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Impact of Total Quality Management (TQM) on the Performance of Building Construction Industry

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Abstract: ***The purpose of this paper is to discuss the impact of Total Quality Management (TQM) on building construction industry in India. The critical success factors, problems, issues and challenges in effective TQM implementation in building construction industry have been briefly discussed. There are not many research studies available in India on implementation of Total Quality Management (TQM) in building construction that have found out the change in the performance of the building construction companies after implementation of TQM. This study is exploratory in nature and perhaps one of the few studies which has studied the change in the performance of the construction industry in India after successful implementation of TQM. A questionnaire survey was conducted among the building construction firms in India to measure the impact on the performance of building construction after implementation of TQM. The findings show that there is a significant change in the performance level after implementation of TQM in the sample building construction organizations. Productivity has increased whereas complaints have reduced. There is an increase in repeat customers whereas rework and change orders have reduced***

Keywords : TQM; Obstacles; Critical success factors; Construction firms

I. INTRODUCTION

As National Mission for Urban Housing of Govt. of India aims "Housing for All by 2022", so there is a need to create 20 million new housing units and supportive

infrastructure. To achieve such gigantic task, the construction industry will play an important role in the process of economic development and growth of our country. It requires a scientific approach for appropriate management of men, materials, machines, money and above all motivation. The demand for high quality buildings is growing in India. A number of social factors such as cost of construction, lack of time, quality of buildings etc, are pushing the construction industry towards industrialization. As people are becoming more educated about energy conservation, lighting, indoor air quality, and other health and comfort related issues, so consumers increasingly want their buildings to be built to the highest standard of quality. Therefore, construction industry should switch over to advanced techniques of management called TQM. In construction, quality can be described as conformance to project plans and specifications. Improving construction process will result in improved final product quality, specifically, the finished building project. Poor quality of construction may lead to failure or collapse of large structures such as high rise buildings, shopping malls etc., which could have disastrous effects on the society by way of loss of life and property. The following statement of "the Code of Hammurabi" is worth mentioning here. "If a builder constructed a house but did not make his construction work strong with the result that the house which he built, collapsed and so caused the death of the occupants of the house, the builder shall be put to a severe punishment, may be death". Such statements show the importance of quality management in building construction industry.

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II. QUALITY IN CONSTRUCTION

The best known definition of quality is 'fitness for purpose'. According to Juran (1974), a famous TQM guru, 'Fitness for purpose' may be another way of saying 'giving customers what they want' or rather what they need. Crosby (1979) define it as the conformance to requirements. Feigenbaum (1961) define it as about meeting or exceeding the needs of the customer, customer satisfaction/customer delight or the value for his money.

According to Deffenbaugh (1993) "So total quality in the construction industry can be defined as a measurable process of continuous improvement that is focused on the needs and expectations of the customer. Success requires a partnership characterized by input, involvement, commitment and action from owners, contractors, architects, engineers, sub-contractors and suppliers".

III. TOTAL QUALITY MANAGEMENT (TQM)

Total Quality Management is that philosophy and strategy of management which is customer focussed. It is centred on quality so that customer is delighted. The word "Total" implies that continuous efforts are made by all members of the organisation to delight the customer through systematic efforts for improvement of building construction processes.

3.1 Tqm In Building Construction Industry

Construction industry can be classified into many segments depending on a company's specific area of activity ranging from industrial, housing, commercial, utilities and civil work and development of infrastructure. Arghadeep and Murty (2004) stated that the importance of the construction industry can be understood from the fact that it accounts for about 50 per cent of India's planned outlay. It is the biggest employer, next only to agriculture in India. Construction plays an important role in the building of the nation and in India, it employs approximately 31 million people.

A fundamental condition to guarantee the implementation of the techniques of TQM is understanding the significance of this idea. If the managers of a building construction organization want to actualize the Total Quality Management as a technique to compete in the market, they should know precisely what they mean, when they are discussing quality or quality enhancement and they should realize how to measure quality of an item or service.

In present day situation, TQM is viewed as an approach to beat the competitors to enhance business viability by presenting a level of adaptability in its different tasks. It is applicable as much as to construction industry as it does to manufacturing.

Deming (1982), the man responsible for making the Japanese industry world leaders in quality, defined "Total Quality Management (TQM) as a modern method of leadership by which employees are encouraged to participate in the management decision processes and where boundaries between departments are eliminated. It is this process of continuous improvement for both production and service which should be constantly nurtured by top management."

