

ANALYSIS THE PRODUCTIVITY OF VARIOUS TYPES INFRA-STRUCTURE PROJECT WITH RESPECT TIME, COST, AND CASH FLOW.

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ABSTRACT

Indian Construction industry have various types Projects they have different activity , completion period and Costing , those organization engage in this industry required proper planning to complete this project with respect to time, if specific planning and calculation use this organization can increase their profit ratio with respect to time and increase the cash flow during financial year ,which help to improve the turnover of organization. In this Paper Compare the Construction Project with each other and determine the Activity profit ratio with respect to time ,determine the cash flow during project completion with the help of Simulation network , the simulation network compare this project each other depends upon practical input and give the results , this results can help to organization to determine the project profit ratio with each other, decision making to commencement of project.

Keywords - Activity profit ratio, cash flow, Duration, Simulation network.

I.INTRODUCTION

The Indian construction industry has various type of project. Example –A)Infrastructures- Road, Bridge, Building, Compound Wall, Telecom Infra Structure B)Irrigation Projects- Pipe line , Dam , Elevated Storage Reservoirs C)Earth Work – Earth Excavation and Transportation ,Canal deepening and widening, Deep Continuous counter trench, Mati nala band , Bandara. This various types of project have different Factor for Completion.

To Complete this project required planning with respect to Activity, cost, time, quality and organization profit. depends on some Practical factors and Construction management Study try to increase the organization Productivity and performance ,it means minting the technical performance, schedule of working and within budgetary cost . In this project some simulation network create and give the some practical input on various factor depend upon -project duration(Time) ,Process, man power , Machinery (Quality), cash flow and margin and try to improve the performance and Profitability of organization and give some conclusion to selection of projects. And repetition of project for improving performance and technical improvement in profitable area.

Infrastructure projects are different from other projects. In order to define their success, we need more dimensions to consider these differences for a wide range of stake holders, and manage a high budget influenced by political decisions, long time span for planning and executing etc. The quality of work has a big influence on improving the economic conditions (Spang, 2016)1. Improving economic conditions includes the business conditions and organizational capabilities. Use of simulation network in this study we try to make good decision model to analysis different infrastructure project to each other to determine the profit and loss .this will help to improving the organization productivity and Profit.

1.3 Aim

The aim of study ‘Increases the Productivity of various types infra-Structure project with respect to Time, cost, cash flow and make organization more profitable’

1.4 Objectives

- A) To evaluate the productivity of various infra projects with respect to organization profitability.
- B)To evaluate methodology for increasing the profitability of organization.

II. LITERATURE REVIEW

2.2.1 “Analysis of Duration and Cost Estimate of Construction Projects Through Computer Simulation”, Darko Duki, Tamara Mari, Dubravka Babi. Proceedings of the ITI 2007 29th Int. Conf. on Information Technology Interfaces, June 25-28, 2007, Cavtat, Croatia^[1]

Computer simulation is used in the field of construction project management as well. Its us for solving the scheduled problem can significantly solve for project manager's decision-making ,especially in today's complex operating situation .in this paper model of calculation of time requirement and estimated cost of construction projects depends on a computer simulation. The theoretical job for generating random numbers put by the triangular distribution. Most help full think statistical analysis which use for results in establishing interval for the project duration.

PERT method assumes the required time of each activities used by random variable with a probability density function. Which theoretical distribution will be used in the time risk analysis depends on the type and characteristics of a particular project, as well as on the project manager's preferences. In this paper how the triangular distribution in Monte Carlo simulation can be applied and what can be achieved with it. The triangular distribution is determined by three parameters – minimum value (a), most likely value (m) and maximum value (b)The theoretical framework for conducting simulations in the presented model is established by the triangular distribution. Although quite simple, it has characteristics that reflect well the three time estimates of construction activity duration. To provide better understanding, in this paper determined the probability density function and the cumulative probability function of such random variable, and then formulated its basic parameters. Furthermore, the procedure of generating random

numbers from the triangular distribution has been explained. The sum of duration times of all activities obtained through simulation, which are found on the critical path, represents the total project duration.

2.2.2 “Strategic Cost Management For Construction Project Success: A Systematic Study’s T. G. K. Vasista Ph D Research Scholar Sunrise University, Alwar Civil Engineering and Urban Planning: An International Journal (CiVEJ) Vol.4, No.1, March 2017 DOI:10.5121/civej.2017.4105^[2]

Large construction projects are complex and dynamic. projects start with ideas, investments and efforts. However, most of them do not achieve success. unsuccessful projects is lack of knowledge on time, cost, scope and quality. The objective of the research is to considering only the s, time, cost, quality and scope as process success parameters and how cost element influence the project completion when all other factor or element other than estimated price are determine in terms of cost factor with the contract rule as basic rules that drive the strategic cost based on use of CRASP methodology concept. The concepts of benchmarking provide meaning of project success full complete when allowing to dividing the meaning of customer profit to the project providers (project owner and contractors).

