

**A Perspective for the GDS
Network and Collaborative
Commerce in Japan**

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In January 2005, countries in both Europe and North America had adopted a standard product code structure. Up to the end of 2004, the product code structure in Europe had been inconsistent with the one in North America. In addition, these countries began operation of a new IT infrastructure called the Global Data Synchronization Network.

This network virtually enables automation of the synchronization of product master data that previously had been operated manually. Of more significance, this infrastructure aims to promote “collaborative commerce” rather than simply to reduce the workload required in updating the master database. In this paper, we define collaborative commerce as pursuing the optimization of a supply chain among manufacturers, wholesalers and retailers.

In Japan, the government is taking the initiative in developing a master data synchronization network. However, it is not necessarily easy to add sophistication to business processes with the new infrastructure because most Japanese companies, unlike Western companies, have just started to understand the concept of collaborative commerce. Rather, it is likely that the gap between Japanese companies and Western companies may widen even further.

It is time for Japanese companies to take the initiative in incorporating this new opportunity into their companies’ strategies.

I GDS as the Distribution IT Infrastructure Covering the Global Market

Global data synchronization (GDS), promoted by the Global Commerce Initiative (GCI), maintains the consistency of product master data and location master data among companies in distribution industries on a worldwide basis through the process of data synchronization. The synchronization process means that if a manufacturer registers data in the database at one site, the master data of all retailers who use that database (the master data for the world's retail industry) will be updated automatically.

Figure 1 shows the concept of the GDS role. The illustration at left shows the business process before GDS deployment. It illustrates the existing registration process of master data, which resembles relaying buckets one after another. After a wholesaler requests and receives product information from a manufacturer, the wholesaler provides such information to retailers and asks them to register it. Problems have been pointed out about this data flow because these processes not only require a substantial human workload but also hinder collaborative commerce, which is explained later, due to a lack of information and erroneous information.

The illustration at right shows the business process after GDS deployment. Here, a manufacturer stores information as if it were in a pool of water, and retailers acquire necessary information from the tap. This framework represents efforts to eliminate inconsistencies in master data among trading partners completely by automating master data registration and maintenance processes.

The structure of the inter-company network to achieve synchronization consists of a single worldwide global registry (the registry that manages data locations), worldwide data pools connected to the registry and access to those data pools by manufacturers and retailers.

In other words, if a manufacturer registers master data in one data pool, the other data pools connected to the retailers notify them of new data registration. Data are exchanged between data pools as required, updating the master data of retailers.

II GDS Aiming to Achieve Collaborative Commerce

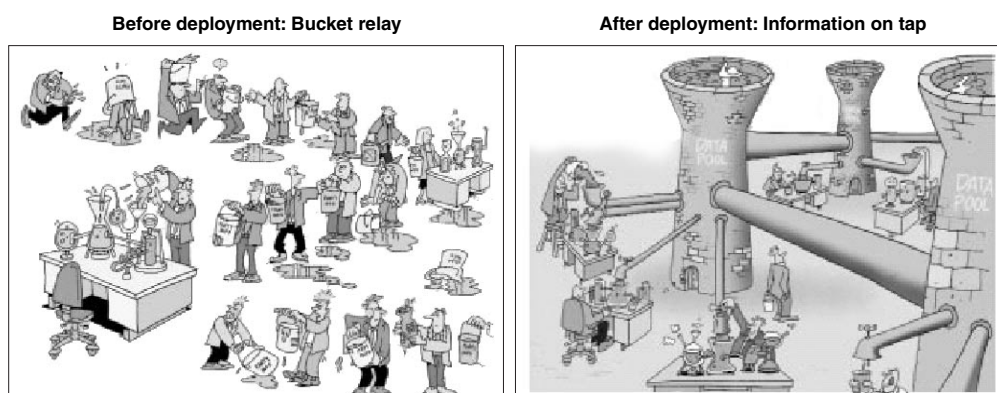
What do we truly want to achieve by deploying GDS? The answer is collaborative commerce where companies of a variety of business types and formats are unified as if they acted as a single company, which implements product planning and development and provides the optimal selection of products from the perspective of consumers. Its objectives also include the elimination of stock shortages and unnecessary distribution costs.

We consider that collaborative commerce consists of five layers (Figure 2). The business process for Layer (2) in (b) has been developed and proposed as category management. The business process for Layer (3) in (b) has been developed and proposed as engaging in collaborative planning, forecasting and replenishment (CPFR) between retailers and suppliers.

It is necessary for companies to share vast amounts of planning and performance information so that they can conduct unified activities as if they were a single company. If basic product information between a supplier and retailer is inconsistent, an interpretation function is required each time companies exchange information. GDS serves as a base for companies to communicate in the same language without an interpreter.

