

# Optimal Pricing Strategy for Multi-generations Durable Products with a Trade-in Program

**Hui-Chiung Lo**\*

Department of Business Administration  
Tamkang University  
New Taipei City, 25137, Taiwan  
hclo@mail.tku.edu.tw

**Yi-Feng Gao**

Department of Business Administration  
Tamkang University  
New Taipei City, 25137, Taiwan  
conanv1412@gmail.com

## Abstract

This research explores the pricing strategies of two generations for durable products in a simple supply chain. In recent years, most of companies have often launched new generation products by upgrading the design of their original ones in the market. The upgrading level of quality is an attractive factor to purchase/replace the new/original-generation ones. Meanwhile, the price of the original generations is reduced for sale. Furthermore, companies offer a trade-in rebate to promote sales of the new-generation products and customer loyalties; that is, customers can sell their used products as part payment for buying new generation products. When products are durable goods, the used will compete with the new ones, so that all of the new, original and used products coexist in the market. Therefore, we take into account the heterogeneous customers and the trade-in service to build the profit models of the supplier and retailer. The Stackelberg game is also used to assess the optimal pricing policies to maximize their profits. Furthermore, a numerical example and some sensitivity analyses are carried out to study the effects of the model parameters on the optimal decisions.

## Keywords (12 font)

Pricing Strategy, Durable Products, Multi-generation Products, Trade-in

## Biography

**Hui-Chiung Lo** is currently an associate professor in the Department of Business Administration, Tamkang University, Taiwan, R.O.C. She received his Ph.D. in Management Sciences from National Taiwan University of Science and Technology. Her research interests are preventive maintenance, warranty policy, supply chain management and revenue management.

**Yi-Feng Gao** is currently a sales Product Management in Liteon Corporation Storage SBG. He holds a Communication Engineering degree in School of Electronic and Information Engineering from Beijing Jiaotong University and a Master of Business Administration degree in Business and

Management from University of Tamkang. He has engineering and business background, so he is good at solving business problems through mathematics model.