

RISK CONSIDERATION AND COST ESTIMATION IN CONSTRUCTION PROJECTS USING MONTE CARLO SIMULATION

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Abstract:

Construction projects usually involve high investments. It is, therefore, a risky adventure for companies as actual costs of construction projects nearly always exceed the planned scenario. This is due to the various risks and the large uncertainty existing within this industry. Determination and quantification of risks and their impact on project costs within the construction industry is described to be one of the most difficult areas.

This paper analyses how the cost of construction projects can be estimated using *Monte Carlo Simulation*. It investigates if the different cost elements in a construction project follow a specific probability distribution. The research examines the effect of correlation between different project costs on the result of the *Monte Carlo Simulation*. The paper finds out that *Monte Carlo Simulation* can be a helpful tool for risk managers and can be used for cost estimation of construction projects. The research has shown that cost distributions are positively skewed and cost elements seem to have some interdependent relationships.

Keywords: risk Management, Monte Carlo Simulation, construction, probability distribution