



# Building Postponement Capability

Takashima, Katsuyoshi

---

**(Citation)**

神戸大学経営学研究科 Discussion paper, 2010・29

**(Issue Date)**

2010-04

**(Resource Type)**

technical report

**(Version)**

Version of Record

**(URL)**

<https://hdl.handle.net/20.500.14094/81002072>



Graduate School of  
Business Administration

KOBE  
UNIVERSITY



ROKKO KOBE JAPAN

2010-29

Building Postponement Capability

Katsuyoshi TAKASHIMA

Discussion Paper Series

# Building Postponement Capability<sup>1</sup>

Katsuyoshi TAKASHIMA

Graduate School of Business Administration, Kobe University

2-1 Rokkodai, Nada, Kobe 657-8501, Japan

takasima@kobe-u.ac.jp

## I. Postponement-Speculation Model

Retail innovations in recent years have often involved the establishment of supply chain management. These innovations help to control inventory to prevent merchandise from being out of stock or left unsold at each store whenever possible. This is accomplished by establishing logistics centers to distribute merchandise to each store and by introducing an information system to manage orders and physical distribution. The systems used by convenience stores and SPA (Specialty Store Retailer of Private Label Apparel) are good examples of this type of innovation in distribution systems, generally called logistics postponement.

The basic concept of postponement based on the Bucklin-type postponement-speculation model (Bucklin, 1965, 1966) is to delay the shipment of goods until more accurate information is available. The Bucklin model uses an indicator to measure postponement-speculation levels as an independent variable, and derives a cost function for the distribution expense of the distribution channel as a whole from a manufacturer to consumers. The model can select a postponement-speculation level that makes the distribution cost the lowest possible throughout competition.

Postponement-speculation levels for inventory decision are measured through delivery lead time or delivery lot sizes, which can impact inventory decision at retail stores. In other words, the faster, more frequent, and smaller the deliveries made to retail stores, the more postponed the process becomes. The efficiency of distribution is considered in terms of the average distribution cost from manufacturers to consumers.

One characteristic of the Bucklin-type postponement-speculation model is that it does not include postponement of changes in form presented earlier by Alderson (1957). While some studies are based on Alderson's classic model which combines inventory and form postponement-speculation (Zinn and Bowersox 1988, Pagh and Cooper 1998, van Hoek 1999,

---

<sup>1</sup> This is a preliminary draft. Do not cite or circulate without permission.

Yang et al. 2004), these studies do not aim to derive the optimum postponement-speculation level. Rather, they describe macroscopic states of distribution systems and identify their types. Yet, the idea of postponement in inventory decision and speculation in manufacturing is not appropriate in considering cost optimization. This is because there are many most appropriate standards in inventory decision, and the equilibrium level of postponement-speculation cannot be determined. Hence, as long as the Bucklin-type postponement-speculation model is used, the postponement-speculation in manufacturing is considered to be given conditions. These two types of models cannot be manipulated at the same time.

## II. Postponement-Speculation Model of Inventory Decision

In the Bucklin-type postponement-speculation model of inventory decision, to shorten the delivery lead time or lessen the delivery lot size from suppliers to retail stores is considered postponement (Bucklin 1965). This is because short lead time and small lot size make it possible to put off decision-making for inventory decision at retail stores. In other words, decision-making can be “postponed.” This postponement can bring about the following changes in cost:

[A] Logistics costs to retail stores will increase as delivery is made frequently and in small amounts.

