The relationship between network effect and the number of franchise stores

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1 Introduction

According to the classic product life cycle model [2], products typically experience four stages: introduction stage, growth stage, maturity stage, and decline stage. However, unlike these products, franchise brands typical experience three stages of development in a new area. At the first stage, the franchise opens new stores quickly, and the number of stores increases continuously in the way of ascending rate of growth. Among the drivers that account for the increasing rate of growth, the network effect [1] is an important one. To be specific, when a new store joins the network, the value of extant stores increases because of higher brand exposure/awareness. And as a result, more investors want to join the franchise to grab profit. We call this phenomenon the same-side network effect. In addition, there is a cross-side network effect. More stores can attract more suppliers, empowering the franchisor to obtain bargaining power in the contract negotiations with its suppliers to reduce the materials and services costs. The cost-cutting can be transferred to the franchisees, intriguing more potential investors.

At the second stage, the number of stores still increases. That is to say, the new open stores exceed new closing stores if existing. However, the rate of growth decreases. It takes more time to increase the same amount of stores than in the past. The cross-side effect is still there. However, the same-side effect on franchisees side turns to negative because of the new stores might grab existing stores' customers.

At the third stage, the number of stores keeps stable or fluctuates slightly. The influence of the cross-side effect, even if it is positive, is negligible. However, the same-side effect must be negative because of market saturation. The inter-store competition causes the value for existing store to decrease if there is an entrant.

We assume that the investors decide to join a franchise to open a new store only because the investor surplus (S), which is perceived value of the store (v) minus the price of the store (p), is positive. The decision of the investment is given by

If $S = v - p > 0$, agree to invest

If $S = v - p < 0$, disagree to invest

Supposing that the price of the store is a constant in all three stages of development, the v is the determinant of the investment decision. According to the above discussion, at the first stage of the franchise's development in a given area, S is positive and v is a function with positive first and second derivatives [3]. At the second stage, S is positive and v is a function with a positive first derivative and a negative second derivative. At the third stage, the S is approaching to 0 and the v and p are comparable. In other words, the v can be considered as a constant and the first derivative and the second derivative are both zero.

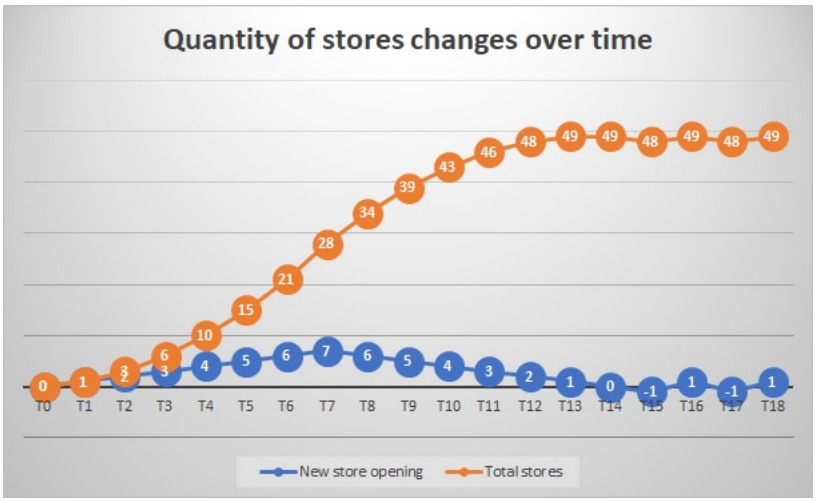

Figure 1: Quantity of stores changes over time

Figure 1 shows how the quantity of a franchise's stores changes over time. The total number of stores continuously increase from T0 to T13. However, the rate of growth reaches a global maximum at T7. Therefore, we conclude that in this example, the first stage is T0 to T7, the second stage is T8 to T13, and the third stage is from T14 to the future.

Based on the previous analysis, we propose that the v is highly related to the total network effect, which is the sum of the same-side network effect (sse) and the cross-side network effect (cse). To be specific, we will build a model given by equation

$$v = \beta_1 * sse^2 + \beta_2 * sse + \beta_3 * cse + u \tag{1}$$

where u is the error term, including other factors that impact v but are out of our interests in this paper.

References

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