UNIVERSITÄT ZU KÖLN
SEMINAR FÜR
ALLGEMEINE BETRIEBSWIRTSCHAFTSLEHRE,
BETRIEBSWIRTSCHAFTLICHE PLANUNG UND LOGISTIK
Direktor: Prof. Dr. Werner Delfmann

Cologne Intensive Study Programme in
European Management (CISP), June 2003

Global Supply Chain Management: A European Perspective

Referat zum Thema ”Configuration and Coordination of Global Supply Networks“

This document highlights some strategies in the field of Global Supply Networks which are employed by enterprises in the automotive, electronics and consumer goods sectors.

Referent:	Gabriel Rüeck
Semesterzahl:	
Matr.-Nr.:	3871150
Anschrift:	50 Nanyang Crescent #05-03, Singapore 637598
Tel.-Nr.:	0160 7582425
Email-Adresse:	gabriel_rueeck@pmail.ntu.edu.sg

TABLE OF CONTENT

1. BACKGROUND

Figure 1: Matching of Produce and Supply Chain

	Functional Products	Innovative Products
Efficient Supply Chain	*match*	*Mismatch*
Responsive Supply Chain	*mismatch*	*Match*

In order to establish a successful supply chain, companies first must determine whether their products are *functional* or *innovative*[1]. Supply chains for functional products have to built by *efficient* processes which emphasize low costs in the supply chain. The sales figures of functional products can be predicted very well so that demand can usually be well anticipated. Innovative products require a *responsive* supply chain in order to cope with the uncertain demand that is inherent to this product category[1]. What is shown in a simple way in Figure 1, creates real problems for an enterprise that manufactures both functional and innovative versions of a product. The BMW Z3, for example, is an example of an innovative product[1] whereas the mass models of the series BMW 32X can be more classified as functional cars. Choosing the wrong supply chain for a product or trying to combine both products in one supply chain is a clear recipe for failure. Sometimes, in cases when a company has an unresponsive supply chain for innovative products, the right solution is to make some of the products functional and to create a responsive supply chain for the remaining innovative products[1]. This can be done through *mass customization* in which innovative components are added to the functional chassis in a very late stage of the manufacturing process. Dell computers for example uses mass customization to transform the unpredictable demand of innovative laptops into a more stable demand of functional components like batteries, displays or memory modules.

Another frequently observed error is he misuse of promotions for functional products like detergents or soap. Such promotions are especially bad because they disturb the otherwise smooth sales figures of functional products. Customers and retailers engage in *forward buying* which creates a *bullwhip effect* through the whole supply chain[1]. While this instability creates high costs in the supply chain, it does not ultimately increase the sales for a functional product.

---

[1] Cmp. Fisher (1997).

2. EXAMPLES FROM DIFFERENT INDUSTRIES

Undoubtedly, modern supply chain management has largely benefited from e-business and is affecting the procurement, order fulfilment, product design and post-sales support processes in the involved enterprises. E-Business provides efficient information integration, synchronized planning and workflow coordination[2]. Information integration describes both information sharing and the direct and real time accessibility of the information by all partners in the supply chain resulting in a reduced bullwhip effect and faster response[2]. Synchronized planning comprises collaborative planning, forecasting and replenishment and joint design of the components[2]. Finally, workflow coordination means joint production planning and operations, procurement, order processing and design engineering[2].

2.1. Examples from the Automotive Industry

The field of the automotive industry has brought up many concept of modern supply chain management. The *just in time* (JIT) concept is probably among the most commonly known strategies which had been made use of in the automotive sector first. In order to define the term JIT precisely, the definition of Voss and Schonenberger can help[3]. Voss defines JIT as "a disciplined approach to improving overall productivity and eliminating waste. It provides for the cost-effective production and delivery of only the necessary quantity of parts at the right quality, at the right time and place, while using a minimum amount of facilities, equipment, materials and human resources…". Schonenberger explains the goal of JIT as "to produce and deliver goods just in time to be sold, subassemblies just in time to be assembled into finished goods, fabricated parts just in time to go into the subassemblies and purchased materials just in time to be transformed into fabricated parts".

The automobile industry has gone through five eras of supply chain models[4]: In the "traditional model" before 1975, the basis for sourcing was cost and price only and characterized by complete mistrust. Demand was high and competitive pressure low. In the "stress model" (1972-1985), the price was still the determining factor, but the

---

[2] Cmp. Lee and Whang (2001).

[3] Cmp. Doran (2001).