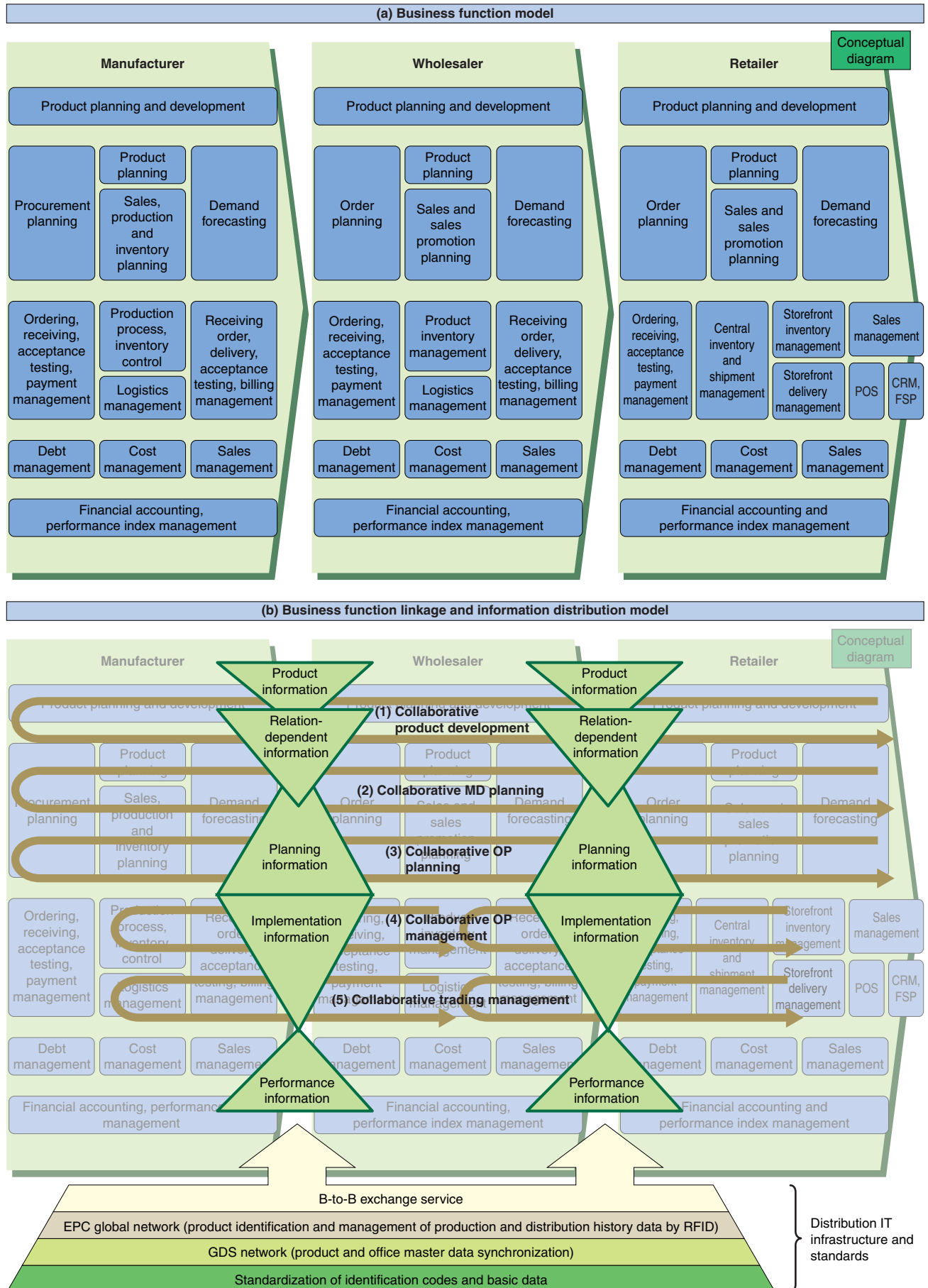
In the United States, many companies offering B-to-B exchange service emerged in 2000 in the midst of the IT bubble. The emergence of such companies led to investment totaling about 1 billion dollars in both intra-company systems and B-to-B exchanges. However, because of insufficient standardization of electronic data interchange (EDI) and master data synchronization, users were unable to achieve collaborative commerce efficiently

Figure 1. Processes of Master Data Synchronization before and after Deployment of GDS



Note: GDS refers to the system of the master data synchronization network promoted by GCI.
Source: Materials provided by GCI and Capgemini.

Figure 2. Collaborative Commerce and Supporting Distribution IT Infrastructure



Notes: B-to-B exchange = business-to-business electronic commerce, CRM = customer relationship management, EPC = electronic product code (next-generation bar code standards), FSP = frequent shopper program (marketing based on customer's purchasing history), IT = information technology, MD = merchandising, OP = operation, POS = point of sale, RFID = radio frequency identification.

and could not obtain the advantages that would justify their investment.

Consequently, user companies recognized the necessity to establish the mechanisms for code standardization and synchronization in the unified efforts and cooperation among standardization organizations in Europe and North America. Under this recognition, competing companies have cooperated with each other and have made industry-wide efforts in the past several years. These endeavors have given birth to GDS.

Unfortunately, Japan is still at the level where only a limited number of advanced companies are piloting collaborative commerce. In particular, management executives do not necessarily fully understand this concept. Because, to begin with, Japanese companies are not familiar with collaborative commerce, there are many cases in which GDS is evaluated only from the perspective of whether the efficiency of the maintenance of master data can be improved. This is the current situation in Japan.

