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# **An Analysis of the Interactive Decision Process When Deploying E-business for the OEM Industries in the Multi-Tier Supply Chain**

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## **Abstract**

*Based on the value system of the supply chain, an analytical procedure which focused on the interactive relationship among the multi-tiered business network is proposed to generate the strategies and the activities for implementing SCM. The proposed methodology begins with analyzing the value system of the three-tiered supply chain and respectively explores the core activities and linkages in business processes. After figure out the interactions, an iterative model, which concerned the relationships of the demand functions, the control functions and the logistical functions in the three-tiered supply chain, is developed to obtain the improving orientation. Finally, an integrated business process reengineering method is conducted to generate the suggestions.*

**Keywords:** Supply Chain Management, Strategic Interaction, Value System, e-Business

## **1. Introduction**

Due to the changes of economic environment and the developments of information technology in recent years, many industries are trying to promote the operational efficiency for the challenges in the new generation. Under the global competition the vertical integration, strategy alliance, and multi-national cooperation strategies become important topics. At the meanwhile, many enterprises are trying to raise their contention by implementing supply chain management (SCM) or enterprise resource planning, which emphasize that how enterprises utilize the limited resources properly to get the most effective synergy. However for these enterprises, e-business is a tool which helps them to face the new environment and they also have to integrate the business strategies and the process to obtain the advantages. Therefore, how to integrate various operations and managing activities effectively and set up the appropriate enterprise strategies is becoming a significant issue.

According to the industrial structure in Taiwan, the output values of original equipped manufacturers (OEM) take up quite high portion of the total gross output values. While the electronic generation is coming, it becomes important that how the enterprises transfer the existed information effectively in the information systems to management knowledge to assist OEMs in studying development strategies. To help the relative industries build the enterprise intelligence, it is necessary to analyze the operations and transactions in OEM enterprises.

Based on the value system, which is proposed by Porter (1985), we are going to achieve the target “strategy fit” of e-business by analyzing the importance of each enterprise’s value activities in every tier of the supply chain and investigating the interacting relationship among the enterprises. The major purposes of this study are as follows:

- To analyze the operational relations in the multi-tiered supply chains, distinguish every member's position within the supply chain, and identify their interactive relationship to help the OEMs to clarify the changes while implementing e-business.
- To suggest the procedures that the OEM enterprises should have to set up their e-strategies based on the interaction of the linkages in the value system.

In the following sections, this study analyzes related bibliographies that include information strategy, supply chain management, and value chain system analysis. Then, we investigate the interactions of major value activities among the enterprises and the developing strategies of enterprises under the structures of multi-tiered supply chain. Finally, the proposed suggestions will be analyzed.

## **2. Literature Reviews**

Three major relative criterions, which are information strategies, supply chain management, and value system analysis, will be illustrated as follows.

### ***2.1 Information strategies***

In the previous studies, Clemons & Kleindorfer (1992) concern about e-business in multi-tiered supply chains are focused on the multi-organizational information systems, they emphasize how to share information through network to get the highest benefits. But, Davis and Hamilton (1993) point out that while using information technology for the integrations of multi-organizational supply chains (SC's), we should think currently about the enterprise cultures, operational procedures to obtain the complete informational benefits, Besides, Simchi-Levi (2000) comprehensively introduced the differences among the members were generated from the cultures, information construction, the effects of measurement, the usability of IS, expectation, and human resource and so forth. Therefore, we should take the differences into consideration to integrate effectively the various resources as well as get the deserved synergy. Alexander (1993) and Clemons (1992) expounded that there would be some influences and conflicts in the multi-organizational coordination and information technology (IT) implementation. They focused on multi-national enterprises, vertical integration, and facilitators whose members stood for supporting position, the measurements which were mentioned would be used in our research.

Considering about the effects between multi-national cultures and information systems (IS), Hunter and Beck (2000) propose the quality method to assay the different cultures, but it only presented the estimations with RepGrid method, lacking the effective analysis for individual enterprise. For the multi-organizational IT applications, Dewna (1998), Nault (1998) and Monge (1998) explored the benefits of using IT with the kinds of organizational architectures and products. In the part of combining IT with global groups, Jarvenpaa and Leidner (1999) suggested that the global groups could work as the form of collaborative project to obtain the best operational integration, but they also proposed that the groups which were composed by e-commerce should be changed in the communication and mutual confidences by the evolution of the times. Our study would investigate the OEM industries with the dynamic thinking to implement the IS into enterprises.

