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A STUDY ON QUALITY MANAGEMENT IN CONSTRUCTION PROJECTS AT AMRAVATI.

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Abstract: *The quality management system (QMS) of the construction industry includes quality planning, quality control, and quality assurance. The main goal of construction is to ensure that the construction project is successfully completed within the constraints of better quality, a certain period of time and less possible costs. The research, which is based on the QMS, recommended that construction companies were going to create a flexible and supportive organizational environment that would advance the development of a quality management system for all aspects of their work. The survey was conducted as part of the study through interviews with project participants. Project participants are the owner of the premises or construction, project management consultant, entrepreneur, various consultants and contractors. The questionnaire is compiled by the authors based on the quality assessment of construction projects of the developer / contractor, contractor, as well as the customer and / or residents of the building. This article describes the analysis of information collected during interviews and questionnaires with the developer / contractor.*

Keywords — Assurance, contractor, expectations, management, quality.

I INTRODUCTION

Quality is a major factor in the success of a construction project. The quality of construction work as successful projects can be considered as a place of expectation (i.e., satisfaction of project participants. The construction sector in India has been struggling with quality issues for several years. A significant part of the budget is spent annually on infrastructure and other development projects. Because the result of the quality of projects does not meet these standards, which are required, poor-quality construction occurs. Therefore, additional investment will be required to fix the defect and maintain it. A construction project goes through several key project stages in its life cycle. The most important stages of the project, as shown below, can be described: conceptual planning, feasibility study, design, project, delivery, construction, acceptance, operation and maintenance.

Quality construction projects related to correctly manage all

project stages, life cycle. Design and engineering are the two most important stages of the project life cycle, which significantly affects the quality of construction projects. UNDER the Office for National Economic Development, London, its research aimed at improving the quality control of construction work found that "project" and "poor performance in the project" together account for more than 90 percent of the overall failure rate of the measure. Thus, this work focuses on the quality management system at the project implementation stage. The purpose of this article is to shed light on the importance of quality management during the construction project execution phase.

Quality is arguably the most important vehicle competition in today's unpredictable markets. Within this general framework, quality management is defined as:

"A set of features and characteristics of a product that affect its ability to meet stated or implied requirements." (ISO, 1994A, Chung, 1999)

Quality is an elusive and mixed tool, but despite this, many

works on this topic of quality can be defined differently, according to the specific situation, organization or client. But design, construction and quality in particular can be considered a very complex concept, to identify the main unique features, their design methods, products and labor that can be used in the project. But, unlike standard products, which can be put back on the production line if it doesn't meet the requirements, a product usually has the form of a project, which once done is irrevocable. One of the unique companies that is in place regarding goals, time, costs, and performance requirements. Three of them are inextricably linked to each other, so the change, that is, will undoubtedly have an impact on others. The construction of a site requires productivity, we can say that it represents high quality, which means that the quality can be described as "adaptation to requirements." Despite this, in the various interpretations of quality by experts, it is also impossible not to note how quality has become an important tool of competition today. In the construction nature of the project, this means that it will be multiprofessionals and craftsmen who are responsible for the construction products. As a result, if many problems fail in a few years, the source is difficult to identify. Therefore, the various disciplines involved in the project should have separate quality management systems that will ensure compliance with the contract requirements. An industry that has long been seen as robust and changing, and has been doing so on the international stage, is just too poor a quality initiative that needs to be taken to get rid of the image that prevents construction companies from gaining a competitive advantage in the international market. High-quality work should be done in the organization.

II. LITERATURE REVIEW

D.Ashokkumar et. al. This project mainly addresses the importance and factors affecting the project quality management (engineer) design phase. The project also includes visiting some construction sites and completing a questionnaire to analyze the problem (main elements) and variance of costs caused by a quality defect in the quality management system, as well as suggestions, some of the proactive measures to improve the quality of the construction project stage execution.

The construction industry plays an important role in the country's development. The development of the construction sector directly depends on the quality of the region. Quality is a key factor in the success of a construction project. Quality improvement of construction projects related to the project quality management system in the life cycle. Even if the quality management system at every stage of the project life cycle is important, but the quality control at the stage of implementation (construction) a significant contribution to the latest high-quality results of the project.

