

Effects of the Store-owned Brands and Direct Marketing Channels on Products' Innovation

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Abstract. With retailers' expanding market power, the store-owned brands are becoming increasingly popular recently. In order to ensure their profits, manufacturers have to develop new distribution channels, which are known as direct-market channels. This paper views the two distribution channels, store-owned-brands and direct-market-channels, as the options outside the traditional distribution channels of selling through professional retailers, to exam their effects on the two parts of the channel, the retailers and the manufacturers, and further more the effects on product innovation.

Keywords: Store-Owned Brand, Direct-Distribution Channel, Innovation

1. Introduction

Store-owned Brand, also known as Private Brand (PB), is a kind of merchandise brand, which is different from traditional one, National Brand (NB). PB commodities are the ones provided by professional retailers who have the advantage of facing the consumers directly, such as being able to search, organize and analyze the information of the market demands. Retailers construct their own manufacturing base, or select appropriate manufacturers providing the commodities according to their requirement, and eventually sell through their sales spots with the retailers' own brands[1][2].

Since appeared in British in 1882, PB has becoming increasingly popular among the retailers. According to the investments, the proportions of PB goods in America, British and Swiss markets have risen from 10.9%, 29.7% and 41.8% to 20.7%, 44.7% and 54.1% respectively from 1997 to 1999. IKEA from Sweden sells nothing but its own PB products. All the commodities sold in United Kingdom's Marks and Spencer is produced by manufacturers according to M&S Group's request on the variety, qualification and quality. Over 90% of the goods sold in retailer Sears, one of the most important American retailers, are PB products. There are over 10000 original equipment manufacturers and 22 factories providing commodities for Sears. Other major retailers, such as Wal-Mart, TESCO, The gap, Seven-Eleven, Ahold, Dayton, are also selling abundant of PB products.

With the development of Chinese retail industry and the propelling of its internationalizing process, Chinese major retail enterprises have been developing their own PB products. PB products with the name of "Qinjian" in Hualian supermarket from Shanghai covers 15 categories including grain and oil products, articles of daily use, detergents and flavorings. Retailers, such as RTMart from Ruentex Group in Taiwan, Suguo supermarket in Nanjing, GOME, SUNING and Five Star Appliances (a wholly-owned subsidiary of Best Buy), have been developing their own PB products. Comparing to foreign large retail enterprises, PB products in these chain stores cover relatively fewer categories and have weaker impact, however, they mean a good start for Chinese retail enterprises' PB products.

Now consider the other participants of the retail channel, manufacturers. With soaring prices of the raw materials on the one hand, and the development of retailer's market power and their PB products on the other, manufacturers are confronting with more challenges to survive. Their situation would not be improved if they passively accept retailers charging great amount of slotting allowances and paying declining wholesale prices. Given the circumstances, manufacturers have no other choices but to develop new distribution channels^[3]. Direct marketing channel is as much a feasible marketing approach as a credible threat to the

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retailers; such a channel would reduce the slotting allowances and increase the wholesale prices when the manufacturers and retailers sign contracts[4][5].

Direct marketing channels, also known as zero-level channels, are the consequences of manufacturers expanding from production field to sales territory. Manufacturers sell directly to consumers by constructing new channels or merging the existing ones to sell nothing else but their own products. The major examples of direct marketing channels are manufacturer-owned stores (also called corporate chain stores), door-to-door sales, home parties, mail order, telemarketing, TV selling and internet selling. Direct marketing channels exist mostly in home appliance industry, fashion industry and food industry. Plenty of direct marketing channels other than ordinary manufacturer-owned store can be seen nowadays, such as discount stores, outlets stores, factory stores etc. There are also stores that are constructed by several manufacturers producing similar merchandises, and sell directly from their production bases to the stores, which are similar to supermarkets that consumers are free to choose anything they like without unnecessary assistants in the stores. These distribution channels are more flexible and can be used in combination with one another. Current brands are always attractive enough for customers to the stores, in return, the flexible sales promotions and commodity combinations would reinforce consumers' brand loyalty.

