Business Models and Industry Solutions 12

Learning Objectives

Logistics plays a huge part in improving a company's competitive position. In many cases it is prerequisite for the creation of new business fields and for opening up additional markets. This chapter deals with various existing business models in the industry, trade, and service sectors; with the main focus on the logistical requirements and structures, which will be further explained through some exemplary industry solutions. In particular, the chapter illustrates the effects on logistics resulting from internationalization and globalization, from increasing division of labor and the forms of collaboration caused by this, and from new procurement concepts and sales channels brought about by e-commerce. The reader will gain insights into the consequences business decisions can have on logistics – and why the functions of logistics should be taken into account at an early planning stage.

Keywords

- Industry models, industry solutions
- Stationary trade, mail order business
- E-commerce
- Internationalization, globalization
- Automobile, textile, and electronics industries
- Procurement, production, and distribution strategies
- Contract logistics

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12.1 Business Models

A model is a simplified representation of reality. Hence, a business model is a simplified representation of a commercial activity where several business partners come together to exchange material or immaterial goods commercially. Business transactions in the form of business processes – such as product offering, product delivery, order and payment processing – can form a business model and are necessary for this exchange.[1]

A business model not only can be the description of an individual company but also of an entire industry or trading sector. This is also called industry solution. In this sense, the term business model is applied to mature industries, in which a dominant business model has become prevalent. Nevertheless, these models are subject to ongoing innovation and change, which is fuelled by the need for increased economic efficiency and cost reduction. Selected business models and industry solutions with their respective logistics systems will be presented in the following.

12.2 Logistical Industry Solutions

12.2.1 Industry Solutions in Manufacturing

Logistical industry concepts are as manifold in the manufacturing sector as the individual industries themselves. Thus, only a few industries and their logistics systems can be presented here. A key industry is the *automotive industry* including the *supplying industry*, which has taken on a leading role in the development and application of logistics concepts since the beginning of logistics. Many logistics concepts have been adopted from other industries, such as just-in-time delivery or vendor managed inventory, area freight forwarding, external procurement warehouses, and supplier parks (see Chap. 7).

The main logistical determinants of the automotive industry are:

- Strong fragmentation of value chains
- Decentralized manufacturing in networked production systems
- Increasingly globalized supply chains

Fragmented value chains generate widely ramified procurement-supply chains between car producers and their direct suppliers. These suppliers are also termed tier-1 suppliers. The integration of pre-suppliers (tier-2, tier-3 etc.) in these chains is still the exception rather than the rule, which is why industry-specific and optimized value chains in this field have hardly developed yet. In the future, the automotive

[1] Cf. Berning (2002), p. 16.

industry will direct their efforts towards this issue,[2] thereby making this sector ever more reliant on logistics.

The automotive industry greatly relies on purchased components, materials, and primary products, which entails highly complex supplier–buyer relations. For this reason, automobile manufacturers consistently seek to reduce their supplying resources in terms of components, product lines, and locations.[3] While in the past e.g. European manufacturers collaborated with 500–1,000 suppliers, some producers have already reduced this number to 350. The medium-term plan is to only collaborate with 30–50 suppliers. This strategy of *Single Sourcing* is considerably driven by purchasing pre-finished modules and systems.[4]

A module is defined as a self-contained functional unit that may consist of several or many (individual) parts and components. A system is a functional and technical-developmental unit oriented towards one main function. A system supplier's responsibilities, however, comprise more than merely procurement, assembly, and test operations. They are also integrated into a company's R&D, product designing, and logistics. These suppliers are also called *value-adding partners*.

The procurement strategies of *modular and system sourcing* lead to a regrouping of the supply chain (so-called *tiering*). The supply chain is enlarged by an additional tier made up of module and system suppliers and now comprises components, module, and system suppliers. Module suppliers autonomously coordinate the flow of materials and components of the upstream suppliers in the supply chain and assemble the pre-finished modules from the components.

One example is the cockpit of a car, which consists of an instrument carrier, heating and air-conditioning, all control elements, a steering column and steering wheel, safety installations (airbag), radio and navigation systems, and so on. Another example is the chassis frame, where either front or rear axle module, including undercarriage technology (springs, dampers) are available, as well as wheel systems including rims, tires, pressure control, and so forth (see Fig. 12.1).

The procurement of modules and systems is not confined to the automotive industry. Other sectors have also pursued this procurement-supply concept for some time.[5] Thus, computer manufacturers purchase complete hard drives and screens, builders procure entire bathrooms and door, window, and facade elements. Watch producers are supplied with clockworks while in the food industry spice blends and ready-made fruit supplements for yogurt production are purchased as complete modules.

With increased scope of delivery, modules correspond to the criteria of just-in-time procurement (i.e. quality, diversity, and volume), which is why the supply of modules takes the greatest share of just-in-time deliveries.[6] In this case, the

[2] Cf. Straube et al. (2005), p. 104.

[3] Cf. Wildemann (2010). p. 86 et seq.

[4] Cf. Ihme (2006), p. 276.

[5] Cf. v. Eicke and Femerling (1991), p. 59.