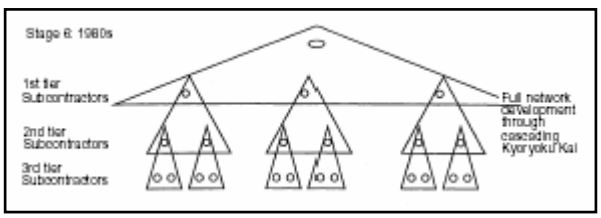
[4] Cmp. Zairi (1998).

suppliers were forced by the manufacturers to comply with quality standard using standard statistical methods. The atmosphere was confrontational. In the "resolved model" from 1982 onwards relationships were more seen on a strategic basis, and data was shared on an operational level. Quality and delivery is addressed and the component purchases are commonly planned and scheduled. In the subsequent "partnership model" in the 1990s, the first real joint collaborations emerged and delivery was shifted more towards JIT. Technological know-how was shared between suppliers and manufacturers. Finally, in the "lean supply model" which was first seen in 1993, information exchange is further increased and a total data awareness is created among the supply chain. *Kaizen* is applied.

2.1.1. Upstream Examples

Toyota is an excellent example for the implementation of Japanese concepts in the automotive supply chain. The common strategy of Toyota has been to establish a close connection with its suppliers in supplier associations. The first associations were founded already in the 1930 and called *kyoryoku kai* (cooperative associations)[5]. Over the years, these associations developed further, and geographically regional associations established as well as associations which only dealt with certain daughter enterprises of the Toyota group[5]. An important stage of this ongoing development can be seen in the establishment of tiered supplier groups in the 1980s where a cascade of *kyoryoku kai* has been established which is shown in Figure 2[5]. Recently, Toyota has established supplier groups also outside Japan, at its production sites in Kentucky (U.S.) and Burnaston (UK). However, Toyota does not simply copy the Japanese model, but it does adapt it to the different social and cultural environment abroad[6]. The common characteristics of the Toyota suppliers is, however, that they employ methods like SPC, JIT, *kanban*, *kaizen*, TQM programmes, cellular manufacturing, cross-disciplinary teams and daily team briefing more frequently than suppliers of other non-Japanese automotive manufacturers[6]. Besides these associations, process teams have been set up which deal with

Figure 2: Tiered Supplier Groups



[5] Cmp. Hines and Rich (1998)

[6] Cmp. Winfield and Kerrin (1996).

improvements in certain areas like PPM failures[6]. This ensures continuous striving for improvement (*kaizen*).

Nissan employs similar methods as Toyota and emphasizes the close and long-term relationships between Nissan and its suppliers. As in Toyota's case, Nissan's suppliers are expected to follow *kaizen* and to strive for rigorous quality levels[7]. But Nissan developed JIT delivery of its suppliers further into the so-called "synchronous supply"[7]. In synchronous supply, the suppliers deliver the requested components in a way that exactly suits the production requirements of the automotive supplier. A seat manufacturer like Ikeda Hoover Ltd. (IHL) in the UK hence delivers exactly the type of seats (in size and colour) that corresponds to the sequence in Nissan's production line[7]. This implies frequent deliveries (30 minute intervals) and requires very low PPM reject rates (below 50) because the synchronous process would be interrupted otherwise. IHL which is located close to the Nissan plant, is able to deal with 200 seating variations within a time window of 2½ hours only[7].

A case study of Fiat[8] reveals that this manufacturer follows a mixture between *keiretsu* and an *adversarial relationship* with its suppliers. The adversarial model assumes that the supplier is not a partner of the manufacturer but only a component supplier who has to deliver a certain quantity of clearly specified components in a specified quality level at the lowest possible price. *Keiretsu*, on the other side, involves aspects like coherent price setting, cost control and profit sharing and interweaves the manufacturer with its supplier. It is considered to be "one of the foundations of Japanese buyer-supplier relationships"[8]. In Fiat's case, some aspects like vertical information sharing are intense like in the *keiretsu* model whereas other aspects like the selection criteria of the supplier are purely based on price (adversarial model)[8].

A similar hybrid approach to suppliers can be seen in the case of Proton[9] which also does not follow completely the Japanese *keiretsu* model. Proton uses some basic systems in order to assess vendors like 4M Assessment (Man, Machine, Material, and Method) and SWOT Analysis (Strength, Weakness, Opportunity and Threat) in order to gain some insights into the capabilities of its suppliers[9]. Proton is politically restricted because they cannot choose their suppliers on the worldwide market freely. Rather than that, following a political mandate ("Bumiputera policy"), they have to focus almost

---

[7] Cmp. Doran (2001)

[8] Cmp. Zirpoli and Caputo (2002).

[9] Cmp. Simpson *et al.* (1998).

exclusively on Malaysian suppliers which sometimes do not achieve the same quality levels that international suppliers do[9].