A project has a fix starting point and finishing point and must meet specified aim. Broadly these aims are required to be achieved by three fundamental criteria i.e.: (i) the project completed on specific duration (ii) the project completed within the budget cost (iii) the project must be prescribed quality requirements. There is no practical guideline for measuring such criteria. Therefore in this paper an attempt is made to measure and study the quality cost towards indicating the evaluation of technical performance in construction projects. Quality cost can play an medal role in project management from a cost of project and consequently help to the success the construction project.

2.2.3. ‘Neural network as a simulation metamodel in economic analysis of risky projects Adedeji B. Badiru a, ,, David B. Sieger ba Expert Systems Laboratory, School ofIndustrialEngineering, University of Oklahoma, Norman, OK 73019, USAb Department of Mechanical Engineering, University of Illinois at Chicago, Chicago, IL 60607-7022, USAReceived 26 July 1993; accepted 16 October 1996^[3]

Artificial neural network (ANN) model of risk economic study of projects is represented in this paper. results of simulation structure are used as neural network by some inputs. The neural network is then used to calculate the minimum out come from an investment project. The indirect cost of the project include the investment, the rate of return, investment period. Back propagation method is used in the neural network , hyperbolic tangent functions and Sigmoid are used in the learning aspect of the system.

Study of result the outputs of the neural network indicates that more precise workability can be achieve by simulation with neural network . The good network able to find simulation output based on the input values with good accuracy . This helps in analysis of the further planning of the investment in the project without having extra expenses and time taking simulation experiments.

This paper studied Artificial neural network model for cost analysis of projects. Outputs of simulation model are use as neural network inputs. The neural network model is then used to calculate the profit from an investment project having parameters.

2.2.4. Innovation in project-based, service-enhanced firms: the construction of complex products and systems David M. Gann), Ammon J. Salter SPRU-Science and Technology Policy Research, Uniġersity of Sussex, Mantell Building, Brighton BNI 9RF, UK^[4]

This paper study the management of innovation within firm constructing complex projects. It based on studies of how construction complete ,design and engineering firms develop buildings and structures. Researcher contends that these projects, service forms of company are not adequately addressed in the literature.

Project based firms reply on hiring technical expertise from other companies to delivers their own technical skills, usually in one off process. The paper studied that these firms are only able to effectively control and reproduce their technological capabilities by applying project and business processes within the firm. results show the need for a better conceptual understanding and new management practices to link business processes and project. The paper give idea of framework IT-based decision support systems for finding this, explain and help the dynamics of project based firms and how they can improve the working performance across the projects.

Information systems are likely to change the decision-making and the nature of decision with the implementation of business management and project management tools. Successful implement of IT-based decision support systems in leading construction firms demonstrates that implement in processes are quite different in character from conventional approaches. The use of IT systems is resulting in fundamental changes to the sequencing, timing and ranked of decision-making. The most important aspects of change are: I) the increasing the speed of decision –making. II). to make information readily available where and when it is required; and .III). increased visibility of decision-making processes, including access to other people’s decisions. construction firms not able to achieve all of these changes alone. forms of service enhanced, project based manufacture are likely to require new systems of innovation support at national and international levels.

2.2.5 Practical Multifactor Approach to Evaluating Risk of Investment in Engineering Projects Abraham Warszawski, F.ASCE,1 and Rafael Sacks2 DOI: 10.1061/~ASCE:0733-9364~2004:130:3~357^[5]

Risk analysis is critical in management to make decisions regarding the budget of engineering projects. In most of construction projects, risk assessment work are not used because the detailed information they required is not available to the manager or owner. As output, risk assessment has limitation for simple sensitivity analyses. This literature presents a practical thorough model in which the economic complexity in a construction project can be calculated or find out with input of various levels of detail. The proposed “multifactor” method take in the account of interdependence between a project risk factor. The aim of the method are explained, its used to a big construction project, and the findings are discussed.

A aim and transparent method for risks analysis of investment in building construction projects has been constructed, used in software, and tested. It enables a building project owner/developer to: 1. Assess the economic risk associated with their project very quickly and with relatively little input information and 2. Identify the ways in which he/she can intervene to ameliorate the risks, and assess the effectiveness of such interventions.

The multifactor method can operate with risk factors at any available level of information detail. This is an important advantage, The method could be both enhanced and simplified from the point of view of the nonprofessional user if default probability distributions for typical activities were made available. Such distributions should be based on historic duration and cost distribution data for completed projects.

2.3 Research Gap

In Past Research methodology doesn't find the project productivity with respect to Time and Cost and productivity with respect to cash flow so this research gap cant increase the organization productivity by selection of project with comper to others project.

