

# Survey on Effects of Productivity of Equipment in Construction Projects

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**Abstract** -It is vital to note that equipment productivity may be a degree of adequacy of association frameworks in utilizing work, equipment and capital to convert labour endeavors into valuable yield, and is not a degree of the capabilities of the labour alone. This study was made to discover the productivity and effects influencing the output of the construction tools. This investigate aims at considering the effects of productivity of equipment at the micro level of the essential exercises of progress for building projects. The information collected were examined utilizing the relative importance index strategy to rank the effects and their impacts on venture. The RII for each effect was calculated from the examination of the rating obtained by the respondents with utilize of 5 point likert scale.

**Key Words:** Effects of construction equipment Productivity, Construction equipment.

## 1. INTRODUCTION

### 1.1 BACKGROUND

Equipment management is the portion of project management. Authentic management of assets in projects can create noteworthy investment funds in time and cost. However, until nowadays, construction businesses are still confronting a number of issues with respect to the low efficiency, destitute security and inadequate quality.

For successful equipment management, it is essential to consider productivity of equipment. For finding out the productivity of equipment, consider of effects influencing behind them is necessary.

Appropriate equipment management can increment the equipment productivity which lead to minimize the maximum cost of the current project.

### 1.2 OBJECTIVE OF THE STUDY

This investigate, primarily aims to examine vital effects influenced by equipment productivity in building development project and their impact on projects.

The following are the actual objectives of the study.

1. To outline the productivity measurement practices within the construction industry.

2. Analyze and calculate the Relative Important Index (RII) of those effects affected by equipment productivity.
3. To find the effects of construction equipment Productivity on project using RII method.

### 1.3 SCOPE AND LIMITATION OF THE RESEARCH

In any case, investigation attention is only on construction firms and ventures due to the circumstance that construction of buildings utilizes various equipment's. Because it is considered by distinctive investigates most of the construction ventures fails to be finished within the agreement time and budgeted cost.

The scope of this investigate is limited to the research of equipment productivity on construction ventures. Low equipment productivity influences all contractors of various class and category.

## 2. LITRATURE REWIEW

### 2.1 GENERAL

The following are the past research survey based on the distinguishing proof of factors influencing the efficiency of construction equipment.

A.A. Attar<sup>1</sup>, A.K. Gupta and D.B.Desai [1] conducted a study on project directors and skilled engineers of building ventures in pune, sangli & Kolhapur locale, where an increment in productivity is being looked for. Respondents were required to rate utilizing their skill how all factors influence productivity with regard to cost, time, and quality.

The investigation was achieved by a responses and questionnaire. The ten most important factors influencing labour proficiency for medium, small & huge firms are recognized.

D. Sukumar, V. Rajesh Kumar [5] have done study to distinguish and examine the factors that influences the productivity of labour in road development. The questionnaire is arranged based on different literature and information collected from the location.

The most important factor that influences the proficiency is identified through the RII (Relative importance index) strategy. The findings shows the best factors influencing the

Labour productivity are construction method, destitute soil condition, work area restriction, assessment delays, inaccessibility of experienced labours, and good quality of required works.

Mohamed Abdelaal and Hassan Enam [8] in this paper quantitative questionnaire study was done with industry practitioners to find major factors which are impacting on equipment productivity.

It includes some of the major factors like site working time, managing site equipment, communication, work schedule, working tasks types, safety measures, quality control, managerial factors, skilled laborers, motivation, scope change, availability of material, and over planning and work methodology.

This research examines all significant factors by method of a structured survey managed in GCC countries. The ranking of factors is calculated by relative importance indices that is RII.

### 3. RESEARCH METHODOLOGY

#### 3.1 GENERAL

The main objective of study is to provide basic data about effects influenced by equipment productivity at construction area and their impacts on venture.

Effects which influence productivity of construction are delay (time overrun), cost overrun, disputes, Loss in productivity of equipment, Equipment related accidents and suspension of work.

#### 3.2 RESEARCH STAGES

This investigate, passed through the following stages in figure:



**Fig 3.1**Research stages

#### 3.2.1 Objective and scope of project

The scope of this investigate is inadequate to the study of productivity of equipment of building construction projects. The objective of this consider focuses on opinions from the construction business about different effects influencing equipment productivity.

#### 3.2.2 Background of productivity

From the different literature studies, productivity meaning is clarified and significance of equipment productivity is discussed.

#### 3.2.3 Review of literature

In this suggested model, the identification of different effects influence the productivity of equipment of construction equipment and their impacts on ventures basis has been developed on the origin of literature review.

#### 3.2.4 Design of questionnaire

Questionnaires were considered on the structural basis to acquire data about the individual information of the respondents and their contribution on problems related to equipment productivity in construction.

As the result of pilot overview, there are 6 effects which are recognized as major effects influencing equipment productivity. These effects are organized in the questionnaire format.

