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# The Effect of Customers Loyal to National Brand on Brand Launch Strategy

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## Abstract

**Purpose** – Typically, retailers will want PB(Private Brand) products to expand to the needs of low-PB loyal customers as well as existing PB(Private Brand) loyal customers. Therefore, a strategy of minimizing the share of the manufacturer brand in the distributor can be considered as a way to maximize the profit of the distributor.

**Research design, data, and methodology** - In the previous study, the researches about the rivalry and conflict between the NB(National Brand) products and the PB products were mainly made. Previous studies did not model inter-national brand-level competition and inter-store competition. In addition, they have focused only on distributors' decisions from the manufacturer's perspective, and assume channel members have the same level of members(Choi, 1996).

**Results** - This paper tries to apply the game theory to researches on how retailers can maximize the benefits of distributing NB(National Brand) products and PB(Private Brand) products, while distributors can also take advantage of their profits.

**Conclusions** - It was found that providing cheap PBs did not help manufacturers and distributors. Distributors and manufacturers' profits were determined by consumers who purchased NB products that were higher in price and higher in perceived quality before providing existing PB products to consumers.

**Keywords:** PB(Private Brand), NB(National Brand), Retailers, Manufacturers, Profit, Game Theory.

**JEL Classifications:** I15, M16, M31, Z32.

## 1. Introduction

From a manufacturer's point of view, it would be advantageous to increase the overall profit by providing products to more consumers by lowering the final price of the product by providing PB products to the retailer. However, loyal customers may be expected to deviate from loyal customers by providing PB products for many manufacturers. In this case, the manufacturer would have to decide whether or not to use the PB product according to the existing loyal customers.

On the other hand, when it comes to retailers, the goal is to increase their brand image and lower the final price to attract more consumers and increase demand. By using PB, however, it can be detrimental to profitability if it causes the displeasure of existing loyal customers and leads to the

departure of existing loyal customers' distributors. In this study, I would like to study whether profitability is not necessarily increased when distributors only supply PB. In particular, if the manufacturer purchases the existing NB, the focus is on increasing the psychological cost of consumers who purchase the existing NB product and decreasing the utility. If the manufacturer launches NB and PB at the same time, This study would like to prove the fact that the profitability is lower than the case of NB only, depending on the number of NB customers using game theory.

## 2. Theoretical Framework

### 2.1. National Brand(NB) vs. Private Brand(PB)

There was a lot of research on competition between National Brand and Private label Brand. The previous paper explored the changes in private label market share between different product categories by examining the impact of variables on competition between NB and PB (Hoch &

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Manerji, 1993; Raju et al., 1995; Hoch, 1996; Narasiman & Wilcox, 1998; Kim & Parker, 1999; Coterill & Dhar, 2000) They said distributors could use better conditions by introducing specific categories of private labels. Raju et al. (1995) argued that the introduction of private labels could increase the distributor's profit in product categories with less cross-price sensitivity between national brands and private labels.

On the other hand, sales of Store Brand, which is an advantage of price reduction, has surged in the last few years. However, consumers do not consider price alone at the time of purchasing, and they value product attributes such as perceived quality(Hogan, 1996). This is true of Fast Moving Consumer Goods(FMCG)(Smith & Sparks, 1993; Veloutsou et al., 2004). Consumer awareness of brand loyalty is an important factor influencing product and brand choice(Lumpkin & Greenberg, 1982; Burt & Sparks, 1995). In particular, loyal customers are less sensitive to price (Krishnamurthi & Raj, 1991).

## 2.2. Partnership with distributors and manufacturer brands

Bettman(1974) emphasized that the perceived risks associated with the use of retailer brands have a significant impact on consumers' favorable appraisal and purchasing trends for these products.

For example, uncertainties related to the quality of retail brands and perceived risk associated with purchases can be a major factor in distinguishing between manufacture brand buyers and retail brand preference trends. This is because retailers' brand reputation is important to the retailer, and evaluation of quality is an important factor in brand selection(Levy & Weitz, 1992). Research on PB products is most active in consumer behavior research, which identifies consumer perceptions and influencing factors. Distributor brands have pricing power, but quality has a limit to be perceived as less than manufacturer branding(Shapiro, 2002).