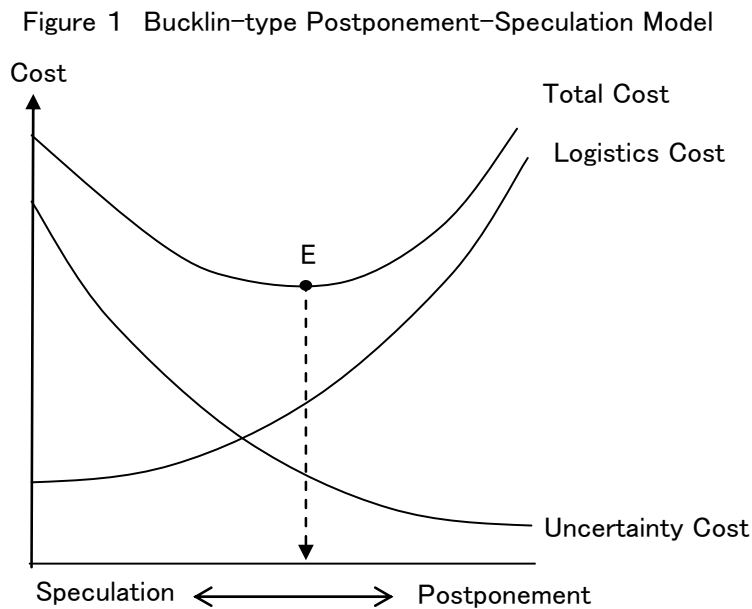
[B] Companies bear the cost for the uncertainty of consumer demands. For example, they must assume the lost opportunity cost due to stock exhaust, and the cost of avoiding it. They must also assume the cost of disposing of unsold goods. These costs can be lowered by swift, frequent, and small-amount deliveries (Yang et al. 2004).

Furthermore, as long as cost reduction due to [B] exceeds cost increase due to [A], companies can choose to shorten delivery lead times or lessen delivery lot sizes for the purpose of efficient delivery. In other words, the most efficient delivery lead time and lot size can be considered to be point *E*, where the total logistics cost and the cost of dealing with the uncertainty of the consumer demands are at the lowest levels (Figure 1).

In addition, the idea above can be explained in relation to the logistics information system developed in recent years. [A] is the cost of the logistics information system, and [B] is the cost of stock exhaust and goods left unsold, which can be reduced through the logistics information system. More and more retail companies opt for logistics informatization these days because the

progress of information technology suppresses the rise in the cost of [A], and the accurate prediction of inventory size has become difficult due to uncertainty of consumer demands (Rabinovich and Evers 2003). Therefore, reduction of the costs of [B] is larger than before.

The increases and decreases of these costs as seen in the postponement-speculation model reflect not only the costs assumed by retail companies, but also the distribution cost as a whole, including costs of wholesale and manufacturing companies (Bucklin 1965, 1966, van Hoek 2001). However, in effect, [A] often occurs through investment into the logistics information system by wholesale or manufacturing companies. What is more, the majority of the cost of [A] is assumed by wholesale and manufacturing companies, while [B] can lower costs for retail companies because it results in inventory reduction for retail stores.



Transactions between retail, wholesale, and manufacturing companies are conducted in a competitive environment. Therefore, the cost burden for these transactions is expected to be offset as the distribution of the results from [B], in the form of preferential treatment by retail companies of wholesale and manufacturing companies which deliver products swiftly, frequently, and in small lot sizes. In other words, the profit of retail companies that increases due to the decrease in stock exhaust and unsold products is expected to be distributed to the wholesale and manufacturing companies which have established the logistics information system, through the modification of

transactional conditions in the competitive market.

As examined above, as long as the results from the transition to the most appropriate postponement-speculation level are appropriately distributed among retail, wholesale, and manufacturing companies in the competitive market through transactional conditions, each company can find the motivation to shift to the level. Furthermore, in this situation, a given retailer cannot gain a competitive advantage alone by conducting longer postponement than other retail companies. This is because other retail companies can also achieve postponement by making transactions with wholesale and manufacturing companies which have established the logistics information system; therefore, the competitive advantage is cancelled.

Thus, in stating that retail companies which adopt the postponed distribution system can establish a competitive advantage, it should be noted that this system cannot be imitated under certain conditions. Let us suppose that when a retail company achieves a postponement level that is more efficient than those of other retail companies and the system is difficult to imitate, the ability to achieve this level is called postponement capability. It can then be concluded that the conditions allowing a company to establish a postponed distribution system is based on its postponement capability.

