论文

奖惩机制下具竞争制造商的废旧产品回收决策模型

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The Decision Making of Manufacturers for Collection and Remanufacturing Based on Premium and Penalty Mechanism under Competition Environment

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摘要 各国政府为保护环境加强了对废旧电器电子产品的回收再制造的管制。本文研究了两个制造商竞争情况下基于政府奖惩机制的制造商的废旧产品回收决策问题。具体研究时分两种情况:一种情况是两个制造商中只有一个回收再制造废旧产品,另一种情况是两个制造商都回收再制造废旧产品。研究表明:奖惩机制下回收再制造废旧产品的制造商的回收率提高;无论制造商是否回收再制造废旧产品,其新产品销售价均比无奖惩机制时低,奖惩机制对消费者有利;制造商竞争有利于奖惩机制引导制造商提高废旧产品的回收率;回收率随再制造率的提高而提高;无论另一个制造商回收再制造废旧产品与否,实施回收再制造制造商的利润随奖惩力度的提高而增加,随政府规定的目标回收率的提高而降低,且奖惩力度越大,降低幅度越明显。算例分析说明了上述结论的正确性。

关键词: 竞争 奖惩机制 回收再制造 回收率

Abstract: Waste product take-back is growing regulated by countries to protect the environment. The problem of collection and remanufacturing decision making based on premium and penalty mechanism is studies under manufacture competition environment in this paper. Two cases are discussed, one case is that only one manufacturer implements collection and remanufacturing,the other one is that two manufacturers implement collection and remanufacturing. Several conclusions are gained. For the manufacturer who collects and remanufactures old products, collection rate increases under premium and penalty mechanism. No matter the manufacturer collects and remanufacturers old products or not, new product's price is lower than the price without the premium and penalty mechanism. The consumer can benefit from the mechanism. The competition between manufactures is beneficial to the mechanism for leading manufacturers to increase collection rates. The collection rate increases with the remanufacturing rate. No matter the other manufacturer collects and remanufacturers old products or not, the profit of the remanufacturer who collects and remanufactures old products increases with the premium and penalty degree, and decreases with the target collection rate's increasing, furthermore, with the increase of the degree, the decrease trend become more obvious. Above conclusions are proved by the numerical analysis.

引用本文:

王文宾, 达庆利 .奖惩机制下具竞争制造商的废旧产品回收决策模型[J] 中国管理科学, 2013,V21(5): 50-56

[1] Atasu A,Van Wassenhove L N,Sarvary M. Efficient take-back legislation [J]. Production and Operations Management, 2009, 18(3):243-258.

[2] Atasu A. Stakeholder perspectives on E-waste take-back legislation [J]. Production and Operations Management, 2013, 22(2):382-396.

[3] Huang Min, Song Min, Lee L H, et al. Analysis for strategy of closed-loop supply chain with dual recycling channel [J]. Int. J. Production Economics, 2013, 144:510-520.

[4] 唐秋生,牛婷婷,马先婷.基于Stackelberg理论的MeRCRM型闭环供应链批量折扣协调机制与定价策略[J].管理工程学报,2012,26(4):183-191.

[5] 郭军华,李邦义,倪明.不确定需求下的延伸责任分担机制[J].系统工程,2012,30(1):21-26.

[6] Savaskan R C, Bhattacharya S, Wassenhove L N V. Closed-Loop supply chain models with product remanufacturing [J].Management Science ,2004 ,50(2):239-252.

[7] Savaskan R C, Van Wassenhove L N. Reverse channel design: the case of competing retailers [J]. Management Science, 2006, 52(1):1-14.

[8] Choi S C. Price competition in a channel structure with a common retailer [J]. Marketing Science, 1991, 10(4): 271-296.

[9] 易余胤.具竞争零售商的再制造闭环供应链模型研究[J].管理科学学报,2009,12(6):45-54.

[10] 曹俊,熊中楷,刘莉莎.闭环供应链中新件制造商和再制造商的价格及质量水平竞争[J].中国管理科学,2010,18(5):82-90. 浏览

[11] 李响,李勇建,蔡小强.随机产率和随机需求下的再制造系统的回收定价决策[J].系统工程理论与实践,2009,29(8):19-27.