The study by Miquel et al.(2002) suggested that the degree of knowledge of products, and how they perceive the difference between PB products and NB products, has a decisive impact on the purchase of PB products. On the other hand, Vaidyanathan and Aggarwal (2000) stated that consumers 'preference rises when retailers' brands are combined with manufacturer brands. They argue that the introduction of the manufacturer brand is regarded as an element brand and that the reliability of the quality is important in the case of the retail brand. Rao and Sieben(1992) reported that reputable manufacturer brands are delivered to customers as a signal to distributor brand product quality that is difficult to observe. However, there is much debate as to whether distributor and manufacturer brand partnership benefits both distributors and manufacturers.

Therefore, this paper will confirm that whether the alliances of these two brands are profitable, especially from the viewpoint of the manufacturer, will depend on the characteristics of the consumers.

## 3. Proof through Game Theory

<Model> : Manufacture vs Retailer's Game

<Model> refers to the paper of Narasimhan, Chakravarthi and Ronald T. Wilcox (1998). This paper focuses on how manufacturers and retailers' profits will evolve as consumers who did not purchase the former NB for higher prices move from PB to NB when NB has lowered prices than PB.

→ This paper focuses on how the overall benefits of retailers and manufacturers will be developed when NB, which released only NB, supplies PB with NB to retailers. Specifically, this model assumes that the loyal customers of the original NB customers still purchase NB in spite of the launch of the PB, but some customers are able to make a purchase conversion from NB to PB due to the low-priced PB.

The NB manufacturer assumes a zero product cost(product const = 0). We also know that the prices of  $W_s$  (Private Brand (Store Brand) wholesale) and  $W_N$  (National Brand's wholesale) are fixed. Assuming that the price of PB is lower than the price of NB, the goal of retailers is to maximize Profit, whether the distributor releases NB or PB. The retailer has to decide whether to release PB and which manufacturer to collaborate with.

In the first step, the NB maker determines the  $W_N$  and in the second step PB determines the price of NB and PB.

NB manufacturer decides the  $W_N$  of the NB and assumes that  $W_N = bP_n$  is determined automatically.

### 1) Equilibrium when there is no Private Brand

$$\pi^r = (P_n - W_n) \times \alpha$$

$$\pi^m = W_n \times \alpha$$

→ That is, the NB maker sets  $W_n = r$  until there is no incentive to go down any  $r$  value. In this case  $\alpha$  is the number of consumers who are willing to pay up to  $P_n$ .

### 2) Equilibrium when Manufacturer carries a Private Brand & National Brand

$$\pi^r = \alpha \cdot \theta (P_n - W_n) + \alpha \cdot (1 - \theta) (P_s - W_s) + \beta (P_s - W_s)$$

$$\pi^m = \alpha \cdot \theta \cdot W_n + \alpha \cdot (1 - \theta) W_s + \beta \cdot W_s$$

$\theta$ : The percentage of customers who are willing to buy NBs when they launch only National brands, and those who

buy NBs even if NBs are released with PBs (percentage of customers loyal to NBs).  $(1-\theta)$  is the percentage of customers switching from NB to PB When PB is released

At this time, it is assumed that  $\alpha + \beta = 1$ .

→  $\theta = \text{prob}[\ell > P_n - P_s] P_n - P_s = K$  ( $K$  is the difference between the NB price and the PB (store brand) price,  $F(K)$  indicates the c.d.f and the consumer ratio.)  $\theta$  equals  $1-F(K)$ .

$$\begin{aligned} \pi^\gamma &= \alpha \cdot (1-F(K))(P_n - W_n) + \alpha \cdot F(K) \cdot (P_s - W_s) \\ &\quad + \beta(P_s - W_s) \\ &= \alpha \cdot (1-F(K))(P_n - W_n) + \alpha \cdot F(K) \cdot (P_n - K - W_s) \\ &\quad + \beta(P_n - K - W_s) \end{aligned} \quad (3)$$

$$\pi^m = \alpha \cdot (1-F(K)) \cdot W_n + \alpha \cdot F(K) \cdot W_s + \beta W_s \quad (4)$$

In equation (3), the retailer's  $\pi^\gamma$  increases as the silver  $P_n$  increases. Only  $K$  can be determined by the retailer. As a response to the distributor's response function by solving the game with backward induction, optimizing about  $K$  is

$$K = W_n - W_s - \frac{F(K)}{f(K)} \quad (5)$$

$f(K)$  is an arbitrary distribution, making it difficult to find a closed-form solution for optimal  $K$ . The following equation is re-developed assuming  $\ell \sim U[0, L]$ .