Postponement capability can be realized under at least four conditions, which will be discussed in the following sections. In addition, these conditions can allow a retailer to establish a competitive advantage based on the postponed distribution system.

### III. Postponement Capability

#### (1) Partnership with Suppliers

The accomplishment of postponement through investment by wholesale and manufacturing companies into the logistics information system increases logistics costs for these companies. On the other hand, inventory is reduced in retail stores, which in turn reduces the total cost. For wholesale and manufacturing companies to establish a swift, frequent, and small-quantity postponed logistics information system, profits for retail companies should be appropriately distributed in the form of changing transactional conditions. However, there are conflicting interests regarding transactional relationships between retail, wholesale, and manufacturing companies. Therefore, it is necessary for retail companies to consider how to adjust this conflict without presenting the explicit preferential treatment of raising of transactional prices.

First of all, when a postponed logistics information system is built between retail, wholesale, and manufacturing companies, the retail company is more likely to narrow down its suppliers and

establish a stable relationship with them. This is because the retail company, by narrowing down its suppliers and purchasing a large quantity on a regular basis, can pursue economies of scale and suppress the cost of information and logistics processing.

Wholesale and manufacturing companies which cooperate with retail companies in establishing the postponed logistics information system can expect an increase in their business efficiency, because the retail company can now increase its volume of transactions due to its stable relationship with its suppliers. These wholesale and manufacturing companies can also reduce costs for their business operations because they no longer have to compete fiercely with one another for the transactions. This is equivalent to the distribution of profit by the retail company—not by raising purchase prices, but by increasing its transactions. In other words, transactional conditions in the increased transactions, such as prices, are more advantageous to wholesale and manufacturing companies than had previously been expected.

Furthermore, in some cases, when retailers provide suppliers with information regarding sales and inventory, these suppliers can reduce their inventories and find the most appropriate timing and quantity of their production and procurement, which enables to reduce their inventory costs (Yu et al. 2001). These companies swiftly share the retailers' information of the regarding sales and inventory, apply the information to their production and purchasing activities, and reduce the inventory cost and risk of the procurement of products and materials.

When operation and inventory costs can be lowered in wholesale and manufacturing companies, these companies can obtain merits that offset their investment into the logistics information system. Therefore, they can successfully shift to a postponed distribution system.

However, since the advantage of postponement cannot be equally recognized by retail, wholesale, or manufacturing companies, the adoption of a postponed distribution system cannot be automatically agreed upon among these companies. When a retail company tries to narrow down its transaction relations, competition from other wholesale and manufacturing companies might prevent the retail company from securing the relationships it desires. Wholesale and manufacturing companies also conduct aggressive sales promotion activities, trying to secure orders from retail companies for lot sizes as large as possible. These competitive activities bring about a temporary increase in sales through channel stuffing and a decrease in future sales through the preoccupation of demand—a huge swing in the quantity of distribution.

These activities increase the amount of inventory at the retail phase, which negatively affects the postponed distribution system. However, other wholesale and manufacturing companies assume inventory costs themselves by, for example, accepting the return of unsold goods. They also show preferential treatment to retail companies by performing transactions which result in orders for large lots. In other words, this competition is not only concerned with other wholesale and

manufacturing companies, but also competition among different systems of postponement-speculation. That is, these wholesale and manufacturing companies present merits from speculative inventory, so that they do not allow the adoption of an exclusive postponed distribution system. These competitive activities always disturb the existing postponed distribution system. Therefore, wholesale and manufacturing companies cannot consider the choice of transaction relationships by retail companies to be continuous.

Additionally, even if the reduction in wholesale and manufacturing companies' inventory costs can be realized due to the processes of delivery and production systems at the right time and amount, it is difficult to predict how efficient it would be. Expectations cannot be high especially, for companies which do not have accumulated experience with these process innovations. Logistics information systems are not so simple as to reduce inventory costs as soon as informatization or automation is introduced. This is because the amount of cost that can be reduced can change, depending on whether various processes can be improved upon to work with other systems. Therefore, wholesale and manufacturing companies having little experience in the synchronization of logistics information systems often hesitate to agree upon a postponed distribution system with retail companies. This is because they cannot be certain about the possible effect of cost reduction that the system could have on them.

