

Comparisons and Sensitivity Study for Investigation of Factors of Work Sampling Models

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Abstract

Work sampling utilizing the sampling techniques to understand the characteristics of a process rather than the entire process has been widely used in the industrial settings to set standards, in pharmacies to describe work patterns, and in the medical education to describe house staff training. Three procedures for work sampling, the delayed randomization, fixed-random mixture sampling, and the Erlang sampling models of an alternating Poisson process, have been proposed for gaining some of the efficiency advantage of fixed sampling while retaining some degree of randomization. These three different procedures have different parameters that can be altered to reduce the variance, improve information. In this paper, comparisons of three sampling methods are discussed. Moreover, one never knows the nature of the process being sampled. Sometimes, the processes are too complex to allow realistic models to be evaluated by mathematical methods and these models must be studied by means of simulation. A designed sensitivity study of the robustness of the Erlang sampling model is conducted by simulation and the effects of process factors that cause the deviations from the assumptions of the APP process are investigated.

Keywords: Work Sampling, Alternating Poisson Process, Delayed Randomization Model, Fixed-Random Mixture Model, Erlang Model.