2.4 Problem Statement

In Construction industry have many types of Infrastructure project they have different or same activity to competition, for this different activity required deferent material ,machinery ,deferent labors and cost and time to completion. Organizations have various opportunities to take different project but depends upon the time of completion, and cash flow also specialization of Activity's we comper the various project each other. Organization also improve the performance by selecting same types of project it is beneficial to organization or not this will find in this study also cash flow requirement for all this activity and allocation of cash flow requirement also define. Depends upon the comparison we try to improve the organization performance, profitability and management strategies to specialization in same activity or project.

III. Methodology

3.1 Methodology of work

Primary and secondary data is studied first ,Primary data were collect from the interviews from a mini-survey and from conversations with supervisors at deferent project. In addition, documents from the four projects were used as primary data in order to describe the characteristics of the project. The secondary data collect mainly from resulting in the literature study and books. The literature study made before and during the interviews. The purpose of the literature review to get an understanding of project, success criteria, and time and cost for activity for completion and how they are related in order to form appropriate interview questions. The results from the interviews brought up new subjects that were necessary to be include in the Paper. Thus, the data from the interviews conduct are limited to the project management of the four projects.

After the interview simulation network is crate on Microsoft excel and give the practical input relates to Activity, Time ,Cost And Cash Flow Duration of Project for all this four cases .In simulation network depends upon the input some strategic calculation and observation the comparison is done on hidden layer and final output is give bye simulation network this more easily calculated(in fig 1) depends upon the output organization can define the more profitable construction project and capability of organization of hand the same type of the construction project and its help to increase the productivity of project.

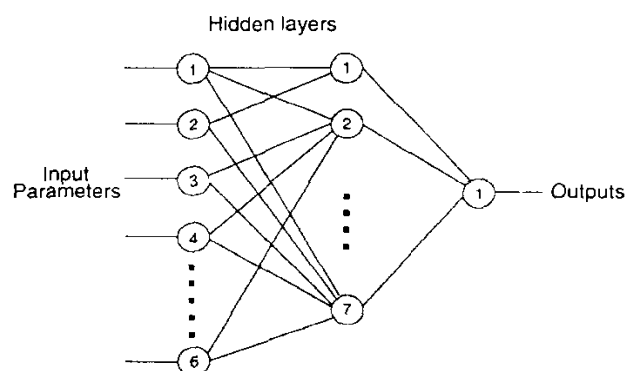


Figure 1 Simulation Network Diagram

IV. Theoretical Contents

In this study analyzed the various infra project with respect to Activity ,time ,cost ,cash flow depends upon some observation the various infra project have different activity ,time and cash flow also different profit and loss margins so, In this study we try to summarized all this observation and create on simulation network to find the best profitable project compering to other infrastructure projects .

To compete this project required planning with respect to Activity, cost, time, quality and organization profit (Fig-1). depends on some factors and Construction management Study try to increase the organization performance ,it means minting the technical performance, schedule of working and within budgetary can improve the profitability of organization by repetition of project or by specialization of same type of project in the same area.

Artificial neural networks (ANN) form a branch of artificial intelligence. Neural networks is a connection of simple processing elements capable of calculating the data which given by external inputs. The Calculating element is referred to as a neuron. Every neuron is connected to minimum one other neuron in a mesh-like fashion. A network consists of cells that are organized in one by one layers. There are three layers in a neural network: the first input layer, second one is hidden layer(s), and the last output layer. Neural networks used by evaluating changes in input. Learning can be supervised or unsupervised or reinforcement. In supervised learning each input is checked by specified parameters. Command is given to computer to compare inputs to ideal responses, and any discrepancy between the new inputs and ideal responses is recorded. The network then uses this information to guess how much the newly gathered data is similar to or different from the ideal responses.

In this paper simulation network is created, compare the project each other by activity, time, cost by using the various practical inputs, by using some calculation and assumption the various project are compared to each other in Hidden layer and final result are calculated depends upon final output the more profitable projects are found out depended upon this the organization productivity can increase also the specialization of organization can define and the organization production process, management can be finalized to minimize the losses and complication for competing the all activity.

V. CONCLUSION

The construction industries struggle with inefficient processes much to be desired. In order to meet this challenge the construction industry must move up to date by using fewer resources. Small changes in the operational cost, which increase the efficiency, can make substantial changes in profit. By using simulation network we can improve the specialization of organization and productivity of organization. Which directly effect on profit and loss sheet of organization And after having a view on the project cases it concluded that due lack of knowledge about simulation network techniques, most of the working people in the construction sector are unaware about the benefits of it, which is the main demerit of implementing the techniques and gaining profit from it.

Initial proper knowledge and information should be provided among the management team and other people in organization to gain maximum profit in minimum productive time.

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