

**Lei, L.; Wang, Q.; Fan, C.**

**Optimal business policies for a supplier-transporter-buyer channel with a price-sensitive demand.** (English) [Zbl 1089.90010](#)

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Summary: As the third party logistics partners (carriers) taking a more and more significant role in supply chain practices and customer service performance improvement, there is an emerging need for the studies on optimal channel coordination policies for business processes involving not only supplier and buyer (retailer), but also transportation partners. In this paper, we explicitly add a transportation partner with concave cost functions into the analysis for supplier-buyer channel coordination policies, and analyse the impact of coordination and pricing policies on supply chain profitability. The market demand is assumed to be a decreasing convex function of buyer's selling price ( $x$ ),  $D(x) = d/x^2$ . Under this assumption, we quantify the improvement on total supply chain profitability when moving from a non-cooperative environment to a fully cooperative environment, and show that the joint annual profit of three partners in a cooperative environment can be at least twice of what may be achieved by three independently operated companies in a leader-follower business game. While in a real-world business environment, a perfect collaboration is hard to achieve, this result can be used to provide a quick estimation on the upper bound on the budget for profit sharing or discount offers among the supply chain partners.

**MSC:**

90B05 Inventory, storage, reservoirs  
90B06 Transportation, logistics and supply chain management  
91B06 Decision theory

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supplier; buyer and transporter coordination policies; pricing; ordering quantity; concave transportation cost; price-sensitive demand

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