A Review of Earned Value Analysis Application to High Rise Building

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***Abstract* - Earned Value Management (EVM) is a methodical move toward to the integration in addition to measurement of cost, schedule, in addition to technical development of a project or task. It provides project manager's ability to examine detailed agenda information, critical program, technological milestones, and cost data. Earned value management is a technique that forecasts the project giving a near the beginning warning of cost & schedule. It not only events the project performance but also measure the growth of the schedule. Most of the construction projects suffer on or after cost and time overruns due to a multiplicity of factors. Earned value management is a project performance assessment technique that have origin in industrial manufacturing, but which has been adapted for application in project organization. The earned value analysis gives early indications of project presentation to highlight the need for eventual corrective action. These studies are to in present and discuss the main parameters involved in the reckoning of Earned Value Analysis (EVA) in the cost administration of civil construction projects.**

***keywords* - Index Terms—Earned Value, Project Management and Construction planning.**

I. INTRODUCTION

Construction industry is an significant manufacturing at together the worldwide height and national level. It is second largest sector in India. It provide huge service to the people and plays very significant role in country financial system. Project delay is the preponderance widespread evils in the conception industry. In developing countries project overruns is a serious where implementation of project faces many doubts. It results in wastage of scare financial resources, delay in providing facilities, development and too make construction costlier. With globalization and technology driven economic growth all over the world, a scientific and systematic approach to project organization becomes imperative to ensure that project objectives are attain within the constraints of time and resources EVM is the process of measuring performance of project work against a baseline plan. EVM application helps in providing performance standard for the evaluation of advancement report of project and it also act as a control device to take care of time and cost schedule by responsibility defined in OBS. It supply improved performance picture of project in addition to gives improved predict of the concluding conclusion cost.

Earned value is an improvement over customary procedure of price secretarial. Traditionally the budget cost is evaluated by computing the difference between planned cost and actual cost incurred in a project. The focus was on planned expenditure and actual costs. Earned Value method reveals future opportunities and it also examines actual accomplishment. By means of the help of EVM, project manager get enough help to keep deep spontaneous understanding keen on possible risk areas. So that with the help of clearer picture of the development cost performances, manager can create risk alleviation plans based on actual cost, agenda and technical progress of the work. It is like an alarm for the manager to identify and control problems by taking appropriate remedial events before they turn out to be too huge in the direction of overcome It provides better understanding of the project in terms of time and cost schedule. EVM System is a set of guidelines to provide satisfactory completion of project. It has been seen that to cover cost overrun, development team undergoes cost reduction either by reducing the project scope and quality or by providing additional. Similarly incase of time overrun, they plan crashing of activities or fast tract programs. Therefore with the use of EVM system, project goals are achieved in better way. Earned Value psychotherapy is a technique of look dimension. Earned worth is a program management technique with the intention of uses "work in progress" to indicate what will happen to work in the future. EVM is system for preparation and scheming the project cost performances. EVM set out of bed work letters earned value baseline by integrating project scope, time, schedule and cost objectives. This baseline is called as cost control and is second-hand for presentation evaluation of scheme on a given date. Psychotherapy of discrepancy from the baseline provide the cost related information's for problem categorization, trend analysis and corrective proceedings such as re-planning in addition to revising financial statement.

II. LITERATURE REVIEW

- **Naderpour, M. Mofid, "Improving Construction Management Of An Educational Center By Applying Earned Value Technique", Science Direct, Vol- 14, Pp No- 1945-1952, 2011.**

Earned value project organization is a well-known organization scheme that integrates cost, schedule in addition to technical performance. It allows the calculation of cost and agenda variances and presentation indices and forecasts the project cost and schedule period. The Earned Value notion was conceive by industrial engineers working in American factory over a century before. This concept better by the time and in July 1998, the Earned Value Management System became the American National principles Institute Standard #748. By concise in arrange derived from using Earned Value technique in the map, the boss is able to have exact in order regarding the project particulars and also be able to lessen the risk in his decisions in risky conditions of the

project. It would be early caveat tools designed for a scheme manage. Consequently, the project could be finished after a short period of time. These paper aims to explore the concepts of earn value method, its methods and metrics, performance measurements and forecasting project progress. In order to compare between EVPM technique and traditional methods, the effectiveness of applying EVPM in a real project, construction of an instructive center in one of the petrochemical plant as a case study is give details. Reports derived from by means of earned value method in the system indicated that the supervisor was able to have precise in sequence about the project details in addition to also mitigate the risk in his decisions in dangerous conditions of the project. As a result, the project was ended after a small era of time.