To sum up, both store-owned brands and direct marketing channels have emerged aiming at higher profitability or to confront each other's more intense competition brought by new distribution channels. In the following we are about to analyze how the two distribution channels influence the innovation.

2. Store-Owned Brands' Effect on Innovation

2.1. How Store-Owned Brands Work?

To produce his store-owned brand goods, a retailer could choose to produce himself or to outsource from professional manufacturers. In the former mode, retailer would construct his own manufacturing base to develop and produce the product. Considered to be a state of upward integration, this mode means stronger control of the production because the production department is directly affiliated to the retailer itself, however it also requires massive human and material resources establishing the production base and maintaining production facilities. What's more important, as retailer could choose to provide only a few of commodities, in facing with market fluctuations, he would be inflexible and has trouble to turn to other profitable commodities.

To outsource from professional manufacturers means the retailer has to search for appropriate producers and sign contracts including retailer's requirement on products' quality, standards and packaging. After attached to the retailer's brands, the commodities could and only could be sold in the chain spots of the retailer. In this mode, the retailer could save great amount of capital building the production base. At the same time, considering the contractual relationship between the retailer and the manufacturer, it's feasible for the retailer to terminate the contract and search for new partners when there are demanding swings in the market. However, it is also because of the contractual relationship that this mode has some defects. Firstly, it would take quite a long time and great costs searching for a qualified partner, which should be competent to produce required goods at a cost low enough to make sure that the deal would be profitable. And what more important, the manufacturer who has such production capacity with such low cost would be willing to abandon his own brand. Secondly, since most, if not all, of the existing qualified partners are small-scale ones without a sound credit history, there could be a chance that the small manufacturers might break the contracts. Thirdly, there would be a problem when the retailer has several chain stores in locations far from one another. There could be differences in product standard and multiple searching costs and negotiation costs if the chain stores choose local partners respectively. If the chain stores choose one partner to provide commodities, the cost of transportation and storing must be taken into account.

In developed retailing market, store-owned brands, such as Marks and Spencer, IKEA and Watson's, have got certain market power and brand effect, and they are being more powerful and effective. However large scale retailers in most Chinese cities have just started their store-owned brands, and the brands involve mostly the mass consumer products with low technical content, such as paper products, foods and stationeries. Consumers being weak in brand awareness and paying little attention in quality, store-owned

brands with relatively lower prices are attractive. Instead of being a symbol standing for a certain social influence, the brands of store-owned-brand commodities are just marks distinguishing from each other. Retailers who develop the store-owned brands are just aiming at the profits taking the advantage of lower entry costs and the favorable position in promotion. Hence for Chinese retailers, cooperating with professional manufacturers is favorable to producing by themselves for the latter one is relatively costly, risky and inflexible.

2.2. Store-Owned Brands' Effect on Innovation

Store-owned brands may make an impact on innovation through multiple aspects including production, intermediate transaction and promotion.

There is diversity in innovation capacity between professional manufacturers producing national brand products and the small-scale producers providing private brand products. Innovation could be noticed as updating of commodity categories or the reduction of production costs. Professional manufacturers tend to have their professional R&D teams, which are more efficiency with the same (margin) investment. It would take less cost and shorter time to develop new products or to improve the packaging, and when the innovation refers to the original products, the cost reduction would be more remarkable. According to the theory of comparative advantage, professional manufacturers have comparative advantage in innovation, and the producers providing store-owned brand products are relatively competitive in production cost when the technique is unchanged.

Private brands would intensify market competition and further more stimulate the professional manufacturers to innovate. In order to countervail private brand products' superiority in cost and promotion, the national brand suppliers have to give full play to his comparative advantage in innovation to avoid direct collision on homogeneous products and keep attractive to consumers. In this sense, introducing private brand products would encourage innovation by aggravating the market competition.