III GDS in Europe and North America Started in 2005

On January 1, 2005, product identification codes for a variety of packing types such as in-store goods, cases and pallets were integrated into 14 digits, and the GDS network started operation in Europe and North America. While GDS initially handled consumer items, the product categories handled by GDS are going to include electric home appliances, living-related products, apparel and pharmaceuticals. As of July 2004, there were 3,700 member companies of UCCnet in the United States, a non-profit organization promoting UCC standards, which was established through investment by the Uniform Code Council (UCC). The Electronic Commerce Council of Canada (ECCC) has approximately 1,500 member companies. EANnet of Australia has about 1,000 member companies. (The European Article Numbering, or EAN, is an international standardization organization consisting principally of European manufacturers and retailers. Australia has also joined EAN. UCC and EAN were consolidated into a single standardization organization, UCC/EAN, in 2005.) It is assumed that SYNFOSS of Germany and Austria has about 2,000 member companies. Because these member companies have joined the GDS network as data pools, the total number of companies currently participating in the GDS network is thought to be 8,000 to 9,000.

In addition, Wal-Mart Stores in the United States is encouraging trading partners to join the GDS network by using its Retail Link (a system to share inventory and sales information with manufacturers) as a data pool. It is predicted that as many as 20,000 – 30,000 companies will join the worldwide GDS network during 2005.

Companies studying collaborative commerce are no longer limited to Wal-Mart. The concept is discussed extensively throughout the distribution industry in the United States. Furthermore, it is spreading beyond the United States to Europe and Asia.

There are two organizations promoting collaborative commerce: the Efficient Consumer Response (ECR) in Europe and the Voluntary Interindustry Commerce Standards Association (VICS) in the United States.

In Asia, ECR Asia is promoting collaborative commerce. Although an ECR Asia meeting was held in Manila in October 2004, only two companies from Japan participated, Izumiya Co. and Kao Corp. As such, most Japanese companies have failed to learn about the activities and expertise established for collaborative commerce over the years in other countries.


Another fact that Japanese companies are not aware of is that the GDS network is prerequisite for the EPC global network (EPC stands for electronic product code) that provides production and distribution history information by using RFID technology and that both networks in Europe and North America will be integrated.

The system of product traceability enables users to access static product attribute information such as product name, color and size as well as production and distribution history. As a great deal of time and labor is required to provide this kind of information for each traceability system, the GDS network is designed to provide such attribute information.

Figure 3 shows an example of product traceability information. The “Source” column reveals that data are obtained from Transora (marketplace), which is one of the existing data pools, as well as from the EPC global network.

With respect to RFID technology as well, which was introduced by Wal-Mart in January 2005, Japanese companies pay attention to hardware technology such as RFID tags and RFID readers, because the effects of RFID are visible at storefronts and warehouses. Rather,

Figure 3. Relationship between the EPC Network and the GDS Network

EPC Track & Trace				
Product Information				
	Data	Source		
Product Name:	Pringles	Transora		
Description:	PRINGLES POTATO CRISP	Transora		
Dimensions:	48 x 38 x 45.3 IN	Transora		
Weight:	468 LB	Transora		
Manufacturer:	Pringles	Transora		
EPC:	1.900100.240.848	EPC Network		
Manufacture Date:	09/09/2003	EPC Network		
Manufacture Location:	United States Of America	EPC Network		
Track & Trace				
Event#	Type	Location		Date
1	Manufacturer	Des Moines	2004-03-24 10:24:04	
2	Distributor	ABC Company	2004-03-25 23:20:40	
3	Receiving	Warehouse	2004-03-27 08:32:30	
4	Carrier	Distribution Checkpoint	2004-04-02 09:48:43	
5	Manufacturer	U Connect VeriSign Bo...	2004-05-25 14:44:42	

Source: 2004 U Connect Conference materials.

it is important to recognize that the software infrastructure that supports such hardware technology is being developed simultaneously.

IV Start of Master Data Synchronization in Three Segments in Japan

The development of IT infrastructure for the synchronization of product master data in Japan has accelerated rapidly during the past year. Members of the GCI Study Group conducted verification tests for data synchronization in the Manufacturer, Wholesaler and Retailer Master Data Synchronization Project and announced their results in November 2003 (Figure 4). Specifically, more than 30 leading retailers, wholesalers, manufacturers and IT vendors in Japan got together and directly linked four data pools to exchange data: FINET, PLANET, WWRE (Worldwide Retail Exchange) and BizMart.

In addition, verification tests for further enhanced functions of product and location master data synchronization are planned for fiscal 2005 (April 2005 – March 2006) under the SCM (supply chain management) project initiated by the Ministry of Economy, Trade and Industry (METI). While studies on GDS in Europe and North America have focused on two-segment models involving manufacturers and retailers, the projects in Japan are aimed at achieving three-segment models in which manufacturers, wholesalers and retailers participate due to the significance of wholesalers in Japan.

The environment facilitating collaborative commerce has thus been established in Japan as well. This heralds the arrival of opportunities for Japanese distributors and manufacturers of consumer products to reconsider collaborative commerce as a strategic option.

