



# Is brand alliance always beneficial to firms?

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## ABSTRACT

In this research, we develop a fresh analytical model to examine the impact of brand quality on the firms' performances when two firms selling substitute products form a brand alliance. Our results indicate that when two products have equal brand qualities, brand alliance is always a beneficial strategy for two firms to employ. However, when two products have different brand qualities, brand quality differential shows a positive relationship with the profit of the firm with the low-quality brand but demonstrates a negative relationship with the profit of the firm with the high-quality brand in the brand alliance. Our results also show that brand quality differential has a greater effect on the profit of the firm with the high-quality brand than on that of the firm with the low-quality brand. In addition, we find that brand alliance becomes much more valuable to the firm with the high-quality brand when the brand quality differential decreases, but the value of brand alliance has a concave relationship with the profit of the firm with the low-quality brand when the brand quality differential increases.

## 1. Introduction

The combination of two or more individual brands into a brand alliance (Rao and Ruekert, 1994) becomes increasingly popular in the business market. The case of complementary products (i.e., consumers buy more than one product at the same time to get the full utility of the goods) to form a brand alliance has been studied in the literature (e.g., Yue et al., 2006; Cao and Sorescu, 2013). However, research on the case of marketing substitutable products (i.e., consumers choose between the competing products depending on their preferences and the marketing strategy of the firms) to form a brand alliance is scarce in the literature. This case has recently gained giant interest. For example, HP and Canon formed a brand alliance for printers (Lewis, 1999). Other well-known brand alliances include Taco Bell and Doritos's popular Doritos Locos Tacos, and Quaker Oats and Tyson (Conroy and Narula, 2010). Another example is the co-branding agreement between the Babybel and the Aldi's "Be light" in UK in order to capitalize on the power of supermarkets (Potter and Jones, 2009). The marketing paradigm of competitive products is different from that of complementary products in that the products of one firm lose sales to the other firm rather than benefit from each other's sales. In this paper, we focus on competitive products and develop a new model to derive optimal strategies for business managers when they plan to form a brand alliance to develop the cobranded products.

Normally, firms in building alliance brands achieve more than they can on their own (Lewis, 1999). However, how and when two firms

benefit from a brand alliance is not well understood, particularly given that the brand quality is considered. Current brand alliance research focuses on consumer responses to cobranded products and partner brands. For example, cobranded ingredients can facilitate a consumer's acceptance of brand expansion (Desai and Keller, 2002); Park et al. (1996) and Simonin and Ruth (1998) found positive consumer perception spillover from the participating brands to the cobranded products, and vice versa. Rao et al. (1999) showed that entering an alliance with a secondary brand may provide a signal of higher quality that the original brand could not offer by itself to marketplace and may command a premium price. Washburn et al. (2004) found that brand alliances transfer the positive brand equity of two or more partner brands to the newly created joint brand. Lafferty (2005) studied the cause-brand alliances and showed that brand alliance always has a positive effect on the brand attitudes regardless of the degree of cause familiarity. Li and He (2013) examined the reaction of native consumers to international brand alliance between a foreign brand and a native brand. Their results showed that when the partner brand appears first rather than second in the international brand alliance, the effect of the partner brand attitude on the attitude towards an international brand alliance becomes stronger.

However, consumer responses cannot directly be translated into profit, which is significantly important to the survival and development of a firm. We thus study the firm's profit associated with the brand alliance through novel analytical modeling with the consideration of brand quality. Given that most studies have merely analyzed consumer

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response to brand alliances, the extant literature would benefit from analytical research focusing on firm's profit obtained by brand alliance partners.

Specifically, our research studies the following questions: when two firms selling substitute products form a brand alliance and the product brand qualities are considered, is brand alliance always beneficial to two firms? If not, what is the condition under which brand alliance can generate higher profits for the partner firms? How does the brand quality differential between the two products affect the value of the brand alliance for each partner firm? What are the optimal marketing strategies for business managers to employ when they plan to form a brand alliance to develop the cobranded products?

Our research makes substantial contributions to the extant literature, since only a few analytical models studied the value of brand alliance for two partner firms. Venkatesh and Mahajan (1997) analytically modeled the optimal price of cobranded products and estimated the impact of the revenue gain or loss for the branded component involved in a partnership. Geylani et al. (2008) employed analytical models to study the influence of cobranding on the images of two brands and found that co-branding may increase the expected value of the brand attributes. However, our research diverges significantly from these studies, because we focus on competing firms to form the brand alliance, investigate the effect of the value of brand alliance on the firm's profit, and address how the value of brand alliance is influenced by the brand quality differential between the two brands. To the best of our knowledge, our research is the first one to consider the brand quality's free-riding effect in the analytical model, address how the competing firms form a brand alliance, and examine the important role the brand quality plays on the value of brand alliance to firms in the extant literature.

Generally, to obtain a more comprehensive understanding of how firms gain from brand alliances, our research examines the effect of a brand alliance on firm's profit through a novel utility model. Through the utility model, we show that brand quality has an important influence on the profits of two partner firms when they form a brand alliance. When two products have equal brand qualities, brand alliance is always a beneficial strategy for two firms to employ. However, when two products have different brand qualities, brand quality differential shows a positive relationship with the profit of the firm with the low-quality brand but demonstrates a negative relationship with the profit of the firm with the high-quality brand in the brand alliance. Our results also show that brand quality differential has a greater effect on the profit of the firm with the high-quality brand than on that of the firm with the low-quality brand. In addition, we find that brand alliance becomes much more valuable to the firm with the high-quality brand when the brand quality differential decreases, but the value of brand alliance has a concave relationship with the profit of the firm with the low-quality brand when the brand quality differential increases.

