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"Productivity Improvement in Construction Industry using Automation Techniques"

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Abstract - *Productivity is at the forefront of concerns facing professionals in the construction industry worldwide. This study highlights the factors affecting productivity of the Construction industry. A questionnaire was used to gather the relevant data from the study area .The top three factors affecting construction productivity are: Management of productivity, Human factors, and External factors. Recommendations have been made in the study to address these factors*.

Key Words: Construction 1, Productivity 2, Improvement Techniques 3, Automation 4, Evaluation 5

1.INTRODUCTION

The Construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. Construction industry is world's most largest and challenging industry. Human resource has a strategic role in increasing productivity in construction industry. With the effective and optimum use of human resources can help in productivity growth. The construction projects are mostly labor based with basic use of hand tools and equipment's in which labour cost consists of about 30% to 50% of total project cost. Indian construction industry is one of fastest growing sector globally. The construction sector gives second largest employment after agriculture. India shares about 8% of total GDP and also provides employment to around 35 million peoples directly or indirectly. In construction industry one of the biggest problems faced is of unskilled labour which implies in productivity loss and impacts on cost overrun and schedule daily. Labour productivity is one of important factor which affects physical progress of construction project. To perform effective job, construction labour should be familiar with materials, tools and machineries that they use. Background of construction industry and productivity is given and also explained, how low productivity affects the time and cost of construction project. Many researchers have shown that poor construction management practices leads to poor performance, wastage of efforts in different phases of construction projects. Researchers tried to overcome some of challenges by adding their efforts in construction project, however many problems are yet to be solved in terms of construction productivity. Identifying and analyzing the critical factor that influence construction productivity will lead to develop most effective method and strategies to improve the construction productivity in upcoming time. Construction project is said to be successful if it is completed in schedule duration and estimated cost. For that purpose productivity has to be efficient. Productivity forecasting plays an important role in strategic and operational planning. Productivity is one of the key components of every company's success and Competitiveness in the market. Productivity translates directly into cost savings and profitability a construction contractor stands to gain or lose, depending on how well his company's productivity responds to competition. The growth of infrastructure and development in emerging countries like India may require the construction industry to shift from traditional methods of construction to modern ones in order to improve productivity and enhance performance.

A competitive, market oriented and rationalized construction tomorrow requires developing of automated construction system today. This includes construction material production, prefabrication of construction components, on site construction, facility management, rehabilitation and recycling. Today's construction projects are characterizing by short design and build period, increased demands of quality and low cost. These problems can be approached by a flexible automation based upon planning, engineering and construction management. By automation, increased productivity could reduce high labor cost share of 40% or more. Introduction of automation technology would result in better working and health conditions. In next section purpose of study is explained and problem accumulated in construction productivity are given. The objectives of proposed work that are to be achieved at the end of project.

2. METHODOLOGY

The main purpose of this dissertation is to provide more precise and uniform quality of construction through automation techniques. A review of literature is conducted to determine the factors that influence productivity of construction projects through productivity evaluation checklist. Analysis of formulated check list through data collected from Engineers, contractors

labours etc. The best suggestive measures will be given for productivity improvement in construction industry through automation techniques. Which finally declines higher cost, and increases efficiency and productivity of the project.

2.1 QUESTIONNAIRE DESIGN

The design of questionnaire is very simple and under stable for respondents. The advantage of questionnaires is in smaller timing getting more accuracy in final outcome. Factors affecting the productivity of construction were identified through literature survey. the questionnaire required the respondents to rank factors affecting the labor productivity with the scale the rating of '1' representing very low effect; '2' representing low effect; '3' representing medium effect; '4' representing high effect; '5' representing very high effect.

3. CONCLUSION

The importance of implementing automation technologies is the need of today's infrastructure project and construction firms in order to increase the productivity and good quality of work. Both medium and large size firms require automation technologies partly or fully to implement in different sectors. It is important to maintain the correct relationship between the speed of processing and the speed of material delivery, which is essential for automation in construction industry. To achieve satisfactory construction work with necessary quality and safety, we must follow the automation adopted by developed countries.

- As the machines used for construction work are not up to mark, they need to be upgraded with the newer machines with all the extra features in it.
- The work procedure, materials used, standard of quality etc. all should be done according to the recommended design.
- There should be a different committee for stricter supervision on the constructional works by their higher authorities to avoid use of inferior quality materials, inefficient machines, improper work procedures etc. all that are being followed nowadays.
- All labours/operators/workers need to be fully equipped with Personal Protective Equipment's (PPEs) before the commencement of any constructional activity.

There is wider scope for automation in construction sector and its utilization of automation is growing rapidly since last decades.

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BIOGRAPHIES

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