

# A LITERATURE REVIEW OF LABOUR PRODUCTIVITY ON CONSTRUCTION INDUSTRY IN A PANDEMIC

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**Abstract :** Construction Process is always costly, because of the increase in the cost of material, which in turn directly influences the total project cost, time, quality, safety, etc. These factors are multifold for developed and developing construction projects which cause challenges in maintaining the production efficiency during a pandemic. In these critical situations, it is enormously important to keep the same process in the construction industry to increase their labour productivity. Recognition and examination of these factors that directly impact on labour productivity in a pandemic situation are pivotal. Many researchers, analysts, and expert people in the construction industry have done extensive research and analysis. By taking reference of this research and analysis in construction management, various factors affecting labour productivity, methods for labour productivity improvement, construction labour productivity patterns are derived.

**Keywords - Labour Productivity, Construction Industry, Pandemic.**

## I. INTRODUCTION

During pandemic construction project profitability and productivity is an essential aspect. Labour productivity is the ratio of the number of workers who complete the work in given time to the available resources consists of labour, cost, time, power, raw material, management, etc. One need to consider important factors like management and technologies that affect labour productivity in the construction industry during a pandemic.

In pandemic situation construction industry, productivity is nothing but a mean of labour productivity; that is, it the ratio of the quantity of work done per person in an hour.

India has more than 46.8% of construction worker population [4]. In already established and budding construction industry projects, there is a lack of employment opportunities for labours in critical situations like a pandemic. Construction is depending on labours. There is a lack of choices for labours in this situation, as their skills and educations are limited and specific.

In a pandemic situation, the performance of labour in the construction industry is directly affecting the timeline of the project, cost of projects due to delays and quality of work due to the unavailability of skilled labours. Therefore, it is essential to calculate these factors of labour productivity in the construction industry.

## II. LITERATURE REVIEW

The following are the previous research review based on labour productivity construction industry.

Shah meet et al. (2014): - conclude that productivity is the main factor to minimize the losses in projects and gives more profit. He gives main factors which are affecting productivity based on his research conducted in Gujarat attempting inferior construction methods, less use of technology, delay in material delivery, delay in labour payment etc. [2]

Shashank et al. (2014): - studied six different groups which are Motivation group, Manpower group, Material/Equipment group, Safety group, Managerial group, Quality group. He said motivational factor is more important for labour productivity. He said the construction company should focus on labour satisfaction by giving a reward, paying good salary, conducting knowledgeable program, giving a friendly environment on-site, facilities provide on-site. [3]

Kazaz et al. (2015): - said that labours are challenging to manage on-site. In their study, shows manager and craft person perspectives for labour productivity. In this main factor affecting labour productivity are grouped under organizational factors. [6]

Raj et al. (2014): - studied on human resource management most important in a construction site. They make a questionnaire on a survey with 100 labours from a different organization. Furthermore, analyses on the survey how impacted productivity on human resource management and financial performance in the construction site. They concluded that 75% of people agree to a friendly environment more useful for perfect work. [5]

Vekaria (2012): - concluded that project management skill is a more critical factor in the construction industry which encourage labours for productivity more than other factors also important such as skill training about technology, work uniqueness and wages. He said productivity also depends on new technology or technology transfer. New technology is helping to maintain the performance of the project as per standards of construction industry adopted across the globe. [14]

S. Thiyagarajan (2016): - He discussed on labour efficiency. He said construction activity is costly and always faced with industrial conflicts that are the reason to decrease growth in a construction project. In the construction industry, we should resolve the problem by understanding the depth of project .in this we get solution and methods for the factor affecting labour productivity. It gives an idea regarding the project to increase productivity. [8]

Vaid et al. (2016): - he said different factors were affecting precast housing construction project such as choosing new technology, using new materials, appointing skilled labour, proper project planning and structural design. [7]

Vishal Sherekar (2016): - discussed which factor affecting on labour productivity of housing construction projects in the Pune after detailed analysis and complete questionnaire form with experienced contractors and engineers. The questionnaire sent to 100 people for collecting their judgment amongst them 50 judgements taken from little construction projects and 50 judgment taken

from substantial construction projects. There are 35 crucial factors associated with labour productivity were recognized and categorized into eight groups: physical, psychological, capital, experience, external, time and workload, supervision and leadership and safety. To analyses of the well-known factors are done by multi-criteria decision analysis Analytic Hierarchy Process (AHP) method. The result indicated that the three critical factors affecting on labour productivity of little construction projects in Pune are drug use, Remuneration, Ignore Safety Precautions, and insubstantial construction projects top three factors are level of training, job satisfaction, and work planning to schedule. [9]

Ameh et al. (2011): - in Lagos Nigeria, he started to research about the relation between time overrun and labour productivity on construction sites. There were different factors affect on construction site such inadequate fund for the project, inadequate planning of project before take-off, inadequate tools and equipment, delay in delivery of materials, and design changes during project execution. By using the wrong construction method, most of the factors affect on construction site. Based on the outcome of the study, he suggested to improved productivity in the construction industry by reducing time overrun on projects in Nigeria. [10]

Loeraa et al. (2013): - They have worked on progressed methodology to use for labour productivity industrial maintenance work. In this methodology, started work on main factors that affecting labour productivity, as well as they, proposed to apply lean thinking to improve labour productivity. [11]

Khaled et al. (2013): - based on 50 different productivity factors labour, industrial and management. Five factors specified for construction labour productivity in Egypt such as Labour experience and skills, Incentive programs, Availability of the material and ease of handling, Leadership and Competency of construction management and Competency of labour supervision. [12]

Ghate et al. (2016): - he said that the measurement of labour productivity techniques is most important to the saving project time and give good quality work. By using work-study and work measurement techniques directly helps for improvement in labours. He concluded that the measurement of labour productivity techniques helps to reduce cost up to 20% of labour cost per floor. [13]

### III. CONCLUSION

The literature review-based conclusion are as follows:

1) During situations like pandemic labours productivity suffers a lot by adding to the factor affecting labour productivity. This results in no payments, disruption of construction work, delays or no delivery of construction and material and lack or non-availability of machines.

2) Additionally, during pandemic there is a lack of skilled labour which in turn puts pressure on other labours affecting their productivity.

3) Healthy environment is not provided to labours to work which lacks basic sanitation arrangements to counter pandemic in small or medium companies due to lack of funds.

4) There is a huge psychological impact to labours during pandemic which will result in poor construction quality, design parameters violations etc. which are key factors for a successful construction project.

5) Management are also under pressure to complete the project on time and with limited funds which in turn puts labours productivity under microscope.

6) In critical situations government interference also plays a major role in productivity. There are times when government shutdowns key government offices, transportation (impacting labours and material), limited food and medical supply, temporarily closing the construction projects etc.

7) There is a lack of technology exploration or technology transfer which can boost up the labour productivity due to pandemic

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