Juran (1980) eminent quality "guru" focuses on "quality triology". "His quality management philosophy focuses on three processes-Quality Planning, Quality Improvement and Quality Control. He provides three steps for quality improvement – analyze symptoms, identify the causes and apply remedies". Crosby (1979) introduced four absolutes of TQM. "Quality is conformance to requirements, the system for achieving quality is prevention, the performance standard is Zero defect and the measurement of quality is the price of non-conformance." He further indicates that education and awareness are key to successful quality management. He emphasizes the process of corporate cultural change. All these three 'gurus' are unanimous in saying that the days of inspection-based quality control are over. Leadership by top management is essential for culture of commitment to quality. Quality is the result of high intentions and sincere and committed effort of planning and execution by all personnel of the construction organization. Contributions of all these three 'gurus' and other experts have to be considered as the foundation for improving quality of the Building Construction Industry.

3.2 A JOURNEY TO TQM

Many construction organizations have attempted to implement TQM and are not successful because their culture was not ready for the implementation of TQM. There was lack of discipline and control on construction processes. There were problems regarding interdepartmental interaction.ISO 9000 focuses on eliminating these type of problems, while the goal is customer satisfaction. ISO 9000 helps an organization to shift its culture to allow successful implementation of TQM.

TQM and ISO 9000 are not alternatives for each other. The ISO quality system may be one of the essential features of TQM. To better understand the transformation process brought about by ISO 9000 to successfully implement TQM, we need to understand the commonality between TQM and ISO 9000. These areas are:

- Top management commitment and involvement
- Prevention, detection and correction of errors and defects.
- Dependency and integration of processes.
- Customer focus, both internal and external.
- Root-cause corrective action process.
- Education and Training
- Control of product and process design.
- Statistical Process Control
- Effective implementation

Many ask what is so unique about TQM, considering it is only a managerial tool like many others. TQM advocates building in quality rather than inspecting it at the end. It promotes continuous measurement and improvement of the process rather than blaming construction workers for inefficiencies. Another major difference is that TQM is a type of philosophy that the companies must embrace as a whole. It needs to be implemented in all different sectors and become a way of doing business. The participation of all the employees is essential for the success of TQM. However, the underlying factor that differentiates TQM from many other tools is the principle that everything must be geared so as to satisfy the customer, and to meet and exceed expectations.

IV. IDENTIFYING OBSTACLES AND CRITICAL SUCCESS FACTORS

Before implementing TQM, construction companies must try to identify the problems or obstacles, they may face and they must take steps to overcome these obstacles to achieve the goal of quality construction. A construction organisation can overcome these obstacles if it is involved in the implementation of TQM with full dedication and establishes a style using teaching, inspecting and promoting TQM. Some major obstacles are shown in the Figure 1, which were found during this study.

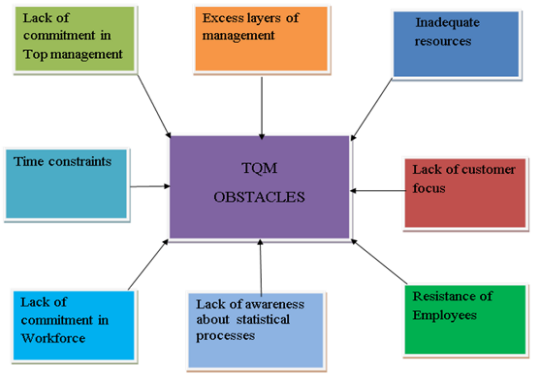

Figure 1: TQM Obstacles

Similarly, construction companies must identify critical success factors (C.S.Fs) and should focus on these C.S.Fs to ensure the successful implementation of TQM. Customer satisfaction, management commitment and total employees involvement are some of the critical success factors that help in successful implementation of TQM in building construction industry.

Some of these critical success factors are shown in the Figure 2, which were found during this study.

Figure 2:TQM Critical Success Factors

V. CONCLUSION

The research findings show that there is a significant change in the performance level after implementation of TQM in the sample building construction organisations. Productivity has increased whereas complaints have reduced. There is an increase in repeat customers whereas rework and change orders have reduced.Therefore,all types of construction organisations, irrespective of the size, sector or ownership must adopt TQM and continue to use this as a way of doing construction business. As TQM is a process and customer focused, there is a dire need to implement this in building construction industry so as to improve the quality of all buildings being constructed in India.There is no use of inspecting the building after the process is completed. The quality has to be built in the process of construction and that is possible if TQM is implemented in the true sense. This will lead to customer satisfaction through total quality improvement. The increasing interest in the TQM philosophy has grown due to a changing business climate. Increased foreign and domestic competition, as well as increased public awareness and expectations regarding quality have forced private corporate and government agencies to increase the value for money of their product or service to remain competitive or, in the case of government, retain the goodwill of taxpayers..

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