### ***2.2 Supply chain management***

Competitive Strategy is a strategy which contents with the demand of customers through products and service. The goal of Competitive Strategy which is based on the price, delivery, response time, variety, and quality provides various kinds of products and service to satisfy the customers in every segment. Sunil (2000) mentioned that SCM strategy depends on row

material purchase, material transportation, product manufacturing, product delivery, and customer service, so he concluded that SCM strategy should include inventory strategy, product distribution, operational equipments, and information flows. Chopra and Meindl (2001) considered that in the supply chains were four major driving elements which are inventory, delivery, facility, and information, and the enterprises should utilize the four to take some valid SCM strategies.

Lambert and Cooper (2000) suggested that supply chain framework is composed of network architecture, business process and management units. Lancioni (2000) pointed out that supply chain design should include three processes that are coordinating the activities in the supply chain to know the economic scales, integrating the activities of each level with standard information technology, and evaluating the service and cost performance with performance measurements. Hausman (2000) claimed that SC's performances should across the boundary of an enterprise that includes the dispatch of raw material, parts, and products from the channels to customers and traditional functions. Mclean (1999) thought that the enterprises of SC's should eliminate the mutual profit conflicts to avoid the single enterprise being selfish to lose the entirely cooperative performances in a process-driven viewpoint.

### ***2.3 Value System Analysis***

Strategy fit indicates that competitive strategy and SC's strategy have the same targets which are to satisfy customers with their needs and build SC management capability. Porter (1985) proposed that the concept of value chain was the basis of enterprise competitive advantages and its model could be used in the supply chain system. To get the competitive advantages, the enterprises must try to lower down the cost of value activities, create more values, and coordinate the outer linkage relationship. Furthermore, Porter indicated that the value chain of an enterprise was included with a broader range value system, and he also pointed out that the enterprise not only depends on understanding its own value chain but also getting more comprehension in how it cooperates with the entire value system to maintain its competitive advantages. In the meanwhile, IT would be an important role which affects the performance and the linkage relationship in the process of competition.

For the strategy analysis, Porter (1980) proposed the "Five force analysis", the enterprise could make use of the inner and outer conditions which were caused by the five forces to be its own target of business development. Besides, the interaction and improvement of business processes, Davenport (1993), Hammer and Champy (1993) introduced the most major analysis tools to analyze business processes by investigating the relations of every member of the supply chain between the physical and information flows.

## **3. Strategy Analysis of Multi-Tiered Enterprises**

The three-tiered supply chain is the selected object in this study, and the interaction between the value chain and value system is the main studying structure. Then, it was derived to the interacting relationship by e-business effects and the mutual relations of major activities. Finally, for being a basis of strategy forming, we quote the revised quality function deployment (QFD) related matrix to satisfy with the requirements of customers in the process when implementing e-business.

### ***3.1 Supply Chain Architecture***

Porter (1985) claimed that we should analyze the value activities of an individual enterprise for knowing its competitive advantages, and exploring the related advantages from the value activities. The effects of e-business are not only for one individual enterprise but also for the

process reconstructing and value chain re-integrating. So, based on the value chain and value system analysis, we need to explore the interacting relationship through the effects in the value system by analyzing the changes of the value chain.

In selecting a studying object of manufacturers, there were some considerations as follows. From the customer demands, production cycles and different product characteristics, the types of production in one enterprise can be divided into original equipment manufacturing, own designing and manufacturing (ODM), and own branding and manufacturing (OBM) such as table 3-1. And the studying object of the manufacturers was the manufacturing plant which production type was OEM, the object of the distributors was the downstream customers of the manufacturing plant, which is a famous marketing distributor, and the supplier was selected from the upstream clients.