Rizwan U. Farooqui et. al. Inside, like the fact that construction projects are becoming larger and more complex clients more than requires a higher level of quality, efficiency and delivery. Total Quality Management (TQM) has long been known and successfully implements management in the manufacturing and service sectors. Total quality management (TQM) and can be part of the construction industry to contribute to improving quality and productivity. This report is an attempt to present the main elements of the ISO 9000 series and describe how each of them can be implemented by a wide range of construction-related businesses, as well as to achieve the goal of completeness and quality. In many cases, it has been found that research shows that it is the ability of the ISO-9000 series that allows the company to improve quality, productivity, avoid costly mistakes and create, and it is used by customers. For the purposes of this article, two case studies are considered that show how construction companies can successfully apply total quality management. Maintain ties with Azerbaijan benefits include reduced costs, improved quality, employee satisfaction because they have to go wrong, and complaints from customers, customers, and work that is performed correctly, from the very beginning, the supplier has the right quality management system in place, as well as closer ties that subpodratçı and the supplier. The effectiveness of Total Quality management (TQM) also reflected management's commitment to high-level engagement and customer satisfaction, employee engagement and empowerment, customer-supplier relationships, and improved management processes. Finally, it is recommended to develop a framework for the application of general construction quality management

Alfredo Federico Serpellaa et. al. One of the main roles performed by the project manager is risk management in the project. But this issue is particularly complex, and not so effective if good risk management is implemented from the very beginning of the project. Effective strategies and risk management, which requires a correct and systematic methodology, and most importantly, knowledge and experience. Previous studies in Chile have shown, however, that both owners and the rich cannot systematically apply risk management techniques, which will result in having a negative impact on results. This article examines the problem of risk management in construction projects using a knowledge-based approach and suggests a method based on a three-fold model of achieving that, modeling, risk management, including the function and its evaluation, as well as sharing best practices of the model. This approach is part of the research that is ongoing. A big initial conclusion to the conclusion of this study is the fact that risk management in construction projects is still very inefficient, and this is the main reason for knowledge. It is assumed that the application of the proposed approach is to provide

customers and contractors to develop and risk management system project based on best practices, as well as to improve the efficiency of these functions.

Ahmed S. Agha et. al. The development path requires large financial expenditures, not only for the development of new infrastructure, but also for the repair and maintenance of existing ones. In this case, developing countries like India have a shortage to finance new infrastructure projects, both for their development but also, very importantly, for their care and maintenance. Building long-lasting, highly efficient, street-friendly buildings is the topic of today's discussion. Most roads are bituminous surfaces that begin to show signs of deformation in the form of ruts, cracks and aging as a result of exposure to high traffic, increased pressure and other factors. Concrete sidewalks can be used instead of the typical bitumen pavement, a cost-effective option. One of the possible applications of bitumen overlays for road surface restoration is to apply a white coating to existing bitumen surfaces. In this paper, an attempt was made to analyze the cost of the concrete life cycle

Tan Chin-Keng et. al. This research explores preliminarily the practices of quality management, management commitment in quality management, and quality management implementation problems in construction projects in the context of Malaysian construction industry. The research applies semi-structured interview approach with twelve project management practitioners. The findings of the study indicate that the state of quality management in construction projects in Malaysia needs to be strengthened and there are problems in relation to quality management implementation that require attention and further research. The paper provides an insight on the state of quality management in construction projects in Malaysia.

Theo C. Haupt et. al. A quality system means that the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management to provide: a framework for ensuring that each time an operation is performed the same information about methods, skills, and controls, use, and application in a consistent manner. Total Quality Management (TQM) has been defined as a comprehensive, systematic measure, integration, case management across the organization, aimed at meeting customer needs through continuous process improvement. Its main goal is for everyone who wants to participate, total quality management (TQM) with the potential to improve their business performance, increase sensitivity, customer and customer satisfaction, attract employees and personal growth, team work and better management, employees, business sectors. It is the ability to adapt to new ideas, tools and techniques, which suggests that it can be applied, despite being in a different form, to design

in operations where employees are at a level that is traditionally considered below average. But the construction industry is in no hurry to accept the concept of general quality management. Construction firms are constantly fighting and applying it. Historically, construction was an area that was reluctant to make changes. Therefore, it was left behind, where it should be for the implementation of general quality management. Generally, the principles of general quality management (TQM) should not be applied, at other levels of management, to the general contractor. Multiple contractors who have fully implemented overall quality management at all levels in their area of the organization and not yet in the locations of its subcontractors and suppliers. This article reviews research conducted in the United States to identify barriers to implementing the principles of general Quality Management (TQM) and actual use of the construction workplace.