Most of Chinese retailers today are not developed enough to be a strong innovator. Once the private brand has become a monopolist to some extent (take IKEA for example), he could and have to insist on constant innovation. This is a more developed stage in the vertical integration of production and sales, which majority of Chinese retailers are unable to achieve. Being initial and immature, the store-owned brands have not been fully accepted by the market and consumers. Retailers who want to develop their own private brand will have to start with items with lower technical requirements and entry barriers, such as cakes, stationeries and paper products. Hence, under the current circumstances, store-owned brand products are still imitating the well-developed national brand products and obtain market share with the competitive prices (even the Watson's is partly taking such strategy).

Such situation is similar to the theory of product life cycle between developed countries and developing countries. Developed countries, or in Chinese case, the national brand suppliers take their advantage to innovate and produce new commodities. Once the commodities are mature and fully accepted by consumers, developing countries or the producers of private brand products imitate and obtain more market share with their lower costs.

In brief, in Chinese current retail market, introducing store-owned brands could stimulate innovation indirectly by intensify market competition and encourage the national brand producers to enhance their investment in R&D more than directly encourage innovation.

2.3. Model of Private Brands and Innovation

Store-owned brands having been introduced, there will be two kinds of goods at the same time. PB and NB products are differentiated in quality, packaging, est. Considering the substitutability of the two brands, the change of price of one brand does not only effect it's own demand (price elasticity of demand), but also have an effect on the other's demand (cross price elasticity). As a result, the inverse demand functions are $P_N = a - b_1 Q_N + e_1 Q_P$ and $P_P = a - b_2 Q_P + e_2 Q_N$ respectively, where b_1 and b_2 represent the effect of price elasticity of the two brands, e_1 and e_2 represent the effect of cross price elasticity, and all of the four parameters are positive. Apparently there are six parameters in the inverse demand function already, and the result would be beyond complicated. So instead of this traditional way to describe demands, we turn to

consumer utility functions. Following Tirole's (1997) assumption of model of vertical differentiation, consumer's utility function is $U = \theta s - P$, where s stands for the quality of the good, P stands for the retail price. Let θ denote consumer's preference of the quality, which subjects to uniform distribution in $[0, 1]$, with the density function $f(\theta)$ and distribution function $F(\theta)$, which stands for the proportion of consumers with preference lower than. Let the quality of the products positively relevant to marginal cost, $s_N = \alpha C_N$, $s_P = \alpha C_P$.

When there are only national brand products, only the consumers with the preference $\theta > \frac{P_N}{\alpha C_N}$ would purchase, let the total amount of the consumers equals to 1, the demand of national brand good is $Q_N = 1 - F(\frac{P_N}{\alpha C_N}) = 1 - \frac{P_N}{\alpha C_N}$.

When there are both national brand products and store-owned brand goods, assume that $P_P < P_N$, $C_P < C_N$, $\frac{P_P}{\alpha C_P} < \frac{P_N}{\alpha C_N}$. Such assumptions are reasonable because the store-owned brands usually enjoy certain advantages in promotion, and do not need to advertise as hard as the manufacturers do. Consumers with the preference of $\theta^* = \frac{P_N - P_P}{\alpha(C_N - C_P)}$ are indifferent with the two brands. If $\theta > \theta^*$, they will purchase the national brand, and if $\frac{P_P}{\alpha C_P} < \theta < \theta^*$, store-owned brand is more attractive. Those with $\theta < \frac{P_P}{\alpha C_P}$ would choose neither brands. Therefore, the demand of national brand products is $Q_N = 1 - F[\frac{P_N - P_P}{\alpha(C_N - C_P)}] = 1 - \frac{P_N - P_P}{\alpha(C_N - C_P)}$, and the demand of private brand goods is $Q_P = F[\frac{P_N - P_P}{\alpha(C_N - C_P)}] - F(\frac{P_P}{\alpha C_P}) = \frac{P_N - P_P}{\alpha(C_N - C_P)} - \frac{P_P}{\alpha C_P}$.

Besides, we assume that only the professional manufacturers are able to innovate, and the investment in innovation, denoted as I , would only reduce the marginal cost from C_N to C_N/I . Quality of the products are not affected by the innovation. Retailer charges slotting allowances including one-time fee S_0 and marginal fee S_A . Producers providing goods for the retailer are competitive, and receive a fixed transaction costs. We neglect the common costs in the sales process of the two brands in order to focus on the difference between them.