### 3.2 The Inference of the Value System

In this study, we will explore the interactions between the value system, and by these interacting conditions, the importance of the value activities in the supply chains should be understood. Then, we could use simulation technique to investigate the probable interacting relationship and search the main principles of drawing up the supply chain strategies for those OEM enterprises to provide an appropriate reference model.

Lee and Whang (2001) mentioned that there were four factors from the changes of the supply chain integration in e-business (table3-2). In the meantime, they also emphasized that e-business has enhanced and integrated effects for each factor. We believed that it should exist one interaction relationship in the three-tiered supply chain, and through e-business, the added values of integrations should be the results of mutual inferences of the members in the supply chain. Therefore, we are going to find out the relationships or quantitative factors to be the basis of the strategy developing.

#### 3.2.3 Mutual relations of the major activities

When the enterprises are facing with the e-business in the downstream brand companies, they often can't figure out the corresponding strategies such as the best practice model or not knowing what to do. From analyzing the main linkages of value activities of the supply chain, it can provide some strategic thinking for the upstream companies facing the demands of the downstream ones. Chopra and Meindl (2001) also mentioned that to get an entire, proper strategy, the company should take all the strategies of functions in the value chain to be sure that all of the functions in the value chain have the identical strategies on supporting competitive strategies. The main value activities in the upstream and downstream companies are distributed such as figure 3-1.

- Value activities of the brand company (tier one, T1): new product develop, inbound logistics, and marketing/distribution

Business Model	Characteristics
OEM	Manufacturers depend on the customer demands to produce the product, and then the products use the brand label of enterprise customers, who sell those products by themselves.
ODM	Manufacturers depend on the demands of customers to design and produce products for customers. Then the products use the brand label of enterprise customers, who sell those products by themselves.
OBM	Enterprises have their own brands.

Table 3-2 Supply Chain Integration Dimensions				
Dimension	Business Process			
	Purchase	Order fulfillment	Product design	Service
Information integration	Information share	Information share	Information share	Information linking
Planning Synchronization	Coordinate replenishment	Collaborative planning	New product introduction and development currently	Coordinating service
Workflow Coordination	Non-paper purchase, auto replenishment, auto payment	Auto workflow, contract of maker, logistics and replenishment	automation of product change management, co-design	Consumables of auto replenishment
New business models	Market trade, auction(the second market)	SC reconstruction, intelligence marketing	Plenty of customized product, new service provider	Remote diagnosis, download and renew
Monitor & measurement	Monitoring of contract commitment	Order monitoring, trace of logistics	Specialty monitoring	Measurement and traceability of performance

Source: Lee and Whang, 2001

- Value activities of the OEM/ODM (tier two, T2): production and inbound logistics.
- Value activities of the row material suppliers (tier three, T3): marketing and production.

Porter's value system explains that there is one relation between the upstream and downstream in the supply chain, which affects each other, but he didn't point out clearly how to get the mutual relationship and which relation it is. So, based on demand-supply transformation method (figure 3-2) and Quality Function Deployment (QFD) transformation matrix methodology, the mutual interaction relationship was investigated to find the linkages of main activities in the value system. In figure 3-2, there are three main activities:

- Demanding activities: From the product/service demands of customers, the enterprise generates the demands which can satisfy with customers and downstream enterprises relying on the product demand forecasts and requirement information share of downstream enterprises. The linkages among the main activities begin from the customer's demands, and then transferring the customer's demands to enterprise, the linkages will extend toward the upstream.
- Supplying activities: After the satisfying demands are determined, the enterprises will transfer them into the resources or services required by downstream enterprises or customers and supply these for them. The linkages will receive the supplies from the upstream enterprises to respond to their own demands and provide products/services for downstream enterprises to replenish their requirements.

