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Two-Period Pricing Model for Walk-in Potential Consumers with Normal Distribution of the Price of Their Willing to Buy

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Abstract

The optimal model was mainly constructed for the products, such as real estates, amusement park, or major furniture which themselves cannot be moved or worn to reveal to other consumers in public, to explain their optimal promotional pricing strategy. The study adopted the dual sources of the diffusion power, the number of walk-in potential consumers and the price level of the product, in the extended Bass Diffusion Model. Given periods of $[0, T)$ and $[T, \bar{T})$, $T < \bar{T}$, and $\bar{T}$ maybe ∞ when a firm attempts to decide price P_0 within $[0, T)$ and price P_T within $[T, \bar{T})$, respectively, to achieve the goal of maximizing discounted profit in the interval $[0, \bar{T})$, the characteristics of its optimal solution (P_0^*, P_T^*) at each period were rigorously derived and profoundly discussed. This two-period model pricing could be extended to an infinite multiple-period optimal pricing model to become the issue of price control. The study would further conclude that, after a new product is initialized, its price should decline with time to take advantage of it with exhausting the consumer surplus of consumers.

Keywords: Amusement park, bass diffusion model, promotional pricing strategy, real estates, walk-in potential consumers.

1. Introduction

The Bass Diffusion Model [2] is based on cumulated sales volume x_t as the source of diffusion power at time t. With a product that cannot be readily moved or worn by users, such as real estates and major furniture, its information would not be easily proliferated from actual consumers (users) to other potential consumers who mainly use their eye-consciousness to receive the information. So, the source of diffusion power should be based on their word-of-mouth among actual users. Chen, Li and Wang [4] extended the source of diffusion power to enhance the functionality of Bass Diffusion Model to better describe the characteristics of optimal pricing strategy for the sorts of regarded products.

Chen, Li and Wang [4] also adopted Probability Density Function, $g(z)$, where z is the ceiling price consumers are willing to buy, to further gauge the purchase proportion