

AN INVESTIGATION ON THE CRITICAL SUCCESS FACTORS OF TOTAL QUALITY MANAGEMENT IMPLEMENTATION IN LIBYAN CONSTRUCTION ORGANISATIONS

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The paper presents an investigation on the Critical Success Factors (CSFs) of the implementation of Total Quality Management (TQM) in Libyan construction organisations. A thorough review of literature has been carried out to identify the CSFs, which were then used to develop a questionnaire. Of 200 questionnaires distributed to contractors in Tripoli, 130 were completed and returned, representing a response of 65 per cent. Among of these participating organisations about two-third are from the public sector, and the rest from the private sector. The data were analysed using Principal Component Analysis (PCA) which revealed the internal structure of the data in a way which best explains the relationships between CSFs. The findings identified five reliable and valid TQM constructs, namely 'organisation management', 'communication to improve quality', 'training and development', 'employee's involvement and recognition' and 'culture'. The findings revealed a low level of CSFs implementation, which might be originated from little understanding of the fundamental TQM principles.

1 INTRODUCTION

Quality management is crucial elements of successful management of construction projects. Construction companies must produce high quality products consistently and added value to appeal to their customers/ clients. The construction industry is the backbone of the economy of any country and it is also vital to a country's infrastructure. However the construction industry in Libya faces problems of developing economy, such as high fragmentation, low productivity, lack of standards and poor quality. Most countries are faced with similar problems in their construction industries even though the economy of each country is different¹. The requirements of the quality standards are often not fulfilled by construction clients. Kometa and Olomolaiye², also state that clients are still often displeased and many other problems continue to arise in the construction industry, even though efforts have been made and time and cost overruns have been improved. Taking Libya as a case in point, this still means that the construction industry in this country is still not up to its fullest potential. The research presented in the paper aims to investigate and identify Critical Success Factors (CSFs) effecting TQM implementation in Libyan Construction Industry (LCI).

2 KEY PRINCIPLES UNDERPINNING TQM IMPLEMENTATION

Several researchers have examined TQM from different perspectives^{3,4,5,6,7}. The key ingredients which are crucial in successfully implementing TQM within any organisation

comprises the following:

3.1 Management commitment and leadership

Drucker⁸, describe leadership as the ability to inspire confidence and support amongst those needed to achieve organisational goals. Anderson et al⁹, describes the concept of leadership as the ability of top management to establish practice and a long term vision for the organisation or firm driven by changing customer requirement. However, accordingly to Saylor¹⁰, the client provide the impetus for setting targets for TQM, which is further developed in detailed through establishing quality policies, deploying appropriate resources to match the goals and roles of top management¹¹. These sentiments were also echoed by the European Quality Award Malcolm Baldrige Quality Award. Hence the concept of leadership can be defined as: the ability of top management to lead the firm in a continuous manner, pursuing long term overall business success. This can be exemplified by top management participation, top management commitment to employees, education and training.

3.2 Teamwork

It is widely accepted working in a team or group is generally more effective than working individually. TQM recognises that the team approach should not be limited to the internal organisation team, but it should be used to cover vendors and take external customers under their umbrella. TQM benefits from the successful experience of quality circles in Japan^{12,13}.

3.3 Training and education

According to several scholars^{14,15,16} training is an essential factor for any successful quality management program. Programs of training must target all persons in the organisation and the total quality management is the responsibility of everyone in the organisation. The employees from the top management to the labour-force must understand the philosophies of TQM. Teamwork is required to improve all processes in the construction industry.

3.4 Communication

According to Burati¹⁴, good communications will result in reducing ones fear as this will allow TQM to be more approachable. Deming¹⁷, advises to “drive out fear” for management to change. Good communication and a good feedback system are very important in conveying ideas to the management and to incorporate the necessary change required¹⁸.

3.5 Employee involvement and participation

Successful implementation of a TQM environment requires a committed and skilled workforce to fully participate in the activities carried out to improve the quality. All the employees at all levels within the organisation should be encouraged to take responsibility and communicate effectively toward improving the quality at all production stages. Managers and supervisors must consider the employees as being intelligent and having effective ideas¹⁹.