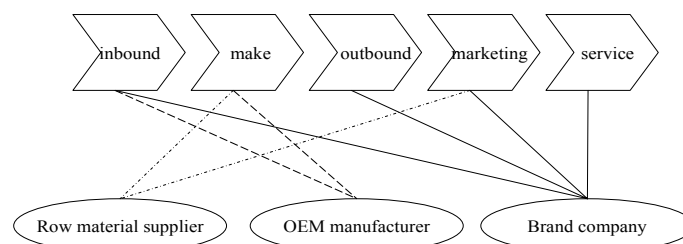


Figure 3-1 Key Value Activities of Three-tiered Supply Chain

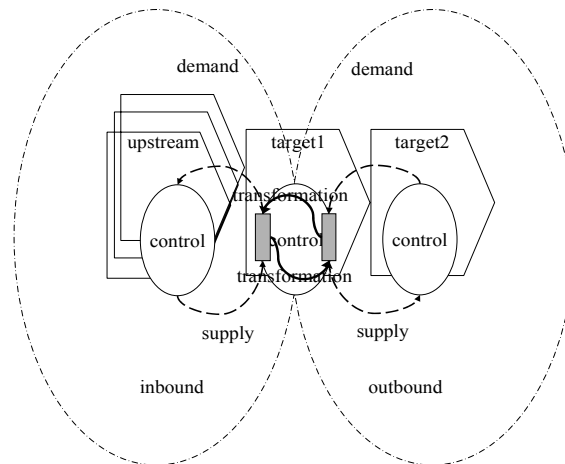


Figure 3-2, Demand-Control Transformation  
Source: Huang, 2002

- Controlling activities: After receiving the demands from downstream enterprises or customers, the enterprise begin to control the resource required, and obtain the supplies from upstream enterprises. And then, the enterprise begins to control the schedules, resources and outputs to coordinate the core process to finish the output together.

Requirement information stimulates the execution of the enterprise core process, and the enterprise transfers it to the demands required by itself through transformation procedures. Besides, after receiving the supply information from upstream enterprises, the enterprise will transfer it to the supplies for the downstream enterprises through transformation procedures. Further, according to the idea of “House of Quality”, the research would transfer the demands required by the downstream customers to the target enterprise strategy relation matrix (figure 3-3) which includes two levels of operational activities in each dimension that the first level is the major enterprise activities and the second one is the details of the major activities, such as table 3-3.

When the downstream follows the product or market strategy to draw up the inventory, delivery date, purchase, dispatch, and production strategies, the supply plans and strategies of the upstream must be affected. Therefore, by the strategic relation matrix, the conditions of interaction among the major activities of each level would be found and defined.

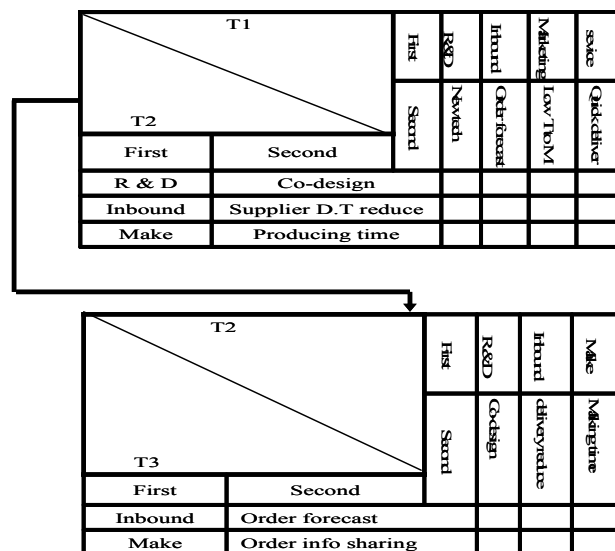


Figure 3-3 Transformation of QFD

Table 3-3 Major Activities Of The Enterprises	
Critical Activities	Details
Inbound Logistics	Material handling, warehouse, inventory control, delivery schedule, return
Make	Production, package, assembly, facility maintenance, test, factorial operation
Outbound Logistics	Warehouse, material control, order control, shipping operation, order schedule of finished goods
Marketing & Sales	Ads, promotion, quotation, price making, channel selection
Service	Product installation, maintenance, training, parts supply, product adjustment

Source: Porter, 1985

### 3.4 Multi-tiered Enterprise Strategy

From the viewpoint of e-business strategy, to be aimed at the major value activities of each level in the supply chain, we proposed where those levels should be focused on.

