

Lead-Time Estimation Approach Using the Process Capability Index

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Abstract : This research proposes a methodology to estimate the customer order lead time in the supply chain based on the process capability index. The cases when the process output is normally distributed and when it is not are considered. The relationships between the system capability indices in both service and manufacturing applications, delivery system reliability and the percentages of orders delivered after their promised due dates are presented. The proposed method can be used to examine the current process capability to deliver the orders before the promised lead-time. If the system was found to be incapable, the method can be used to help revise the current lead-time to a proper value according to the service reliability level selected by the management. Numerical examples and a case study describing the lead time estimation methodology and testing the system capability of delivering the orders before their promised due date are illustrated.

Keywords : lead-time estimation, process capability index, delivery system reliability, statistical analysis, service achievement index, service quality

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