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TECHNOLOGY**

**STUDY OF EFFECTS OF LABOUR PRODUCTIVITY ON CONSTRUCTION  
PROJECTS**

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**ABSTRACT**

Productivity remains an intriguing subject and a dominant issue in the construction sector, promising cost savings and efficient usage of resources. Productivity is one of the most important issues in both developed and developing countries. The developed countries are aware of the importance of economic growth and social welfare. The developing countries which face unemployment problems, inflation and resource scarcity seek to utilise resources and in such a way as to achieve economic growth and improve citizens' lives. The aim of this thesis is to identify factors affecting labour productivity and also to study causes i.e. labour problems on site and its effects on the construction projects. Some of the important factors affecting labour productivity are: quality of site management, material shortage, timely payment of wages, labour experience, misunderstandings between labour and superintendent etc. The problems faced by the labour on Indian construction sites are dealt with in detail. Problems like non-availability of proper accommodation, basic amenities, low wages, safety related problems, security etc. dominate on almost all Indian construction sites. In our survey we have found that, specifically small firms in India are not able to fulfill labours' requirements. And that is why labour is not able to raise their productivity. In fact it is found that actual labour productivity ratios are reducing day by day, which in turns harms organization's profitability. In this study we will try to relate the ill effects of labour productivity this study restricts itself to the survey and research in the Indian context. Analysis of obtained data was done using different statistical methods. This report includes explanations on productivity, a case study, factors affecting labour productivity and the remedies for the same.

**KEYWORDS:** Productivity, Labour, safety, Cost saving, Labours productivity

**INTRODUCTION**

Productivity consciousness has acquired worldwide momentum. Higher productivity is necessary for the survival of any nation. It stands for proper utilisation of available resources to achieve the best results with minimum cost. Improvement in productivity is the only answer to the problems in the industrial sphere and it is the only path to national prosperity. In India it assumes special significance owing to the resource gap. In order to overcome the hurdle of shortfall in resources, stepping up of productivity is a must. Productivity denotes the efficiency with which the various inputs are converted into goods and services. However, it is a multi-faceted concept; no single definition can fully describe it. Technically, it signifies the ratio between the input and output. Productivity is said to be high when more output is derived from the same input, or the same output is obtained from a less input. It is well understood as the ratio of output to input with respect to given resources. When more is produced with the same expenditure of resources it may be termed as effectiveness; when the same amount is produced at less cost it may be termed as efficiency. The word productivity is broad enough to cover both. It should be recognised that the longterm productivity improvements can be achieved by the human factor through positive and innovative attitudes. In this sense productivity is an attitude of mind' which is intolerant of waste of every kind and in any form. Productivity does not refer merely to work systems but to the development of right attitudes and a strong concern for efficiency, maximum output, economy, quality, elimination of waste and satisfaction of human beings through increased employment, income and better



standard of living are some of the objectives of productivity movement in our country or for that purpose in any other country.

## METHODOLOGY

The preliminary insight of the subject data for this study has been collected through a literature review followed by the use of a questionnaire survey targeted at contractors, subcontractors, engineers and labours. The literature review was collected through internet and leading construction management and engineering journals. In this stage, factors contributing to the reduced labour productivity and the impact of reduced labour productivity on construction industry were studied. On the basis of literature study, different problems which contributes in lowering the productivity was derived. After deriving the problems of labour two different questionnaires for employer and workers were prepared. The details about labour's working conditions, wages, expenses, timing, facilities provided to them, training etc. were included in these questionnaires. The survey was carried out using convenient random sampling. Data was collected from medium to large size construction sites of vasai-virar .Different types of sites like residential and commercial, were visited to get variety of data. As labour are migratory, random sampling was found to be appropriate to represent the community. After collecting required number of samples, data analysis was done to arrive at different factors which lower the productivity. These factors were then analysed to find its effect on different aspects of the project. Finally factor specific solutions were studied from different articles, journals, books etc. and suggested in this report. The data from this survey was analysed and most important factors were further studied and discussed in detail in this report.

## SCOPE OF STUDY

The study identifies factors affecting productivity at construction sites and to study and analyze the onsequential impact of labour productivity on construction industry. As this study is carried out in Vasai-virar region it is applicable in regions similar to it and semi urban regions. In this study local site survey has been used to find out factors affecting labour productivity. This study has been focused on primary data search by obtaining views from labourers as well as contractors/owners/managers and to find out labour problems.