In order to overcome the contradiction between JIT and a global supply chain, some manufacturers look for a close geographic proximity of their own factory with their first tier suppliers on one premises. The VW plant in Resende (Brazil) which is a joint investment between VW and seven first tier suppliers is such an example[10]. VW manufactures trucks in Resende and has outsourced complete modules like the whole driver cabin to its suppliers. The suppliers themselves source their material mostly from plants in São Paulo which is about 300km away from Resende. Due to the often unpredictable traffic conditions in Brazil especially in the greater São Paulo area, the material flow poses a huge challenge on the VW plant, and VW has imposed stringent restrictions for the warehousing at the plant side. All items are placed into one of three categories and are allowed to stay on the plant side only for 8, 12, or 48 hours, before they are processed. An external logistics operator is responsible for the timely delivery of parts from São Paulo, while an internal logistics operator does "milk runs" within the plant[10]. Although this model is considered to be very progressive, it has not yet been reached the predicted economic success, according to the case study[10].

2.1.2. Downstream Examples

A good example on how automotive enterprises can optimize the supply chain towards their customers is shown in a case study about Volvo[11]. In the mid-1980s, the focus of Volvo had been to negotiate lower prices with the suppliers and to concentrate on low manufacturing costs. Cars were produced to inventory and stored at the production site, in transit, at the national sales companies or at the dealers. The inventory was sufficient to cover 14 weeks of demand, and consequently, large amounts of capital were bound in the inventory[11]. In 1986, Volvo started the first attempts to reduce inventory and to streamline the distribution of cars. But the advance faced a strong opposition from Volvo's employees in the affected departments and finally ended without success. In 1990 then Volvo started a second attempt which focussed on a reduction of the lead time to 28 days, a delivery precision of 95% and a 100% customer based production (built to order)[11]. The importance of this project rose after a failed merger with Renault in 1993. In the course of this program, one complete level of distribution, the national

[10] Cmp. Pires (1998).

[11] Cmp. Hertz et al. (2001).

sales company, was eliminated. The delivery of cars was re-organized and cars were shipped at night enabling Volvo to achieve its ambitious targets.

2.2. Examples from the Electronics Industry

2.2.1. Upstream Examples

Big enterprises like Motorola try to develop their relationships from a *transactional* one to a *process*-related one. The underlying idea is that Motorola's suppliers should play a "strategic role" in Motorola's future business success [12] . Motorola calls this transformation the "value challenge program" and started it with enforcing specific quality and speed targets on the suppliers. After these targets were reached, Motorola then implemented a reverse auction process which favoured the supplier with the lowest quote for the specified quality level. This approach tries to outplace the suppliers who offer over-priced and under-valued components. Motorola helps the suppliers to meet its targets and to enhance their own manufacturing processes so that they can reach the targets set by Motorola. To do this, common workshops are held and production issues are addressed[12].

In the last years, many *original equipment manufacturers* (OEMs) in the electronics industry such as Lucent Technologies, Hewlett Packard, NCR, Phillips, Ericsson, IBM, Compaq, Nokia and Apple Computer have liquidated a portion of their in-house manufacturing facilities and contracted work to *electronics manufacturing services* (EMS).

But EMS so not only function as mere contract manufacturers (CMs) for OEMs, they also generate new business opportunities for small high-tech enterprises that cannot or do not want to own manufacturing units themselves. Transmeta, for example, a 200 person start-up company specializing in microprocessor design, has contracted IBM for the initial production and a Taiwan semiconductor company for the volume production of its newly designed chips. Transmeta thus can use the efficient manufacturing and supply chain capabilities of an established EMS.[13]

Traditionally, a lot of contract manufacturing has been done in Asia, mostly because of low labour costs. However, with increasingly shorter product life cycles, obsolete inventory costs become more dominant and therefore transportation becomes a

---

[12] Cmp. Poon and Lau (2000).

[13] Cmp. Barnes *et al.* (2000).

significant issue. OEMs increasingly want to assemble their products near the target markets, and in order to reduce the transportation costs, CMs follow the OEMs into these markets and consequently establish a global presence, too.

CMs have to manage their suppliers well in order to have a scaleable and cheap supply of components. They can take leverage of their size and demand that their suppliers participate in vendor managed inventory (VMI) or supplier owned inventory (SOI) programs[13].

Solectron, for example, is a major supplier of computer peripherals, PCs, mobile phones, LAN and WAN products, telecommunications equipment, workstations, avionics, mainframes, semiconductors and test equipment. The company has pulled most PC motherboard production out of Malaysia and relocated it to Guadalajara where production costs are roughly the same, but where manufacturing is much closer to the U.S. market. But Asian manufacturing sites do not become obsolete. An executive at Solectron believes that more U.S.-based OEMs are interested in supplying markets in India and China. Anticipating this development, Solectron will grow its Asia manufacturing presence faster than in Europe or Mexico. Currently, 15% of Solectron's manufacturing capacity is in Asia. Solectron's management views the electronics industry as moving towards the Wal-Mart/Dell model. However, one major challenge still is components shortage in the highly dynamic market. Sometimes, suppliers cannot deliver the requested quantity of components which places Solectron in the precarious situation to delay OEM orders[13]. The company is also actively seeking new businesses and currently works with Silicon Valley start-ups with no investment in manufacturing or supply-chain development. These start-ups concentrate on their core competencies, R&D, sales and marketing, while choosing a partner like Solectron in order to provide specialized manufacturing skills[13].