**T1 the brand company:** T1 controls the critical activities of marketing channels and adopts the typical e-business strategy to maintain the better linkages in other activities of the value chain for better controls of the upstream supplier and generate the better supply chain performances. Besides, the supply chain model, “push model”, would be transferred into the “pull model” which speeds up the response rate, reduce the inventory, and make the risks more easily be shared.

**T2 OEM manufacturer:** T2 concerns about the low-cost manufacturing advantages and has more linkages of critical activities of the value chain in the supply chain. T2 also can develop different value activities by handling the advantages and strengthen the entirety of functions in the value chain activities. The main e-business strategies are as follows:

- Draw up the proper requirement planning, manufacture more flexible and faster to share risks.
- The controls of supplier’s capability, delivery date, inventory, and brand.
- Global e-logistics, the control of the trend, and the layout of the distribution channels.
- Increasing the capability of R&D with the whole chain, and the transformation from OEM to ODM.

**T3 row material supplier:** No matter product development or marketing activities, T3 always has more activities of linkages than T1 and T2 and should pay more attentions on the establishment of relations between T2 and T3 in developing and marketing activities. Hence, T3’s e-business strategy should focus on as follows.

- Raising its own operational efficiency by information sharing
- Controlling the product development in the situations of marketing to draw up the demand plan in advance and handling the condition of T1’s ordering to avoid the losses of orders caused by T2
- Product design of flexible and standard fabrication, shared WIP’s of front fabrication

## 4. Analysis of Case Study

Supply chain management is the information integration strategy which is implemented by the enterprise and its suppliers, distributors, or channel owners which they would cooperate



to satisfy with the demands of end-customers and reduce the costs to raise the marketing competitions in the entire supply chain. At the same time, the international enterprises gradually realized that keeping the most competitive and value-added core capability would be the global trends. The case selected is a famous-brand shoe industry, and is divided into three tiers which are a channel, a manufacturer, and a supplier.

#### **4.1 Case Description**

The case of the three levels is respectively as follows.

- The first level is global marketing company which leads the shoe trends (named as N-company).
- The second level is the professional global OEM factory (named as P-company).
- The third level is the raw material supplier of leathers (named as S-company).

##### ***T1 - the channel, N-company***

N-company was engaged in the design, make, and marketing of sports shoes in the early stages, but when it gradually controls the advantages of brand promotion, N-company takes its non-competitive businesses into outsourcing which includes make and retail businesses to lower down the total costs. The major activities of N-company are as follows:

- Inbound logistics: matching demand forecast made by every retailer, sharing the demand date to manufacturers, and controlling the speed of supply of the maker.
- Make: outsource to the low-wages country in Asia, matching the product market development to arrange capacity of every plant.
- Outbound logistics: Being a global marketing company, it is very important in the inbound and outbound logistics.
- Marketing and sales: combining with the innovation of product technology and using the opportunity of activities or sports well as a voice of its products to obtain the best marketing effects.
- Service: paying more attentions on the service requirement in the every retailer.

##### ***T2 - the manufacturer, P-company***

P-company was established in 1969 which conducted the manufacture and sales of various kinds of sports shoes, leather shoes, plastic shoes, and etc. P-company wants to expand the production stations in Asia to become the shoes industry of a world-wide OEM enterprise. And N-company is the biggest customers for the P-company's. The major activities of P-company are as follows:

- Inbound logistics: The logistics of production planning, material backup and delivery is related so complicated because of the more materials of a product, the more customized products, and the more material suppliers.
- Make: Due to the continuous expansions of production scales and the control of cost advantages, it has become the core capability of the value chain.
- Outbound logistics: Because the marketing redoubts of N-company are distributed so widely, the outbound logistics is also very complicated. But for the manufacturers which are focused on the production types of OEM/ODM, the operational processes are mostly followed by the orders of N-company.
- Marketing and sales: Marketing activities utilize the production advantages and connect to the capability of product development to enhance the interaction and service of N-company. Due to the customization of products, P-company pays more attentions on the manufacturing technology and capability of product development.

