

**USING PROCESS CAPABILITY ANALYSIS TO EVALUATE SUPPLY CHAIN FLEXIBILITY BASED ON ORDER LEAD TIME AND ORDER PROCESSING COST DEVIATIONS**

Gottfried Seebacher, Alpen-Adria-Universität Klagenfurt, AUSTRIA  
Herwig Winkler, Alpen-Adria-Universität Klagenfurt, AUSTRIA

[dx.doi.org/10.18374/EJM-13-1.10](https://doi.org/10.18374/EJM-13-1.10)

**ABSTRACT**

Customer-driven markets and turbulent economic developments require that whole supply chains adapt to changing requirements rapidly and without adding significant cost. As a consequence, the issue of supply chain flexibility is becoming one of the key capabilities of any industrial supply chain. Therefore, it is necessary to have an applicable approach available to determine the current flexibility of the entire supply chain. However, due to the lack of information about all the involved supply chain entities from the raw material supplier to the end customer it is impossible in most cases to calculate a single key figure that illustrates the flexibility of the entire supply chain. Thus, we developed a more practical approach that is based on the available information to evaluate the supply chain flexibility. To evaluate the supply chain flexibility, the dyadic supplier-buyer relationships along the supply chain will be investigated in terms of order lead time and order processing cost deviations. A bivariate and unilateral process capability analysis will be applied to calculate a process capability measure of the dyadic supply chain processes. This supply chain process capability measure indicates whether the investigated supplier-buyer relationship is capable of dealing with the arising flexibility requirements in a timely and cost-efficient manner. The current approach can be applied to either assess the flexibility of any given detail of the supply, the entire supply chain or the whole supply chain network.

Keywords: *supply chain flexibility, order lead time, order processing costs, bivariate process capability.*