



NEED OF TOTAL QUALITY MANAGEMENT IN INDIAN CONSTRUCTION INDUSTRY

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ABSTRACT

For the last few decades Total Quality Management (TQM) techniques have been used extensively and beneficially in the area of manufacturing and industrial engineering to control the process and prevent defects before they happen. TQM focuses on the quality of management systems, not the management of quality, on continuous improvement of processes in order to improve every feature of an organization. The implementation of TQM is fundamentally a process of culture change. This paper provides an insight on the need of total quality management in construction industry as there is absence of an in-depth study exploring the TQM in the Construction Industry.

Keywords - Construction Industry, Continuous improvement, Customer satisfaction, TQM

I. INTRODUCTION

In order to understand the need for improvement in the Indian construction industry and better management of construction projects, appropriate methods needs to be used. Day by day construction costs are becoming too high. When turn around at the end of a project becomes a distressing experience with unnecessary disputes which arises because of insufficient quality or indifference to quality which imposes a serious drain on the financial resources of a company and limits profit potential. To be competitive in today's market, it is essential for Indian construction companies to provide more consistent quality and value to their owners/stakeholders/customers. Now it's time to discard the old adversarial approach to manage the construction work. It's time to develop better and more direct relationships with owners/stakeholders/customers, to initiate more teamwork at the jobsite, and to produce better quality work.

TQM is a management philosophy that seeks to integrate all organizational functions (marketing, finance, design, engineering, production, customer service, etc.) to focus on meeting customer needs and organizational objectives.

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 the members of the organization and to the society.

Total: Everyone in the organization is involved in creating and maintaining the quality of the services and products offered by the organization. It is a comprehensive way of dealing with complex sets of interacting issues involving everyone at all levels and addressing all major issues.

Quality: The organization through individual and collective actions focuses on meeting customer's needs, at lowest cost, first time and every time and hence recognizing that it is the customer's perception that identifies quality. Total quality therefore refers to the fact involved in achieving quality according to some requirements laid down.

Management: While managing the system, the emphasis should be towards continuous improvement and not on quick fixes. Then only Quality can be achieved. This requires everyone in the organization to be responsible for managing their own job.

TQM portrays a whole systems view for quality management. It builds on the idea that an organization is an interactive network of communication and control. Total Quality Management is a management system for a customer focused organization that involves all employees in a constant improvement of all aspects of the organization [5].

II. LITERATURE SURVEY

The problems of the construction industry like low productivity, poor health and safety, inferior working conditions, and inadequate quality are chronic [1]. In the construction industry there is huge amount of wastage of time, money and resources, both human as well as material, each year because of absence of quality management procedures [2]. Similar problems had also been encountered in the manufacturing industry, yet great performance improvements have been attained in manufacturing in the last decades because of successful quality management programs such as Total Quality Management (TQM) [3]. TQM is a customer-oriented and quality focused management philosophy for achieving continuous improvement [4]. TQM refers to a new concept in which the focus is shifted from quality of products to quality of all the issues within an organization. In other words, it compasses all aspects of business, makes quality a strategic objective, and requires an integrated effort among employees at all levels to increase customer satisfaction by continuously improving performance [2].

The implementation of TQM in the manufacturing industry caused increase in productivity, it decreased product cost and improved product reliability also [2]. TQM aims to establish quality enhancement as an organizational dominant priority and improve organizational effectiveness through eight principles, which include: 1) top management leadership, 2) customer management, 3) people management, 4) supplier management, 5) quality information management, 6) process management, 7) learning, and 8) continual improvement [7].



III. HISTORICAL BACKGROUND

In 1920s -

1. Some of the first seeds of quality management were planted as the principles of scientific management swept through U.S. industry.
2. Businesses clearly separated the processes of planning and carrying out the plan, and union opposition arose as workers were deprived of a voice in the conditions and functions of their work.
3. The Hawthorne experiments in the late 1920s showed how worker productivity could be impacted by participation.

In 1930s -

1. Walter Shewhart developed the methods for statistical analysis and control of quality

In 1950s -

1. W. Edwards Deming taught methods for statistical analysis and control of quality to Japanese engineers and executives. This can be considered the origin of TQM.
2. Joseph M. Juran taught the concepts of controlling quality and managerial breakthrough.
3. Armand V. Feigenbaum's book Total Quality Control, a forerunner for the present understanding of TQM, was published.
4. Philip B. Crosby's promotion of zero defects paved the way for quality improvement in many companies.

In 1968s –

1. The Japanese named their approach to total quality *companywide quality control*. It is around this time that the term quality management system arises.
2. Kaoru Ishikawa's synthesis of the philosophy contributed to Japan's ascendancy as a quality leader.

Today -

1. TQM is the name for the philosophy of a broad and systemic approach to managing organizational quality.
2. Quality standards such as the ISO 9000 series and quality award programs such as the Deming Prize and the Malcolm Baldrige National Quality Award specify principles and processes that comprise TQM [13].

TQM is implemented in manufacturing companies such as Ford Motor Company, Phillips Semiconductor, SGL Carbon, Motorola and Toyota Motor Company. It is also implemented in construction sector of foreign countries s like UK, Oman, Yemen, Hongkong, USA, Turki, Egypt, etc.