Flextronics' diverse customer base comprises 3Com, Palm, Hewlett-Packard, IBM, Microsoft, Motorola, Nokia and Ericsson. The manufacturing process is done using a ***kanban*** system, with very small buffers at each station. Flextronics operates at built-to-order (BTO) and does not own a ***finished goods inventory*** (FGI). The warehouse in Singapore keeps two days of inventory from each supplier. Flextronics has adopted an Industrial Park model as part of its global strategy and has co-located suppliers of such services as plastic moulding, chip packaging, and component distribution at so-called ***campus facilities*** in Mexico, Hungary, and China. These campus facilities serve the U.S., the European and the Asian markets. The suppliers lease space from Flextronics at the

campuses, where they not only provide services to Flextronics but also build their own merchant business[13]. The company pays attention not to consume more than 30% of any of its co-located partners' output[13]. Recdently, Flextronics announced that it signed a five-year, $10 billion contract with Motorola Inc. Under this contract, Flextronics will manufacture cellular phones, set-top boxes, pagers and other wireless equipment for Motorola by 2005[13].

JIT is a mid-size CM located in Singapore, and its customer base comprises Motorola, 2Wire, Hewlett-Packard, Fujitsu Japan, Halo Data Devices, and Canopus. JIT has a BTO business model, and thus holds very little FGI. JIT feels that the component costs of its suppliers are a very crucial element[13].

The upstream supply with components for OEMs or CMs can also be outsourced to a specialized logistics enterprise. Exel, for example, has established itself as exclusive logistics external and internal provider in the Xing Wang Industrial Park in China which hosts manufacturers like Sanyo, Friwo and RF Micro Devices[14]. Within the area of the industrial park, Exel runs a ***milk run delivery process*** which is shown in Figure 3[14]. But its real strength lies in the incoming supply with components which is shown in Figure 4[14]. In China, the import of components from abroad can be troublesome due to changing regulations (WTO) or simply due to unintentional or intentional delays by the involved authorities. Especially smaller enterprises lack the necessary good contacts (***guanxi***) with the Chinese authorities that usually result in a smooth flow of supply. Exel helps the enterprises in the industrial park by dispatching all the import and the formalities with the customs authorities and delivers the components directly to the factory.

[14] Cmp. Lee (2002).