Firstly, the retailer takes the wholesale price W and demands as given, and choose retail price P to maximize his profit. Secondly professional choose the wholesale price to maximize the profit. The equilibrium outcomes under different market circumstances are as follows.

i Only NB products, no innovation: $\pi_R^* = \frac{(\alpha-1)^2}{16\alpha} C_N + S_0$, $\pi_M^* = \frac{(\alpha-1)^2}{8\alpha} C_N - S_0$.

ii Only NB products with innovation: $\pi_R^* = \frac{(\alpha - \frac{1}{I})^2}{16\alpha} C_N + S_0$, $\pi_M^* = \frac{(\alpha - \frac{1}{I})^2}{8\alpha} C_N - S_0$.

iii Both NB and PB products, no innovation: $\pi_R^{***} = \frac{(\alpha-1)^2}{16\alpha} (C_N + 3C_P) + S_0$, $\pi_M^{***} = \frac{(\alpha-1)^2}{8\alpha} (C_N - C_P) - S_0$.

iv Both NB and PB products with innovation: $\pi_R^{****} = \frac{(\alpha - \frac{1}{I})^2 C_N^2 - 2(\alpha-1)(\alpha-2)C_P^2 + (\alpha-3)(\alpha + \frac{1}{I} - 2)C_N C_P}{16\alpha(C_N - C_P)} + S_0$, $\pi_M^{****} = \frac{[(\alpha - \frac{1}{I})C_N - (\alpha-1)C_P]^2}{8\alpha(C_N - C_P)} - S_0$.

2.4. Analysis of the Equilibriums

It's obvious that when there is no innovation, introducing PB products would raise retailer's profit while the manufacturer's profit would be reduced, but the total profit of the two participants would be increased.

Investment in innovation could increase producer's profit, while the effect on retailer is uncertain. Innovation would be the dominant strategy for the manufacturer whether the retailer introduces PB or not. For the consumers, a market with PB products and innovated ones at the same time is more satisfying considering the competitive prices and the select range. Hence it is beneficial for the consumers if the retailer increase slotting allowances appropriately to recover the loss of profit from PB products. At the same time, preferential measures made by relevant policy department, such as subsidies to retailer selling PB products, would be favorable too.

One of the assumptions is that innovation has nothing to do with α , which could be considered as a measure of perceived quality. If manufacturer were able to innovate to increase α both manufacturer and retailer could gain from the investment for the increase of demand. Another assumption in this model is that the retailer could not innovate, which is an extreme case comparing the different innovation capacity of the two participants. In fact, developed retailers nowadays are often committed to innovation so as to compete with professional producers. Innovation is the only way for PB product to surpass NB one if there were any chance. As a credible rival, retailer's potential ability to innovate would effectively stimulate manufacturer to innovate. In this sense, introducing of store-owned brands could encourage innovation in upstream[6].

3. Direct Market Channels' Effect on Innovation

When a manufacturer intends to sell through retail stores, he has to deal with more exploitation of the retailer. Besides entering-store fee and the routine costs of labor, electricity, sanitation service and promotion, there are also expenses like consumption discount, festival fee, store-celebration fee, etc. In direct market channel, manufacturer's expenditures are relatively simple, because after discounting the rent, staff costs, utilities miscellaneous, industrial and commercial tax, all the rest of the income belongs to the manufacturer himself. And in the routine operations he is free to make the decisions about production, distribution and promotion policy. But constructing direct market channel requires quite big amount of initial capital that not many manufacturers can afford. Even after the channels have been built successfully, let alone the chances of failure, the follow-up investment, investment in R&D and the capital used to resistant the market risks are heavy burdens, too. In general, direct marketing channels could effect innovation directly and indirectly[7].

