

The Influence of Beta Shape Parameters in Project Planning

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Abstract : Networks can be utilized to represent project planning problems, using nodes for activities and arcs to indicate precedence relationship between them. For fixed activity duration, a simple algorithm calculates the amount of time required to complete a project, followed by the activities that comprise the critical path. Program Evaluation and Review Technique (PERT) generalizes the above model by incorporating uncertainty, allowing activity durations to be random variables, producing nevertheless a relatively crude solution in planning problems. In this paper, based on the findings of the relevant literature, which strongly suggests that a Beta distribution can be employed to model earthmoving activities, we utilize Monte Carlo simulation, to estimate the project completion time distribution and measure the influence of skewness, an element inherent in activities of modern technical projects. We also extract the activity criticality index, with an ultimate goal to produce more accurate planning estimations.

Keywords : beta distribution, PERT, Monte Carlo simulation, skewness, project completion time distribution

Conference Title : ICMMASE 2019 : International Conference on Mathematical Methods and Applications in Science and Engineering

Conference Location : New York, United States

Conference Dates : April 22-23, 2019