V The Essence of Collaborative Commerce

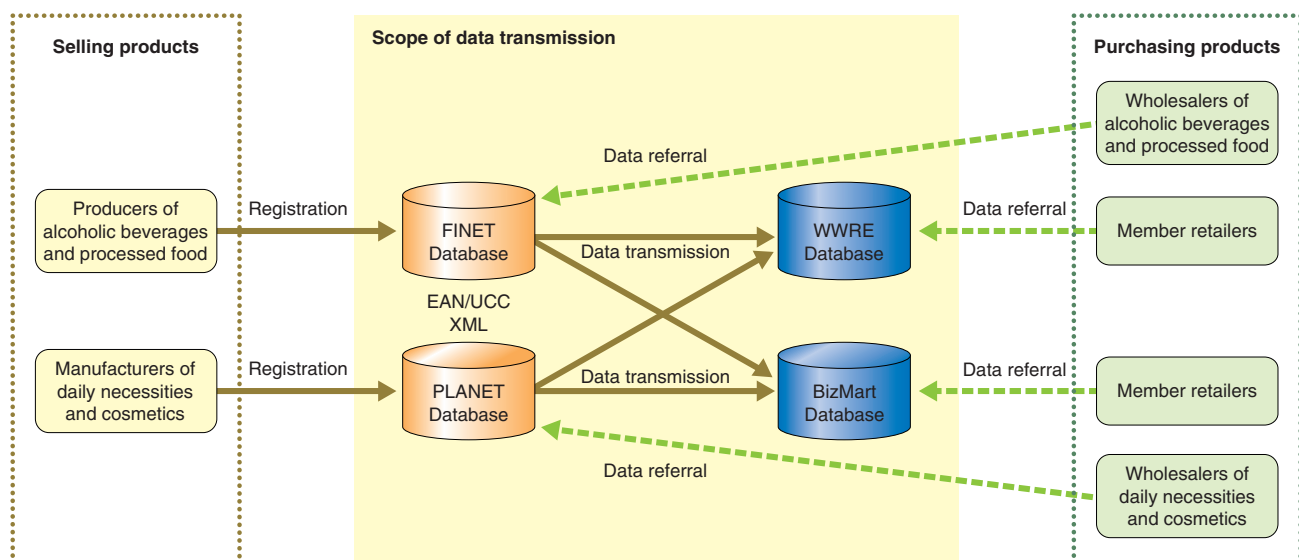
1 Beyond Push and Pull Strategies

It was in 1985 when collaborative commerce or quick response (QR) initiatives first started, principally in apparel industry in the United States. Also, it was in the 1992 when efficient consumer response (ECR) moves began between food manufacturers and retailers.

Up until then, manufacturers engaged in push-type sales activities where reduced prices were offered to promote the sales of a large quantity of products. On the purchasing side, retailers pursued product procurement at lower prices by purchasing the largest quantity of products as they could. It is said that there were many cases of diversionary tactics in which products were purchased in areas where prices were lower and profits were gained by selling the products in other areas where prices were higher. Despite the increase in total costs related to the supply chain, these negotiations were common practices between retailers' buyers and manufacturers' salespersons. Around 1993, such practices started to fade away, even in the United States.

Nevertheless, in Japan's distribution industry, persons in charge of both selling and purchasing products have still been busy negotiating trading conditions. On one

Figure 4. Manufacturer, Wholesaler and Retailer Master Data Synchronization Project by Voluntary Members of the GCI Study Group



Notes: BizMart = retail exchange service provided by NRI, EAN/UCC = organization created in 2003 by consolidating the European Article Numbering Association (EAN) in Europe and the Uniform Code Council (UCC) in the United States, WWRE = worldwide retail exchange, XML = extensible markup language.

Source: Material of the Manufacturer, Wholesaler and Retailer Master Data Synchronization Project (November 26, 2003).

hand, manufacturers try to sell large quantities of products at the end of every month, and wholesalers purchase such large quantities of products at such times even if they already have a large inventory. On the other hand, retailers have adopted pull strategies in purchasing activities by procuring products with a short ordering lead-time. In addition, when a new product is introduced, manufacturers and wholesalers maintain large inventories to avoid any stock shortages. Both push and pull strategies increase supply costs whenever market uncertainty is high. When both the maximization of customer value and the improvement of efficiency in supply activities are taken into account, is the current way of trading practices appropriate?

In describing sales activities, the slogan “from push strategy to pull strategy” is expected to be replaced with the “collaborative strategy.”

Retailers and manufacturers collaborate in forecasting the purchasing behaviors of consumers and establishing hypotheses. Based on these hypotheses, while they conduct supply activities, they simultaneously repeat verification activities. The activities that combine feed forward (process from forecast to establishing hypothesis) and feed back (process from results to verifying hypothesis) are called collaborative strategy. This is neither push strategy nor pull strategy. It may be appropriate to call it strategy with hypothesis verification involving all supply chain companies. This is the essence of collaborative commerce (Figure 5).

2 Multiple Companies Acting as a Single Company

If it is considered that inefficiency occurs because each player on a supply chain acts inconsistently due to demand uncertainty, handling all retailer, wholesaler and manufacturer functions by a single company emerges as a solution. This idea corresponds to SPA (specialty store retailer of private label apparel) in the apparel industry. Some Japanese apparel companies adopting the SPA type are growing significantly. World Co. and Fast Retailing Co. (UNIQLO) have expanded remarkably. This represents one format of vertical integration in the supply chain.

Such a format will not be appropriate for all companies, however, as it is fragile in terms of responses to a medium-term structural change. A possible solution to this situation that comes forward is to retain the current structure of business types and current role sharing and to facilitate activities by information sharing among multiple companies as if they were “one company.” This works where multiple companies collaborate in verifying hypotheses based on close information sharing planning and forecast information and act as if they were “one company.”