Low Sui Pheng1 et. al. As building projects get larger and more complex, clients are also increasingly demanding higher standards for their delivery. Total quality management ~TQM! has been recognized as a successful management philosophy in the manufacturing and service industries. TQM can likewise be embraced in the construction industry to help raise quality and productivity. Two case studies of construction companies showed how TQM can be successfully implemented in the construction industry. The benefits experienced include reduction in quality costs, better employee job satisfaction because they do not need to attend to defects and client complaints, recognition by clients, work carried out correctly right from the start, subcontractors with proper quality management systems, and closer relationships with subcontractors and suppliers. TQM performance measures were also reflected through top management commitment, customer involvement and satisfaction, employee involvement and empowerment, customer-supplier relationships, and process improvement and management. Finally, a framework for implementing TQM in construction is recommended. Construction Industry plays a major role in the economic growth of a nation. Construction Industry is one of the most booming industries in the whole world. Construction sector is viewed as a service industry which generates substantial employment and provides growth impetus to other manufacturing sectors. The critical objective of construction industries nowadays is to complete the project in time and within the scheduled costs and budget. Also need for contractors to improve performance relates mostly to quality assurance, Improving quality and customer satisfaction has received considerable attention in recent years. Which can be achieved by using recent techniques such as Six Sigma. Six Sigma is a continuous improvement methodology which known as DMAIC (define, measure, analyze, improve, control) aims to enhance the efficiency of

the existing processes and increase customer satisfaction through designed methods or techniques. The result of Six Sigma will be an increased efficiency, improvement in performance, and the control of performance problems thus minimizing defects, risks and deviation. In this paper efforts are made to establish complete analysis of 20 papers published literature related to six sigma in construction. This paper discusses different research papers, articles, case studies that have been published in this field and present a literature review Related to Abstract.

Nashwan Mohammed Noman Saeed et. al. This study empirically examines the extent to which Total Quality Management (TQM) and project performance are correlated and the effects of TQM on project performance. In this study, a TQM framework is developed according to a comprehensive literature review. This framework demonstrates the relationship between TQM and construction project performance through examining the effects of nine TQM constructs on three element levels of project performance. The proposed model and hypotheses were tested by using data collected from Yemen construction firms. The survey covered 40 companies chosen from construction sector (30% of sample size). 29 questionnaires were returned. The response rate was 72.5 %, normal for such research). The results of this aforementioned model support the proposed hypothesis (TQM has positive effects on teamwork satisfaction, quality of construction project implementation, client satisfaction, and construction project performance. Finally, this research culminates with TQM process for improving construction project performance, a discussion and the general conclusions are extracted in the light of the survey findings. The results finding are expected to provide useful information for future research directions especially as an indicator for the development of a suitable TQM framework for the construction firms.

A. A. Gulghane et. al. For new trends, there is a wide range of available materials for the construction of civil engineering structures. The total cost of materials, which can be up to 60% or more, the total cost of construction depends on the nature of the project. Efficient management of building materials is key to the success of a construction project. Construction waste is a serious problem in the construction industry. At all stages of construction, large and different types of waste are generated in the process, with different characteristics. The construction industry plays an important role in helping the environment. The social, economic and environmental benefits that construction waste should receive. This article provides a systematic overview of research, building materials management and construction waste, waste management and control, as well as existing situations of construction and construction waste, industrial.

Abdur Rahim et. Al Operational management attention, be careful of managing the entire process for the production of products or services, finance. This system uses perceptions that form the basis of modern thinking in the field of quality management. Another major business is supply chain management, which involves the efficient movement of materials, information, and funds. Operations management, quality management, and supply chain management have been proposed as a means of improving quality and at the same time, reducing costs, removing waste, and improving efficiency and results. It can be used as a complementary part of a comprehensive strategy aimed at improving competitiveness. This presentation will provide an overview of recent work on integrating these three management systems.. This talk will provide an overview of recent work on the integration of these three management systems.