3.1. Current Situation of Direct Marketing Channels

Direct marketing channels are popular among household appliances industry, clothing industry and food industry. There are differences among industries when comes to the traditional distribution mode. Producers of household appliances tend to sell their products through professional retailers such as GOME, SUNING and FIVE STAR. The most common form of clothing distribution is brand sections in the department stores. There are clothing sector in supermarkets, too, but these products are always the ones without brand consciousness. In food industry there are significant differences of the product categories. Foods sold through major retailers are mainly the ones with fixed quantity and standard package, such as biscuit, powdered milk, soft drinks, etc., yet in direct marketing channels it is often unpacked food, fresh food and the ones need to be cook on customers' requirement, such as LAIYIFEN, Zhou's Black Duck, etc. These foods are seldom sold in supermarket or professional retailers for technical reasons, so we mainly aim at the direct marketing channels in household appliances industry.

Few appliance producers sell their products only through direct marketing channels. After the conflict affair between GOME and GREE in 2004¹, GREE's products cannot be seen in GOME for 3 years. But because of all kinds of issues emerged in the direct marketing channel, they finally made peace with each other and continued with their cooperation. Besides, Happy Tree chain stores of TCL have promoted their franchisee nationwide, but ended with modest progress. Manufacturers like Vantage and AUCMA have established their direct marketing channels, too, but instead of dropping out of the professional retailers, all of them choose to cooperate with major chain appliance retailers at the same time.

3.2. What does Direct Marketing Channels Mean to Manufacturers: Direct Effects on Innovation

¹ In February 2004, since GOME lowered the prices of GREE's products out of the blue without informing GREE in advance, GREE reckoned that GOME had damaged his consolidated and stable price system in the long term and had damaged his brand image. After GOME had refused GREE's request of restoring the original prices, GREE decided to stop supplying for GOME. On March 9th, GOME headquarters in Beijing made the situation even worse by delivering the decision of "clear GREE out of the marketplace" to all his branches. Source of data: <http://zhidao.baidu.com/question/265774706.html>

For manufacturer, introducing direct marketing channel means higher costs and more risk. Constructing new stores or merging the existing ones both require enough initial fund, running the chain stores needs quite an outflow of capital, too. Since the spaces in each store are quite limited considering the rent, manufacturers are not able to apportion the costs and fees to multiple goods like the professional retailers do. As a result, the sales cost per unit in direct channel is higher than in traditional channel. When manufacturer has limited fund, he may not be able to afford the innovation after the investment in direct channel.

On the other hand, it is because of the higher cost, the manufacturer has to endeavor to improve their product so as to be more attractive than the retailer. Manufacturers who have constructed direct channels are always the ones with certain market power. After they draw the customers into the store for their brand effects, they have to do something to retain the customer loyalty. Because of the higher costs, it's not an option to compete on price with the retailers whose main operation principle is to make small margins and quick returns. As a result, manufacturers with direct channels have no choice but to keep launching new products and sell the latest ones only in their own stores. Once there is a belief that the products in the exclusive shops are always up to date, the customers who pursue unique, quality and novelty will have the loyalty.

Although the initial cost is relatively higher comparing to the traditional channel, manufacturers would not need to pay big amount of slotting allowances in the direct channels, and they no longer have to split part of their profit to the retailer, besides there would no longer be costs of negotiation and price discount when the retailer has the market power. Since all the net profit belongs to the manufacturer, the marketing personnel and research staff would be encouraged to make more effort, and as a result the innovation would be enhanced.

3.3. What does Direct Marketing Channel Mean to Retailers: Indirect Effects on Innovation?

If all manufacturers with certain market power choose to abandon the professional retailer and sell simply through the direct channel, retailers would have to cooperate with small producers and would be much less attractive to the consumers. Rare as this situation would be, direct marketing channels that only part of the major brand producers have constructed are quite competitive rivals. In this sense, direct market channels could be one of manufacturer's optional strategies as a credible threat when negotiating with retailers. Such threat from manufacturers with the capacity to conduct is more believable, so they would be stronger in the bargain. For the manufacturers who do not really have the strength to build direct channels, the retailers would rather be fewer rigors in order to keep them as long-run bi-win cooperative partners to compete with direct channels than to make other potential rivals. Hence, introducing the direct marketing channels as a credible threat could make it easier for manufacturers in the retailer stores. As a result, more capital could be invested in innovation instead of paying slotting allowances, and that is the indirect effect of direct marketing channel on innovation.