A possible solution to this stalemate is to establish a partnership with specific wholesale and manufacturing companies. If a retailer forms special cooperative relationship with certain suppliers, sales competition will be suppressed and the companies concerned can share information regarding the assumption of cost. The formation of this cooperative relationship requires not only narrowing down wholesale and manufacturing companies, but also establishing discriminatory transaction relationships with these companies, so that transactions between them are protected from disturbing competition by rival companies. This way, channel stuffing of inventory from excessive sales promotion activities that could occur in the relationship with these companies can be controlled.

It is also necessary to form a relationship of trust with these wholesale and manufacturing companies and actively exchange information regarding cost. Even if the streamlining of distribution reduces cost, the information about the cost itself should be revealed and must be distributed fairly. Otherwise, the companies cannot be motivated to cooperate in holding appropriate inventory for the purpose of achieving cost reduction. Sharing as much information as possible regarding distribution cost can make those at the wholesale and manufacturing companies sure of the fairness of the distribution of cost reduction due to postponed inventory, and alleviate hesitation about the postponement.

However, not many retail companies can form this type of partnership with wholesale and manufacturing companies. First, wholesale and manufacturing companies handle a large number of



transactions. This is because when wholesale and manufacturing companies build partnerships with specified retail companies, the partnerships could have a negative impact on their relationships with other competing retail companies. The retail companies must have a large quantity of sales and purchases to cover the possible losses that could be caused by the negative impact. Furthermore, it is important for retail companies to continue to maintain its orientation with and knowledge of postponed distribution systems, and for wholesale and manufacturing companies to determine whether the retailers' postponement strategies are long-term.

This type of retail company can establish postponed distribution systems with wholesale and manufacturing companies based on its partnership with these companies, thereby securing a competitive advantage. Other retail companies, on the other hand, are unable to establish postponed distribution systems because they cannot establish partnerships among companies, or even if they do establish the systems, they cannot obtain the desired results.

## (2) Order Management at Retail Stores

Logistics information systems involve the investment into distribution centers and information systems. Therefore, the economies of scale in terms of transaction volume are pursued. This merit can be accomplished through the increase in sales. To achieve this, however, it is necessary to develop many stores because the sales at each store are restricted by the trade area. It is an issue of how to manage order placement at these stores in accordance with a postponed distribution system.

It is expected to reduce inventory by placing orders frequently and in small quantities at each store using a postponed distribution system. The decision-making regarding what and how many items to order at each store should be adjusted according to the analysis results of Point of Sales (POS) data and the demand prediction based on customers' responses, although the decision-making depends on the standardized decision methods utilized in the POS or the Electronic Ordering System (EOS). This is because it is necessary to consider the regional characteristics of each store's trade area of and the short-term fluctuating elements of demand within this area to avoid missing sales opportunities, and with a minimum amount of forward stock.

Yet, the decision-making regarding order placement at each store tends to depend on modest demand predictions. This is because since a postponed distribution system is oriented to cost saving through inventory reduction, the order quantity tends to be modestly controlled. Also, it is relatively easy to grasp the situation of unsold products through inventory data, and therefore easier to manage these unsold products, compared with the case of a missed sales opportunity due to consumer demand for merchandise the store does not carry. The store should observe the behavior of its customers very carefully to prevent this from happening. Another reason is that those in charge of placing orders often do not feel pressure concerning missed sales opportunities, because

these missed opportunities are not shown as data. This is different from the case of unsold products, where those in charge of placing orders try hard to avoid responsibility for unsold products; the loss to the store caused by the unsold products is clearly recognizable. Therefore, even when a high level of demand for the replenishment of seasonal inventory is expected due to regional reasons unknown to the company's headquarters, those in charge of placing orders may acquire less than they should, for fear of the risk of unsold products.

