



Price forecasting model of the FPD market with existing technological variance – Case: Global FPD TV market

Myoung Kwan Yoo^{a,*}, Seungjae Lim^{b,1}

^a Management System R&D Center, Hyundai Research Institute, Hyundai Building 11F, 140-2 Gye-Dong Jongno-Gu, Seoul 110-920, South Korea

^b Consulting Department, Hyundai Research Institute, Hyundai Building 11F, 140-2 Gye-Dong Jongno-Gu, Seoul 110-920, South Korea

ARTICLE INFO

Keywords:

Price based simulation
Pricing model
Price scenario
Price response function
Recognition point and Premium of the new technology
Flat Panel Display

ABSTRACT

Beginning the 21st century, the FPD (Flat Panel Display) market has been growing massively. It is difficult for the market to establish pricing strategies according to the development of technology and the change of market due to technological variances and diverse sizes of products such as the LCD, PDP, Braun tube, and projection television (TV) in the FPD market.

The preexisting methods for pricing, used to forecast the future price of products, take into consideration the prime cost, value of brand, and functions of products applied by the same technology. In the market, however, the rapidly changing technology becomes an obstacle to the establishment of pricing strategies considering market competition.

In order to overcome the preceding limitations, we propose a new method for forecasting the appropriate gap between the prices of products based on different technology and size. The purpose of this PBS (Pricing Based on Simulation) method is to contribute to setting up an effective pricing strategy in the FPD market. This method consists of surveys, estimated price response function, analysis of the appropriate gap between product prices, prediction of future market competition, and establishment of strategies.

By implying the PBS method to the global FPD market in year 2005, we deduced the price response function and the appropriate gap between product prices for the future. According to the real FPD market from 2005 to 2006, the statistical marketing data shows significant similarity in movement to the forecasting result by the method. Therefore, the PBS method can be utilized effectively when products using newly developed technology is introduced to the market in the future.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

As technology rapidly develops, consumers encounter a problem where they need to decide whether they are willing to exchange the benefit of obtaining the best technology available with the cost of acquiring that technology. Therefore, when producers make the sequential versions of products, they should consider the “buy or wait” decision problem of consumers (Kornish, 2001). Consumers and producers find it difficult to decide the value of the product since the change of technology is not simply a partial improvement or an addition of new functions for the product, but an innovative change of technology. Producers are facing the problem of determining the proper amount of investment for innovative technology. Also, consumers need to decide on the proper acquiring cost for the product applied by this new technology considering its value. Especially in the market where there are diverse

products using new technologies, we need to evaluate not only the value of new technology individually, but also the value of new technology in relation to others. As the markets become increasingly competitive, globalized with quick technological change and decreased average life of products, the incorrect pricing of new products may considerably reduce the profitability (Rochford & Wotruba, 2000).

This paper plans to apply the new method, which forecasts the value of new technology and the upcoming market, into the big screen FPD market that challenges the products using various new technologies. There are innovative new technologies such as the PDP, LCD, and projection TV in the big screen FPD market. Producers need to make decisions on vastly investing in the innovation of the screen size and quality, while the consumers make complex decisions on purchasing a TV based on the difference of new technologies, screen size, and quality. For example, it is difficult to purchase a TV based on only screen size because a projection TV with larger screen size than others may be bought for the same price, but has poor quality and unnecessarily large volume. Although PDP and LCD TVs cannot be distinguished by

* Corresponding author. Tel.: +82 10 9301 4487; fax: +82 2 3669 4499.

E-mail addresses: myoo@hri.co.kr (M.K. Yoo), sjlim@hri.co.kr (S. Lim).

¹ Tel.: +82 10 7665 7110; fax: +82 2 3669 4499.

regular consumers due to similar outlooks, they differ in detail specifications such as brightness, contrast, and electrical usage since completely different technologies are used.

Preexisting researches about price forecasting and pricing policy have focused on the establishment of pricing strategy for the market as well as proper pricing of new and existing products (Dean, 1969; Faulhaber & Boyd, 1989; Green & Srinivasan, 1990; Ingenbleek, Debruyne, Frambach, & Verhallen, 2003; Rochford & Wotruba, 2000). For this reason, these researches have worked well in the market where only a single product develops in function. However, it is difficult to apply the existing researches to the market in which investment for developing technology is vast and there are diverse innovative technologies such as the FPD market. In the future, the markets that are exposed will have diverse new technologies that exist and develop simultaneously. The purpose of this paper is to establish a strategy of pricing by forecasting the market competition of products using innovative technologies in the market, which has diverse new technology and alternative products. We especially evaluate the validity of this method by comparing the forecasting results of the FPD market in 2005 to the real movement of the FPD market from 2005 to 2006. Therefore, the point is that this evaluated method can be applied to other innovative technology markets in the future.