## PROBLEM STATEMENT

The problems faced by the labour on Indian construction sites like non-availability of proper accommodation, basic amenities, low wages, safety related problems, security etc which in turn affect productivity are addressed in our study and the remedies for the same have been discussed.

## DATA COLLECTION AND ANALYSIS

Field data collected from construction sites of Vasai-virar with a view to understand the real time difficulties in achieving higher construction labour productivity. Random sampling was done in cities on various construction sites. Medium to large firms were contacted for the survey. Sites within the cities were mainly residential buildings, Commercial buildings. A total of 20 firms were approached of which 15 responded. These firms were visited and detail questionnaire survey was carried out.

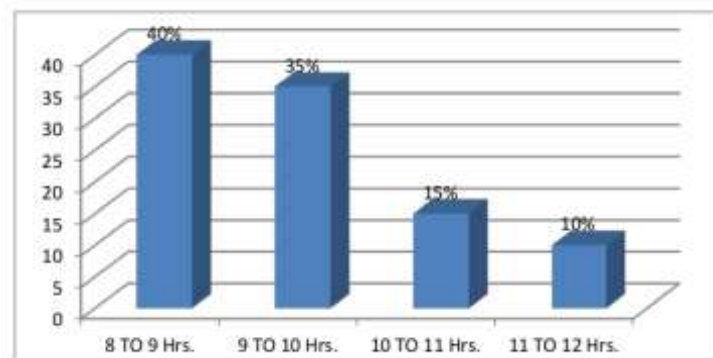
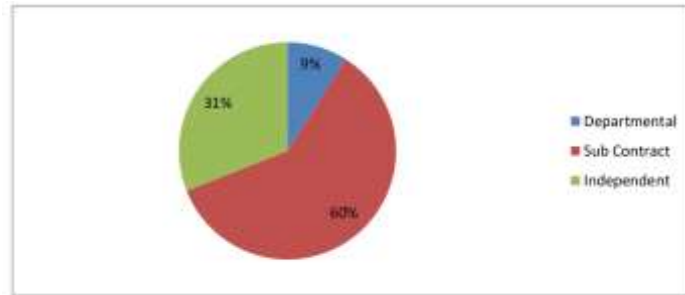


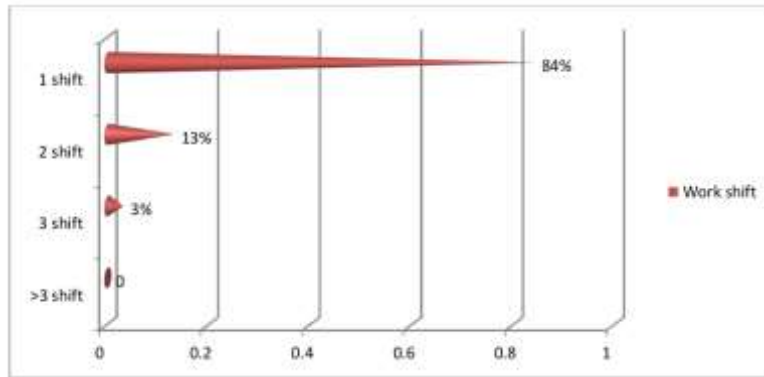
Chart 1 Duration of work shift.

40 % of sites are working for 8 to 9 hours/day,35% are working for 9-10 hours/day,15% are working for 10 to 11 hours/day and rest of them are working 11-12 hours/day. If applied here, more than 50% of labour are working for 10 hours and more a day hence this tend to reduce labour productivity.



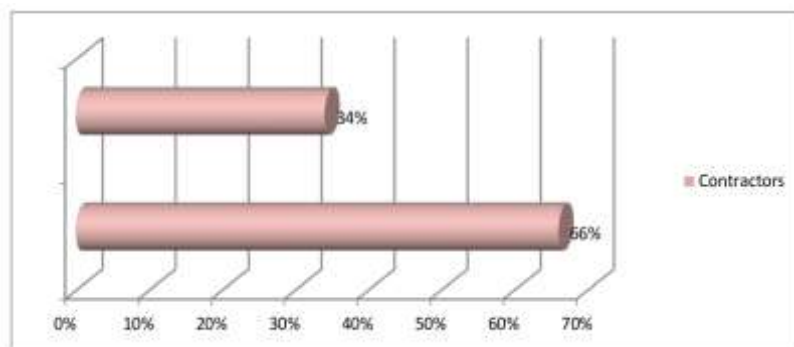
**Chart 2 Type of Labour**

9% is departmental labour, 60% is sub-contracted labour and 31% is independent labour. As departmental labour percentage is less, labour do not feel like working for their organization which contributes in lowering labour’s productivity.



