

RESEARCH ARTICLE



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ASSESSMENT OF IMPLEMENTATION OF QUALITY MANAGEMENT IN CONSTRUCTION INDUSTRY

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ABSTRACT

Quality management is a process to improve the effectiveness, flexibility and competitiveness of a business. The importance of quality management in construction industry is being recognized, nowadays. However implementing the quality standards in construction sector is real challenging work. Therefore it is necessary to access the present scenario of quality management in construction industry. The method adopted for this, in this study is questionnaire survey. This study aims at analyzing the frequency and percentage of responses of construction firms regarding the implementation of Quality management at all the levels of the projects. The questionnaires were designed for four levels of management; top management, project managers, contractors and site engineers. The data reliability and analysis has been carried out using SPSS software version 16.0. From the statistical data analysis, present scenario and problems in implementation of quality management in construction sector of Pune have been arrived at.

Keywords— Quality management, implementation, construction industry.

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INTRODUCTION

Implementation of Quality management (QM) has become an important strategic in construction sector around the world. It has become an important tool for companies around the world to improve their competitive abilities and provide strategic advantages [8]. QM is used in construction industries to improve the quality, which is considered as a global phenomenon for seeking high output within rapid changes of environmental and economical variables. The Indian construction industry is an integral part of economy and a conduit for a substantial part of its development investment, and its growth is considered on account of industrialization, urbanization, economic development and customers increasing expectations for improved quality of living. To be competitive in

today's market, it has become essential for construction industry to provide more standard of quality and giving more importance to customer satisfaction. Construction industry recently started to adopt QM as an initiative tool to solve quality related problems and to satisfy the needs of the customer, which has lead to customer satisfaction with reducing projects cost and time i.e. reduced rework. Quality management in construction industry creates a major problem in construction industry due to sudden change in market. Major difficulties in implementation and acceptance are traditional or conventional practice. Lack of quality in construction may fail to attract the customers which result in price drop down of profit.

LITERATURE REVIEW

Fluctuation of demand and custom work are some of the constructions problems which create difficulties in implementing QM and QM help organizations to cope with such fluctuations of demand. In other words, while QM could be a solution for the construction industry problems, some of the construction industry problems are themselves obstacles for QM implementation. Nowadays construction industry faces the major difficulties in implementing quality management due to the barrier caused by traditional or conventional practice [4]. It is widely accepted that the client usually selects the contractor base mainly on the lowest price with less consideration for past experience, current workload, and reputation for quality. To change an organization culture is a difficult task which may lead to problems and even an organization may face resistance of different management team and barrier from top management. The challenge of implementing QM results from the fact that QM is not a slogan, nor a tool, nor a program; it is an organization paradigm. The concept of QM is broad enough to be the framework or foundation of an organization's culture. Therefore, implementing QM might deal with replacing, not just modifying, and the organization's culture [3]

III METHODOLOGY

To assess the present scenario in context of implementation of quality in construction industry, Questionnaire method was adopted. The present work is carried out in following phases:

- a) Development of questionnaire survey
- b) Data collection
- c) Data analysis and interpretation

The information has been collected from people of different levels working in construction industry, for which four different questionnaires are developed for top management, project manager, site engineer, and contractor. Development of questionnaire was the most critical task as the interpretation of answer to these questions will give the real picture of QM in construction sector. Hence the major parameters considered while developing questionnaire survey are concept of quality,

knowledge, quality management systems and methods, training programs, contribution of top management towards quality and experience of responses were also taken into consideration. The questionnaires were distributed after discussing the objective of this work to around 250 persons. The collected data was checked carefully and finally 200 responses i.e. 50 in each category are used for the analysis. Data analysis is done to transfer the questionnaire into statistical information and determine collected data that can achieve research objective. Data analysis focuses on transferring the questionnaires and filling the gaps between all variables. After collecting the data, SPSS statistical tool is used to analyze the quantitative data. The finding will clearly show the effectiveness of TQM in construction industry and find out the most significant factor that will improve the quality.

The range of work experience has been arranged in four categories that are greater than 15 years, 10-15 years, 5-10 years and less than 5 years. The results have been classified as working experience in construction sector in order to see it will help in the effectiveness of QM.

Table1: Frequency of Years of work experience

Years of experience	Top management	Project manager	Contractor	Site engineer
>15 years	21	11	7	1
10-15 years	28	16	18	7
5-10 years	1	23	18	20
<5 years	-	-	7	22

Reliability analysis: According to [8], The reliability test is used to measure the defect free element of the measurement. Cronbach alpha is used to measure the internal consistency of data collected whether it is reliable or not. Alpha value usually ranges from 0 to 1. If alpha value is less than 0.5 the data is unacceptable, for value above 0.6 the data is acceptable and above 0.7 data is good.

