



TQM: CONCEPTUALIZATION AND IMPLEMENTATION IN INDIAN CONSTRUCTION INDUSTRIES

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ABSTRACT

Infrastructure development plays a vital role in the growth of the economy. Investment in the infrastructure as a percentage of GDP is increasing day by day in almost all the countries especially in India. With rapid growth of the economy, tremendous pressure comes on the infrastructure development and in turn the construction industry. As construction projects get larger and more and more complex, people increasingly demanding higher standards of quality. As we know, Total Quality Management (TQM) is universally accepted as a successful management tool in the service and manufacturing industries. This tool can also be adopted in the construction industry to achieve the quality production. Implementation of TQM in construction industry leads towards reduction in construction quality costs, timely execution of works, customer satisfaction and relationship building between user and supplier. The aim of this paper is to identify the level of effectiveness of TQM as well as framework for implementing TQM in construction industries in India.

Keywords :- Infrastructure, economy, GDP, construction industry, TQM, management tool, construction quality

INTRODUCTION

Total quality management was first officially introduced in the 1940's by Dr. W. Edward Deming and has continued to change and improve through the years. Even though this concept has not yet been fully accepted by construction industries in India, the acceptance and implementation of total quality management programs is increasing. The main obstacle for total acceptance of TQM seems to be based on the fact that construction managers are more interested in short term results and profits as well as completion of projects than in steady, quality wise work and improvement. Most of the countries are facing with the same quality problems despite the differences in their economies. Due to the above mentioned quality problems, customers are not satisfied with the performance achieved on many of their projects. So many construction companies are disappointed in their effort to improve quality through TQM because of their focusing on financial aspects and profitability instead of quality achievements.

In order to emphasize the role of quality various aspects of quality tools and techniques have been also described in previous studies (Belle 2000, Metri 2004). Today, quality management has become one of the important factors leading towards the organizational growth and a company's success in the global market. In order to achieve overall success and customer's satisfaction, construction companies must always apply the principles of Total Quality Management. Indian Construction companies, therefore, need to understand the concept of TQM for the successful implementation of TQM. The aim of this paper is to focus the ways of effective implementation of TQM in the Indian construction companies.

TQM Definitions

The International Academy of the American Society for Quality has defined TQM as: The management approach of an organization centered on quality, based on the participation of all of its members and aiming at long-term success through customer satisfaction and benefits to all members of the organization and to society.

ISO 8402:1994 has defined TQM as: Total quality management is the management approach of an organization, which concentrates on quality based on the participation of its

members and aims at long-term success through satisfaction and benefits to all members of the organization and society.

Nordics defined TQM as – the culture of an Organization committed to customer satisfaction through continuous improvement.

Japanese definition of TQM – A management philosophy which is characterized by being scientific, i.e. based on data logic, systematic i.e. based on systems (e.g. ISO-9000) and companywide i.e. involving everyone in the organization.

This definition of Japanese based on the fact that the road to TQM in manufacturing and construction companies comes from SQC (Statistical Quality Control) is more scientific.

TQM Concept

TQM concept was first adopted, worldwide, for manufacturing industry which results in the misleading impression that the TQM concept cannot be applied to any industry other than manufacturing. In manufacturing companies, processes are of uniform and repetitive in nature whereas in construction industries activities are unique in nature. This makes implementing TQM is more challenging in construction industry than in manufacturing industry. One of the main principles of the TQM concept, which is an important objective for any organization, including construction firms, is to achieve customer satisfaction. The success of TQM concept in any industry mainly depends on its two main elements viz. Quality Assurance (QA) and Quality Control (QC).

Quality assurance is all planned and systematic actions necessary to provide adequate confidence that a structure, system or component will perform satisfactorily and conform to project requirements. On the other hand, quality control is a set of specific procedures involved in the quality assurance process. These procedures include planning, coordinating, developing, checking, reviewing, and scheduling the work. QA and QC are applied during project implementation whereas TQM is a quality improvement process adopted by an organization and implemented on a continuous basis.

Basic Elements of TQM

For any construction process, project requirements are the key factors that define quality. The process of construction can be broken down into various stages, namely, (1) briefing stage (2) designing or planning stage (3) tendering stage (4) construction stage and (5) commissioning stage. Following are the basic elements of TQM which are generally accepted by the manufacturing and construction industries that affect quality of the process.