$$\begin{aligned} \pi^\gamma &= \alpha \cdot \left(1 - \frac{K}{L}\right)(P_n - W_n) + \alpha \cdot \frac{K}{L} \cdot (P_n - K - W_s) \\ &\quad + \beta(P_n - K - W_s) \end{aligned} \quad (6)$$

$$\pi^m = \alpha \cdot \left(1 - \frac{K}{L}\right) \cdot W_n + \alpha \cdot \frac{K}{L} \cdot W_s + \beta W_s \quad (7)$$

→ According to Eq. (7), if  $K$  goes to  $L$ , the manufacturer's profit is determined by  $W_s$  rather than  $W_n$ .

● Derivation of Stackelberg Equilibrium

The game is solved by backward induction.

$$\begin{aligned} \pi^\gamma &= \alpha \cdot \left(1 - \frac{K}{L}\right)(P_n - W_n) + \alpha \cdot \frac{K}{L} \cdot (P_n - K - W_s) \\ &\quad + \beta(P_n - K - W_s) \end{aligned}$$

The first-order condition that maximizes the profit of the Retail Profit is

$$\begin{aligned} \frac{\partial \pi^\gamma}{\partial K} &= \left(1 - \frac{K}{L}\right)(\alpha \cdot P_n - \alpha \cdot W_n) \\ &\quad + \frac{K}{L}(\alpha \cdot P_n - \alpha \cdot K - \alpha \cdot W_s) + \beta(P_n - K - W_s) \end{aligned}$$

$$\begin{aligned} &= \alpha \cdot P_n - \alpha \cdot W_n - \frac{\alpha \cdot P_n}{L} \cdot K + \frac{\alpha \cdot W_n}{L} \cdot K - \beta \\ &\quad + \frac{-\alpha \cdot P_n + \alpha \cdot W_n}{L} + \frac{\alpha \cdot P_n - \alpha \cdot K - \alpha \cdot W_s}{L} - \frac{K \cdot \alpha}{L} \\ &= 0 \quad (8) \\ &\frac{\alpha \cdot W_n - \alpha \cdot W_s - 2 \cdot \alpha \cdot K - L \cdot \beta}{L} = 0 \quad (9) \end{aligned}$$

$$\Rightarrow \hat{K} = \frac{W_n - W_s}{2} - \frac{L\beta}{2\alpha}, \text{ The maximum profit at this}$$

point is determined.

→ Assuming that  $K = P_n - P_s$  and  $W_n$  and  $W_s$  are also determined by  $P_n$  and  $P_s$ , respectively,

$$\frac{W_n - W_s}{2} = \frac{L\beta}{2\alpha} + K \text{ If } K > 0, \text{ then } W_n - W_s \text{ is}$$

determined by  $\frac{\beta}{\alpha}$ . Here,  $\alpha$  is the customer who purchased

NB even when only NB is released to the market, and the value of  $W_n - W_s$  becomes larger as  $\alpha$  is smaller.

This means that if the number of customers who originally purchased NB is small, the prices of NB's Wholesale Price and PB's Wholesale Price should be increased. If there are many customers who originally purchased NB, the price difference between NB's Wholesale Price and PB's Wholesale Price should be set to a small value. In other words, the more NB customers there are, the less the price difference between NB's Wholesale Price and PB's Wholesale Price, and between NB's Price and PB's. When this setting is made, the maximum profit can be obtained.

In addition, if the response function of the retailer is replaced with the profit function of the manufacturer,

$$\begin{aligned} \pi^m &= \alpha \cdot \left(1 - \frac{K}{L}\right) \cdot W_n + \alpha \cdot \frac{K}{L} \cdot W_s + \beta W_s \text{ If } \hat{K} = \\ &\frac{W_n - W_s}{2} - \frac{L\beta}{2\alpha} \text{ is substituted into the equation (7).} \end{aligned}$$