IV. INDIAN CONSTRUCTION SECTOR

The construction sector in India is the second largest employer, next only to agriculture. The construction sector employs more than 35 million people in India. From 2013 to September 2015, and it attracted the second highest FDI (foreign direct investment) equity inflow. According to India's government, the construction sector is valued at over \$126 billion. About half of the demand comes from the infrastructure sector, and the rest is driven by the real estate sector and other industrial activities [10].



GDP from Construction in India increased to 2290.92 IND Billion in the second quarter of 2016 from 2285.27 IND Billion in the first quarter of 2016. GDP From Construction in India averaged 1990.66 IND Billion from 2011 until 2016, reaching an all time high of 2377.80 IND Billion in the second quarter of 2015 and a record low of 1736.49 IND Billion in the third quarter of 2012. GDP from Construction in India is reported by the Central Statistical Organization, India [11].

Apart from the Smart Cities project, the Government's 'Housing for All by 2022' will be a major game changer for the industry. Increased impetus to the creation of affordable housing mission, along with quicker approvals and other supportive policy changes will soon result in an increase in construction activity. Likewise, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) will bring in increased activity in infrastructure and related sectors. Township housing and infrastructure will also become major drivers for the construction sector in the immediate future. In most cases, the development of townships and their associated infrastructure happens in new corridors of Indian cities, and the Government is extending a lot of support for developing untapped areas [12].

V. FAILURES IN CONSTRUCTION INDUSTRY

The construction industry in India suffers from the problems such as workmanship defects, time and cost overrun. Poorly coordinated designs, plans and specifications usually lead to poor quality, cost overrun and customer dissatisfaction. A poorly defined scope of work that was made part of the engineering agreement can lead to extra costs incurred by the owner. Poor planning and execution can cause schedule problems that could translate into added contingencies. Poor communications between the disciplines involved in the project can lead to cost overruns due to poorly coordinated designs and specifications. Poor documentation of meetings and understandings often lead to costly revisions of design or could lead to changes during construction where extra work or force account work has to be paid by the owner. Poor or nonexistent quality-control and quality-assurance procedures can allow costly errors to go undetected in the design and contract documents. The lack of understanding of construction procedures and techniques by the design professional can have a profound effect on construction feasibility and costs. Inaccurate quantity takeoff that mislead the contractor, inadequate quality-control and quality-assurance programs that lead to costly errors [6].

Construction sector faces number of problems like poor quality of material/work, lack of skilled employees/labours, failure to meet schedules/deadlines, design flaws, errors in execution of plan, improper communications/co-ordination, improper management of resources, etc.

VI. BENEFITS FROM IMPLEMENTATION OF TQM

TQM is a customer-oriented and quality focused management philosophy for achieving continuous improvement. As TQM is successfully implemented in the manufacturing industry, it has become source of innovation for the construction industry. This aspired to adopt and implement TQM in the construction industry. It is commonly acknowledged that implementation of TQM in the construction industry promises several benefits such as, Better customer satisfaction / more repeat customers, Reduced rework, Reduced nonconformities, Improved relationships with architects /engineers / subcontractors, Higher productivity,

Reduced waste of resources (e.g., labor, material, money, etc.), Reduced cost of poor quality, Increased competitive advantage over competitors, Success in realizing long-term strategic plans of the company, Better chances in bidding process with pre-qualification, Improved budget performance, Improved schedule performance, Increased market share, Better chances in winning contracts in international markets, Improved employee job satisfaction, Better chances in winning contracts in domestic markets, etc. [8].