According to Sayeh et al²⁰, all employees within the organisation are considered as internal customers and should be well satisfied if the organisation desires to achieve a full satisfaction for its external customers, this situation indicates to a chain of suppliers and customer relationships involving both internal and external customers. Therefore TQM programs are strongly focused on the importance of the relationship between both internal and

external customers and suppliers. This relationship is known as a quality chain which should not be broken at any stage¹⁶.

3.6 Culture

The culture within an organisation is defined by Jeffries et al²¹, as an interaction that takes place between employees within an organisation along with the relationships engendered by this behavior. In line with this Hofstede²², states that the culture can be described as the beliefs which pervade the organisation regarding the procedures used to conduct the business, how the employees should behave and the way they prefer to be treated.

Within the TQM culture a co-operative and open culture has to be created by the organisation management in which all employees are responsible for satisfying the organisation's customers. They will consider this only if they are involved in the development of the vision, plans and strategies of the organisation. It is crucial for the organisation to achieve a successful implementation of TQM to encourage the employees to participate in all these activities. However they are unlikely to behave in an acceptable responsible it was concluded by²⁰, that before thinking of implementing TQM within an organisation it is advisable for the organisation to understand the existing dominant culture.

4 THE IMPLEMENTATION OF QUALITY MANAGEMENT IN ARABIC COUNTRIES

Arabic countries have made many efforts to implement Quality Management. These countries include Dubai, Bahrain, and Saudi Arabia. This is indicated by^{23,24} in Saudi Arabia. ²⁵, in Qatar. ²⁶, in Yemen. ²⁷, in UAE The majority of Arabic countries are still in the early stage of implementing quality management initiatives (QMS and TQM). They all share the same limitation: (i) lack of management commitment, vision and planning and lack of constancy of purpose – this can lead to the business only being run for a limited amount of time²⁸. (ii) lack of skill and ability from the top and middle managements in the quality management field.

5 CRITICAL SUCCESS FACTORS FOR TQM IMPLEMENTATION

Saraph et al²⁹, defined the critical factors for TQM as “critical areas of managerial planning and action that must be practiced to achieve effective quality management in business unit”.

Many studied has been done related to CSFs used different methodologies such as ^{30,31,32} using a different set of factors ^{33,34,35,36} and however those authors has attempt to investigate the critical success factors in the TQM in different set of factors.

TQM frameworks	Critical Success Factors														
	Top management	Strategic	Process	Design	Education and Training	Supplier	Customer satisfaction	Employee empowerment	Business	Information and Analysis	Benchmarkin	Resources	Society & environment	Statistical process control	Culture
Juran (1974)	■	■	■	■	■	■	■	■	■						
Crosby (1979)	■	■	■	■	■	■		■	■					■	
Feigenbaum (1983)	■	■	■		■			■							
Garvin (1988)	■		■	■		■	■	■							
Saraph et al (1989)		■	■	■	■	■	■		■		■				
Lu and Sohal (1993)	■	■	■	■	■				■		■	■		■	
Oakland (1993)		■	■	■		■	■	■		■	■			■	
Flynn et al. (1994)	■		■	■	■	■	■			■					
Babbar & Aspelin (1994)	■				■		■	■							
Powel (1995)	■	■	■	■	■	■	■		■	■	■		■	■	
Ahire et al. (1996)	■	■	■	■	■	■	■	■		■	■			■	
Black and Porter (1996)		■	■	■	■	■	■	■	■		■				■
Low and Wei (1996)			■			■	■			■	■				
Tamimi (1998)	■	■			■	■	■	■				■			
Ang et al. (2000)		■	■	■		■	■	■	■		■				
Zhang et al. (2000)	■		■	■	■	■	■	■		■					
Nwabueze (2001)		■	■	■	■	■	■	■	■		■				

Thiagarajan et al (2001)		■		■		■		■	■					
Motwani (2001)	■				■	■	■		■		■			
Deming prize (2004)			■	■	■	■		■			■			
MBNQA (2004)		■	■	■	■	■	■	■	■	■				
EQA(2004)		■	■	■		■	■	■	■	■		■	■	

Table 1: Comparative Analysis of Various TQM Frameworks

From the table 1 most of frameworks have three CSFs in common such as process management, training and education, customer satisfaction and the other frameworks revealed that have four CSFs such as top management commitment, supplier quality management, employee empowerment and involvement, and information and analysis in addition quality culture ,CSFs occurs only³⁵ where culture very important factors to success TQM For instance, these researchers,^{37,38,39,40,41,42,43,44,45,46,47,48} have all emphasised the importance of organisational culture for the implementation of quality initiatives in their studies.