### ***T3 - the supplier, S-company***

Due to the effective integration of main upstream fabrication, the adjustment of production technology, and fast provision of customized sample requirement, S-company becomes the main material provider of the world-wide sports shoes companies during the depression of economy in the synthetic leather industry. The major activities of S-company are as follows:

- Inbound logistics: Because parts of raw materials have been integrated and suppliers of the other raw materials belong to the citification upstream enterprises. Purchasing planning is the main core activities.
- Make: The downstream industry of synthetic leather industry generally belongs to the pop industry and it focuses on the changes and colors of the surface. Therefore, the process in the rear is relatively important to the technology of surface processing, and the make affects the competitions of S-company.
- Outbound logistics: Because the globalization of shoes plants is faster than other levels in the supply chain, how to dealing with raw materials is still up to the shoes plants to decide. Hence, the arrangement of outbound logistics is simpler, but when matching with the global production stations, S-company will have more complicated logistics and has a great influence on its own competition.
- Marketing and sales: S-company is running in the area of brand sports shoes, it's marketing activities will match up the development requirements of the types of shoes in the brand sports shoes company, whose characters combine with the product development and marketing activities, that is rooted in the brand sports shoes company.
- Service: Because the object of product delivery is a sports shoes manufacturer, there are many special materials, and S-company should provide the direction services for the shoes plants.

### ***4.2 The analysis of the value system***

Before applying processes design methodology to the case, the value system of the shoes plants should be analyzed first, and then the steps are to define the value chain architecture, enterprise critical activities, core processes, and linkages.

- A. Define value system: The elements of the value system are N-company, P-company and S-company, which are a channel, a manufacturer, and a material supplier.
- B. Define critical activities: According to the previous description, figure 4-1 presents the critical activities in the supply chain. The critical activities of N-company are inbound logistics, outbound logistics, marketing & sales and service. The critical activities of P-company are inbound logistics, make, marketing & sales, and service. The critical activities of S-company are inbound logistics and make.
- C. Define the linkages: We revised the QFD method and proposed a process of how to use related matrix to define the critical activities and linkages. It will analyze the relations between the strength and weakness which are in the critical activities of the three-tiered

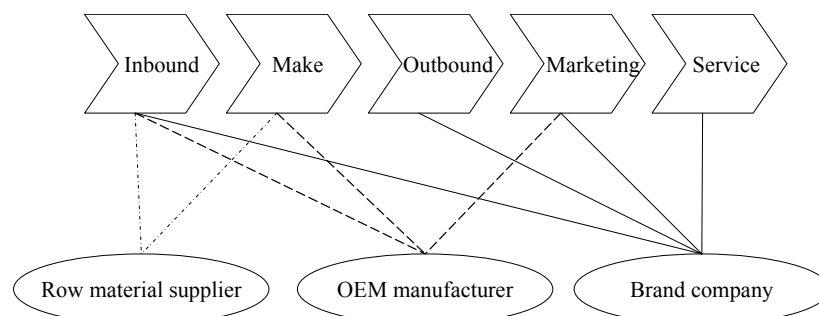


Figure 4-1 Critical Value Activities of Three-tiered Supply Chain

supply chain, and then, by analyzing the related matrix, we can define the linkages of the critical activities of each level. For the critical activities, we define the operational activities of two levels, which the first level is main critical activities and the second level is the details of the critical activities. The situations are shown as table 4-1.

Besides, according to the classifications of table 4-1, we interviewed with S-company and P-company and adopted the way of collecting data and analyzing for N-company, which we define the relationship between the activities of P and S or P and N. Table 4-2 and table 4-3 are the strategic relation matrices of the target company after analyzing, which the symbol ● represents the stronger relation and the symbol ⊙ represents the relatively weaker relation.

#### 4.3 Strategic analysis and development

After designing the core processes of the case, we explored the linkage scopes of core processes and the demand strength of core process information and sum up the linkage types of critical activities. Then, utilizing the procedural operational strategic matrices, we proposed the recommendations for the P-company. The critical activities of P-company are inbound logistics, make, and marketing & sales.