Figure 3: Exel's Milk Run Delivery Process in the Xing Wang Industrial Park

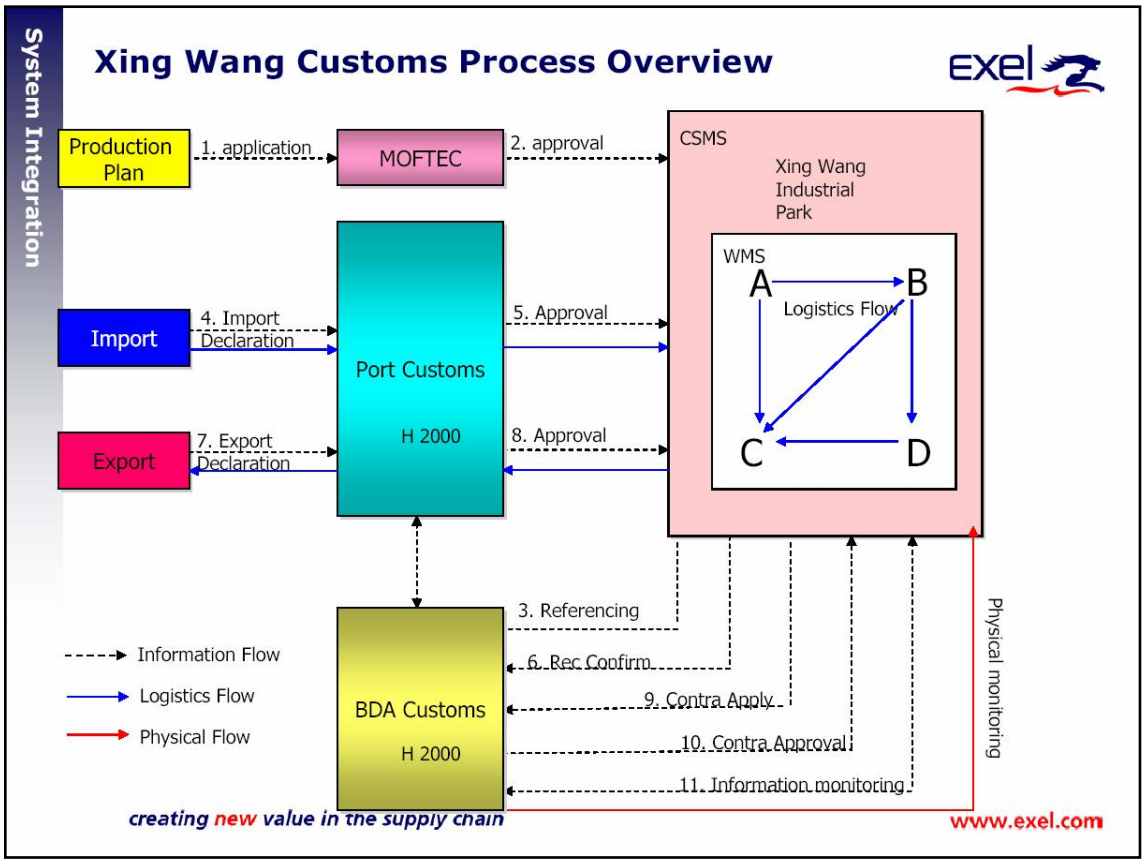
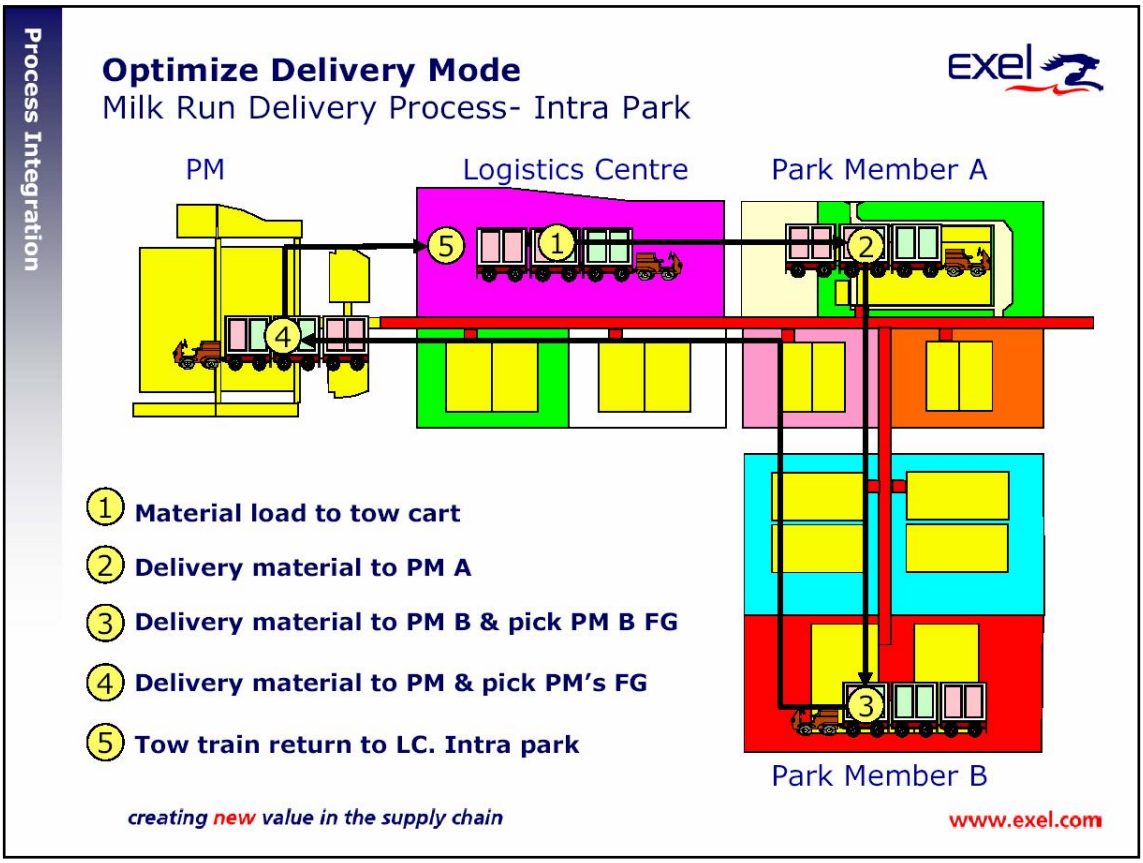


