

Three-Stage Mining Metals Supply Chain Coordination and Product Quality Improvement with Revenue Sharing Contract

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Abstract : One of the main concerns of miners is to increase the quality level of their products because the mining metals price depends on their quality level; however, increasing the quality level of these products has different costs at different levels of the supply chain. These costs usually increase after extractor level. This paper studies the coordination issue of a decentralized three-level supply chain with one supplier (extractor), one mineral processor and one manufacturer in which the increasing product quality level cost at the processor level is higher than the supplier and at the level of the manufacturer is more than the processor. We identify the optimal product quality level for each supply chain member by designing a revenue sharing contract. Finally, numerical examples show that the designed contract not only increases the final product quality level but also provides a win-win condition for all supply chain members and increases the whole supply chain profit.

Keywords : three-stage supply chain, product quality improvement, channel coordination, revenue sharing

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