To avoid this situation, it is important for stores to properly manage decision-making regarding order placement at stores which are far away from their headquarters. More precisely, it can help the store to avoid ordering arbitrarily based on experience or intuition and to accept an appropriate level of risk for unsold products, based on POS data and the situation of customers. To achieve this, it is important to delegate authority to those who place orders, to develop human resources with regards to demand prediction and information analysis, and to motivate them to willingly accept the risk.

Whether innovative postponed distribution succeeds depends on if delegation of authority, development of human resources, and motivation can help manage multiple stores appropriately. If managed properly, these stores are difficult to imitate, establishing a competitive advantage.

More concretely, the store's headquarters needs to dispatch those who supervise and train store managers as well as those in charge of order placement, so that they can be effectively motivated. It is also necessary to delegate authority to those competent in information processing, so that they can attempt more challenging and ambitious order placements and sorting.

### (3) Strategic Expansion of Scale

The third condition necessary for a retail company to establish a competitive advantage through a postponed distribution system is the company's ability to produce an expansion of scale. It is an issue of whether a retail company can develop within the scale of its operations.

A postponed distribution system requires investment into an information system and distribution center to process and deliver orders swiftly, frequently, and in small amounts, which need a large initial investment. Therefore, it tends to create economies of scale; the larger the scale of information processing and delivery, the more efficient they can be. This fact relates to the logistics costs mentioned in [A]. Logistics costs are different in different companies even in the same industry, depending on the scale of operation. Companies delivering swiftly, frequently, and in small amounts on a large scale are more competitive in cost than companies doing so on a small scale. This fact is reflected in the profit rate and price competitiveness of the former.

If companies obtained similar information regarding the concerned market, were able to predict an expected profit of investment, and started operations almost at the same time, there would be no

difference in scale that could promote competitive advantages. At least this is why the Bucklin model does not consider the condition of the scale of operation. In reality, however, differences in scale that cause competitive advantages can occur due to the following three factors.

First, a company can be competitive based on economies of scale and experience effects, when the company introduces a postponed distribution system as an innovative process earlier than other companies, when it accumulates know-how of the system, and when it loses no time implementing strategies that encourage rapid growth. To do so, however, it is important to secure competitiveness against other companies based on experience effects, and expand the scale of the company rapidly. This is the reason why a company adopting a postponed distribution system strives to grow.

Second, this expansion of scale is restricted by the aforementioned organizational ability to manage stores. In other words, if a retail company cannot properly manage order placement while trying to expand its operations and increasing the number of stores, cost reduction, which aims to deal with uncertainty, cannot be effectively executed. In this case, the company's ability to manage its stores affects the possibility of expanding its operation, thus causing differences in the scale of operations in a postponed distribution system.

Third, the expansion of the scale of operation may be developed in an overseas market. In this case, the company must accept possible risks concerning the establishment of stores and logistics centers overseas. The company must also be able to transfer the innovative process of a postponed distribution system overseas and successfully apply the process to its local area. Therefore, it is expected that the more competent a company is in accepting the risks and transference and applying the innovative process to a local area, the more likely the company is to pursue the economies of scale that accompanies overseas operations.

#### (4) Brand Strategy

In building a postponed distribution system, it is important to develop a brand strategy regarding the products sold at a retail store. This is especially true in the case of developing directly managed stores, such as in SPA. To establish a successful postponed distribution system, it is important to make the brand highly attractive to consumers, thereby enhancing their brand loyalty.

However, this strategy is not limited to a postponed distribution system. The strong preference of consumers for a particular brand is also important in the decision-making of speculative inventory. This is because when consumers exclusively choose a brand, demand is stabilized. Therefore, the company can keep the cost of dealing with the uncertainty of the market low, being able to plan and conduct the effective production and logistics in large lot sizes.

If so, it is reasonable to assume that, brand strategy in speculative distribution is more important in establishing a competitive advantage than that in postponed distribution, utilizing swift, frequent,

and small-amount delivery to deal with the uncertainty of the market. Still, establishing a competitive advantage in postponed distribution depends more on brand strategy.