Figure 4: Exel's Customs Clearing Process for the Xing Wang Industrial Park



2.2.2. Downstream Examples

Probably the most known and documented example in the academic literature of a successful downstream example is Dell Computers. Facing the rapid decrease in price of computer parts and the low margins in the computer retail business, Dell positioned itself as a true e-commerce company not only in the B2C domain, but also in the link with its suppliers. Running under an i2 resource planning system[15], Dell can always monitor the status of the execution of customer orders and the supply of components. Dell has structured its supplier base so that the top 30 suppliers represent about 75% of the costs. The top 50 suppliers accounts for 95% of the costs[15]. Dell carries only five days of inventory and brings only material for the next two hours of manufacturing to the assembly lines running a built-to-order manufacturing process. This implies frequent communication with the top tier suppliers as often as several times per day[15]. In order to guarantee a timely and efficient delivery of components, Dell has switched to local manufacturers of high-value components like the motherboard[16]. If Dell faces a lack of certain components, it will first try to substitute the component from other suppliers. If that cannot be done, it will substitute the missing component by an available component that is of higher value for the customer (bigger hard disk, larger memory, etc.) or try to delay newly incoming orders for some days. Another possibility is to shift consumer demand by running a promotion on a product that does not need this component. Products that are not manufactured at Dell but sold under the brand name like monitors and printers, are bundled and delivered by UPS rather than bundled in the Dell factory itself[16].

Hewlett-Packard (HP) faced an increasingly tough environment for the production of its CD writers (CD-RW). The market for CD writers grew from 100,000 in 1997 to over 5 millions in 2001, but at the same time, the price decreased at a yearly rate of 50%[17] and the number of competitors multiplied. HP's initial supply chain comprised suppliers in Malaysia and Japan who delivered to distribution centres in the U.S., the Netherlands and Singapore where the CD-RW were localized for the target markets. The localized devices were then delivered to the resellers in the respective countries. Transport was done by ship, and the overall cycle time was 120 days with an inventory of 91 days at

---

[15] Cmp. Hunter (2001).

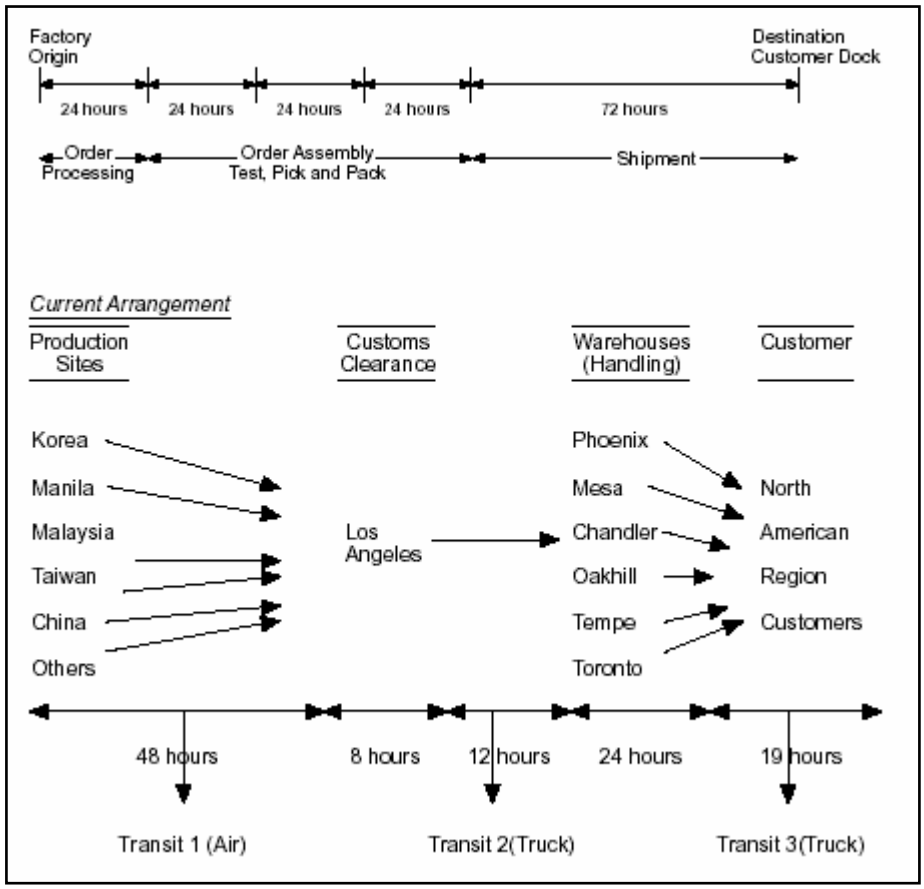
[16] Cmp. McWilliams (1997).

[17] Cmp. Hammel *et al.* (2002).

the distribution centres alone. The large inventories bound large amounts of capital and was affected by the rapid decrease in prices for CD-RWs. HP started to restructures this supply chain in 1999 and substituted the three distribution centres by one world-wide distribution centre in Singapore. HP also switched to air freight despite the higher prices, which were more than offset by the decrease in inventory holding costs[17]. By furthermore establishing JIT delivery from HP's suppliers in Malaysia and Japan to its new worldwide distribution centre in Singapore, HP managed to decrease the cycle time to eight days only realizing $50 million per year[17].