[12] 肖迪,黄培清.基于不对称信息的闭环供应链激励机制[J].工业工程与管理,2007,12(4):11-14.

[13] Subramoniam R, Huisingh D, Chinnam R B.Remanufacturing for the automotive aftermarket-strategic factors:literature review and future research needs[J].Journal of Cleaner Production, 2009, 17(13):1163-1174.

[14] Subramanian R, Gupta S, Talbot B. Product design and supply chain coordination under extended producer responsibility [J].Production and Operations Management, 2009, 18(3):259-277.

[15] 计国君,黄位旺.回收条例约束下的再制造供应链决策[J].系统工程理论与实践,2010,30(8):1355-1362.

[16] 汪翼,孙林岩,杨洪焦,等.不同回收法律下的再制造供应链决策与合作研究[J].管理科学,2009,22(1):2-8.

[17] Aksen D, Aras N, Karaarslan A G.Design and analysis of government subsidized collection systems for incentive-dependent returns [J].International Journal of Production Economics, 2009, 119(2):308-327.

[18] Mitra S, Webster S.Competition in remanufacturing and the effects of government subsidies [J].International Journal of Production Economics, 2008, 111(2):287-298.

[19] Chen Y J, Sheu J B. Environmental-regulation pricing strategies for green supply chain management[J].Transportation Research Part E: Logistics and Transportation Review, 2009,45(5):667-677.

[20] 王文宾,达庆利.奖惩机制下电子类产品制造商回收再制造决策模型[J].中国管理科学,2008,16(5):57-63. 浏览

[21] 王文宾,达庆利.考虑政府引导的电子类产品逆向供应链奖惩机制设计[J].中国管理科学,2010,18(2):62-67. 浏览

[1] 肖迪, 袁敬霞, 包兴.质量与价格双重竞争情景下的供应链协调策略分析[J]. 中国管理科学, 2013,21(4): 82-88

[2] 黄永, 孙浩, 达庆利.制造商竞争环境下基于产品生命周期的闭环供应链的定价和生产策略研究[J]. 中国管理科学, 2013,21(3): 96-103

[3] 刘慧慧, 黄涛, 雷明.废旧电器电子产品双渠道回收模型及政府补贴作用研究[J]. 中国管理科学, 2013,(2): 123-131

[4] 郭军华, 李帮义, 倪明.WTP差异下的再制造进入决策研究[J]. 中国管理科学, 2013,(1): 149-156

[5] 倪得兵, 李韬韬, 唐小我.需求不确定下生产能力与竞争优势之间的关系[J]. 中国管理科学, 2012,20(6): 133-140

[6] 孟庆峰, 范明, 李真 .基于返回策略的供应链网络竞争绩效研究[J]. 中国管理科学, 2012,20(5): 122-130

[7] 叶涛锋, 达庆利.需求替代情形下反应能力的价值分析 [J]. 中国管理科学, 2012,20(3): 175-184

[8] 王凯, 熊中楷, 熊榆.制造商经销再制造商产品的合作模式研究[J]. 中国管理科学, 2012,(1): 145-151

[9] 范小军, 陈宏民.零售商导入自有品牌对渠道竞争的影响研究[J]. 中国管理科学, 2011,19(6): 79-87

[10] 王国栋, 詹原瑞.信用风险中回收率分布的双Beta模型[J]. 中国管理科学, 2011,19(6): 10-14

[11] 杨玉香, 周根贵.闭环供应链网络设施竞争选址模型研究[J]. 中国管理科学, 2011,19(5): 50-57

[12] 禹爱民, 刘丽文.免费搭车行为对供应链横向竞争的影响[J]. 中国管理科学, 2011,19(5): 37-41

[13] 李豪, 熊中楷, 彭志强.竞争环境下基于顾客策略行为的易逝品动态定价研究[J]. 中国管理科学, 2011,19(2): 88-98

[14] 陈志松, 王慧敏, 马平.多晶硅光伏供应链的竞争、合作与协调[J]. 中国管理科学, 2011,19(1): 55-61

[15] 王文宾, 达庆利.奖惩机制下闭环供应链的决策与协调[J]. 中国管理科学, 2011,19(1): 36-41