



# On Commercial Enterprises' Choice between Self-managed Logistics and Outsourcing Logistics

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## Abstract

Quantitative, qualitative and empirical analyses are employed in this article to investigate the criteria that can be used by commercial enterprises to choose between self-managed logistics and outsourcing logistics.

**Keywords:** Logistics, Self-managed, Outsourcing

Commercial logistics is the final link of consumer product supply chain. It covers the whole logistics process from procurement to final distribution to end customers. Based on the principal that offers logistics service, commercial enterprises' logistics operation pattern can be further divided into self-managed logistics, outsourcing logistics, joint distribution that jointly offered by a group of commercial enterprises and vendor-managed distribution. How should commercial enterprises choose between these options?

## 1. Qualitative Analysis

Based on qualitative analysis, two factors have an impact on commercial enterprises' choice of logistics operation pattern: one is logistics performance's enterprises' success and the other is enterprises' logistics capability. Enterprises' decision process is shown in Figure 1. The horizontal axle represents enterprises' logistics capability with the right end showing the strongest capability. The vertical axle represents logistics performance's impact on enterprises' success with the highest end showing the most importance.

Logistics performance's impact on enterprises' success	High	Enterprise Type II To find logistics partner	Enterprise Type I Self-managed logistics
	Low	Enterprise Type III 3PL	Enterprise Type IV Leader in partnership
		Low	High

Figure 1. Enterprises' logistics capability

For enterprises that have strong capability in logistics management, that are able to guarantee high service level and their logistics cost accounts for a big portion of their total cost, they are called enterprise type I. They seldom outsource logistics and more often manage logistics activities by themselves. A case in point is Shanghai Ahold-Zhonghui supermarket which was built by Dutch Royal Ahold group and two Chinese enterprises in Shanghai in 1996 and now owns 60 outlets in Shanghai and is famous for its brand for fresh food. Fresh food in supermarket needs skillful logistics management. The distribution center is not only responsible for quality inspection, packaging and processing, but also needs to pass market information to the farms to improve their production. And as mass procurement implies big discounts, the management level of distribution center becomes vital for the success of supermarkets. Dutch Royal Ahold group enjoys deep experience in supermarket logistics management, thus they decided to set up the distribution

center by themselves.

For enterprises that are weak in logistics capability but whose logistics performance is vital for the enterprises, they are called enterprise type II. The best choice for them is to build logistics alliance, from which they will benefit from logistics infrastructure, transportation management, and professional management expertise. Some State-Owned-Enterprises rich in resources belong to this type. They can both introduce talents to strengthen their capability and lease their spare warehouse and vehicles to enterprise type IV. This is especially true when the partner is 3PL, whose operation is often constrained by their limited resources.

For enterprises that are weak in logistics capability, and their logistics operation is limited and not important to their strategy, they are called enterprise type III. Most of them are in their early stage of development or develop based on technical innovation. They can choose to outsource their logistics operation to professional 3PL who are ready to offer all-round and quality logistics service. This can guarantee customer service level and reduce their investment in logistics infrastructure. A typical case is the cooperation between Unilever and Shanghai Friendship Warehousing and Transportation Company. The former one Unilever is a big cosmetics company that has high throughput and implements zero inventory management. The later one is a state-owned company with a history of more than 50 years in warehouse management. Its logistics park is only 2.5 km from Unilever and enjoys advantaged location. Their cooperation is based on a serial of negotiations and alignment. Shanghai Friendship Warehousing and Transportation Company made a lot of adjustment to meet Unilever's demand, like operation process adjustment and setting aside processing place to stick tags, pack products, and add promotion items, which guarantee that products can be directly put on shelf.

For enterprises that have high logistics competency, but whose logistics performance is not vital for their strategy, they are called enterprises type IV. They need to find partners to share their logistics resources and achieve scale economy by expanding logistics volume. Enterprises type II and type IV can build logistics alliance, in which enterprise type IV is often a leader for its logistics capability. Logistics alliance means both parties should become logistics partners that share their resources and the benefits, jointly bear risk and trust each other, like what the following enterprises do. The electronics product company in California enjoys high sales volume and complete logistics infrastructure like 8 distribution center all over America. To reduce cost it builds logistics alliance with another European peer who is ready to enter California market. This alliance is beneficial for both sides: American company has made full use of their logistics facilities and European company has got access to the local market.

## 2. Quantitative Analysis

Scale economy theory and Production-Cost-Profit Analysis are employed here to explain commercial enterprises decision process between self-managed and outsourcing logistics. The model is as follows:

$$P=R-(V+F) = KQ-(V_cQ + F) = (K-V_c)Q-F$$

P—Cost difference between self-managed logistics and outsourcing logistics;

V—Total Variable cost of self-managed logistics

$V_c$ —Unit Variable cost of self-managed logistics;

F—the sum of fixed cost;

K—Unit Price for outsourcing logistics;

Q—Logistics volume;

R—Price of outsourcing logistics.

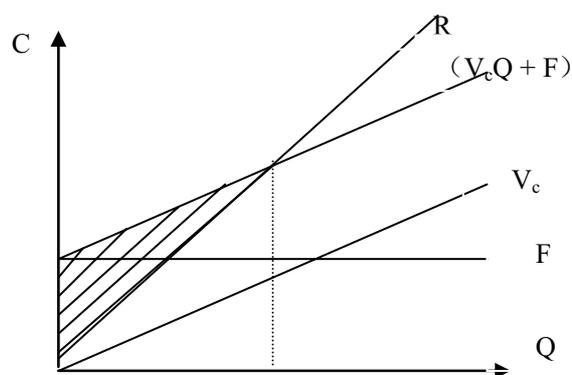


Figure 2. Division line between self-managed logistics and outsourcing logistics

As Figure 2 shows, when the logistics volume reaches certain amount, the cost of outsourcing logistics and

self-managed logistics are equal, i.e.  $P=0$  s.t.  $KQ=VcQ + F$ . Thus the division line between commercial enterprises' choice of self-managed logistics and outsourcing logistics is where the logistics volume is  $Q_0$ , i.e.  $Q_0 = \frac{F}{K - Vc}$ .