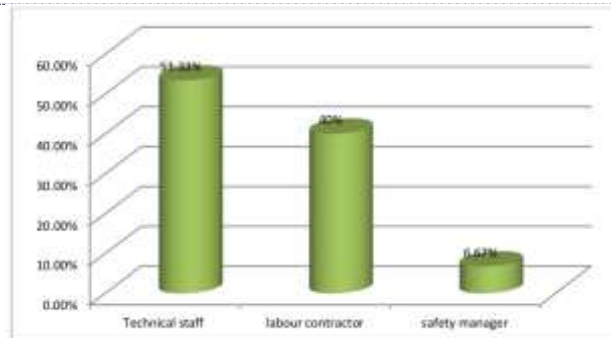
**Chart 3 Work Shift**

84% contractors said they worked in single shift, 13% are working in 2 shifts, 3% said they work in 3 shifts and none of them are working more than 3 shifts. Worker working in single shift are forced to produce more each day, due to higher work load everyday labour tend to reduce their capacity of work day by day.



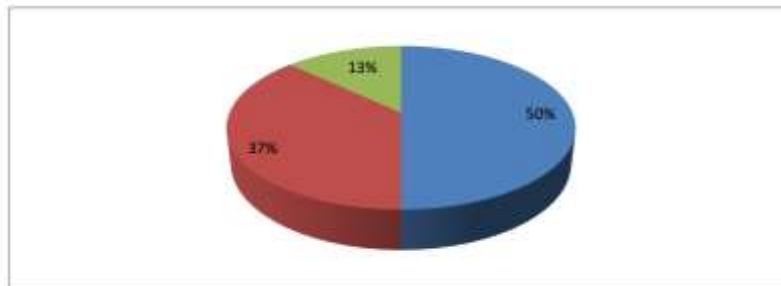
**Chart 4 Satisfaction with current productivity**

66% contractors are not satisfied with current productivity and 34% contractors are satisfied with current productivity of labour. Due to this impression of employers they do not give much importance to labour and do not provide ways and means to them by which they can be motivated to produce more. Rather they try and find out replacement of labour with equipment’s.



**Chart 5 Care of labour in Organisation**

53.33% of labour are taken care by technical staff, 40% are taken care by labour contractors, 6.66% are taken care by safety manager. This implies that in major site there is no safety manager to take care of the labourers and hence contractors can easily exploit the labourers.



**Chart 6 Difficulties in Handling labour**

50% of contractors find high difficulty in handling the labour, 37% find it at moderate level while only 13% contractors find less difficulty in handling the labour. A majority of the sample found handling labour on site difficult. This implies that worker discipline problems are very high in construction industry.

### **OTHER FINDINGS**

- 72% contractors are planning to go for more mechanised work while 28% contractors are satisfied with current work. As employers are not satisfied with labour productivity they tend to go for more mechanised work.
- A majority of the sample found handling labour on site difficult. This implies that worker discipline problems are very high in construction industry.
- employers provide safety training but when it is compared to other safety they provide very less PPEs. Social training like AIDS awareness, family planning, communication etc also given on some sites.



#### TOP 10 FACTORS AFFECTING LABOUR PRODUCTIVITY

Sr.No.	Factors	R.I.I
1	On time payment	4.64
2	Site layout	4.64
3	Material Management	4.61
4	Quality of work	4.25
5	Health and safety conditions	4.16
6	Supervision	4.16
7	Creating competition	4
8	Crew size and efficiency	3.92
9	Weather size and efficiency	3.92
10	Work satisfaction	3.84

#### CONCLUSION

- Above survey indicates that the living conditions are so poor and the labourers are staying in tin sheeted houses.
- The construction company is not making provision of any electricity or sanitation facility to the construction labourers.
- Where the sites have toilets there it is of having substandard quality.
- There is limited provision of drinking water.
- The working hours of the construction labourers varied considerably.
- Accident relief equipment's like helmets, hand gloves and shoes, safety belts, protection eye wear etc. are not made available for construction workers
- No holiday structure is found in majority of the construction sites.
- The working hours of the construction labourers varied considerably.
- There is no one to look after children's of labourers, they keep on wandering on site missing proper education, care.
- Most of labourers lack training.
- Less safety awareness.

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