#### Inbound Logistics

- A. Inner logistics: Due to the shoes industry which has many material suppliers, the pull production model which P-company uses and the orders satisfactions which inventory can't satisfy with, we derived that the linkage scale between P-company and it's supplier is over 50%. Figure 4-2 represents the processes and linkages of inner logistics of P-company after designing. From the figure, we could find P-company has strong demands of core process information in the inner logistics, so we suggested that P-company should adopt e-process operational strategy.
- B. Outer logistics: P-company has a low linkage scale. From figure4-2, the linkage scale of the core process in outer logistics is low, so we suggest that the operational strategy of process flatness should be taken.

Company	First level (critical activities)	Second level (detail activities)
S	Inbound logistics	Order forecast, planning purchase, global material inventory allocation
	Make	Production allocation, complex production model, order trace of information sharing
	Marketing & Sales	Development capability of customization, e-business co-design, curtailment of trial time
P	Inbound Logistics	Demand planning, compression of supplier delivery time, the controls of capacity, delivery date and quality
	Make	JIT production model, production information share
	Marketing & Sales	Raise of ODM capability, integration of critical suppliers, e-business co-design, curtailment of trial time
N	Inbound Logistics	Demand plan share, curtailment of trial time, inventory of reduction
	Marketing & Sale	Time-to-market of curtailment, production schedule
	Service	Faster delivery time of retailer, more entire delivery rate, higher added value

P-company \ N-company		N-company		Inbound logistics			Marketing & sale		Service		
		First	Second	demand plan	curtailment of trial time	inventory of reduction	time-to-market of curtailment	production schedule	faster delivery time of retailer	more entire delivery rate	higher added value
First	Second										
		Inbound logistics	demand planning		●	●	●				◎
compression of delivery time				◎	◎				◎		
the controls of capacity, delivery date, and quality			◎	●	◎					◎	
Make	JIT production model		◎							◎	
	production information share			◎						◎	
Marketing & sales	raise of ODM capability					●	◎				◎
	integration of critical suppliers					●	●				
	e-business co-design					●	◎				
	curtailment of trial time						◎	◎			

S-company \ P-company		P-company		Inbound logistics			Make		Marketing & sales			
		First	Second	Demand planning	compression of supplier delivery time	the controls of capacity, delivery date and quality	JIT production model	production information share	Raise of ODM capability	integration of critical suppliers	e-business co-design	curtailment of trial time
First	Second											
		Inbound logistics	order forecast		◎	●						
planning purchase			●	●		◎	◎					
global material inventory allocation			●	◎		◎						
Make	production allocation			◎		◎			◎		◎	
	complex production model		●	●		◎						
	order trace of information sharing				◎		◎					
Marketing & sales	development capability of customization								●	●		◎
	e-business co-design		◎	◎								◎
	curtailment of trial time								●	●	◎	◎