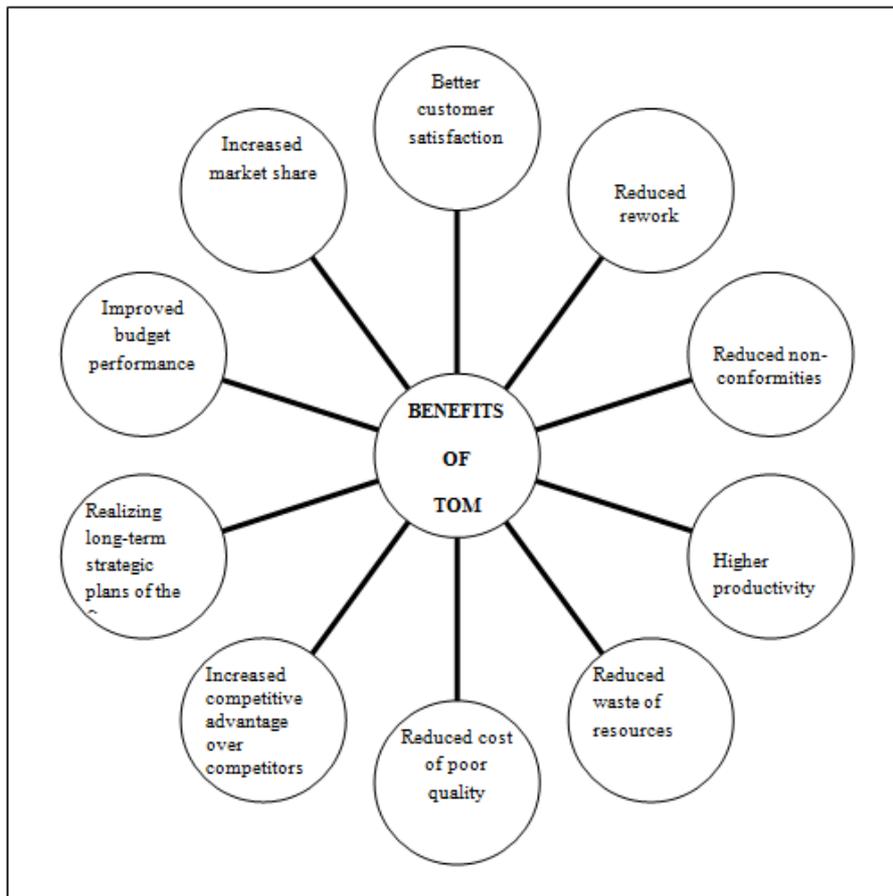


Fig.1 Benefits of TQM

VII. NEED OF TQM

Currently in the Indian construction industry, there is inadequate quality-control and quality-assurance programs which causes issues like rework, delays, cost overruns, reduced productivity, wastage of resources, customer dissatisfaction, poor budget performance, employee job dissatisfaction, etc. It means the Indian Construction Industry needs a very effective method/program to deal with these problems. TQM provides a key to deal with all the problems as Total Quality Management is nothing but a comprehensive management system which [5],

- Focuses on meeting owners'/customers' needs by providing quality services at a cost that provides value to the owners/customers.
- Is driven by the quest for continuous improvement in all operations.
- Recognizes that everyone in the organization has owners/customers who are either internal or external.

- Views an organization as an internal system with a common aim rather than as individual departments acting to maximize their own performances.
- Focuses on the way tasks are accomplished rather than simply what tasks are accomplished.
- Emphasizes teamwork and a high level of participation by all employees.

VIII. FRAMEWORK FOR IMPLEMENTATION OF TQM

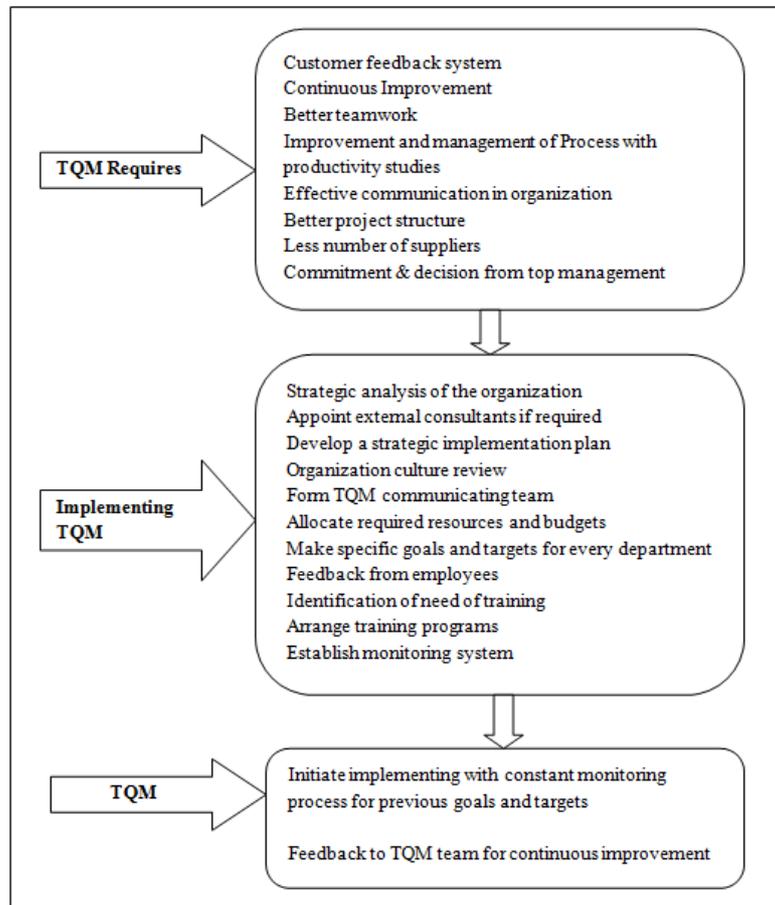


Fig. 2 - Implementation of TQM

IX. CONCLUSION

The construction sector in India is the second largest employer, next only to agriculture. The construction sector attracted the second highest FDI (foreign direct investment) equity inflow. GDP from Construction in India increased to 2290.92 IND Billion in the second quarter of 2016 from 2285.27 IND Billion in the first quarter of 2016. It means the construction sector in India gives huge contribution in development of the country. But this sector should realize that the success cannot be achieved overnight, it should give some time for adaption and continuous improvement. In order to comprehend the need for overall improvement in the construction industry, and to better manage construction projects, there is need of implementing TQM in the Indian construction industry.



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