INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume 5, Issue 5)
Available online at: www.ijariit.com

Effective project management by using controlling tool EVA by tracking project through MSP

Arihant Ajit Adake
adakearihant24@gmail.com
D. Y. Patil College of Engineering and Technology, Kolhapur, Maharashtra

Amruta Ajit Lakade
amrutaspatil@gmail.com
D. Y. Patil College of Engineering and Technology, Kolhapur, Maharashtra

A. K. Gupta
gupta7962@gmail.com
D. Y. Patil College of Engineering and Technology, Kolhapur, Maharashtra

ABSTRACT

The infrastructure sector plays an important role in the growth and development of the Indian economy. Nearly, 9% of India's GDP is spent on Infrastructure services. Indian Construction and real estate sector is the second largest employer after agriculture and is expected to add 32 million jobs to the existing 45 million in the next five years. So, for management of the technical project is becoming a challenge to professional engineers. Thus, it becomes difficult rather impossible to manage such kind of large infrastructure projects manually. Here comes the need for Microsoft Project which is a management tool and helps to resolve the problems and complete the project efficiently. Earned value analysis which helps to evaluate the project performance through MSP.

Keywords— *EVA, MSP, Project management*

1. INTRODUCTION

In an increasingly challenging world, the markets have an intense contest, customer satisfaction had increased the central pivot of many companies of construction industry and they want to be successful. The fulfillment not only comes from the quality and performance but also through time and cost indices in construction. Construction field is one of the most important sectors in development of countries like India. Contribution from this field to growth of a country's economy to a large extent Now days the construction of work is highly aggressive in overall worldwide and the future of a various companies with their proper skill and their financial decisions. If projects is not working well a correction is to be made. In spite of many decades of practice and academic attention project performance, remains problematic, verifiable evidence suggests that projects do not generally achieve the required scope, are frequently delay, and perform badly on quality of deliverables as well as on cost budget. Therefore, Project leader should be in practice of using tool such as M.S project for controlling and monitoring of a project, excel spread sheet for project planning, invoice and resource plain. Basically, Microsoft project is a project management software product developed and sold by Microsoft .it is designed to assist a project manager in developing a schedule, assigning resource to tasks, tracking progress, managing the budget and analyzing workloads.

So, how is your project going? This is a question project manager are frequently asked by management and the customer. One technique often used by project managers is Earned Value Management (EVM) which is a powerful methodology that gives executives, project managers, and other stakeholders the ability to visualize project status throughout the project life cycle and consequently manage projects, programs, and portfolios more effectively. It is a technique that uses "work in progress" to indicate, what is the status of project and what will be the happen in future. It also gives a clear idea if our project is behind or ahead of schedule as well as over budget or under budget. It is also globally recommended method for project performance measurement.

2. LITERATURE REVIEW

In construction industry there are many confrontations and increasing day by day. Above all this confrontation a very important is to improve the performance of the project with reference to cost and schedule to overcome this. To achieve this one of the best tools is earned value analysis and measure performance of construction project .it is helpful in measuring progress and determining unfavorable issues. This enables project management or mangers to know the information about project and its every activity. By using this software program, the delay analysis of project can be evaluated. Therefore, the project manager and team may get to know the status of project. (Rudresh L.2017)

Project management is process of planning organizing and managing activities and resources to accomplish a defined objective within constraints on time resource or cost. It is very common to see project failing to achieve its mission within specified time and cost. The factors contributing to overrun are inadequate project formation, poor planning for implementation and lack project management during project execution but main cause of failure can be attributed to cost estimation failure and management failure. As project become larger and more complex, the ability to exchange information on a timely basis in shrinking. The paper-based project management system cannot meet demands of today's project. There is a tremendous amount of information on a project that is always changing. Hence to overcome loses due to improve management software can be efficiently used for project. (A.A. Lakade 2013)