The rest of our paper is organized as follows. In Section 2, we develop the model framework and derive the key results for unequal brand quality. Model development and analysis for equal brand quality is addressed in Section 3. Section 4 present numerical examples to illustrate our findings. Conclusions and managerial implications are presented in the final section.

## 2. Model framework with different brand qualities

We consider a setting where two independent firms 1 and 2 have different capacities to produce different quality products. Specifically, firms 1 and 2 produce substitute brands 1 and 2 with different qualities respectively and sell them to the same market. The consumer will decide to purchase the brand that maximizes his utility based on the brand price and quality. Due to brand competition, the quality differential between brands 1 and 2 is important and impacts the consumer evaluation of the brand (i.e., amount willing to pay). We assume the quality of brand 1 is  $q_1$  and the quality of brand 2 is  $q_2$ , and

the brand 1 has a lower quality than the brand 2 ( $q_2 > q_1$ ). Hence, the valuation of the brand 1 is  $vq_1$  and thus the consumer surplus is:  $U_1 = vq_1 - p_1$ .  $v$  is denoted as the consumer valuation of the brand (i.e., amount willing to pay), and for analytic simplicity, we assume that it is uniformly distributed from 0 to 1 (Yan and Bhatnagar, 2008; Yan, 2010; Yan et al., 2016). The valuation of the brand 2 is  $vq_2$  and thus the consumer surplus is:  $U_2 = vq_2 - p_2$ . The marginal valuation  $v^1 = \frac{p_1}{q_1}$  shows that the consumer is indifferent to buy the brand 1. The marginal valuation  $v^2 = \frac{p_2}{q_2}$  shows that the consumer is indifferent to buy the brand 2. Since consumers can buy either brand, they would prefer to buy the brand where they can derive more surpluses. Thus, consumers will compare the consumer surplus derived through the brand 2 with the consumer surplus derived through the brand 1 (i.e.,  $vq_2 - p_2$  versus  $vq_1 - p_1$ ) when they make purchase decision. If  $vq_2 - p_2 > vq_1 - p_1$ , then the brand 2 would be preferred over the brand 1. If  $vq_2 - p_2 < vq_1 - p_1$ , then the consumer would like to buy the brand 1. The consumer would be indifferent between the brands 1 and 2 if the marginal valuation is  $v^{21} = \frac{p_2 - p_1}{q_2 - q_1}$ .

Furthermore, it can be shown that when  $v^1 < v^2$ , then  $v^1 < v^2 < v^{21}$ . Hence, all consumers with marginal consumption value in the interval  $[v^1, v^{21}]$  prefer to buy the brand 1. All those in the interval  $[v^{21}, 1]$  prefer to buy the brand 2. Finally, all consumers whose marginal valuation in the interval  $[0, v^1]$  will not buy any brand. Let  $D_2$  and  $D_1$  denote the demands of the brands 2 and 1, respectively, then we have

$$D_2 = 1 - \frac{p_2 - p_1}{q_2 - q_1} \tag{1}$$

$$D_1 = \frac{p_2 - p_1}{q_2 - q_1} - \frac{p_1}{q_1} \tag{2}$$

where  $q_i (i = 1, 2)$  is the quality of respectively the brands 1 and 2 ( $q_i \geq 0$ ) and  $p_i (i = 1, 2)$  is the price of respectively the brands 1 and 2 ( $p_i \geq 0$ ).

When  $v^1 > v^2$ , then  $v^1 > v^2 > v^{21}$  and no any consumer will buy the brand 1 but all consumers whose marginal consumption values are in the interval  $[v^2, 1]$  would buy the brand 2. Let  $d_2$  and  $d_1$  denote the demands of the brands 2 and 1, respectively, then we have

$$d_2 = 1 - \frac{p_2}{q_2} \tag{3}$$

$$d_1 = 0 \tag{4}$$

$v^2 < v^1$  indicates that only the brand 2 is sold in the whole market, thus this context is not the focus of our paper. Hence, we focus solely on the option where  $v^2 > v^1$ . Furthermore, the quality of the brand 2 is defined as  $q$  and the quality of the brand 1 is defined as  $gq (0 < g < 1)$ . The parameter  $g$  effectively catches the quality differential between the brands 1 and 2 (i.e., larger value of  $g$  means higher quality of the brand 1 and also less quality differential between the brands 1 and 2, and vice versa). As a result, the demand functions developed in our paper are given as

$$D_2 = 1 - \frac{p_2 - p_1}{(1 - g)q} \tag{5}$$

$$D_1 = \frac{p_2 - p_1}{(1 - g)q} - \frac{p_1}{gq} \tag{6}$$

where  $D_2$  and  $D_1$  denote the demands of the brands 2 and 1, respectively. In the next sections, we first analyze the scenario in which two firms behave independently. Then we analyze the scenario in which two firms form a brand alliance to develop a cobranded product. Consequently, a unified and centralized price solution is sought to maximize the joint profits of the two firms in the brand alliance. In this research, our interest is to examine the value of a brand alliance when two firms behave cooperatively rather than independently to develop cobranded products. Here we assume the Bertrand mode where two firms make their decisions simultaneously, rather than sequentially, to

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