- 1) Management Commitment and Leadership
- 2) Training
- 3) Teamwork
- 4) Customer Satisfaction
- 5) Cost of Quality
- 6) Statistical Methods
- 7) Supplier Involvement
- 8) Continues Improvement

Implementation of TQM in Construction

TQM processes have been used effectively and broadly in the manufacturing industries for the quality control and prevention of defects as well as to achieve pre-determined results. On the other hand, due to dissimilarity between the constructions, same kind of TQM processes cannot apply to construction industries as they are. In past, so many studies were carried out to find the way of TQM implementation in construction.

Tam and others (2000) conducted a study in Hong Kong to find the result of implementation of quality standards ISO 9000 to building construction in Hong Kong. In 1992, the Housing Authority in Hong Kong made implementation of the ISO 9000 quality system mandatory for contractors who wanted to place a bid on housing development. Furthermore, they developed and introduced an objective quality measure: the Performance Assessment Scoring Scheme (PASS). Results of the study by Tam et al. (2000) showed that seven years later, the general level of quality had not improved and that the expected continuous improvement in construction quality had not been realized.

Lansley (1983) conducted a study in UK to find the effects of TQM implementation in construction industry. He found that management of most of the construction companies finds their problem's solution from past experience or from others. They were not innovative. Most of the management had tendency to "wait and watch". They thought if the new ideas adopted by few firms can work and looks useful then the idea can be copied with low risk but with all benefits. The main tendency in construction industry is to implement innovations that have already proven themselves in the market.

The results of other studies also showed that it is difficult to apply innovative techniques and principles in small-sized building firms. The authors concluded, based on additional analysis of data, that the biggest obstacle to quality implementation is the culture of the construction industry.

These examples show how difficult it is to implement change in the building and construction industry. Though, it also shows the importance of innovative techniques and best practices. If construction companies see that these innovative techniques and best practices actually work, they are more willing to adopt it, especially if it will reduce costs. In addition, providing companies with a roadmap for implementing TQM will increase their confidence and motivation to implement change.

Outcome of TQM implementation in construction industry

There are few studies that explored the effects of TQM

implementation. On the basis of study on TQM implementation in public housing projects in Hong Kong, Liu (2003) concluded that customer satisfaction was increased after ISO 9000 implementation. Results of a study also showed that the average number of defects in housing projects built by companies with ISO 9000 certification was significantly less than the number of defects in housing projects built by companies without ISO 9000 certification.

Chase (1998) concluded that application of TQM to the construction industry has been proven to speed-up projects while increasing profitability.

Torbica and Stroh (1999) found in their empirical study that implementation of TQM is positively related with customer satisfaction.

McIntyre and Kirschenman (2000) concluded from their study on construction firms in US that considerable economic benefit can be achieved through the implementation of TQM.

Hence, from above few studies that has examined the effects of quality implementation in construction industry, the results show that both customers and contractors can benefit from it.

Conclusions

The construction industry along with infrastructure development is the growth engine of India and has undergone a dramatic change in the last few decades. New materials, automation and sophisticated equipment have increased speed and reduced costs in the structural stage.

At the post structural construction level, materials and processes still remain largely unchanged. Over 50% of construction projects suffer from delays and over spending and more than 30% of the completed projects have quality defects resulting in huge cost and time overruns. This is mainly because of increasing costs and lack of easy availability of materials like sand, bricks, labour and such essential resources. Delays are also due to inconsistency in materials, inefficiency of labour, talent, training, fatigue, etc. which can be eliminated by effective implementation of TQM techniques in the construction industries in India.

Though, the TQM implementation in the building and construction industry is not an easy task. One of the reasons is the conservative nature of the construction industry and the involvement of many parties (e.g. contractors, sub-contractors, consultants, owners, etc.). Another reason is the lack of standardisation of the construction industry. One more reason is that the construction professionals are unaware of the TQM principles and techniques.

The overall success of today's construction companies mainly depends on the integrated approach to total quality management and quality control/quality assurance. The development of a total corporate quality management program should, therefore, be incorporated to the Indian construction companies to meet the specific need of the company. Education and training of management personnel should be accomplished first, as managers must fully understand and support the total quality management process and actively participate in its implementation. For the acceptance of TQM in the company, pilot projects should also be introduced during the early stages of implementation. Also, for the improvement of quality, warm and productive relationships among owners, contractors, subcontractors and professionals should be developed.

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