The procedure adopted for recording, reporting and collecting information related to performance of project is known as project monitoring and controlling. The actual performance of project can be able to bring planned performance by using the data of monitoring activities. The study is carried out for established, an effective system for monitoring and controlling for cost of project, so that project cost has main factor of success. Although that EVA may be the most easily related with the monitoring and evaluation of project cost which undertaken for establishment. It can readily may applied to some adjustment to control some project cost which performed by contractors and vendors. The project was analyzed using the developed software. (MD Imran Khan 2015)

With large infrastructure project in India are in developed phase and if proper planning and management is done it will help in increase the development rate faster in well organizing manner by using proper management technique. Earned value management system is a technique which attempts to resolve built assets stakeholders opt for controlling and monitoring a project and also measuring project progress performance in an objective manner. Earned management value is a technique which helps achieve all above factors in a well-defined manner (Mr. Vishwajit V. Jadhav 2018)

3. OBJECTIVES

- To study Features of MSP 2013 for Earned value management
- Implementing of MSP 2013 Software for selected construction activities for Earned value analysis
- Highlighting Benefits of using MSP 2013 for Earned value Analysis

4. METHODOLOGY

For this paper study of Literature review was carried out through which information was gain about EVA through MSP software for carrying out EVA through MSP. Data was collected of ongoing site, out of total project, Mobilization and sub structure activities were carried out. Duration, planned cost, Actual cost about these activities were listed and used for EVA through MSP. Some of the activities were delayed due to some or the other reasons whose details were also collected. After implementation, the progress of project was tracked in terms of cost and variance were calculated for considered activities

5. APPLICATION

EVA implementation was carried out for a residential construction site G+4 .The total project duration is estimated of about 8 months. As project execution started, at its initial stage it was observed that some of the activities were delayed due to various reasons which affected cost of that activity that is there was variance in planned value and actual value. This made about remaining activities as ultimately it is going to affect the total project duration and total project cost. Hence EVA analysis was carried out for completed activities that is mobilization and sub structure to check overrun budgeted activities. Following table shows details of manual calculation of EVA and delay reasons. For the same site implementation was carried was carried out of EVA through MSP as shown in fig and same results were observed as that of manual calculation.

Table 1: Manual calculation of EVA

S no.	Activities	AC	PV	EV	CPI	CV	SPI	SV	Delay reasons
A. Mobilization									
1	Site cleaning	10000	15000	15000	1.5	-5000	1	0	-
2	Construction of compound wall	35000	50000	50000	1.42	-15000	1	0	Work was completed in 5 days thus labor cost was reduced
3	Site layout	500	500	500	1	0	1	0	-
4	Temporary water and electric connection	10000	10000	10000	1	0	1	0	-
5	Watchman cabin	7000	10000	10000	1.42	3000	1	0	For cabin material was recycled or reused from another site
B. Substructure									
1	Excavation	205000	135268	135268	0.65	-69732	1	0	Contractor encountered unforeseen adverse ground condition during excavation
2	Back filling	31875	31875	31875	1	0	1	0	
3	Soiling	31283	31283	31283	1	0	1	0	
4	P.C.C	60000	71617	71617	1.19	11617	1	0	The work was completed in 1 day
5	R.C.C	310000	259833	259833	0.83	-50167	1	0	