A similar move was done by Motorola in the late 1980s when the semiconductor manufacturer diminished its cycle time from seven to four days. Motorola's starting position is shown in Figure 5[18].

Figure 5: Motorola's U.S. downstream in the 1980s

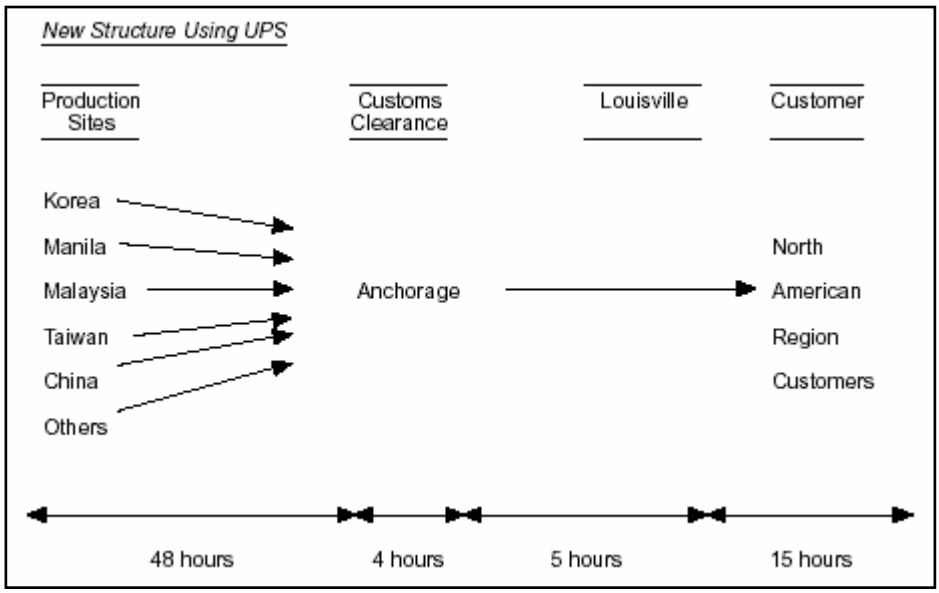


Having a high value/weight ratio and facing a rapid product obsolescence, the use of air freight is justified in the distribution of semiconductors in order to keep inventory holding costs minimal. Motorola realized that half of the cycle time was actually spent

[18] Cmp. Bhatnagar and Viswanathan (2000)

for customs clearance and the subsequent delivery of the components within the U.S. In order to speed up this process, they sought a strategic alliance with UPS and outsourced the whole process of customs clearance and subsequent national distribution. UPS has its air hub for incoming flights from Far East Asia in Anchorage, and the resulting distribution network is shown in Figure 6[18].

Figure 6: Motorola's re-engineered supply chain



From Anchorage, UPS sends the semiconductors directly to the customers in the U.S. The alliance with UPS and the decrease of inventory in transit provided substantial financial benefits for Motorola[18].

2.2.3. Holistic Concepts

Cisco effectively uses the internet to as a link to its suppliers and to its customers. In the mid 1990s, Cisco faced the challenge that their revenues were growing so quickly that Cisco could not increase its production capacities accordingly. So Cisco decided to outsource most of the manufacturing and logistics processes and to take leverage of the possibilities of the web-based internet. The company established the "Manufacturing Connection Online (MCO)" and the "Cisco Connection Online (CCO)" and calls these two interfaces together the "ecosystem"[19]. The MCO system links Cisco to 34 plants globally of which only two are owned by the company. Cisco's suppliers also perform 90% of the sub-assembly work and 55% of the final assembly which means that most of Cisco's products are shipped directly from suppliers to end customers without ever

[19] Cmp. O.V. (2001).

passing through the company[19]. Cisco concentrates itself exclusively on R&D, IP specifications, sales and marketing, and the contracting of the manufacturing. With the CCO interface, Cisco succeeded in automating the customer order process and avoid erroneous orders by a careful design of the order form. The CCO also enables customers to report bugs via a web interface, search for help and download firmware updates interactively, without any further involvement of Cisco staff.

2.3. Examples from the Consumer Goods Industry

Increasingly, consumers of fresh meat, fruit and vegetables in the UK source their products from supermarkets rather than from specialist retailers[20]. Consequently, supermarkets are also adjusting their supply chain to meet the growing demand at low supply costs. J Sainsbury Plc., for example, concentrates on reducing the number of suppliers for fresh produce and meat and is seeking long-term relationships with the few key suppliers. In its "Partnership in produce" agreement with ENFRU Ltd., J Sainsbury Plc. provides information to ENFRU as to the required quality of fruits, food regulations, and environmental standards that the retailer requests from its suppliers. This information sharing practice enables both parties in jointly developing marketing strategies for new products or fruit packages[20].