6 RESEARCH METHOD

A structured questionnaire was developed based on the findings of the literature review. The questionnaire has been designed to obtain the perceptions of managers working in construction companies, where they were asked to indicate their level of agreement on 53 CSF statements, against a four-point Likert scale ranging from 1, ‘strongly disagree to 4, ‘strongly agree. A total of 200 hard copies of the questionnaire were distributed to 45 randomly selected construction companies in Tripoli (Libya) which have been ISO 9000 certified. Each questionnaire was accompanied with a covering letter from the researcher, providing explanation about the idea and outcomes beyond from the survey. In order to enhance the response rate, the questionnaires were distributed and collected in person. A total of 130 questionnaires were fully completed giving a response rate of 65%. Approximately, two-third of the completed questionnaires were from the public sector and the rest from the private sector.

7 THE RESULTS OF ANALYSIS

The first step of the analysis was to subject the data to reliability test. Cronbach’s Alpha⁴⁹ was used as a coefficient of reliability for assessing the internal consistency of TQM constructs. The value of Cronbach Alpha was found 0.970. According to Pallant⁴⁹, Cronbach’s Alpha coefficient of 0.70 or above is considered adequate, giving an evidence that the data from the questionnaire survey can be considered reliable as measure of TQM implementation.

Fifty three items in the questionnaires were inter-correlated and subjected to Principal Component Analysis (PCA) with promax rotation conducted to construct factor structure matrix. Inspection of the correlation matrix revealed the presence coefficient of 0.3 and above and the Kaiser Meyer Oklin (KMO), measure of sampling adequacy value was 0.728. The

Bartlett's test of sphericity indicated a statistical significance. This evidence supports the factorability of the items. Kaiser⁵⁰, cited from Field⁵¹, recommended accepting value of greater than 0.5 as barely acceptable, value between 0.5 and 0.7 are mediocre, value between 0.7 and 0.8 are good, value between 0.8 and 0.9 are great and value above 0.9 are excellent". This indicates the value in our case 0.728 as good.

Apart from using the scree plot as a guide to decide on the number of factors to be extracted, the Kaiser criterion (eigen value greater than 1) was used. Five constructs were identified and explained a total of 83 per cent of the variance in the variables. The finding shows that there are five constructs including 45 CSFs effecting successful implementation of TQM in the LCI. In this research, there are five constructs have been identified and represent collectively the Libyan construction sector, namely (i) management commitment, (ii) communication, (iii) work environment and culture, (4) employee involvement and recognition, and (5) employees training and development.

8 CONCLUSION

This study has identified the of CSFs of TQM implementation in the Libyan construction companies. The organisations were revealed to have a low level of implementation of the CSFs, this was due to: very low knowledge of QMS, methods and tools and lack of top management commitment and determination. This has caused: a lack of vision, inadequate tactical competence and employee involvement and a lack of measurement.

The study has demonstrated that the quality initiatives and practices are still in their early stages, most of the organisations interviewed were progressing with quality improvement programs without any precise quality vision or purpose. As a result from external pressure from international competitors ISO 9000 was launched, this was also used as a prestigious thing to have, this is because some of the other local companies have been certified with the ISO 9000.

Libyan companies have started their quality journey by having the ISO 9000 certificate. The certification of ISO 9000: 2000 is a useful stepping stone for implementing the philosophy of TQM; however the ISO 9000 certification alone will not guarantee an automatic improvement in the performance of the organisations. Good performance is impossible to have with a poor organisational structure and feeble written policies.

ISO 9000 brings many advantages to Libyan companies, for example the QMS can create good document systems, this is important because it will be very useful to companies and currently, as we discovered from the companies interviewed, and these are very poor. This new documentation method may play an extremely important role in measuring the TQM progress in the Libyan environment.

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