TIMELINE

Add tasks with dates to the timeline

GANTT CHART

	Task Name	Planned Value - PV (BCWS)	Earned Value - EV (BCWP)	AC (ACWP)	SV	CV	SPI	CPI
1	**Mobilization**	**₹ 85,500.00**	**₹ 85,500.00**	**₹ 62,500.00**	**₹ 0.00**	**₹ 23,000.00**	**1**	**1.37**
2	Site cleaning	₹ 15,000.00	₹ 15,000.00	₹ 10,000.00	₹ 0.00	₹ 5,000.00	1	1.5
3	Construction of coumpound wall	₹ 50,000.00	₹ 50,000.00	₹ 35,000.00	₹ 0.00	₹ 15,000.00	1	1.43
4	Site layout	₹ 500.00	₹ 500.00	₹ 500.00	₹ 0.00	₹ 0.00	1	1
5	Temporary water & electric connection	₹ 10,000.00	₹ 10,000.00	₹ 10,000.00	₹ 0.00	₹ 0.00	1	1
6	watchman cabin	₹ 10,000.00	₹ 10,000.00	₹ 7,000.00	₹ 0.00	₹ 3,000.00	1	1.43
7	**substructure**	**₹ 529,876.00**	**₹ 529,876.00**	**₹ 638,158.00**	**₹ 0.00**	**₹ 108,282.00)**	**1**	**0.83**
8	Exacavation	₹ 135,268.00	₹ 135,268.00	₹ 205,000.00	₹ 0.00	(₹ 69,732.00)	1	0.66
9	Back filling	₹ 31,875.00	₹ 31,875.00	₹ 31,875.00	₹ 0.00	₹ 0.00	1	1
10	Soiling	₹ 31,283.00	₹ 31,283.00	₹ 31,283.00	₹ 0.00	₹ 0.00	1	1
11	P.C.C	₹ 71,617.00	₹ 71,617.00	₹ 60,000.00	₹ 0.00	₹ 11,617.00	1	1.19
12	R.C.C	₹ 259,833.00	₹ 259,833.00	₹ 310,000.00	₹ 0.00	(₹ 50,167.00)	1	0.84