First, it is important to motivate those in charge of order placement to conduct the decision-making process that accepts risks, since they tend to make decisions concerning order placement based on the modest prediction of demand in a postponed distribution system, as discussed earlier. If they have a particular brand that secures the strong preference of consumers, they are more willing to accept the risks. Those who place orders do not have to make modest predictions because they can expect strong sales of the brand.

Furthermore, if a company sells a particular brand that enjoys the strong preference of consumers nationwide, the company can control the regional differences in demand at its retail stores, resulting in discriminatory preference for the brand. Then, price competition with similar products and fluctuation of demand can be controlled as well. If the fluctuation of demand caused by regional differences in demand or competition is reduced, order placements at different stores can be standardized for the centralized management at headquarters.

Retail companies adopting a postponed distribution system need to expand their operations rapidly, as previously examined. The bottleneck in this growth strategy is a lack of competence in managing order placement at each store. However, if preference for their brand enables them to standardize and centralize their decision-making in order placement, they can make the bottleneck less constraining. In other words, if a company has a brand with strong appeal to consumers, it can expand its operation faster by increasing the number of its stores.

This is the reason why the SPA has adopted a postponed distribution system values brand strategy. The brand here, of course, refers to PB (private brands). If a retail company deals in a national brand, the one its competitors also deal in, uncertainty in the market does not decline. Even if the brand enjoys the strong preference of consumers, competitions with other retail companies prevent each store from accepting potential risks regarding order placement.

Therefore, a retail company develops its own brand and conducts backward integration up until production. Either way, the retail company manages the production phase of a PB and establishes the postponed distribution system that has the information regarding the brand of both sales and production.

Moreover, when other retail companies imitate the brand, price competition begins and the market tends to become uncertain. Therefore, companies usually produce one product or brand after another, trying to secure an exclusive share of the market at the early stage of the life cycle of these products or brands.

**[2010.4.12 979]**

## References

- Alderson, Wroe (1957) *Marketing Behavior and Executive Action*, Richard D. Irwin.
- Bucklin, Louis P. (1965) "Postponement, Speculation and the Structure of Distribution Channels," *Journal of Marketing Research*, Vol.2, No.1, pp.26-31.
- Bucklin, Louis P. (1966) *A Theory of Distribution Channel Structure*, IBER University of California.
- Pagh, Jannus D. & Martha C. Cooper (1998) "Supply Chain Postponement and Speculation Strategies: How to Choose the Right Strategy," *Journal of Business Logistics*, Vol. 19, No.2, pp.13-33.
- Rabinovich, Elliot & Philip T. Evers (2003) "Postponement Effects on Inventory Performance and the Impact of Information Systems," *International Journal of Logistics Management*, Vol. 14, No.1, pp.33-47.
- van Hoek, Remko. I. (1999) "Postponement and the Reconfiguration Challenge for Food Supply Chains," *Supply Chain Management*, Vol. 4, No.1, pp.18-34.
- van Hoek, Remko. I. (2001) "The Discovery of Postponement a Literature Review and Directions for Research," *Journal of Operations Management*, Vol. 19, No.2, pp.161-184.
- Yang, B. & Burns, N. D. (2003) "Implications of Postponement for the Supply Chain," *International Journal of Production Research*, Vol. 41, No.9, pp.2075-2090.
- Yang, B., N. D. Burns & C. J. Backhouse (2004) "Management of Uncertainty through Postponement," *International Journal of Production Research*, Vol. 42, No.6, pp.1049-1064.
- Yu, Zhenxin, Hong Yan, and T. C. Edwin Cheng (2001) "Benefits of Information Sharing with Supply Chain Partnerships," *Industrial Management & Data Systems*, 101-3, pp.114-119.
- Zinn, Walter & Donald J. Bowersox (1988) "Planning Physical Distribution with the Principle of Postponement," *Journal of Business Logistics*, Vol. 9, No.2, pp.117-136.