



Using event method for Tochastic scheduling construction project; A case study on Dalak's dam earth moving operation

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ABSTRACT

Realistic project planning is an essence for project success. Despite its simplicity, in such method, some metrics like schedule bottleneck points, work production and, resource utilization remains vague which in turn can lead to project cost and time overruns. Besides, since project stochastic scheduling is a kind of NP-hard problems, previous project planning literature suggests metaheuristics method and optimization algorithms like genetic algorithm and ant colony optimization algorithm. This study proposed using discrete event simulation for project stochastic scheduling as an innovative method, since: firstly, construction process has kind of discreteness identically resulting from different resourced interactions. Secondly, whole of construction project concepts can be modeled by discrete event simulation modeling elements and, thirdly, the logic of simulation models for each type of project would be same, i.e., it is required just to modify activities duration and the number of available resources. This study investigates a part of the total earth-moving operation of Dalaki dam as a case study. Having modeled the operations, it is observed that they used the best resource combination regarding project cost and time. Moreover, planning performance metrics such as schedule bottleneck points, various cycle productivity and resource utilization were calculated and discussed in depth.

Keywords: *scheduling, stochastic planning, discrete event simulation, earth-moving operation, productivity, symphony.*