$$\begin{aligned} \pi^m &= \left(\frac{2\alpha \cdot L - W_n \cdot \alpha + W_s \cdot \alpha + L \cdot \beta}{2L}\right) \cdot W_n \\ &\quad + \left(\frac{W_n \cdot \alpha - W_s \cdot \alpha - L \cdot \beta}{2L}\right) \cdot W_s + \beta \cdot W_s \end{aligned}$$

$$\begin{aligned} \frac{\partial \pi^m}{\partial W_n} &= \left(\frac{2\alpha \cdot L - W_n \cdot \alpha + W_s \cdot \alpha + L \cdot \beta}{2L}\right) \\ &\quad - \frac{\alpha}{2L} \cdot W_n + \frac{\alpha}{2L} \cdot W_s = 0 \end{aligned} \quad (9)$$

$$-2\alpha \cdot W_n + 2\alpha \cdot W_s + L\beta + 2\alpha \cdot L = 0 \quad (10)$$

$$W_n^* = W_s + \frac{L}{2} + \frac{L}{2\alpha} \quad (11)$$

→  $W_n - W_s = \frac{L}{2} + \frac{L}{2\alpha}$ . Here, it can be seen that the larger the  $\alpha$ , that is, the more customers who originally purchased the NB, the smaller  $W_n - W_s$  should be. Intuitively, the larger  $W_n - W_s$  is, the more the purchase from NB to PB is converted.

At this time, if the value of  $W_n^*$  is put into  $K$ ,

$$\begin{aligned}\hat{K} &= \frac{W_n - W_s}{2} - \frac{L\beta}{2\alpha} \\ &= \frac{L\alpha + L - 2L + 2L\alpha}{4\alpha} = \frac{3L\alpha - L}{4\alpha} \\ \pi^{m*} &= \alpha \cdot \left(1 - \frac{\frac{3L\alpha - L}{4\alpha}}{L}\right) \cdot \left(W_s + \frac{\alpha \cdot L + L}{\alpha}\right) \\ &\quad + \alpha \cdot \frac{3L\alpha - L}{4\alpha} \cdot W_s + (1 - \alpha) \cdot W_s \\ &= W_s + \left(\frac{\alpha + 1}{4}\right) \cdot \left(\frac{\alpha L + L}{\alpha}\right) \\ &= W_s + \left(\frac{\alpha + 1}{4}\right) \cdot L\end{aligned}$$

$$\begin{aligned}\pi^{r*} &= \alpha \cdot \left(1 - \frac{K}{L}\right) (P_n - W_n) + \alpha \cdot \frac{K}{L} \cdot (P_n - K - W_s) \\ &\quad + \beta (P_n - K - W_s) \\ &= \left(\frac{-3\alpha - 1}{4}\right) \cdot W_s + \frac{\alpha^2 \cdot L - 14\alpha \cdot L + L}{16\alpha}\end{aligned}$$

→ The maximum profit of  $\pi^m$  and  $\pi^r$  is determined by  $W_s$  and  $\alpha$ .

#### 4. Conclusion

This paper suggests that the alliance with the retail brand does not achieve the unconditional result. Specifically, it suggests that the manufacturer should try to partner with the private brand in terms of practicality according to the degree of customer loyalty of the existing manufacturer brand. Private brand products are expanding in line with structural changes in the distribution industry, but they are not related to the growth of manufacturers. In particular, SMEs can display unfavorable profit distribution structures.

In conclusion, it was found that providing cheap PBs did not help manufacturers and distributors. Distributors and manufacturers' profits were determined by consumers who purchased NB products that were higher in price and higher in perceived quality before providing existing PB products to consumers.

Therefore, retailers and manufacturers should pay attention to the share of existing NB products when they launch PB products at the same time as existing NB products. For distributors, it would be more desirable to launch PB products through joint ventures with NB products that do not have existing loyal customers. Furthermore, retailers can lose their existing NB product customers by launching PBs if they already have a large number of customers with strong brand preferences at launch.

In addition, by selling PB only to customers who are

already existing NB customers, it is possible to reduce profit by decreasing retailers' profit per customer, that is, consumers with higher reservation prices. However, if there is a potential customer who is not a loyal customer of NB products, and if there is a potential customer who only values the price, then in this case, NB products will be launched in partnership with products without loyal customers. You can avoid losing existing NB preferred customers. At the same time, additional demand from consumers who are hesitant to purchase high-priced products will be generated, which will increase the overall market size and achieve high profits.

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