ABSTRACT

Construction projects that are commonly planned using deterministic method still suffers from delay during their execution. This was due to uncertainties at the time of project execution that are not properly considered in advance. Probabilistic method offers an alternative that is able consider such uncertainties using the PERT method. Previous studies conducted on PERT method proved that PERT estimation process underestimated the project duration mean and overestimated the project duration variance. In 2017, PERT method has been developed into M-PERT method. This study aims to compare the estimated project duration mean and variance from both the PERT method and M-PERT method in project XYZ and identify the difficulties that occurred during the implementation of both method, more importantly in M-PERT. Results from using both method on the external works of project XYZ showed that M-PERT provided better estimation results compared to PERT. This is due to the fact that M-PERT produced smaller value of project duration variance compared to PERT at the same equal value of project duration mean. M-PERT also produced project duration value with RMSE value towards the simulation results of 0.0001818. This value is smaller compared to PERT's RMSE value towards the simulation results of 0.0053961. This shows that M-PERT is able to produce results that are closer to computer simulation results compared to PERT.Although M-PERT method is yet to be completely utilized to obtain the duration mean and variance of project XYZ, this study suggests that M-PERT may be considered as an alternative scheduling method in a less-complex projects.

Keywords : Uncertainties, Probabilistic Method, PERT, M-PERT, Monte Carlo Simulation