

Miscellaneous Cost Estimation Techniques : A Study

Nishtha¹, Richa Vasuja²

¹B.E Scholar, Department of Computer Science, Chandigarh University, Mohali, Punjab, India

²Assistant Professor, Department of Computer Science, Chandigarh University, Mohali, Punjab, India

ABSTRACT

As the software are increasing in a rapid rate. Due to rise in technology the complex software are increasing vastly there is special need to manage them all based on their quality. Cost estimation is the basic technique that should be used by the software companies for the further cope up with the rise in complex software. It is the major concern and the biggest challenge that should be used by all the companies. So the various techniques used here will tell us about all the basic features of cost estimation. If the cost estimation challenge is resolved than the bigger software's can be easily managed with good quality and at a reasonable cost.

Keywords: Software Cost Estimation, Cost Estimation Techniques, Constructive Cost Model, Algorithmic Approach, Non-Algorithmic Approach.

I. INTRODUCTION

The major challenge faced by the software company is Cost Estimation .Software projects mainly rely on the cost on which they want to work upon. There are four various steps that can be used to make a software. size and effort are the major concern for building a software project .Cost estimation is specially used by researchers to get overview of requirements for a project. It is done on the basis of software size and total effort needed to complete the task and thus the total cost will be estimated. The major techniques used are Algorithmic and Non-Algorithmic techniques. The basic approach of algorithm has many pros but at the same time these methods are difficult to memorise and we need the proper information about recent project state in these methods. Non-algorithmic approach are opposite to Algorithmic approach they are easily understandable but the only condition is that we need to have complete knowledge about one of the

previous project similar to current one. Here decision is made on the basis of historical data.The decision cannot be properly made which is the best technique for cost estimation. But by the combination of these methods we can assume the conclusion for the whole phenomena of cost.

The paper starts with the core part that is why cost estimation is required in the companies. The next part covers the various techniques that are existing in software.Further it deals with the estimation techniques for the cost estimation of software.

The various techniques mentioned here will tell the cost needed by the companies. The above mentioned techniques are broadly classified into two types Algorithmic and Non Algorithmic techniques. This section lists all the techniques for cost estimation so as to get the idea which technique is the best.

The organization of document is as follows. In Section 2 (**Methods**), I'll give detail of any modifications to equipment or equipment constructed specifically for the study and, if pertinent, provide illustrations of the modifications. In Section 3 (**Selecting the Estimation Techniques**), present your research findings and your analysis of those findings. Discussed in Section 4(**Conclusion**) a conclusion is the last part of something, its end or result.

II. METHODS

A. Non-Algorithmic techniques

Non-Algorithmic Estimation give the prediction based on their comparison. The complete knowledge about the historical project is similar to the recently ongoing project .The task is completed by taking the data sets for previously completed projects .The techniques which are much in use in Non-Algorithmic are listed as shown

B. Analogies Comparisons

This technique is based behind estimation by analogy. When the new software project comes to existence than the cost estimation of that project is done on the basis of previously similar projects so as to estimation the total cost of the project we are working upon. The resources used in previous project can be used to calculate the cost of the project we want to work upon. This technique can be used at the component level. The steps of the technique are mentioned below:

- i. Determine the things required in our current project. To find the current project compared with historical project.

Pros:

- It depends on the historical data.
- The experienced person from past experience can give better cost..

Cons:

- his technique is not applicable in each project.

III. RESULTS AND DISCUSSION

A. Precise Methods

The technique based on estimation of precise judgment collects the information of all the projects and the cost is estimated by the decision of expert. There are some situations when we have problems in gathering of data. In that case Expert Judgment is good to be used. This is the popular used strategy for estimation of cost of software project .Following are the good and bad effects of this method:

Pros:

- The impacts of required new architecture and technologies are solved by the experts.

Cons:

- The document factors used by the experts are difficult.

B. Top-down Estimation

The method is based on splitting of cost of various components. It is beneficial during early stages. The example of this technique is Putnam's model.

Pros:

- It is easier to implement as it require less detail about the project.
- It focuses on activities like integration and management.

Cons:

- The technique is not taking responsibility of low level problems which are responsible for rising the cost.

C. Bottom-up Estimation

The technique works in opposite direction to other estimation. The individual cost of all required components are calculated and the answer is aggregated to get the total expenditure.

D. Price Win Estimation

In this technique fully focus is on budget rather than functionality of software. It focuses on outline of the project. The pros and cons are discussed below:

Pros:

- Budget of customer is most important need in calculating the cost.

Cons:

- It may suffer loss due to delay of software project.

E. Constructive Cost Model

It is the most famous model and is mostly used by the companies. It is known as Constructive Cost Model. The estimation of cost can be easily done with the help of Constructive Cost Model. The companies used this model for raising their business funds. This model has proved its existence in market in this model are obtained from historical projects of software. There are total of three basic models that Boehm proposed and are as follows: The Constructive Cost Model is the first set of models and the formulae is used for this type of model and is written as:

Intermediate COCOMO (Constructive Cost Model) – It contains effort estimation of nominal and the values are different from that of basic Cost Constructive Model and the formulae used here is:

$$\text{Effort} = a * (\text{KLOC})^b * \text{EAF}$$

EAF stands for Effect Adjustment Factor.

Detailed COCOMO-It works as a boon for larger systems and works on each subsystem separately. They are made up of non-homogeneous sub-systems. COCOMO model wants that system should always have stability. But this validity is not always there. So Constructive Cost Model has pros and cons:

Pros:

- It is easy to estimate cost.

Cons:

- Estimation is done at early stages so sometimes estimation failure occurs.

The result of these problems gave rise to new model known as Constructive Cost Model second which was developed in year 1990. It uses broad data. The obtained output is in the form of effort and size. Pros and cons of this model are discussed below:

Pros:

- It is the standard model for industry.
- It is clear and effective process.

Cons:

- Small projects duration is without reason.

IV. SELECTING THE ESTIMATION TECHNIQUES

The techniques should be selected in such a way that the cost should be cheaper and it must deliver good quality. The above techniques mentioned above individually are not responsible for estimation of cost. But the combination of these techniques will give us good software. COCOMO model, Putnam's model is for large projects. But they are hard to learn and use the concept of mathematical equations. The selection of techniques is done either individually or combination of both. So this cost estimation technique cannot be judged on the basis of individual techniques but the combination of all

the techniques will help us to get good result and give the best decision.

V. CONCLUSION

The actual cost of the project is difficult to determine in this case. Our aim is to initialize the cost when our project is decided. The cost estimation is highly effected by planning and budgeting. So cost estimation plays a very important role in our software project. Now a days there are many techniques we want to work upon. The aim of our project is to make a software which offer cheap and quality that is environmentally compatible. Many methods are there to implement the cost but we cannot say which method is good or bad as each method has it's own pros and cons. The combination of these techniques should be made by effort so as to offer good quality. So we have to estimate the cost based on the techniques to get better result in future

VI. REFERENCES

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Cite this Article

Nishtha, Richa Vasuja, "Miscellaneous Cost Estimation Techniques : A Study", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN : 2456-3307, Volume 5 Issue 2, pp. 731-735, March-April 2019. Available at doi : <https://doi.org/10.32628/CSEIT1952232>
Journal URL : <http://ijsrcseit.com/CSEIT1952232>