

Constructing a Variables Resubmitted Sampling Plan for Lot Sentencing Based on the Process Yield Index

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Abstract

In this paper, a variables resubmitted sampling plan is developed based on process yield when the quality characteristic follows a normal distribution and considers bilateral specification limits. Resubmitted sampling plan for measuring attributes data was firstly proposed by Dr. Govindaraju and Dr. Ganesalingam in 1997 and they examined the situation where resampling is allowed on lots not accepted on original inspection. They also emphasized that the resampling scheme is specially tailored to the situations when the nonconformities of the original inspection is required to discard for resampling and the consumers have confidence in the producers will not deliberately take advantage of resampling. Moreover, the plan parameters (n, C_0) are solved by the classical two-point-condition (AQL and LQL) on the operator characteristic (OC) curve. The efficiency of the proposed method is discussed and compares with the conventional variables single sampling plan. It can be seen that our proposed method conspicuously reduces the required sample size when the quality of lot submission is at high level. For practical purpose, several sampling plan tables are constructed based on selected quality requirements and risks, hence, the users can easily to determine the required sample size and corresponding critical value for lot sentencing.

Keywords

Resubmission, quality characteristic, two-point-condition, operator characteristic curve.

Biography

Shih-Wen Liu is a doctoral student in industrial management at National Taiwan University of Science and Technology, Taiwan. He holds a MA in industrial engineering and management at National Chin-Yi University of Science and Technology. His specific research interests include applications of process capability analysis, quality measurement and statistical data analysis. Currently, his research focuses on considering different strategies of acceptance sampling plan. Mr. Liu can be contacted at d10001015@mail.ntust.edu.tw.

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Shi-Woei Lin is an Associate Professor in the Department of Industrial Management at the National Taiwan University of Science and Technology. His current research interests include the application of game theory to risk-informed regulation, and the use of mathematical model to aggregate experts' uncertainty judgment. Other interests include decision biases and methods for effective risk communication, both to decision makers and to the general public. Shi-Woei Lin can be contacted at shiwoei@mail.ntust.edu.tw