For individual companies to act as if they were one, arrangements must be agreed upon among the compa-

nies. Wal-Mart Store is unique in implementing and fully observing such arrangements. It can be understood that collaborative commerce is a relatively universal movement.

Then, what is meant by different companies acting as if they were one? Collaborative commerce does not refer to trading based on “Reduce the price to such a level so that I will buy that much.” It means collaboration in establishing a quantitative hypothesis, i.e., “identifying what a customer wants to buy next from the customer’s standpoint based on the characteristics of the marketing area of a certain store, attributes of target customers, and the customer’s purchasing behaviors,” and in conducting quantitative verification of such a hypothesis. Collaborative activities for hypothesis verification are conducted dynamically, such as what product assortment should be offered, what sales plans should be adopted, etc., as examined based on information obtained.

These hypothesis verification activities are solely repeated in different spans, such as on a daily, weekly, monthly, quarterly or semi-annual basis.

What is very important in this process is repeating the verification activities. This persistence is the very source of strength for excellent companies such as Wal-Mart, Seven-Eleven Japan Co., Dell and Toyota Motor Corp.

A Wal-Mart executive was invited to the study group meeting held by METI in 2003. To METI’s question of what is the key to Wal-Mart’s success, it is said that the Wal-Mart executive answered that “doing ordinary things in a simple and steady manner.” “It is doing what seems natural. From the standpoint of the customer, it is wrong to do something that does not eventually lead to customer value. We are only doing things that lead to giving value to the customer in a simple way.” However, it is not easy to ensure the perfect implementation of ordinary things.

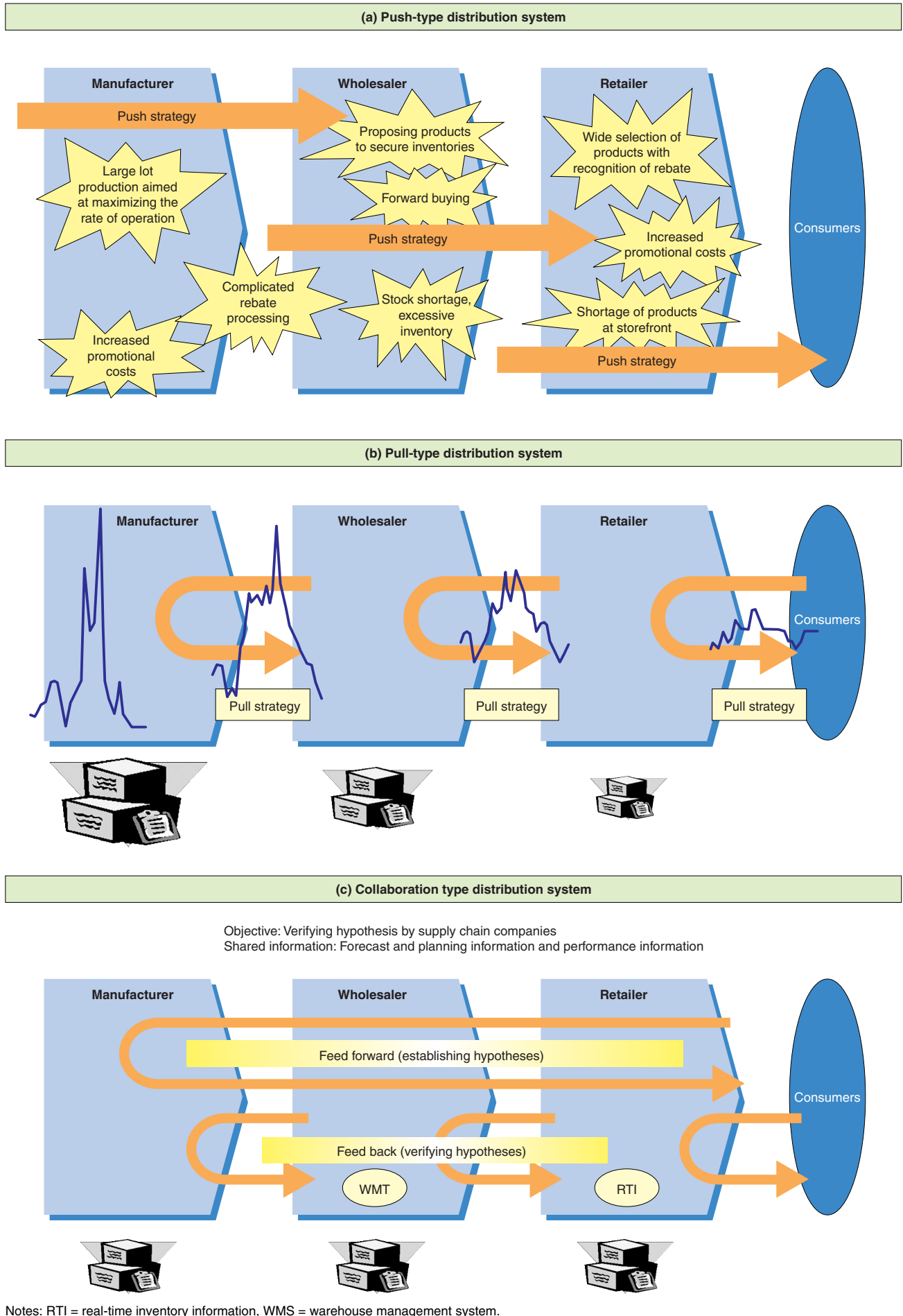
VI Business Processes in Collaborative Commerce Applicable in Japan

The representative models of business processes in collaborative commerce include category management² and collaborative planning, forecasting and replenishment (CPFR).³ This section examines these two models in terms of the possibility of applying them in Japanese companies.