Further more, the possibility of direct market channel could lower the thresholds accessing retail shops for both the major and small manufacturers. Therefore the competition among manufacturers is getting more intense. Even the small manufacturers have to endeavor to innovate instead of attract customers simply with low prices. From this aspect, direct marketing channels could stimulate innovation, too.

3.4. Model of Direct Market Channels and Innovation

In this model, we could use the traditional inverse demand function, that is $PR=a-bQR$ in the professional retail market, and $PD=a-bQD$ in the direct channel, where a denotes the market scale, and b stands for the price elasticity of demand. In the short run, the output of a manufacturer is constant, $Q=QD+QR$. When it comes to cost, professional retailer enjoys the advantage of initial instruction costs, because when the manufacturer is about to choose between a retailer and a direct channel, the professional channel is established already, yet the direct one is about to be built. So we assume the fixed and marginal distribution cost in direct channel is $CD>0$ and $CSD>0$ respectively, and the corresponding costs in professional channel equal to 0. In the process of production, the fixed cost is CMP and the marginal cost is CSP .

The effect of innovation could reduce the cost in production from CSP to CSP/I , or reduce cost in promotion from CSD down to CSD/I , or create whole new goods. When new products come out of the innovation investment, the products have the probability of γ to succeed, that is, with a rate of $1-\gamma$ neither the retailer nor the manufacturer could gain from innovation. At the same time, manufacturer has the right to decide whether sale the new product through professional retailer, because if manufacturer sale solely

through direct channel could keep all the profit to himself if the product is successfully sold, but if the sale is failed, he would have nobody else to pool the risk.

The process of transaction between manufacturer and retailer is different from that in the previous model with private brands. Prices and promotion policies are more flexible and controllable by manufacturer in the direct channel because he has to negotiate with retailer to adjust the signed contracts. So it is reasonable to assume that retailer takes the leadership in pricing, manufacturer adjust the price in direct channel promptly to maximize his profit. The equilibriums outcomes under different circumstances are as follows:

i No direct channel, no innovation: $\pi_R^0 = \frac{(a - C_{SP})^2}{16b} + S_0$, $\pi_M^0 = \frac{(a - C_{SP})^2}{8b} - C_{MP} - S_0$

ii Direct channel, no innovation:

$$\pi_R^* = \frac{(a - C_{SP})^2}{16b} + S_0, \pi_M^* = \frac{3a^2 + 3C_{SP}^2 + 2C_{SD}^2 - 4aC_{SD} - 6aC_{SP} + 4C_{SD}C_{SP}}{8b} - C_{MP} - C_D - S_0$$

iii Direct channel, innovation has an effect on production cost:

$$\pi_R^{**} = \frac{(a - \alpha C_{SP})^2}{16b} + S_0, \pi_M^{**} = \frac{3a^2 + 3\alpha^2 C_{SP}^2 + 2C_{SD}^2 - 4aC_{SD} - 6\alpha C_{SP} + 4\alpha C_{SD}C_{SP}}{8b} - C_{MP} - C_D - S_0$$

iv Direct channel, innovation has an effect on promotion cost:

$$\pi_R^{***} = \pi_R^* = \frac{(a - C_{SP})^2}{16b} + S_0, \pi_M^{***} = \frac{3a^2 + 3C_{SP}^2 + 2\beta^2 C_{SD}^2 - 4a\beta C_{SD} - 6aC_{SP} + 4\beta C_{SD}C_{SP}}{8b} - C_{MP} - C_D - S_0.$$

v New product successfully sold only through direct channel: $\pi_M^* = \frac{(a' - C'_{SD} - C'_{SP})^2}{4b'}$, $\pi_R^* = 0$.

