# Impact of Subsidy Policy on Remanufacturing Industry's Donation Strategy

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*Abstract:*

Motivated by the donation subsidy policy, this paper studies a supply chain consisting of a manufacturer and a remanufacturer. The manufacturer sells new and remanufactured products and can also donate two products. The remanufacturer can only sell and donate remanufactured products. Using the Stackelberg game model, we investigate the optimal production and donation strategies of two competing firms and discuss how the subsidy policy affects these strategies. Our main results include the following: First, the donation strategies of the two firms are not only affected by the subsidies but could also be influenced by the competitor's donation decision, especially when the subsidy is high. Second, the subsidized products for sale in the market will decline as the subsidy increases. Therefore, a high subsidy always causes insufficient market supply. Third, the first-mover advantage may not make the manufacturer avoid a dilemma; however, when the remanufacturer becomes the leader in the market, the first-mover advantage will help the remanufacturer prevent any competitor donation threats. Lastly, the scenario where the manufacturer donates nothing and the remanufacturer donates seems to be a Pareto improvement for two firms, but this scenario is not stable, and the last equilibrium is that both firms decide to donate remanufactured products.