1 Category Management

Category management refers to business processes that include the identification of consumer purchasing behaviors with high resolution and hypothesis verification to maintain consistency between customer needs in subdivided target segments within the marketing area and store merchandising.

Figure 5. Essence of Collaborative Commerce



It is often said that “category management is the best practice in Europe and the United States, but the method of implementing it in Japan is different.” However, there are cases in which the thinking of top executives of the leading retailers in Japan is very close to the concept of category management.

“For example, suppose there is a store whose sale is sluggish. (Omitted.) Suppose the largest number of customers are in their 50s. Naturally, the store will take measures to enhance product assortment targeted at this segment. In contrast, what measures will be taken based on the data-focused principle? (Omitted.) Data on the marketing area indicate that as land prices in that area have been declining, the inflow of new residents consisting principally of young people has been accelerating due to the phenomenon of return from the suburbs. Accordingly, most of the customers in that marketing area have become those who are in their 30s – 40s. However, it was revealed that because this store did not conduct market research and did not provide product assortment targeted at the family segment in their 30s – 40s, only those in their 50s visited the store.”⁴

Category management operates one step ahead of the perception gained from customers. In this case, if the store had investigated the data, it would notice the profile gap between the inhabitants of the marketing area and the actual customer segment and would adopt merchandising policies targeted at customers in their 30s – 40s.

During the seminar held at the Distribution Systems Research Institute in January 2004, Senior Managing Director Shoji Hiraide of Mitsukoshi department store commented as follows:

“Mitsukoshi changed the concepts behind its strategy. In the past, we considered that sales equal average customer unit price times the number of buying customers. We were formulating strategies only from the perspective of increasing the average customer unit price and/or increasing the number of customers. For example, we were examining what product assortment we should offer, the target sales volume and the target number of customers buying the products.”

“Now we have changed the strategy. How many customers do we have who are on their first visit? How many times a year will this customer visit our store? How many brand shops will this customer see during one visit? What sales policies should be adopted to increase each of these indices? In addition, each targeted policy is linked with performance indices. As such, we now conduct hypothesis verification activities for each of these elements.” This concept is very close to the idea of category management.

In Japan, category management has long been misunderstood as in-store merchandising activities on a category unit. In-store merchandising represents only one portion of the overall functions of category management. The true nature of category management can also be applied in Japan. Rather, we believe that what

top management truly wants to employ is category management.

2 CPFR

CPFR refers to a business process in which retailers and suppliers (manufacturers and wholesalers) collaborate in planning, forecasting and replenishing products.

As CPFR originated in the United States, many Japanese consider that it is inconsistent with distribution practices and cultures in Japan. However, this business process is easy to understand if we consider that its source comes from the just-in-time system adopted by Toyota. Toyota and its dealers always share planning information covering extensive activities from annual sales plans, monthly sales plans and annual production contracts to daily production contracts, and are constantly matching their data (Figure 6). The planning accuracy that might have been considerably low three months ago will gradually increase and will become extremely high on the day of production.

Because accuracy is high on the day of production, such production can be regarded as planned production if this high accuracy portion is taken into consideration, making it possible to implement the just-in-time system. The just-in-time system is backed by the sharing of detailed information on plans. Simply exchanging signal boards known as *kanban* is not sufficient to achieve the just-in-time system. The system becomes feasible only through the sharing of planning information as well as manufacturing information in a real-time basis.

Briefly speaking, CPFR refers to the following process. For example, set an error in forecasting 8 weeks ahead at X percent, make an exception for the case where the error exceeds this percentage and manage goals so that this forecast error decreases every year.