- **Jordy batselier, Mario Vanhouck, "Improving Project Forecast Accuracy by Integrating Earned Value Management with Exponential Smoothing and Reference Class Forecasting" Pp. 28-43.**

In this paper, the earned value organization (EVM) project control method is integrated with the exponential smoothing forecasting approach. These results in an extra room of the known EVM and earn schedule (ES) cost and time forecasting formulas. A clear mail between the well-known approach and the newly introduce method – called the XSM – is identified, which could make convincing future achievement. More specially, only single smoothing parameter is needed to calculate the improved EVM presentation thing. Furthermore, this limitation can be dynamically adjusted during project progress based on information of past understanding and/or unsurprising association proceedings. As well, the compass reading class forecasting (RCF) technique can be included into the XSM. Results on or after 23 real-life project show that, for both time and cost forecasting, the XSM exhibit a considerable on the whole presentation development with admiration to the most precise project forecasting methods recognized by earlier research, in scrupulous when fit in the RCF thought.

- **Fernando Acebes, Javier Pajares, José Manuel Galán, Adolfo López-Paredes, "Beyond Earned Value Management: A Graphical Frame work for Integrated Cost, Schedule and Risk Monitoring", Pp. 181-189.**

In this paper, we suggest an ground-breaking inside addition to simple graphical frame for project control as well as monitor, to put as one the scope of project cost and schedule with danger management, so extending the Earned Value line of attack (EVM). EVM allow Project managers to be on familiar terms with whether the project has overruns, but development managers do not know at what time deviations from planned principles are so important that remedial actions should be taken or, in case of first-rate quality concert, sources of development can be detected. From the thought of scheme planned unpredictability, we build a graphical method to be recognizable with when a project remains "out of control" or within expected variability" during the project lifecycle. To this aim, we define and represent new control in dead new cumulative buffers. Five areas in the chart represent five different possible project states. To implement this framework, project manager barely need the data provided by EVM conventional analysis and Monte-Carlo reproduction. We also discover the empathy of the line of attack to be in charge of variables.

- **Hong Long Chen, Wei Tong Chen, Ying Lien Lin, "Earned Value Project Management: Improving the Predictive power Of Planned Value", Pp. 1-8.**

Earned value project management (EVPM) is an efficient instrument for organization project presentation. However, most study on extensions and applications of EVPM think on civilizing final cost and duration estimates rather than improving upon the use of planned value (PV) to predict earned value (EV) and actual cost value (AC). This study proposes a straightforward modeling technique for improving the prognostic power of PV before executing a plan. By using this modeling method, these crams develop EV and AC forecasting models for four case projects. Out of-sample forecasting corroboration using mean absolute percentage error (MAPE) demonstrate that the proposed method improves forecasting accuracy by an average of 23.66% and 17.39%, respectively, for EV and AC. This improvement on PV's predictive power prior to project execution provides administration with more reliable predictive information about EV and AC performance, allow for effective proactive action to make sure constructive presentation outcome.

- **Richard Fulford, Craig Standing, "Construction Industry Productivity and the Potential for Collaborative Practice" Pp. 1-12.**

The construction industry is widely documented as a laggard in terms of productivity development. This investigate study identifies the factors inhibit collaboration and provides a replica for rising a joint network approach. The case study conduct examines the factors impacting on teamwork in the project network of three large building organizations. It was found that too much disintegration in the manufacturing together with disparate project management process and non-standardized in order is impeding competence gains. A panel of project experts reviewed the answer to explain the basis of the practices. This has lead to four primary conclusions: the construction industry lacks the 'strength' of relationships necessary to generate a network of organizations that trust and have shared principles; plan process should include both value engineering and lifecycle costing; events and in sequence require to be homogeneous; there be supposed to be more emphasis on value adding project running activities.