The first chapter of this paper explains the background and purpose of the research, the second chapter reviews the existing studies on forecasting price and the establishment of pricing strategy, the third chapter proposes the method for an analysis of price sensitivity and forecasting the market competition, the fourth chapter evaluates the appropriateness of the method by applying this proposed method to the FPD market, and finally the fifth chapter discusses and concludes the complementary issues for the future.

2. Related works

As the existing research on pricing clearly states, pricing is an enormously complex business practice (Monroe, 1990; Nagle & Holden, 1995). Even though it is difficult to estimate the proper price for new products and services, research on pricing has continued because the success of businesses highly depends on forecasting price and establishment of pricing strategies.

Past researches have examined pricing practices by looking at case studies of pricing processes (Foxall, 1972; Hague, 1971) and surveys of pricing methods such as value-based, competition-based, and cost-based pricing (Abratt & Pitt, 1985; Piercy, 1981; Tzokas, Hart, Argouslidis, & Saren, 2000). First, value-based pricing is the method that estimates prices by grasping the value of the products acceptable by consumers. This is quantified by assessing the monetary amount that the consumers are willing to pay for the perceived value of the product offered by the market (Nagle & Holden, 1995). In the context of manufacturing new products, if the consumers adopt the product for a proper price, then the producers will save costs and increase the productivity (Anderson & Narus, 1999). Secondly, competition-based pricing is the method that estimates the values of new products in preparation for the competitors' products. Interpreting the competitors' prices relative to their market positions enables a quantitative assessment of the producer's relative position. For example, if the producer's product offers slightly less benefits than that of the competitors' products, then the assessment based on competition information probably results in a price slightly below the competitors' price. Finally, cost-based pricing is the method that estimates the price of products based on the cost required for production. Information on fixed costs and variable costs are important in determining the final price (Monroe, 1990). However, fixed costs can increase the ambiguity of the cost information because they can only be evalu-

ated on the basis of accurate assessments of the expected volume (Nagle & Holden, 1995).

The researches on forecasting price are divided into studies on transaction data and studies on survey data depending on how the data is created. First, transaction data gathered by scanner on the simulated test market (Silk & Urban, 1978) or on the real market is compatible and externally valid since actual purchases are observed under the realistic market with various conditions. However, this method is not suitable for the estimation or the forecast of the market because the estimated price in the real or simulated market may vary only within the limited range (Ben-Akiva et al., 1994). Second, survey data collected from the various participants is effective for the new product or non-market public goods (e.g. Cameron & James, 1987). The Jones' method (Jones, 1975) is mostly used for the Conjoint analysis (Green & Srinivasan, 1990) and Conjoint valuation (Mitchell & Carson, 1989).

Various software using the methods for forecasting price have been developed and used by real companies to estimate the proper price for products and establish pricing strategies. These software are categorized as analytic tools, execution tools, and price optimization tools (Valkov, 2005).

In this paper, we propose the proper pricing method for markets with various innovative technologies by integrating several preexisting pricing methods. In other words, the proposed method combines the strong points of existing studies in order to find a method that is appropriate to the real FPD market. This method uses the combination of value-based pricing and competition-based pricing in order to consider the competitors' and the consumers' expectations on values. The survey data is gathered by Jones' method (Jones, 1975) while we perform the analysis using the conjoint method.

3. Proposed methodology

Since existing methods for forecasting price and market competition focus on finding an acceptable price for customers, they cannot respond to the rapidly changing market and the change of cost of the new product due to the development of technology. The methodology for estimating the price of new products and the models for forecasting price temporarily help with pricing at the early stage, but are not able to respond to the market henceforward. To overcome this problem, we propose the methodology that can be useful in setting up the pricing strategy by proposing the method that simulates various price scenarios.

This methodology is divided into two phases: Data collection and analysis as shown in Fig. 1. The first phase, data collection, consists of creating a basic price scenario of the change in market based on the environment and collecting data from a survey. The second phase, analysis, consists of analyzing price sensitivity that calculates the proper price for technological differences, and forecasting market competition for the change of market share due to the change of market price. The analysis of price sensitivity shows how the change in the customers' perceived value for products correlates to the change of the products' price, while forecasting market competition indicates future market competition by setting the price scenario, which consists of various possible prices.

3.1. Phase I: data collection

In the first phase, we collect data by survey in order to forecast the demands of customers for the products applied by new technology. In this paper, we use the Jones' method to collect data since it is more similar to the actual behaviors of customers and more effective for analysis than the Conjoint analysis. However, Jones' method is based on a trade-off between the value of brand and

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات