



Reviewing of the Simulation Models in Cost Management of the Construction Projects

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Abstract

Simulation and computational techniques cover a variety of aspects also had proved its feasibility in construction management as whole, so it had adopted by a lot of researches during the last decades with rapid progress. The current study presents a focused review about construction cost simulation using, and provides an overview of such advancements achieved between 1990 and 2016 in construction management sector. This paper focuses specifically on many different topics including construction cost simulation, simulation modelling concept, steps of simulation conducting, simulation purposes, simulation advantages and disadvantages, etc. Major advances in construction cost simulation area are highlighted, as well as the trends for development and application. Over the selected study period, there has been a substantial increase in the use of high-fidelity simulation in construction cost management.

Keywords: Cost Management; Cost Simulation Modelling; Construction Projects; Simulation Purposes.

1. Introduction

Simulation concept is an expanding concept which is used in various fields such as economics and engineering. Simulation has been used extensively to study many complex decision problems that could not be effectively handled by other analytic methodologies. Simulation is a technique that uses computers to imitate the operations of various kinds of real-world systems and provides insights, support decisions, and prescribes policies about the system. In a construction project, many uncertain variables that may influence project objectives are productivities of crews and equipment, subsurface site conditions, weather, and so on. Therefore, in addition to traditional statistical methods, stochastic simulation methods are popularly used to deal with such random variables and to analyze their impact on project objectives, such as project completion time and costs [1].

2. Cost Management Techniques in Planning Phase of Construction Projects

The main advantage of cost management process is to provide direction for the project costs management during the project life. This process is the approach that presents the procedures, documentation, and policies, for planning, managing, expending, and controlling the construction costs. BMBOK set out a number of techniques that can be benefit in cost management process during planning phase of construction project, which they are [2]:

- Expert judgment: combines the expert judgment with previous historical data, and provides good insight to cost management plan.
- Analytical techniques: these techniques could consist of, internal rate of return, payback period, net present value; and return on investment,

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