The effects on projects are as follows;

1. Cost overrun
2. Delay (time over run)
3. Equipment related accidents
4. Loss in productivity of equipment
5. Disputes
6. Suspension of work

#### 3.2.5 Survey and data collection

In order to simplify the study, after the literature survey and the interviews, plan was framed for collecting field information and making a valuation process and numerical values. About twenty questionnaires were sent to the construction industry by mail and interviews were conducted among construction personnel specifically consultant, client, engineer, contractor, architect and labour.

### 3.2.6 Data analysis and results

The information collected were examined utilizing the relative importance index strategy to rank the effects influencing to equipment productivity on construction locales and their impacts on the project. The RII for each figure was computed from the investigation of the rating shown by the respondents.

$$R.I.I = \frac{5(n5) + 4(n4) + 3(n3) + 2(n2) + 1(n1)}{5(n1 + n2 + n3 + n4 + n5)} * 100$$

Where,

n5= number of respondents who has chosen the effect commitment as eminently significant.

N4= number of respondents who has chosen the effect commitment as very significant.

N3= number of respondents who has chosen the effect commitment as moderately significant.

N2= number of respondents who has chosen the effect commitment as slightly significant.

N1= number of respondents who has chosen the effect commitment as not significant.

### 3.2.7 Conclusions and recommendation

After positioning, conclusions can be made about the effects which influence most and impact on project and at last recommendations and can be given for progressing the productivity.

## 4. RESULTS AND DISCUSSIONS

### 4.1 GENERAL

The overview evaluation was done by utilizing relative importance index strategy and found the best effects influencing equipment productivity.

### 4.2 EFFECTS ON PROJECT:

Table 4.7 Effects on project

Effect on Project	R.I.I.	RANK
Delay (Time over run)	92	1
Cost Over run	66	2
Disputes	54	3
Loss in productivity of equipment	51	4
Equipment related accidents	51	5
Suspension of work	42	6

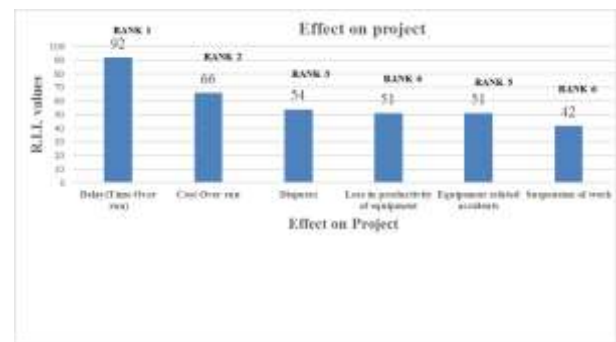


Fig 4.1 RII values and Ranks of effects

Delay (Time over run) effect is ranked 1<sup>st</sup>. Delay is commonly identified, as the foremost common, expensive, complex and hazardous issue experienced in construction projects.

Cost overrun effect is ranked 2<sup>nd</sup>. Cost in project comprises cash and assets (equipment). The client ordinarily needs the project to be completed with the possible least cost and should be convenient. In any case, it is the venture manager’s duty to formulate an execution standard to track cost performance.

Disputes effect is ranked 3<sup>rd</sup>. In each industry where individuals need to work together and coordinate there’s a chance for disputes to emerge, and development industry isn’t an exemption. Regularly there’s a need of understanding about the reasons behind the disputes, but to dodge disputes from happening and resolving them in case they happen, it is crucial to notice the causes of disputes.

Loss in productivity of equipment effect is ranked 4<sup>rd</sup>. productivity is the proportion of valuable work to the time used up to finish that work. The productivity of modern construction equipment has expanded with increment in modernity and modernization, hence permitting the cost of operations to stay moderately steady. Poor equipment arranging and management causes wasteful aspects and loss of profitable time, results in an increment in cost.

Equipment related accidents effect is ranked 5<sup>th</sup>. Construction areas are very unsafe, and construction workers have one of the most significant work-related injury rates within the field. Numerous of these injuries happen in association to the equipment that construction work regularly requires.

Suspension of work effect is ranked 6<sup>th</sup>. A suspension of work beneath a construction contract may be requested by the contracting director for a sensible period of time. In case the suspension is absurd, worker may submit a composed claim for increments within the cost of execution and excluding benefits

## 6. Conclusion and recommendations

### 6.1 conclusion

This study examines all possible effects through an organized questionnaire. The overview results are subjected to investigation, and the positioning of effects is calculated utilizing relative importance indices (RII). This investigation gives study and information of construction productivity as well as focus on effects influencing equipment productivity in building construction projects. The strategy for consideration was a quantitative survey backed by investigative subjective interviews with industry professionals, and the overview discoveries demonstrate the major effects affected by equipment productivity is delay (time overrun).

### 6.2 Recommendation

Recommendations for improving the equipment productivity on the building projects:

- Employ modern innovations
- Motivation of laborers towards project completion.
- Advance equipment planning.
- Commitment to productivity advancement ought to be there at all administration levels.

## REFERENCES

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