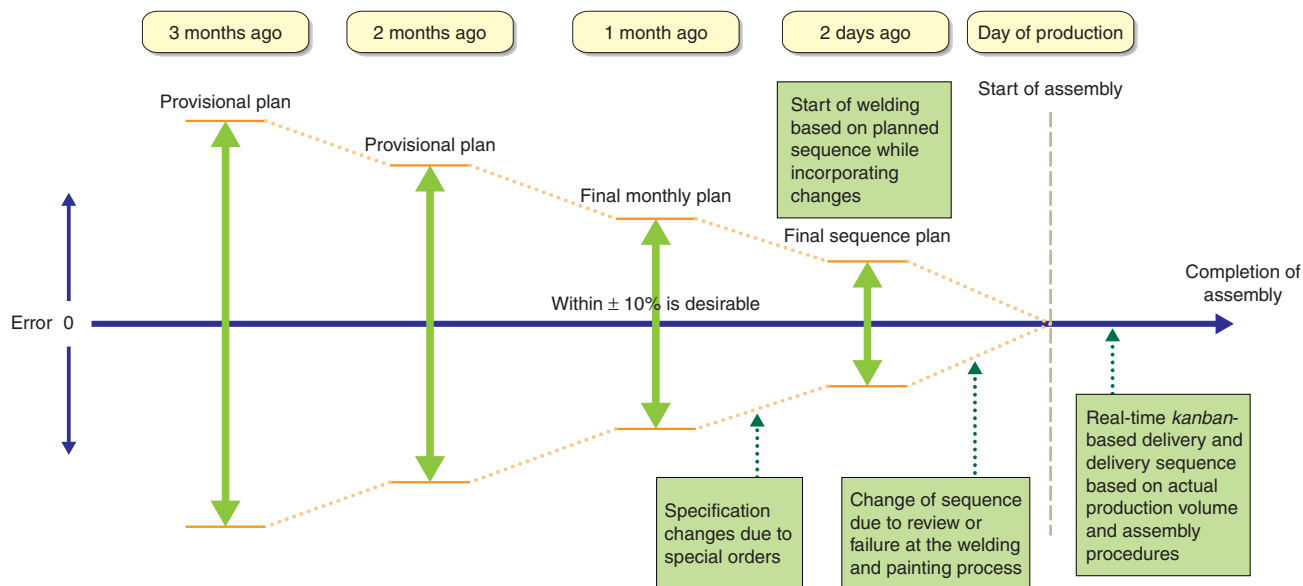
Considered in this way, CPFR closely resembles just-in-time. Accordingly, the argument that CPFR is unique only to business processes in the United States is groundless. The optimization of overall supply chain activities requires the sharing of planning information. CPFR can also be viewed as a business process in which the just-in-time mechanism is applied to the distribution industry.

As such, CPFR is considered a universal business model in the field of operation planning where promotional and distribution activities are managed under category management while appropriate responses are made to market uncertainties.

VII Prospect of GDS and Collaborative Commerce in Japan

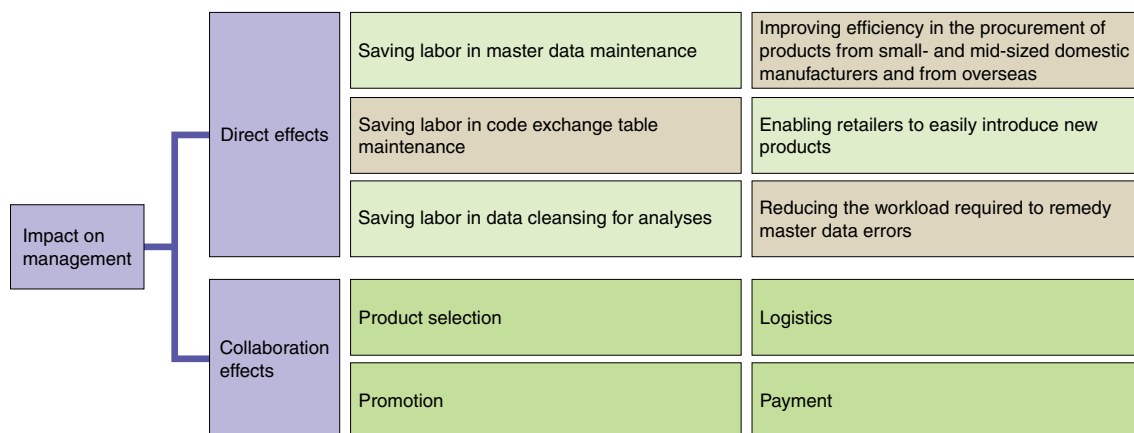
With respect to the effects of implementing master data synchronization and collaborative commerce in Japan,

Figure 6. Increase in Accuracy of Provisional Plans Concerning Component Orders between Toyota and Parts Manufacturers



Source: Takahiro Fujimoto, *Seisan maneijento nyumon I* (Introduction to Production Management I), Nihon Keizai Shimbun, 2001.

Figure 7. Effects of the Introduction of Master Data Synchronization Infrastructure



economic effects were estimated based on macroscopic statistical data in the processed food industry. The results revealed that a total of 7.7 percent of costs including those of retailers, wholesalers and manufacturers could be reduced in terms of the sales of retailers.⁶ This figure is extremely large in view of the current profit levels of the distribution industry and consumer product manufacturers. In addition, companies that introduce these new tools first will also be able to expect increased sales (Figure 7).

Some examples of the effects of collaborative commerce include the following:

- Increasing sales by scientific in-store merchandising plans
- Reducing unnecessary promotional costs by identifying the promotional effect quantitatively
- Reducing product waste by quickly identifying consumer responses to new products

- Reducing excessive inventory and stock shortages by employing CPFR among retailers and suppliers
- Reducing logistics costs by delivering products in poor demand less frequently and by decreasing product movement between stores

Because each company is not in the same situation, the effects of deploying CPFR might also differ. Nevertheless, the extent of such effects is predicted to be remarkably large in almost all companies. It is also necessary to identify what collaborative activities are needed in the whole industry to reduce investment costs.

VIII Pursuing the Establishment of Win-Win Relationships

For each company in Japan to enjoy the effects of investment in collaborative commerce, manufacturers,

wholesalers and retailers must understand and agree to the need to cooperate in developing a common infrastructure within industries, such as a distribution IT infrastructure and its standards, while they may compete with each other in establishing strategic inter-company alliances using such an infrastructure.

