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Dynamic product acquisition in closed loop supply chains

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Abstract

We consider a closed-loop supply chain where demand can either be satisfied by manufacturing new products or by buying back used products from customers and upgrading their functionality by remanufacturing. A joint buy-back pricing and manufacturing–remanufacturing decision model at the operations–marketing interface is presented that allows for dynamic parameters, e.g. product life cycles and seasonal aspects. The model allows the identification of beneficial opportunities for buying back and stor new determi ary and sufficien cost- mini k strategies for us t, in general, uired so as to synch nd stored for future re f

manufactured and remanufactured products. Furthermore, we discuss several reactive and proactive acquisition and remanufacturing heuristics and show under which conditions they are optimal. The findings are illustrated by numerical examples.

Keywords: reverse logistics supply chain management