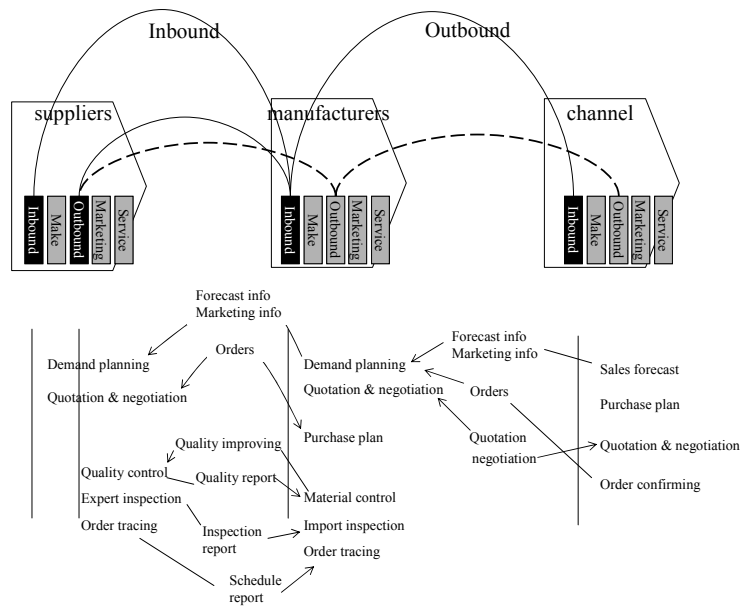


Figure 4-2 The Processes and Linkage of Inbound Logistics

### Marketing & Sales

- C. Inner logistics: Because customized products are the most important in the shoes industry and product developing and designing need to coordinate with the other suppliers, P-company's linkages scales of inner logistics are range in the marketing & sales activities. Figure 4-3 represents the core processes and linkages of marketing & sales activities in P-company. The information strength of core processes is low, and this research suggested that the operational strategies of the collaboration in the organization would be adopted.
- D. Outer logistics: P-company only joins the activities of marketing & sales in the N-company and its linkage scale of outer logistics core processes is low. And from figure 4-3, the strength of information demands of core processes is high, and we recommended that the operational strategy of information sharing for some parts would be adopted.

Summary of above, in the critical activities, the suggestions for operational strategies are:

- A. Inner logistics of inbound logistics: E-process
- B. Outer logistics of outbound logistics: Process flatness

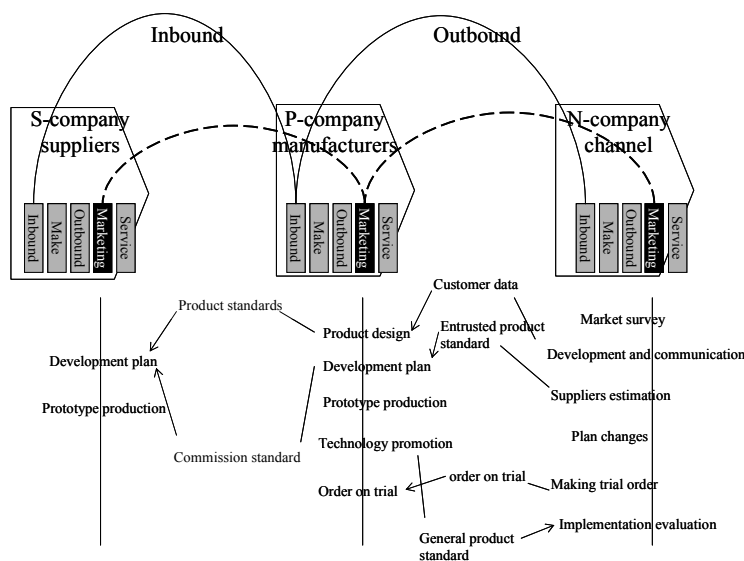


Figure 4-3 The Process and Linkages of Marketing & Sales

- C. Inner logistics of marketing & sales: Collaboration
- D. Outer logistics of marketing & sales: Information sharing

## 5. Conclusions and Suggestions

As the network technology is rising, it extends the range of e-business from the raise of internal management and the change of organizations to the enterprises collaboration and reconstruction of value system, and the trend will continue and affect the collaborative competition vastly .between the enterprises. In this study, we investigate the interactive relation between each level in the supply chain. The linkages of critical activities are identified; the enterprises can clearly understand the core linkage activities and this will be helpful to the analysis of competitive advantages and strategy development. We also develop a QFD transformation matrix as the structure of strategy transformation, it provides an e-business strategy development model, and it can be used to set up the e-business strategies.

There are positive meaning about e-business management to increase entire efficiency and the strengths of competitions. In the process of e-business, it may cause some damages to the profits of individual member in the supply chain or generate the conditions of risk centralizing, so the e-business implementers should take care about the members in the supply chain and pay attention on the problem of the balanced profits in the supply chain. Flexibility is one of the competitive advantages for Taiwan's enterprises. However, SCM e-business model will make the processes of the enterprises specific, transparent, and formal. Such a condition is not necessarily to be a positive effect upon our competitions. E-business make the enterprises between the supply chain more concentration on its own core business, but the OEM manufacturers in Taiwan have lots of developing space in the expansions of value activities and the connections with upstream.

For the interacting relation of e-business in the supply chain, this study is one of the pioneer researches in this domain. Furthermore, more quantitative indices to indicate the vicissitudes of value activities after e-business and the critical linkages relation in the supply chain should be developed, and more industries should be studied. Also, there are many collaborative competition models in the supply chain, and the network structures are so complicated, we can investigate the more extensive domains and directions in the future.

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