

Revenue Management for Durable Goods using Trade-ins with Certified Pre-own Options

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Abstract

The economics research suggests that trade-ins can be used as a revenue management device by a firm to price discriminate between new and replacement buyers of durable goods. It creates market segmentation effect by offering different prices to different groups of customers. This study deals with such an effect by considering trade-ins and certified pre-own options facing a durable goods firm, where CPO is the used goods market generated from the return flow of trade-in transactions. This study determines the optimal pricing and/or trade-in rebate, and examines the strategic choice of the two options. We develop an analytic model that incorporates key features of durable goods into model formulation, namely the deterioration rate (or durability in a reversed measure) and the quality variation of the used goods. Our research findings include (i) the magnitude of trade-in rebates increases in deterioration rate and quality variation, (ii) the segment effect outweighs the cannibalization effect when the deterioration rate is moderately high, (iii) the strategic choice of trade-ins and CPO options depends critically on the two features, and (iv) the majority of profit improvement is generated from trades-in provision, yet CPO option can serve as a second profit boost device.

Keywords

Revenue management; OR in marketing; Pricing; Durable goods; Certified pre-owned;

Biographies

Jen-Ming Chen is a professor of Industrial Management at the National Central University of Taiwan. He received his Ph.D. degree in Industrial Engineering from Pennsylvania State University in 1992. His research interests include inventory and supply chain management, sustainable supply chain management, and revenue management. He is an active member of several professional organizations, including Informs, DSI, and IIE. Dr. Chen is the recipient of the George B. Dantzig Dissertation Award from the Informs and the recipient of the IIE Doctorial Dissertation Award, both in 1994.

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