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The optimal power structure of environmental protection responsibilities transfer in remanufacturing supply chain

Jinshi Cheng\textsuperscript{a,b}, Bangyi Li\textsuperscript{a}, Bengang Gong\textsuperscript{b,c}, Mingbao Cheng\textsuperscript{d*}, Lei Xu\textsuperscript{e}

\textsuperscript{a}School of Economics and Management, Nanjing University of Aeronautics and Astronautics, Nanjing 211100, PR China; Email: jchengscm@gmail.com

\textsuperscript{b}School of Management Engineering, Anhui Polytechnic University, wuha 241000, PR China

\textsuperscript{c}School of Management, Fudan University, Shanghai 200433, PR China

\textsuperscript{d*}School of Management, Guangdong University of Technology, Guangzhou 510520, PR China; Email: chengmb99@hotmail.com

\textsuperscript{e}School of Management, Tianjin University of Technology, Tianjin 300384, PR China

Abstract: Due to the double-pressure from the constraint of relevant laws and high cost of environmental protection activities, original equipment manufacturers (OEMs) have to seek for some ways to transfer their own environmental protection responsibilities to other members in reverse supply chain, and other members do as well. To grope the optimal environmental protection responsibilities shift patterns between OEMs and other members, we study a remanufacturing supply chain consisting of an OEM and a retailer by transferring their own environmental protection responsibilities to each other in this paper. The OEM (retailer) competitively determines its effort by transferring his (her) remanufacturing (recycling) responsibilities to the retailer (OEM) by the wholesale price (the transfer price) of the remanufactured products (the old products). We develop six game models under different market leadships and the deciders of environmental protection responsibility transfer factor to address the optimal power structure. By analyzing the equilibrium solutions of the six models, we prove that environmental and economic performance will decrease when consumer initial environmental awareness is in a certain interval and the retailer who is responsible for recycling decides the responsibilities transfer factor. Further, we find that if the OEM leads the game, the...
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