

# A REVIEW PAPER ON INTEGRATED USE OF SOFTWARES AND ADVANCED CONSTRUCTION MANAGEMENT TECHNIQUES TO ATTAIN ESTIMATION AND SCHEDULING OF A BUILDING.

Sachin Nalawade<sup>1</sup>, Sameeksha Luniya<sup>2</sup>, Pranali Kale<sup>3</sup>, Aishwarya Kumbhar<sup>4</sup>  
Harsh Choudhary<sup>5</sup>, Shekhar Hibare<sup>6</sup>

<sup>1</sup>ASST. PROF. DEPARTMENT OF CIVIL ENGINEERING, DYPIEMR, AKURDI PUNE, INDIA,  
<sup>2,3,4,5,6</sup> DEPARTMENT OF CIVIL ENGINEERING, DYPIEMR, AKURDI PUNE, INDIA,

**Abstract:** The Project aims to study the estimating of the multi-storey building with the use of softwares. Our main aim is to use REVIT for the attainment of estimation and compare it with the conventional method of estimation. It determines the standard cost which represents the best estimate that can be made of i.e. what should be the cost of materials, labour and equipments, etc. after eliminating the inefficiencies and waste. The basic aim of the project work is to schedule the activities by using the Ms Project. It helps to minimize the holding costs and ordering costs. The project will conclude achieving procurement by using EOQ Model. The project includes the real life construction study related to ongoing project. All activities and resources required for the project will be thoroughly studied and implemented for the practical approach.

**Index Terms** - Autodesk Revit estimation, Microsoft Project, scheduling, procurement analysis, EOQ modelling.

## I. INTRODUCTION

Construction projects have come transversely with severe risks in the completion of the project. One of these risks is the imprecision of cost estimate. The project is carried out under conditions of ambiguity; it is whether the over-estimation or underestimation of construction works. This is due to insufficient knowledge of current existing costs, so it leads to a set of hitches hampering the smooth progress of the project. Hence, it arises the need to set out a cost estimating model in line with major studies made in terms of estimating methods and a common associations between various expenses so that the cost estimate would be more real.

In addition to assigning dates to project activities, project scheduling is planned to match the resources of equipment, materials and labour with project work tasks over time. Good scheduling can help to get rid of problems due to production bottlenecks, smoothens the process of the timely procurement of necessary materials, and otherwise assure the completion of a scheme as soon as possible. In contrast, poor scheduling can result in significant waste as labourers and equipment wait for the availability of needed resources or the completion of preceding tasks. Setbacks in the completion of a complete project due to poor scheduling can also create havoc for owners who are keen to start using the constructed facilities.

Many owners require detailed construction schedules to be submitted by contractors as a means of supervising the work progress. The real work performed is commonly compared to the schedule to determine if construction is proceeding suitably. After the construction is done, similar comparisons between the planned schedule and the actual activities may be performed to allocate the accountability for project minimizes due to changes requested by the owner, worker strikes or other unforeseen conditions.

## II. PROBLEM STATEMENT

Here, we use a reference construction project to obtain cost data of all project materials, equipments, manpower, etc. Then the cost estimation is done using REVIT software and comparison is made with the manually obtained cost estimation. Now we arrange the project activities to perform an accurate scheduling using MS Project.



The above picture shows the construction site on which the study has been performed.

### III. OBJECTIVES

- To use REVIT software for the attainment of estimation and compare it with the conventional method of estimation.
- To determine the standard cost which represents the best estimate that can be made of i.e. what should be the cost of materials, labour and equipment, etc. after eliminating the inefficiencies and waste.
- To schedule activities by using MS Project.
- To achieve procurement schedule by EOQ modelling.
- Total budgeting, scheduling, tracking by using advanced construction management techniques.

### IV. OBSERVATION

Here we have carried out estimation with the help of REVIT software and compared the results with the traditional method of estimation.

SR.NO.	DESCRIPTION OF WORK	QUANTITY BY EXCEL	QUANTITY BY REVIT
1	Excavation Quantity (in Cubic meters)	2206.5	2181.3
2	Concrete Quantity for Columns & lift (in Cubic meters)	458.212	443.86
3	Concrete Quantity for Slabs & UGWT (in Cubic Meters)	1411.828	1386.26
4	Gypsum Plaster( in Square meters)	11890.228	11849
5	External Plaster( in Square meters)	11264.464	11268.5

The difference in the quantities obtained by the above two methods is discussed in the conclusion.

### V. ATTRIBUTION

The following are the various advantages obtained from the implementation project work:

- We can precisely get the quantities of all the materials that are going to be needed in the project.
- We can quickly generate quantities to assist in the decision making process.
- It helps to generate more cost estimates at a faster rate.

- It minimizes the holding costs and ordering costs.
- It helps avoid under or over- estimation of materials, labor, equipment, etc.
- We can get an approximate idea whether project is economical or not.
- We can get better visual representation of project and construction elements that must be estimated.
- It saves estimator's time by reducing quantity take-off time.
- It provides easier exploration of different design options and concepts within the owner's budget.
- It helps in quickly determining costs of specific objects.

## VI. CONCLUSION

A cost estimate is always needed to support assessments of project feasibility or funding necessities in support of planning. A cost estimate is often used to determine a budget as the cost constraint for a project or operation.

The quantities obtained with the help of REVIT are approximately same as compared to the traditional method (Excel). Also the time taken to estimate all the quantities of materials by REVIT is less than the time taken by excel. The overall process becomes much easier by using REVIT software.

As observed in the Chapter IV, the difference in the estimation by EXCEL and REVIT is acceptably different. Hence, it is more convenient to adopt the software for estimation to complete the work earlier than the conventional method.

The time required for the total completion of the project without any hindrance is more as compared to the time obtained by scheduling the activities by using MSP after crashing the activities and proper procurement of the materials, labour and equipments.

Through well-defined softwares one can perform estimation, scheduling, procurement analysis, and overall project management with great ease.

## VII. REFERENCES

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