In the present study the calculated value of alpha is in the range of 'Good'. Hence the interpretation of this data will give reliable results.

IV RESULTS AND DISCUSSIONS

From the table 2 it shows that Quality indicator for top management is customer satisfaction (66%). 56% of responses says about not

having quality department in organization. Even though they are aware about Quality management is beneficial (98%) responses.

Table 2: Top management responses

TOP MANAGEMENT			
Description	Options	Frequency	Percentage
Quality indicator	customer satisfaction	33	66
Q.M.department.	No	28	56
Q.M.beneficial.	Yes	49	98
Imp. Rank	c,t,q,s	30	60
Imp. Product	Important	19	38

Table 3: Contractor responses

CONTRACTOR			
Description	Options	Frequency	Percentage
Quality mean	reputation or customer satisfaction	19	35.2
Quality Performance measure	better craftsmanship	24	44.4
Identify defects	Yes	34	63
Quality barrier	lack of proper equipment	17	31.5

According to contractor quality mean is reputation or customer satisfaction (35.2%). They were asked about barrier to quality implementation (31.5%) of

responses said it is due to lack of proper equipment. They were also asked are they debited for defects identified (63%) of responses said yes.

Table 4: Project manager responses

PROJECT MANAGER			
Description	Options	Frequency	Percentage
Quality improvement program	Yes	40	80
Quality management department	No	29	58
Quality mean	Elimination of defect	19	38
Quality manager site	maintaining quality experts	24	48
TQM.cost	0.5-1%,1-2%	18	36
TQM system	0.50%	16	32
Unacceptable construction	by regular & frequent communication with employee	26	52

Q.M.system	personal training & qualification	20	40
Received training	yes	30	60
Customer Satisfaction measure	number of complaints	16	32
Training Program labour	no	31	62
Training Emphasizes	team work and communication	21	42

According to project manager responses Quality mean to them is elimination of defects (38%) which also shows their contribution to quality. They were asked about personal training related to quality (60%) responses were yes. To avoid the poor quality of work and to find out the person responsible for it were by regular and frequent communication with employee (52%). But regarding the training of labour and employee the percentage of responses were very low (38%). Customer satisfaction measures were carried out by number of complaints (32%).

From below table 5, Site engineer were asked how frequently they have communication from senior management (100%) agree about it. Defects in services they find in construction work (100%) responses were gain. Then they were asked question how they ensure quality on site the maximum responses were related to inspection of daily construction work (46%). While concreting is mix proportion is checked (98%) of responses were yes.

Table 5: Site engineer responses

SITE ENGINEER			
Description	Options	Frequency	Percentage
Communication .senior management.	yes	50	100
Defects in services	yes	50	100
Quality register site	yes	40	80
Quality manager .responsible	yes	42	84
Quality Management procedure	preparing checklist	23	46
Empowered operation	fully empowered	25	50
Ensure quality site	Inspection of daily const. Work	23	46
Ensure Quality assurance	2-3 hours in a week	22	44
Mix proportion	yes	49	98
Quality improvement program	Quality control/Q. Assurance	24	48
Material testing	every time	22	44

VIII CONCLUSIONS

The reliability check is carried out for the data collected; it shows that data is reliable i.e. 'good'. The conclusions drawn from this study about the

implementation of QM in construction sector of Pune are as follows

1. Top management is aware of importance of QM, and benefits of separate Quality department in organization. However the top

- management rates the cost and time as prime factor then quality, also Quality department are not in practice in majority of organization.
2. According to project managers the quality mean to them is eliminating of defects, for unacceptable construction the person responsible for poor quality of work can be avoided by regular and frequent communication with employee. This one of the best method to avoid unacceptable work, in which even the employee not having the knowledge about work will get the concept and method of work. Currently the quality management system is practiced by personal training and qualification .Training currently emphasizes on teamwork and communication it shows that teamwork become the focus for corporate thinking and for improving the continuous process of quality.
 3. It has been seen that percentage for quality department in an organization is very less as per top management and project manager in small and medium organization as per responses it came to known that due to the cost and less knowledge about the quality it is not maintained.
 4. Training programs are not in regular practice. Training program for employees can transform them from being part of the problem to part of solution.
 5. It has seen that contractors look for reputation and customer satisfaction they are aware about customer satisfaction but due to lack of proper equipment and better craftsmanship quality is not implemented to its full level.
 6. According to results and analysis it has been concluded that even though top to bottom management agree with the quality methods and concept about it, the large organization carry out the practices related to quality and the small organization till lack in implementing it.

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