Electronic Data Interchange and Enterprise Resource Planning Technology in Supply Chain Contracts

Abstract

We examine a model of supply chain contracting with a purchaser that desires to acquire as much of a product as possible at as low a price as possible. The supplier in our model has private information about its limited capacity. We compare two models of information. In the first, the supplier observes capacity and reports the capacity to the purchaser in exchange for a purchase commitment. We designate this contract as the “Supply Chain” contract. In the second, the purchaser is directly linked to the supplier’s ERP system using Electronic Data Interchange (EDI). This linkage avoids information asymmetry. We refer to this contract as the “Full Information” contract. While the Full Information contract is economically more efficient, the supplier would be reticent to agree to this contract. We propose a third contract, which we call the “Hybrid” contract, that awards the purchaser the efficiency gains available in the Full Information contract, but which provides the supplier the same profits as in the Supply Chain contract. The purchaser, however, would still prefer the Full Information contract to the Hybrid contract. We then add an additional dimension to the problem by allowing the supplier to invest in capacity. We find that due to the increased investment under the Hybrid contract, the purchaser may actually prefer the Hybrid contract to the Full Information contract – as long as the information asymmetry is not too great.