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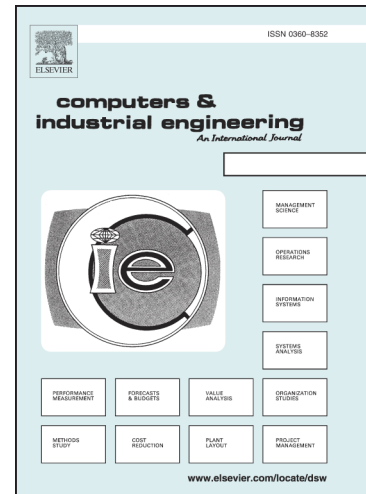
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Value of on-site rework in a coordinated two-stage supply chain with supply imperfection

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Abstract

This paper considers a decentralized supply chain with one supplier with supply imperfection and one manufacturer. The supplier performs outbound inspection to ensure that its components comply with the quality specification (QS), and makes efforts to improve inspection reliability. Once receiving the supplier's components, the manufacturer begins the assembly production process, requiring that every component meet the quality requirement (QR). The components that do not meet the QS or QR are reworked by the supplier. The location at which the latter group of the components is reworked becomes a strategic choice, provided that the option of on-site rework, i.e. rework performed at the manufacturer's production site, is available. We show that on-site rework may be beneficial to the supply chain even if it is more costly than in-house rework, i.e. rework performed in the supplier's in-house repair center. In addition, coordinating the decentralized supply chain with the option of on-site rework yields maximum supply chain performance over a certain cost range of on-site rework. Finally, we show the similarities and differences of the effects of QS and QR on the coordinated results.

Keywords: inspection, rework, supply chain coordination, supply chain management

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