- **Shuheng Zhong, Xin Wang, "Improvement and Application of Earned Value Analysis in Coal project Management", Pp. 1983-1989.**

It would contain a amount of deficiencies in customary earned value analysis methodology when were applied into agenda measurement method and cost dimension methods in a project running, in light of this, the approach to improve cost measurement method was presented. And, based on property of analysis task total time difference, the conception of weight earned charge was introduced to resolve vital path problem of calendar measurement methods; denote while, the heaviness earned value calculating formulas and analysis process were given in this document which could provide a more accurate basis for coal project measurement.

- **Timur Narbaev, Alberto De Marco, "An Earned Schedule-Based Regression Model to improve Cost Estimate at Completion" Pp. 1-12.**

Traditional earn Value Management (EVM) index-based methods for Cost Estimate at Completion (CEAC) of a constant project have be recognized for their confines inherent with in cooperation the assumption that past EVM data is the best available in sequence in adding up to early-stage unreliability. In an attempt to overcome such limitations, a new CEAC line of attack is proposed based on a made to order index-based formula predicting expected cost for the outstanding labor through the Gompers growth model via nonlinear regression curve fitting. Moreover, the proposed equation financial records for the schedule progress as a factor of cost performance. in the direction of this end, it integrates into its equation an Earned Schedule-based factor indicating predictable duration at completion. The proposed model show itself to be more precise and precise within all near the commencement, center, as well as behind stage estimate than those of four compared traditional index-based formulae. The developed line of attack is a practical tool designed for Project Managers to better incorporate the development standing into the task of computing CEAC and is a donation to extending EVM research to superior capture the inherent family member between cost and timetable factors.

- **A. Naderpour, M. Mofid, "Improving Construction Management Of An Educational Center By Applying Earned Value Technique", Pp. 1945-1952.**

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- **Fernandoacebes, Javier Pajaresa, José Manuel Galán, Adolfo López-Paredes. "Beyond Earned Value Management: A Graphical Framework for Integrated Cost, Schedule and Risk Monitoring", Pp. 181-189.**

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- **Hong Long Chen, Wei Tong Chen, Ying Lien Lin, "Earned Value Project Management: Improving the Predictive Power of Planned Value" Pp. 1-8.**

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The construction industry is widely recognized as a laggard in terms of productivity improvement. These researches learn identifies the factor inhibiting collaboration and provides a model for developing a joint network approach. The case studies conducted examine the factors impacting on group effort in the project networks of three large construction organizations. It was found that excessive disintegration in the industry together by way of disparate project management processes and non-standardized information is impeding efficiency gains. Panels of project experts review the answer toward explain the basis of the practices. This have led to four main conclusion: the construction industry lack the 'strength' of relations essential to generate a system of organization that faith and contain shared principles; intend procedure be supposed to include both value commerce and lifecycle costing; proceedings and during succession require to be standardized; there be supposed to be additional emphasis on value adding scheme organization activities.

III. CONCLUSION

This learns show that importance, performance in addition to sole features of earned value management that reimbursement of project manager and in the end consequence in project success. The use of such software help's to total the project on top of agenda time and cost. Although EVA(earn Value Analysis) may be most without problems associated with the check and estimate of development cost that are undertaken within an organization, it can also be readily applied, with some alteration, to the organize of project charge that are perform by contractor and vendor. In that state of affairs, though, it must be recognized that the client and contractor will have differing perspective on actual in addition to budget costs. This modify also indicated that EVA has significant value and presents only one of its kind features that can benefit customers, consultant and contractor caught up in the wide range of structure industry.

The building industry is unique in a way as it is relatively easy to implement the EVA method since much of the data is already obtainable and can be gathered with no much extra effort. The information that isn't readily available be supposed to almost certainly be, which Means so as to EVA simply promote good quality project management. The earned value and earned schedule methods should be well thought-out by any project manager that in some way could benefit from receiving an early caveat cost and schedule signals inside time to alter the ultimate way of the project. In short any project manager working on any project using any kind of contracting method that involves fixed payment for said tasks can benefit from the EVM. An extra benefit of gathering all the data required by the EVA for the existing project is the potential it presents for view jobs. It can be thought of as an iterative growth where the model is refined even further each time it is used, which admittedly would have helped in the formation of the model presented within this paper. This should be considered as one of the greatest strength of EVM and if second-hand properly it will help the contractor in acquiring the development cost high-quality institute needed to contend bounded through the industry

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