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硕士学位论文

基于产品生命周期的创新企业动态优化决策

Dynamic Optimization of Original Innovator  
Based on Product Life-Cycle

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## 摘 要

技术创新，特别是率先创新使企业拥有时间和产品竞争力上的优势，获得了先入优势；另一方面，模仿创新减少了企业的研发成本，更能满足顾客的需求，从而可以获得更高的成功率，使模仿创新企业获得了后入优势。从时间角度看，在模仿创新企业的产品进入市场以前，率先创新企业的原始创新产品在市场处于完全垄断地位，随后转变为与模仿创新企业进行的产品竞争，为在竞争中获得更大的优势，创新企业将会选择对原始创新产品进行升级换代，由此可根据市场中的产品竞争形势将产品生命周期分成不同的多个阶段。另外，无论面对怎样的竞争形势，企业都面临着利润最大化的目标，或是不考虑后续影响的当前利润最大化，或是整个产品生命周期的总利润最大化。

本论文研究了以原始创新产品进入市场、模仿创新产品进入市场、原始创新产品的升级换代产品进入市场为分隔点的产品生命周期不同阶段下率先创新企业对产品的最优定价，以及模仿创新企业采用不同价格策略下的产品均衡定价。在此基础上，分析了影响产品扩散的外部影响因素与内部影响因素对产品价格和企业的瞬时利润的影响，对升级换代产品进入市场的最优时间决策以及影响产品扩散的外部影响因素与内部影响因素对最优时间的影响进行了研究。本论文结论表明：无论企业采用什么价格策略，升级换代产品进入市场的最优时间都应满足升级换代产品进入市场前创新企业的阶段末瞬时利润与进入市场后的初始瞬时利润相等。本论文所得结论为相关企业创新决策提供理论与方法指导。

**关键词：**产品生命周期；产品扩散；动态定价

## Abstract

Technological innovation, especially original innovation helps enterprises gain the advantage of the time and the competitiveness of products, seize the initiative. On the other hand, imitating innovation has the advantage of cost reduction of corporate R&D and meeting customer needs better, which leads to a higher success rate and makes imitation innovative enterprises obtain a post-market advantage. From the perspective of time-based competition, before imitating innovative product's entering into the market, the original innovation product in the market is totally monopolistic position, then turns to compete with the imitating innovative product, in order to ask for greater advantages, original innovative enterprises have to upgrade the original innovative products. As the result, the product life cycle is divided into different stages according to the market competition situation. In addition, whatever competition situation the enterprises face, companies have the goal of profit maximization, or do not consider the subsequent effects of the immediate profit maximization, or maximize the total profit of the entire product life cycle.

This paper studies the optimal pricing of the original innovative product and the upgrade product different stages of product life cycle of products with the times of original innovative products into the market, imitating innovative products into the market, the upgrade product into the market as market-separated points, as well as the equilibrium prices when imitative innovative enterprises using different pricing strategies. On this basis, this paper analyzes the impact of external factors and internal factors, which have an impact on the spread of the product diffusion, on product optimal price and instantaneous profit margin, also studies on the optimal time decision-making for the upgrade products into the market and the impact of external factors and internal factors of different product on the optimal time. The analysis shows that: Whatever pricing strategy is, the optimal time to

upgrade product into the market should meet that the instantaneous profit margin before and after the upgrade products entering into must be equal, which means that the optimal time chosen to throw the upgrade products into the market must make the instantaneous profit margin of original innovative enterprises continuous. All the conclusions of this paper can support enterprises' decision-making on original innovation from the theoretical and methodological.

**Keywords:** Product Life Cycle; Product Diffusion; Dynamic Pricing

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