vi New product failed and there is only direct channel: $\pi_M^{***} = -C'_{MP}$, $\pi_R^{***} = 0$

vii New product successfully sold through both channels:

$$\pi_R^{****} = \frac{(a' - C'_{SP})^2}{16b'} + S_0', \pi_M^{****} = \frac{3a'^2 + 3C_{SP}'^2 + 2C_{SD}'^2 - 4a'C_{SD}' - 6a'C_{SP}' + 4C_{SD}'C_{SP}'}{8b'} - C'_{MP} - S_0'$$

viii New product failed and there is cooperation between the two participants:

$$\pi_M^{*****} = -C'_{MP} - S_0', \pi_R^{*****} = S_0'$$

3.5. Analysis of the Equilibriums

Direct market channel has two effects on retail market. On the one hand, it could divert the original consumers to this new channel; on the other hand, it could expand the existing market and attract more customers. In our model, the later one is mainly considered, as a result, innovation that decrease promotion costs would benefit manufacturer only.

When the innovation reduces the production costs, retailer is indifferent whether manufacturer construct direct channel or not. For the manufacturer, we compare the effects of marginal production cost on his profits

without or with direct channel, that is $\Delta^0 = \frac{\partial \pi_M^0}{\partial C_{SP}} = \frac{C_{SP} - a}{4b}$ and $\Delta^* = \frac{\partial \pi_M^*}{\partial C_{SP}} = \frac{3C_{SP} - 3a + 4C_{SD}}{4b}$

respectively.

It is comprehensible that with equal innovation investment, larger market (a) and smaller costs (C_{SP} and C_{SD}) could bring more benefit to the manufacture with direct market channel. In this sense, as long as the manufacturer is large enough to build direct channel, policies that enlarge the retail market and promote producer's scale effect would encourage innovation indirectly.

When the outcome of innovation is a brand new production, we have to take the risk into account. Under a probability of γ to succeed in the sale, the expected revenues for the manufacturer and retailer to cooperate are

$$A = \gamma \pi_M^{****} + (1 - \gamma) \pi_M^{*****} = \gamma \left[\frac{3a'^2 + 3C_{SP}'^2 + 2C_{SD}'^2 - 4a'C_{SD}' - 6a'C_{SP}' + 4C_{SD}'C_{SP}'}{8b'} \right] - C'_{MP} - S_0' \quad \text{and} \quad B = \gamma \pi_R^{****} + (1 - \gamma) \pi_R^{*****} = \frac{\gamma(a' - C'_{SP})^2}{16b'} + S_0'$$

respectively, and the expected awards for them otherwise are $C = \gamma \pi_M^* + (1 - \gamma) \pi_M^{***} = \gamma \frac{(a' - C'_{SD} - C'_{SP})^2}{4b'}$ - C'_{MP}

and $D = \gamma\pi_R^* + (1-\gamma)\pi_R^{**} = 0$ respectively. Obviously, $B > D$ when $S_0' > -\frac{\gamma(a' - C_{SP}')^2}{16b'}$, namely cooperation is preferred for retailer when his payment to producer is limited. At the same time, manufacturer will cooperate only when $A > C$, that is the slotting allowance is no larger than $\frac{\gamma(2a'^2 + C_{SD}'^2 + 2C_{SP}'^2 + 2C_{SD}'C_{SP}' - 2a'C_{SD}' - 4a'C_{SP}')}{8b'}$. The payoff S_0' here can be considered as retailer's cost to buy a risk asset and differs according to the prospect of the new product.

4. Conclusion

In the vertical integration of production and distribution, the growth of retailer's market power and the countervailing power that the manufacturer has developed to protect his benefit have promoted two marketing patterns outside the traditional distribution channel: store-owned brands and direct marketing channels. In this paper we have discussed the two novel patterns' effects on innovation.

As the emerging patterns, store-owned brands and direct marketing channels have different emphases and procedures considering the effects on innovation, but they share the same principle, that is, both of them enhance the competition and therefore stimulate both of manufactures and retailers to innovate so that they would make profit.

In the future research, we will focus on constructing a model and study the details of cost and profit functions, and analyze specifically how these two sales patterns effect innovation. This will be more of practical use for retailers and manufacturers in making investment decisions.

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