In Europe and North America, the private sector took the initiative in promoting collaborative commerce. However, in Japan, it is considered more effective for the government to take the lead in promoting collaborative commerce because neither retailers, wholesalers nor manufacturers face such an accelerated oligopolistic trend in Japan as compared to Europe and North America. At present, studies are being made concerning IT infrastructure, standardization and guidelines by the distribution and logistics system subcommittee of the Industrial Structure Council of METI, etc. It is highly likely that movement toward collaborative commerce in Japan will be accelerated in the future.

1 Separation of Salespersons, Buyers and Category Managers

Nevertheless, a question arises from the manufacturer side about whether strategic alliances will truly go forward in Japan. Specifically, manufacturers are skeptical about whether category management and CPFR are truly significant, and worry that the only result from the introduction of such new tools might turn out to increase costs.

However, manufacturers in Europe and the United States are seriously using these tools. What's more, they are willing to use such tools. As we had opportunities to hear their comments on a first-hand basis, we could better understand their feelings about these techniques.

To the question of the principal point in employing collaboration, a manufacturer answered "completely separating salespersons and category managers." In other words, salespersons whose evaluations are based on the sales of their own company's products and category managers who are evaluated based on the sales and profits of retailers who are customers of manufacturers are members of completely separate organizations. Accordingly, their appraisal systems are also different.

Category managers are those who create long-term merchandising design strategy jointly with retailers, and belong to an organization that is evaluated based on customer profit. Thus, category managers are separated from salespersons who are evaluated based on the sales and profit of their own companies.

The reason that category management has not taken root in Japan is most likely attributable to the creation of an organization conducting data analyses while at the same time supporting sales departments. If a salesperson of a supplier submitted a proposal based on the analysis of a large volume of data (which took time and labor) while at the same time negotiating conditions, it is highly likely that a buyer (retailer) would not evaluate

the proposal highly by believing that "these data are biased in favor of the salesperson of the supplier."

On the retailer side also, category managers should belong to an organization separate from that of the buyers. They work out strategies by considering promotional strategy to pricing strategy. Those who put the strategies into action are buyers and salespersons.

Furthermore, the consequence of category management for manufacturers is to acquire basic information for brand management and new product planning. With respect to a product that became a hit, specific information regarding marketing areas, competing products that are placed on the same shelf, sales promotional measures taken at that time and attributes of customers cannot be acquired without collaboration with retailers. Such information is extremely valuable for manufacturers. From this perspective, category management works as a means of acquiring basic information to support long-term strategies of manufacturers (Figure 8).

2 To Win a Race, Start Early

To make a success of a strategic alliance, management executives who are vested with the responsibility for the allocation of management resources should become directly involved in such alliances without leaving most of the issues to the frontline operations as was done in the past. The requirements to successfully achieve such a strategic alliance include establishing new trading rules among companies and rebuilding the organizational structures, evaluation systems, business processes, information systems and core skills of each company. To reduce operating costs, a company should determine the areas where collaboration is most effective as part of its efforts to reconsider the strategy of its own enterprise. It appears that the opportunity has again arrived to carefully consider business-to-business alliances and collaboration, which are becoming obsolete words in Japan.

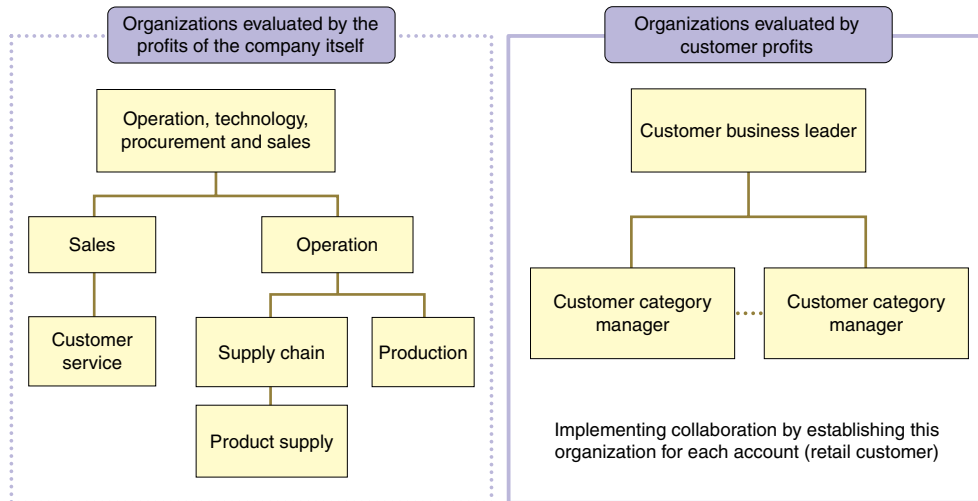
The cooperation of manufacturers as trading partners is indispensable for the hypothesis verification activities conducted by Wal-Mart Stores. In the course of fully implementing hypothesis verification activities, manufacturers and retailers are making progress in exchanging information, and information (knowledge) will rapidly accumulate. This knowledge will then create new value. Because this cycle requires time to generate the intended effects, companies starting hypothesis verification activities early through collaborative commerce will win the race in Japan. The first company to cultivate this capability will be the winner in future competition.

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Figure 8. Category Management of Manufacturers (Case of Kraft Foods in the United States)

A promotional structure, which is completely separate from sales departments, is established for each customer.



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