Raymond T et. Al The most effective and efficient tools for evaluating a successful quality management program are measuring the cost of quality (prevention, evaluation, and cost avoidance). The application of the concept of cost, quality originates in the processing industry in the early 1950s. More and more attention is paid to improving the overall quality of construction, as since the beginning of the 1980s, since the end of the practice of applying general quality management (TQM) in the construction industry has become increasingly popular. A systematic approach requires a qualitative assessment of costs, including the construction industry, due to the large number and complexity of companies operating in the field of a typical project. This article describes how a simple method can be applied to account for costs, quality, and construction projects. Pre-existing models to capture the design, quality and price of Devised that was, Abdul-Rahman and Yeo and other recognition, quality, cost of components, but also eliminate the causes of unwanted deviations. The paper proposes an alternative approach based on the process, cost model, and in accordance with BS6143 (1992), which is designed to facilitate the achievement of the ultimate goal of overall quality management (TQM, i.e. continuous process improvement). A number of specialists involved in construction, quality management, interviews, and a positive mind noted the ease of use of the proposed system in the field of construction applications.

David Arditi, There is great potential to improve the quality of the construction process. Literature review and research conducted in the US has shown that top management's commitment to quality and continuous improvement of quality are very important, and construction professionals are well aware of the importance of education and training, high standards and partnership agreements between parties involved in the construction process is an important step in

ensuring a high level of quality, a feedback loop can update the original quality standards used in the industry. clarity of the project scope and requirements, as well as drawings and specifications, is a prerequisite for a high level of process quality.

Douglas D. Gransberg The paper examines and classifies existing methods for assessing the quality of design/assembly (DB). It does this through a comprehensive content analysis, 78 Request for Proposals (Rfp) for the public sector, a DB project with a total contract value of more than \$ 3.0 billion, which was announced between 1997 and 2002, respectively. In most DB projects the DB owner requires a contractor to set up a firm-fixed price projects were not de-signed. As a rule, corrections are also the project execution time. The traditional design/bid/build (DBB) system has defined plans and specifications. Thus, DBB, graphics and as a fixed cost associated with construction is that the fact that the owners consider competition. Conversely, DB costs and graphics determine the scale, which means that the quality level is the most important element of competition. In this paper, six owners are identified, an approach that consists in the formulation of DB and how to use their RFP. Six methods: quality certificate, evaluated program, suspicious programs, requirements, specifications, and warranty information. They understand it is important that the contractor DB so that they can develop their proposals, so they are both responding to their owner's requirements and also in accordance with the system to have the best way to use the value of the contract award decision..

Neha S. Gawande This study evaluated the performance of residential buildings, in relation to their convenient and high-quality city of Amravati. Customer satisfaction is very important for the construction industry, for commercial and residential projects. In India, industry, real estate, is going through hard times. The construction industry needs to understand that people need to constantly improve their products. This article is devoted to the analysis of customer satisfaction factors for residential premises, apartments located in the city of Amravati and its region of India. Simply put, the customer, the buyer of products and / or services. Many factors that affect customer satisfaction. We can find satisfaction and dissatisfaction among homeowners.

K. N. Jha, The reasons for poor quality in Indian construction projects are studied to suggest possible areas of activity. A preliminary investigation revealed that the signs of responsible influence on the quality of the project. A statistical analysis of the responses to the questionnaire was performed, while at the same time demonstrating which cause two separate sets of success and failure for this tool. Subsequent analysis of individual sets of success attributes and failure attributes separately grouped them into a small

number of critical success and failure factors. Critical success factors that have emerged include: project manager competence, leadership support, monitoring and feedback from project participants, interaction between project participants, owners and skills. Factors that had a negative impact on the quality of project implementation were: conflict between project participants; hostile socio-economic conditions and harsh climatic conditions; incompetence, Prime Minister and lack of knowledge, incorrect conceptualization of the project; aggressive competition in the competition. The analysis also led to the conclusion that the sum of the contribution of various factors to the success rate varies depending on the current project performance rating. Having made a significant contribution to improving the quality and efficiency of the project, the project manager is provided with expert knowledge and high-level technical support. As in the manufacturing sector, the study shows that management plays an important role in achieving the quality of construction projects.

