

“A Review Paper on Study and Analysis for Labor Productivity Improvement in Construction Industry”

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Abstract - Productivity plays an important role in the construction industry. It helps construction industries to be competitive, to achieve goals and to meet the stakeholder and value propositions. Pre-existing research studies has suggested different methods for measuring labor productivity at different levels, but none of them has been proved universally satisfying. It is very important to measure Labor Productivity qualitatively and quantitatively, as it affects overall productivity of construction project. As Construction project undergoes several problems and complex factors such as cost and time. This paper include Objective, Methodology, Study process adopted for calculation of labor productivity and expected conclusion. This research helps the project managers to consider the Labor affecting factors, during planning phase of project and in execution stage to measure productivity.

Key Words: Construction Industry, Labor Productivity, Relative Importance Index, Factors,

1. INTRODUCTION

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 equipments in which labor cost consists of about 30% to 50% of total project cost. In construction industry one of the biggest problems faced is of unskilled labor which implies in productivity loss and impacts on cost overrun and schedule daily. Labor productivity is one of important factor which affects physical progress of construction project. To perform effective job, construction labor should be familiar with materials, tools and machineries that they use.

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.

In today's era, good labor productivity is biggest point of perturbing of any organizations. There are number of ways defined productivity. Several researcher defined productivity in his own ways. In general productivity is ratio of output and input. Resources are input in construction industry and ready to use structure is output. The aim of the project is to study and analyze the labor productivity in construction industry of Kolhapur and sangali region. Also to give suggestive measure in order to improve labor productivity.

2. LITERATURE REVIEW

Construction projects involve interdisciplinary work environment. This includes architects, contractors, vendor managers, project managers working on a different level platform to complete the project. However, the efficiency of interdisciplinary work is completely linked to labor management. H Randolph Thomas et al. (1991) described the relationship between labor productivity and direct work report in work sampling. The conclusions made were based on three assumptions- Reducing wait time leads to increase in direct work, increased direct work leads in the improvement of labor productivity and improved productivity is accomplished by reduced time spent on waiting. William lbbs et al. (2005) affirmed that the construction project is disrupted and detrimental to labor productivity. A data from 162 construction project were statistically analyzed, and three curves were represented. The curves were Early, Normal and Late timing situations on labor productivity. S. P. affecting project was analyzed. In addition to that, a residential building site was considered, where labor productivity of major activities directly affecting the project duration was employment improvement (expanding the things that fulfill laborers about work) and by diminishing the demotivators (the things that laborers dislike). Workers are persuaded by completing quality productive work, creating or building something and improving productivity.

Dozzi and S.M. AbouRizk et al. (1993) described different types of methods like Work Sampling, Foreman Delay Survey method, Craftsmen Questionnaire method, Field rating method for measuring labor productivity on site. Nariman Ghodrati, Tak Wing Yiu, Suzanne Wilkinson and Mehdi

Shahbazpour et al. (2018) aimed to quantify the effective implementation of management strategies, i.e. labor management, training, communication, supervision, resource scheduling in improving labor productivity. The complete body of research depends on the statistical analysis of the high-level and low level of implementation of management strategies.

2.1 Labor Productivity -

The term "Productivity" in construction is defined as the ratio of output to a number of inputs, i.e. output per labor person-hours. As worker consists of a large part of construction cost and quantity of person-hours in executing a task in construction is more influence able to the management than are materials or capital, this productivity gauge to as labor productivity.

2.2 Importance of Productivity -

Construction Industry depends on various internal and external factors that affect the overall cost and time of the project. Thus, productivity has to be evenly poised in order to save money and time of the project. This can be achieved by continuously working on planning, scheduling and monitoring the project. In addition, major affecting factors of the productivity have to be considered at the project initiation stage in order to get the expected response of project planning and monitoring for the execution. These factors lead to continuous variation in labor productivity. It is important to make sure that reduction in productivity does not affect the schedule and plan of the project.

2.3 Inappropriate Conceptions about Labor Productivity -

According to the theory of Adrian (1990), the following are statements of an incorrect conception of labor productivity:

- The major factor of low productivity in the construction industry is Labor.
- Construction Industry is controlled by the weather. Thus, labor productivity cannot be improved.
- The relationship process is not effective in the construction industry.

3. OBJECTIVE OF THE STUDY -

- To assess the current situation and make review for productivity improvement in construction industry.
- To collect current data of Labor Productivity through multi story building and industrial building site.
- To identify factor that affect Labor Productivity.
- To study the effect of time overrun and cost overrun.
- To give suggestive measures in order to improve Labor Productivity.

4. METHODOLOGY -

Following methodology will be adopted -

- Collection of preliminary information through literature surveys.
- Assessing the current situation of construction labor by questionnaire survey.
- Identify factor that affect the productivity of the labor.
- Defining the problem that affect the most
- Analysis of questionnaire survey
- Suggest best recommendations to increase labor productivity

5. STUDY PROCESS -

This study involves mainly following process.

- Determination of objective and scope of study work.
- Determination of study design.
- Review of the literature.
- Site visits and collections of data using questionnaires survey
- Data analysis.
- Discussion of results.
- Suggestions for Improving labor Productivity
- Conclusion and recommendations.

6. Scope of Study -

This study covers only labor productivity on running construction projects. In the study the major factors considered are related to client, contractor, labor, material and equipment Group. The study concentrated on the flow activities of this factor Group. Questionnaire survey is carried out for High rise and industrial building construction site to collect the data. The study carried out on selected construction site in Kolhapur and Sangali region due to site accessibility and availability of contacts this sides are mainly engaged in construction of industrial building and high rise building works.

7. Practical Implication -

The study seeks to have positive implications on sites are-

- The results will enable building organization to improve construction quality, speed of Construction, economy and efficiency through the utilization of the factors presented to remove barrier in the utilization of labor productivity.
- Improving labor productivity factor will help in increasing profitability, improve company performance, increased value of customer, save Time and Cost, etc.

8. Outline of Thesis –

This thesis is consists with following Six Chapters

- Chapter one explains the definition of Labor Productivity, Importance of Productivity, Objectives, study methodology adopted.
- The second chapter consist the literature of the Labor Productivity, Factors affecting Labor Productivity.
- Chapter three consist the methodology that is used throughout the study for calculation of labor productivity. The structure of the questionnaires, the methods adopted to evaluate the data.
- Chapter four explain the effect of time overrun and cost overrun because of considered labor productivity.
- Chapter five explains results, discussions, which are evaluated from the data and also suggestions for improving labor productivity
- Chapter six concludes the overall study and recommendations for future research.

9. Conclusion –

- Relative Importance Index Method were opted to measure labor productivity on the construction site.
- The Client, Contractor, Labor, Material and Equipment and External Factors was consider to Calculate productivity.

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