3. CONCLUSION

The examples in this report show that, across different industries, we can identify common trends in global supply chain management:

1. Enterprises increasingly focus on a few key suppliers and develop strategic links with them. They engage in information sharing, joint development, and collaborative production planning.
2. Large manufacturers team up with contract manufacturers and suppliers in industry compounds near their target markets so that supply chains are short and inventory holding costs are as low as possible. JIT and other contemporary supply chain and manufacturing practices are employed.
3. E-Business enables the instant flow of information across the supply chain partners and creates new possibilities in B2B and B2C links.

---

[20] Cmp. Hughes and Merton (1996).

LITERATURE ANNEX

Barnes *et al.* (2000): Barnes, Earl; Dai, Jim; Deng, Shijie and Doug Down: Electronics Manufacturing Service Industry. In: School of Industrial and Systems Engineering (Editor): Electronics Manufacturing Service Industry. Atlanta, 17 August 2000.

Bhatnagar and Viswanathan (2000): Bhatnagar, Rohit and S. Viswanathan: Re-engineering global supply chains. In: International Journal of Physical Distribution & Logistics Management, Vol. 30, No. 1 (2000), pp. 13-34.

Doran (2001): Doran, Desmond: Synchronous supply: an automotive case study. In: European Business Review, Vol. 13, No. 2 (2001), pp. 114-120.

Fisher (1997): Fisher, Marshall: What Is the Right Supply Chain for Your Product? In: Harvard Business Review, March/April 1997.

Hammel *et al.* (2002): Hammel, Todd; Kuettner, Dorothea and Tom Phelps: The re-engineering of Hewlett-Packard's CD-RW supply chain. In: Supply Chain Management, Vol. 7, No. 3 (2002), pp. 113-118.

Hertz *et al.* (2001): Hertz, Susanne; Johansson, Johny K. and Flip de Jager: Customer-oriented cost cutting: process management at Volvo. In: Supply Chain Management, Vol. 6, No. 3 (2001), pp. 128-141.

Hines and Rich (1998): Hines, Peter and Nick Rich: Outsourcing competitive advantage: the use of supplier associations. In: International Journal of Physical Distribution & Logistics Management, Vol. 28, No. 7 (1998), pp. 524-546.

Hunter (2001): Hunter, Dick: How Dell keeps from stumbling. In: Business Week, 14 May 2001.

Hughes and Merton (1996): Hughes, David and Ian Merton: "Partnership in produce": the J Sainsbury approach to managing the fresh produce supply chain. In: Supply Chain Management, Vol. 1, No. 2 (1996), pp. 4-6.

Lee (2002): Lee, C.K.: Delivering Real Value in the Supply Chain. In: The Logistics Institute – Asia Pacific (Editor). Singapore, 8 November 2002.

Lee and Whang (2001): Lee, Hau L. and Seungjin Whang: E-Business and Supply Chain Integration. In: Stanford Global Supply Chain Management Forum, November 2001.

McWilliams (1997): McWilliams, Gary: Whirlwind on the Web. In: Business Week, 7 April 1997.

o.V. (2001): o.V.: Case Study: Cisco Systems, in: Business Intelligence, o. Jg.

Pires (1998): Pires, Sílvio R. I.: Managerial implications of the modular consortium model in a Brazilian automotive plant. In: International Journal of Operations & Production Management, Vol. 18, No. 3 (1998), pp. 221-232.

Poon and Lau (2000): Poon, W. K. and K. H. Lau: Value challenges in supply chain management. In: Logistics Information Management, Vol. 13, No. 3 (2000), pp. 150-155.

Simpson *et al.* (1998): Simpson, Mike; Sykes, Geoff and Adini Abdullah: Case study: transitory JIT at Proton Cars, Malaysia. In: International Journal of Physical Distribution & Logistics Management, Vol. 28, No. 2 (1998), pp. 121-142.

Winfield and Kerrin (1996): Winfield, Ian and Máire Kerrin: Toyota Motor Manufacturing in Europe: lessons for management development. In: Journal of Management Development, Vol. 15, No. 4 (1996), pp. 49-56.

Zairi (1998): Zairi, Mohamed: Best practice in supply chain management: the experience of the retail sector. In: European Journal of Innovation Management, Vol. 1, No. 2 (1998), pp. 59-66.

Zirpoli and Caputo (2002): Zirpoli, Francesco and Mauro Caputo: The nature of buyer-supplier relationships in co-design activities. In: International Journal of Operations & Production Management, Vol. 22, No. 12 (2002), pp. 1389-1410.