



A comparative analysis of two royalty structures in franchising under demand uncertainty

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Abstract

The objective of this paper is to systematically compare two royalty structures widely used in Japanese convenience store industry: margin-based royalties and sales-based royalties. In particular, we investigate if the margin-based royalties induce the franchisee to order a higher quantity of perishables and promote them more aggressively than the sales-based royalties do. Using a three-stage model incorporating demand uncertainty, we show that the margin-based royalties lead to a lower retail price, higher order quantity and higher total channel profits. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Royalty structure is an important element of franchising contract. When one compares royalty structures across countries, however, an interesting phenomenon emerges. In the United States, for example, almost all franchisors assess royalties based on sales achieved by franchisees (hereafter, sales-based royalties (SBR)). In Japan, however, a different type of royalty structure is adopted by many convenience store chains (hereafter, CVS chains). Under this structure, franchisors assess royalties based on gross margin, i.e., sales minus cost of goods sold (hereafter, margin-based royalties (MBR)).

Although widely adopted in Japan, the MBR originated from the United States. In 1964 Southland Corporation which then operated 7-Eleven stores invented the MBR and shifted its royalty structure to the MBR (Liles, 1977). However, the MBR made hardly any impact on the competition in the United States. Furthermore, Southland Corporation went

into bankruptcy and was subsequently acquired by 7-Eleven Japan in 1991.¹

In Japan, however, after 7-Eleven Japan adopted the MBR in 1973 under the Southland Corporation's leadership, major competitors imitated it, gradually changing their royalty structures from the SBR to the MBR.

¹ Kim (1997) provides detailed descriptions on how 7-Eleven's royalty structures evolved over time. Prior to 1964, Southland Corporation owned all the 7-Eleven stores. Southland Corporation went into franchise business in 1964 when it acquired San Diego-based Speedee Mart Inc. which operated franchised convenience stores in California. Before being acquired, Speedee Mart had been implementing the SBR (2% of sales) plus guaranteeing minimum quarterly profits of \$3,500. The first royalty structure Southland developed after the acquisition was called Residual Royalties consisting of two parts: a provision for guaranteeing the franchisee quarterly profits equal to 12.2% of sales or \$4100, whichever comes greater, and the franchisor taking any remaining profits as royalties. However, this royalty structure failed because a recession depressed sales and many franchisees were able to earn no more than \$4100 as profits, while Southland continued taking away residual profits. In response to the franchisees' dissatisfaction, Southland adopted the MBR in 1967 under which the franchisee takes 55% of gross margin and the franchisor takes the rest. In addition, the franchisee was guaranteed 12.2% of sales as minimum profits. The MBR proved to be a great success; over the next two years overall sales increased by 57% and net profits improved by 61%. Despite the success in the convenience store business, however, Southland Corporation went into financial difficulties and was acquired by 7-Eleven Japan in 1991 mainly due to its failed attempts to diversify into oil refining and real estates.

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Table 1
Top 20 CVS chains in Japan and their royalty structures^a

Name	Royalty structures		
	MBR	SBR	Others
7-Eleven	•		
Lawson	•		
Family Mart	•		
Yamazaki ^b			•
Circle K	•		
Sunkus	•		
Mini Stop	•		
Hot Spar	•		
Seiko Mart		•	
Coco Store			•
Three F	•		
Seven On	•		
Am Pm	•		
Tyubu Family Mart	•		
Popura		•	
Kyusyu Spar	•		
Times Mart	•		
Shop & Life			•
Spar	•		
My Shop		•	

^aSources: Nippon no Franchise Chains 96 (1997) and Kim (1997).

^bYamazaki combines the SBR with fixed royalties which are in proportion to each store's size.

The MBR has now become a de facto standard in the Japanese CVS industry. Table 1 shows that in 1994, 14 out of 20 CVS chains employed the MBR. Of the remaining six chains, three use the SBR, two use fixed royalties, and one uses mixed royalties.

In spite of the widespread adoption of the MBR in Japan, there has been little previous research on what advantages the MBR holds vis-à-vis the SBR. For example, previous studies on royalty structure (e.g., Lal, 1990, Rao and Srinivasan, 1995) have modeled royalties as a fixed percentage of the franchisee's sales. Hence, the MBR has received little, if any, attention from academics. Some practitioners argued that the MBR makes both the franchisor and the franchisee prosper together.² The rationale goes as follows: under the SBR, the franchisor takes away royalties whether or not the franchisee makes positive margins. Thus even when the franchisee incurs loss due to fierce price competition, the franchisor can still obtain a steady stream of royalties at the expense of the franchisee. Under the MBR, however, the franchisor can take royalties only if the franchisee generates positive margins. If the franchisee incurs loss due to fierce price competition, the franchisor obtains no royalties. Thus the MBR is more equitable to both parties.

While plausible, it is not sufficient to explain the advantages of the MBR. For example, most CVS franchising contracts include a provision for guaranteeing minimum profits to the franchisee. Therefore, even when the franchisee incurs loss due to fierce price competition, the franchisor can transfer payments that guarantee a sufficient amount of profits to the franchisee. That is, "equitability" can be restored to a large extent by the provision for guaranteeing minimum profits. If the MBR is to help both the franchisor and the franchisee prosper together, a necessary condition it has to satisfy is that it should generate greater total channel profits than the SBR does.

A recent paper by Lal et al. (2000) analyzed the MBR vis-à-vis the SBR using a theoretical model. They showed that the MBR leads to lower retail price, higher sales volume, and higher total channel profits because it is in essence a profit sharing mechanism between the franchisor and the franchisee, thus alleviating the well-known "double marginalization" problem (Spengler, 1950). In addition, they developed an interesting hypothesis that the franchisor is more likely to adopt the MBR as the proportion of sales accounted for by perishable items (e.g., fast food) increases. The rationale is that the MBR induces the franchisee to set a lower retail price, thus achieving higher sales volume and higher order quantities, which is highly desirable given the perishable nature of the product. However, they did not formally prove their hypothesis.

Perishable goods such as fast food pose a significant challenge to a CVS franchisor. Fast food is one of the most profitable product lines carried by a CVS, generating a 40% margin which is much higher than the average margin of 25% (Nippon no Franchise Chains, 1997). However, since it is highly perishable, the franchisee tends to order less-than-optimal quantities to minimize losses. Hence the franchisor is eager to find ways to encourage the franchisee to increase order quantities of these highly profitable fast food items and promote them aggressively. If the MBR is indeed shown to increase order quantities, it will provide a significant insight both to practitioners as well as academics.

The objective of this paper is to formally investigate the conjecture provided by Lal et al. (2000) by deriving and comparing order quantities under the MBR and the SBR. The perishability problem of fast food items becomes worse with demand uncertainty. We derive order quantities under uncertain demand, employing a three-stage model used in Padmanabhan and Png (1997). Note that Lal et al. (2000) did not allow for uncertain demand nor explicitly model the order quantity decision.

Previous research (e.g., Pellegrini, 1986) showed that a returns policy could encourage retailers to carry larger stocks. Thus a stringent test of the MBR would be to show that the optimal order quantities under the MBR are higher than those under the SBR even *after* implementing a full returns policy. Assuming a full returns

² Based on the interview with Mr. Shuichi Iwakuni, a former CEO of 7-Eleven Japan (Lal et al., 2000).

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