Sequential Screening Procedure by Simulation Methodology

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Abstract

In order to reduce the cost and time effort of inspection, a sequential screening procedure which selects items whose performance is within a one-sided specification based on observing the correlated screening variables according to the individual misclassification error (IME) is developed. To overcome the limit of only up to three stages of the generalized formulas to search for the optimal allocation based on the economical factors or the consideration of screening quality (AOQ) for the sequential screening procedure via Fortran IMSL, we utilize Monte Carlo method to simulate the desired probability values for any finite number of stages. We found the simulation results is satisfactory compared with the exact results of allocating four screening variables into three stages(TSP). Therefore, we can use simulation method for the sequential screening procedure for higher stages. At last, an example with four screening variables allocated into four sequential inspection stations (QSP) is given to illustrate the screening procedure with four stages by simulation methodology.

Keywords: Individual Misclassification Error (IME), Sequential Screening Procedure (SQSP), Triple Screening Procedure(TSP), Quadruple Screening Procedure (QSP).