Fig. 1: EVA for selected site activities through MSP

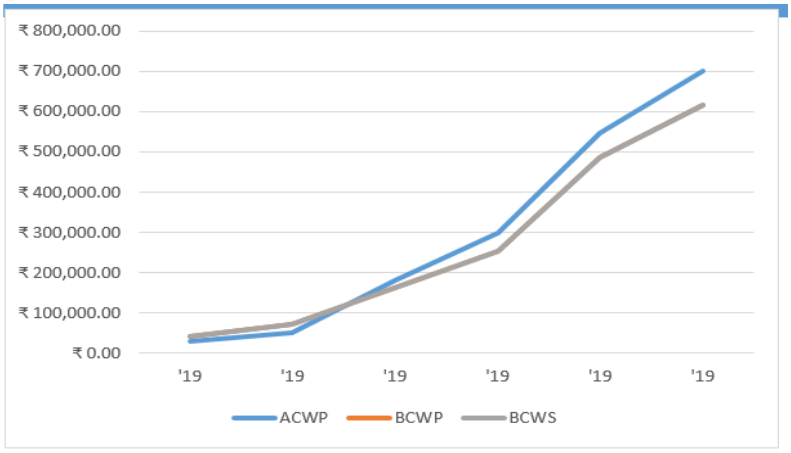

Fig. 2: EVA indicators

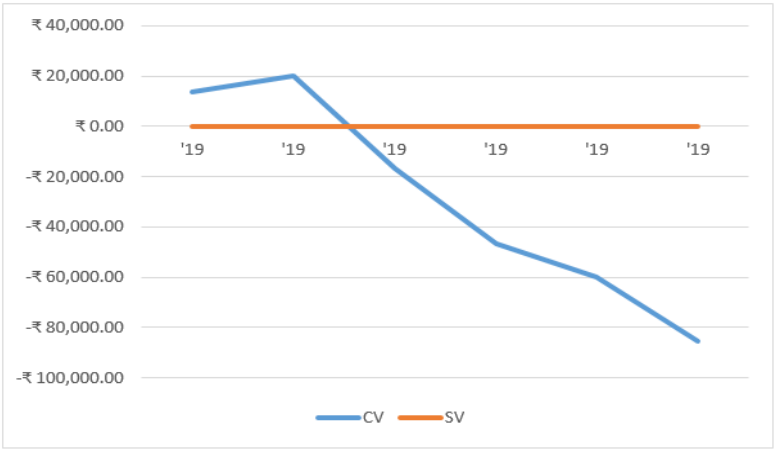

Fig. 3: CV, SV details

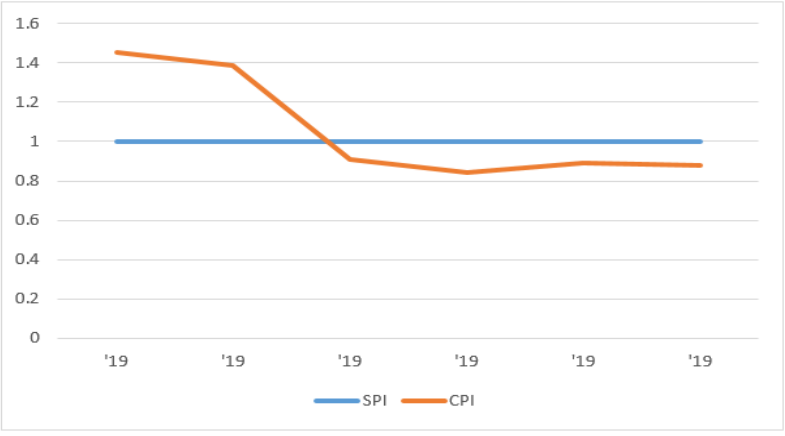

Fig. 4: SPI, CPI details

6. CONCLUSION

After implementing EVA, controlling tool to the construction project activities it was possible to track the project based on completed activities. Implementing of EVA gave various EVA indicators by manual calculations and MSP software implementation as shown in table 1 and figure 1 respectively. The graph generated through MSP for calculated EVA indicators is shown figure (2, 3, and 4). The indicators like PV, EV, AC, SPI, CPI, CV, SV, help to monitor the project progress and cost variation between planned and actual. Example: Consider activity Excavation, following are the EVA indicators

Table 2: EVA analysis for excavation details

Activities	AC	PV	EV	CPI	CV	SPI	Delay reasons
Excavation	205000	135268	135268	0.65	-69732	1	Contractor encountered unforeseen adverse ground condition during excavation

For activity Excavation, the planned value was 135268 but the actual cost on site was 205000. Thus, we get the value of CPI=0.65 that means the project is under budget. And the value of CV = -69732 is negative which means the project is under budget. The value of SPI =1 which means the activity is on schedule.

Use of MSP plays an important role for managing the project of company having their project in various sectors like residential, commercial, infrastructure. Managing of such project manually at every phase of project as and when needed is time consuming and hectic. Hence it is beneficial to manage the project through MSP for accurate and non-manipulated information of various project which are going on simultaneously.

7. REFERENCES

[1] Mr. Vishwajit V. Jadhav, Mr. Rahul D. Shinde" Application of Earned Value Management System For Road Construction Project: A Case Study" International Journal For Research In Applied Science and Engineering Technology (IJRASET) Volume 6 Issue VII (July2018)

[2] Md Imran Khan, Maneeth P D, Brij Bhushan S. "Project Monitoring And Controlling Using Earned Value Method" International Research Journal of Engineering and Technology (IRJET) Volume :02 Issue:07

[3] Miss. A.A. Lakade, Prof. A.K. Gupta "A Project Management Using ERP And Primavera in Construction Industry" Journal of Mechanical and Civil Engineering (IOSR-JMCE) ISSN:2278-1684, PP:21-24

[4] Rudresh L., Shashank U. Vanakudri "Application of Earned Value Method and Delay Analysis on Construction Project to Analyze Cost and Schedule" International Research Journal of Engineering and Technology (IRJET) Volume:04 Issue:07 (July -2017)

[5] Ankur Verma, K.K Pathak, R K Dixit "Earned Value Analysis of Construction Project at Rashtriya Sanskrit Sansthan, Bhopal" ISSN:2319-875, Volume.3, Issue 4 (April2014)