S Meeampo, These studies examine the costs and timelines of project implementation from the perspective of the public and shareholders. This is in contrast to previous studies that focused on the entrepreneur's perspective of the project outcome. All 13 factors were found, taken from the literature and opinions of experienced specialists. Data was collected from 99 projects, a project that is managed by the Department of Highways (DOH) in Ed. Discriminant analysis was used in this study to establish price and time predictive models that article detection samples in cases that were collected and known to be the success and failure of the project. Then use these models to create a new case that measures the predictor variable and predicts that no project will succeed or fail completely. * The results show that the successful value of the performance evaluation will depend on the management of construction resources, budgets, construction method management and kommunikasyalarla. But the scheme for managing and managing human resources is to avoid increasing productivity. The success of a performance depends on the choice of construction methods, construction, construction management, resource management, scheduling and over-vision, as well as, control and communication. Quality management, budget management, human resource management, owners, commitments and relationships, teams are obstacles to completing tasks.

Pravin P. Mane, The quality management system (QMS) of the construction industry includes quality planning, quality control, and quality assurance. The main goal of construction is to ensure that the construction project is successfully completed within the constraints of better quality, a certain period of time and less possible costs. The research, which is

based on the QMS, recommended that construction companies were going to create a flexible and supportive organizational environment that would advance the development of a quality management system for all aspects of their work. The survey was conducted as part of a study on interaction, according to the project participants. Project participants are the owner of the premises or construction, project management consultant, entrepreneur, various consultants and contractors. The questionnaire is compiled by the authors based on the quality assessment of construction projects of the developer / contractor, contractor, as well as the customer and / or residents of the building. This article describes the analysis of information collected during interviews and questionnaires with the developer / contractor.

Hosein N. Rad, On the page at that time, as well as price, quality, service, left, as the most important parameter, because, meets that the main players when creating a construction project model. However, a biased attitude towards a certain quality has made it very difficult to develop a practical approach to quality assessment. Then, a certain trade-off between time and expense in terms of quality remains largely unexplored. The article examines quality from different points of view, and also lays the foundation for the development of clearly defined in terms of quality, which make up its properties and their measurement, a quantitative method. Thanks to an extensive literature review and validation, queries, or queries, it is this work that brings together a number of quality-related attributes and groups them in a number of categories. It is planned that the designer and the customer will have different points of view of quality outside the point of view, it can act as a coordinator and prepare assistance from a single point of view on the topic. The work experience consists in developing a method than objective measurement and quantification of quality, combining measurable and subjective attributes of quality. About this using a bidirectional ranking system that uses attributes, among quality. In addition, triangulation is applied for cross-comparison, three points of view of customer experience, designer and third-party applications. This research will help design a three-dimensional strategic space project that can be used to evaluate project outcomes.

Behnam Neyestani, A quality management system (QMS) provides general guidelines and requirements for determining an adequate quality regulatory procedure with comprehensive verification, while at the same time reducing labor costs, increasing productivity, customer satisfaction and market share over two-decade cycles. In the construction industry, as it can help the company successfully achieve its goals, but also to ensure that all stages of the construction of the facility, the customer's requirements (needs) were

consistently met. The main purpose of this article was to assess the impact of a quality management system for implementing the most important factors of construction projects in Metro Manila, Philippines. To this end, the study conducted an in-depth review of the literature of various books, magazines and websites in order to understand the fundamental foundations of the quality management system, certain characteristics, the main elements of the construction project, as well as the results of empirical studies of the impact of the quality management system on the construction project. Then, based on previous studies, a questionnaire was developed that was randomly distributed among 37 managers to collect the data obtained. Finally, data analysis was done using descriptive statistics to learn the results and conclusions. The results obtained showed that the implementation of a quality management system has a greater impact on the satisfaction of consumers, for whom compliance with costs, time, and, accordingly,

III. CONCLUSIONS

A very strong quality of the funds that are used during the construction of this project is the verification of lists. The quality control measures that are used on the site are the quality of work performed. A very hard answer for the respondent is that, follow a regular quality management schedule during the planning and design phase of the construction project. An obstacle to the project's performance in terms of quality, in the worst case scenario. In addition, the respondents are there, very strong, given the importance of customer satisfaction. According to respondents, implementing a quality management plan anywhere is important, and more importantly, will be a trial run by suppliers, rather than a physical test in the field. Research shows that site satisfaction, provided that all other project participants are satisfied, is also important After study of all above points the researcher reached the following concluding remarks as below,

- Satisfaction of all stakeholders in the industry.
- Better understanding on quality control procedure.
- Satisfaction of Client.
- Suitable quality control method for the project.
- Development of the quality of strength in construction
- Total Quality Management at construction projects.

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