In this way, commercial enterprises know how to make the choice between self-managed logistics and outsourcing logistics with information of total fixed cost  $F$  of self-managed logistics in a certain period (most in a year) like real estate depreciation, overhead etc., unit variable cost  $Vc$  like fuel and labor of self-managed logistics, and unit price of outsourcing logistics like freight rate. What they need to do is to find out  $Q_0$  where the cost difference is 0. If the logistics volume is smaller than  $Q_0$ , than the cost of outsourcing logistics would be lower than that of self-managed logistics, just like the shade area in Figure 2, and vice versa.

**3. Empirical study**

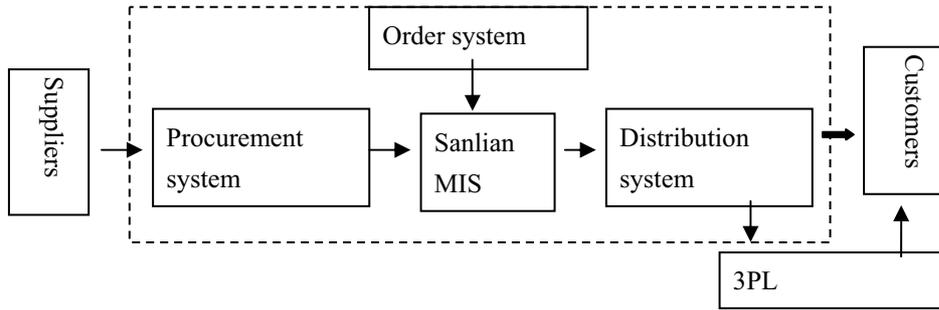


Figure 3. Distribution pattern for the first phase

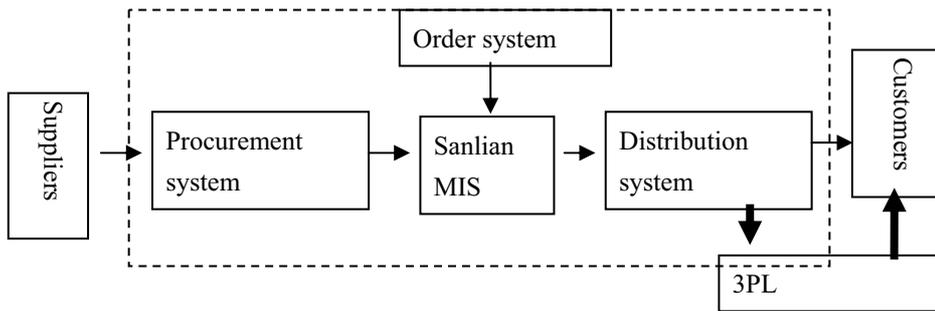


Figure 4. Distribution pattern for the second phase

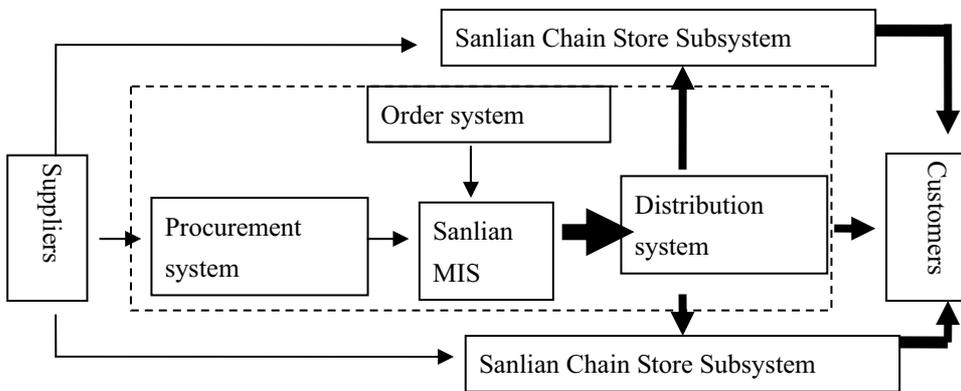


Figure 5. Distribution pattern for the Third phase

Commercial enterprises' choice self-managed logistics or outsourcing logistics should change when the logistics volume changes or their logistics competency changes. A typical case is Sanlian group in Shandong province. Sanlian group is large chain store company selling electric home appliances, and its logistics operation experience three phases. For the first phase, it mainly carries out logistics activities on its own for lack of qualified 3PL and small logistics volume. Its distribution area is limited in where stores lie, and customers' order from other places are filled through 3PL like China Post. During the second phase, the distribution mainly depends on 3PL since the logistics volume is still not

large enough and 3PL's logistics efficiency is higher for the dispersive order from online sales. During the third phase, with the logistics volume soars, the company turns to self-managed logistics gain, for this can help to lower logistics cost, expedite distribution and shape core competency. For the following Figures, solid lines show the distribution process during the three phases.

To sum up, commercial enterprises should base their logistics operation pattern not only on the impact of logistics performance on enterprises' success, enterprises' logistics capability, but also on the cost of self-managed logistics and outsourcing logistics. Comprehensive analysis based on enterprises' internal and external conditions is necessary.

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