00	9.00	0.94	1.25
Employee relations	8.20	8.00	0.92	1.25
Employee involvement	8.78	9.00	0.83	0.50
Lack of interest in the application of TQM	8.30	8.00	1.25	1.50
Client involvement	8.30	8.00	0.82	1.00
Teamwork	8.50	8.00	1.08	2.00
Feedback by project participants	8.50	8.00	0.71	1.00
Design quality management	8.30	8.00	0.82	1.00
Strategic quality management	8.30	8.00	0.82	1.00
Quality data and reporting	8.40	8.00	0.84	1.00
Analysis of quality information	8.50	8.00	0.97	1.25

M=Median; \bar{x} =Mean; SD=Standard Deviation; IQD=Interquartile Deviation

The study was to evaluate the organizational factors and issues that affect the implementation of Total quality Management implementation in the construction industry. Results from the study revealed that the twenty identified organizational factors or measurement variables were considered by the experts to have varying impact on the TQM implementation in Ghanaian construction industry. The assessment of the twenty (20) factors and issues as considered by the experts to be the major determinants of Total quality Management in the construction industry showed that twelve (12) (Leadership and top management commitment, Top management support, Project manager competence, Quality policy, Supplier management, Limited cash flow to manage TQM, Employee involvement, Client involvement, Feedback by project participants, Design quality management, Strategic quality management, Quality data and reporting) were considered by the experts to have achieved consensus with IQD less or equal to one (1). Six (6) of the organizational factors and issues (Leadership and top management commitment, Top management support, Project manager competence, Quality policy, Education and training, Employee involvement) as considered by the experts had very high influence (VHI: 9-10) on Total quality Management in the construction industry. The remaining fourteen (14) of the organizational factors and issues as considered by the experts had high influence (HI: 7-8.99) on Total quality Management in the construction industry. Their SD ranges from 0.48-1.73 and their mean ranges from 7.50 – 9.40. These indicate how significance organizational factors and issues are towards the Total quality Management implementation in the construction industry.

5. Conclusion and Further Research

This study intended to examine organisational factors that affect Total Quality Management implementation in the Ghanaian construction industry. Six out of the twenty organizational factors (Leadership and top management commitment, Top management support, Project manager competence, Quality policy, Education and training, Employee involvement) as considered by the experts had very high influence on Total Quality Management in the construction industry. The remaining fourteen of the organizational factors as considered by the experts had high influence on Total quality Management in the construction industry. It can be concluded from the findings that all the organizational factors considered in the study have high impact on TQM implementation in Ghana. It is believed that attention given to these factors will minimize difficulties related to the implementation of Total quality management and will enhance performance in companies implementing Total quality management. Further research is also suggested to be carried out by using empirical fieldwork (questionnaire survey) to determine the importance, similarities and differences of the identified factors.

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