[6] Cf. Ihme (2006), p. 296.

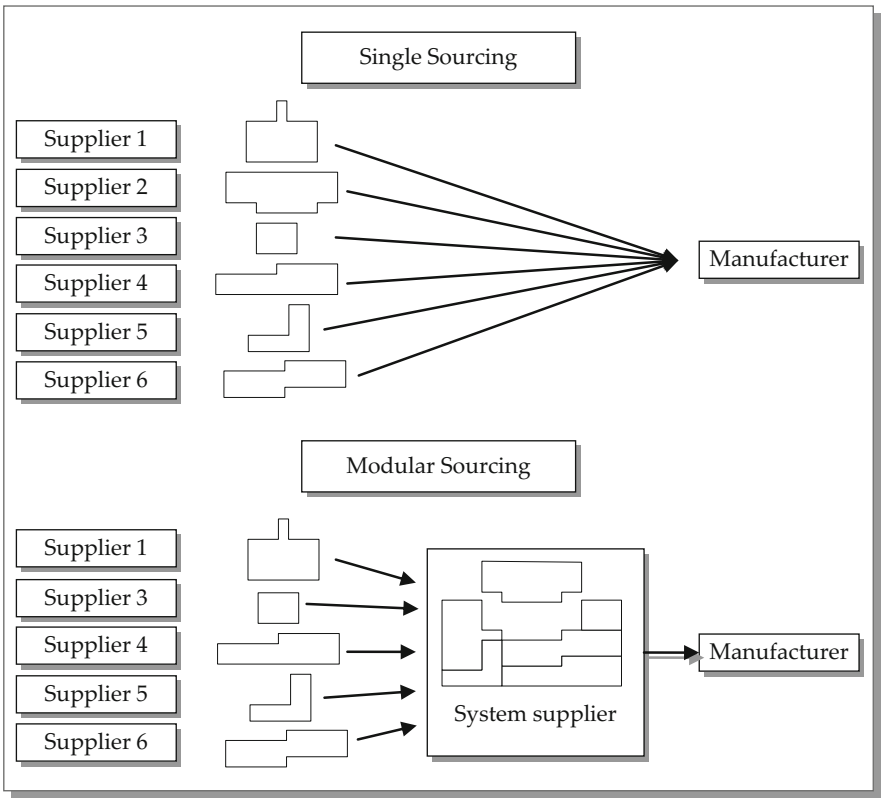

Fig. 12.1 Procurement structures in the automotive industry (Cf. v. Eicke and Femerling (1991), p. 33 et seq)

modules are directly delivered to the assembly line of the automobile plant. The loading aids needed to carry out these procurement processes have to meet special requirements. They are a special type of load carrier with appliances that allow carriage and fixation of the modules to avoid damage during transport and to facilitate handling during the assembly process.

Standards in the materials flow, such as the use of standardized loading aids and packaging, have long been established in the automotive industry, irrespective of the purchased goods. On the other hand, these cross-company efforts for standardization are complicated by OEM standards, which in many cases apply to containers for just-in-time deliveries. Likewise, electronic data exchange is largely standardized in the automotive industry, of which the VDA (German Association of the Automotive Industry)/ODETTE or EDIFACT standards are some examples.[7] However, more recent data exchange protocols, such as XML, are increasingly superseding these

[7] Cf. Ihme (2006), p. 206 et seq.

standards (see Chap. 9). If the information and communication technologies used between producers and their direct suppliers can be regarded as good, upstream suppliers and the involved logistics service providers are also in considerable demand of such technologies.

Apart from the acquisition of external suppliers, the European automobile industry is also characterized by a network of production and assembly sites that is strongly interwoven. The *Volkswagen Group*, for example, operates over 50 production sites world-wide. Likewise, premium car manufacturers have numerous production sites at their disposal, often located in the most important markets. On the one hand, foreign exchange fluctuations can thus successfully be offset. On the other hand, foreign markets are in many cases much more important than the car producer's own domestic market. *BMW*, for instance, now sells more cars in the USA than in Germany. This has led to the set-up of a new production site in Spartanburg, North Carolina, where the X5 and Z4 series are built and the X3 series will be built in the future. These cars are entirely produced there. With a car-specific vertical range of manufacture of about 30 %, most parts and components are procured through the supply network of the BMW Group. Numerous suppliers have relocated to the plant's proximity since it is a common strategy in the supplying sector to adopt the internationalization strategies of their producers. The engines are procured through BMW's production network and mostly manufactured at the engine works in Graz/Austria. Other car manufacturers employ similar procurement and production strategies.

Along with procurement and production, the importance of distribution is growing for the automotive industry, too. Distribution of cars is mostly effected through multi-level sales systems, which are brand-exclusive to many manufacturers. Via sales companies the producers deliver the cars to their own subsidiaries, to contractors, and to importers in the individual markets.

In the past, markets were supplied with cars according to a push strategy which corresponded to existing production facilities, i.e. a certain stock of cars was provided to the car dealers.[8] Due to the great variety of types and designs, this strategy of car distribution is now only suitable for volume manufacturers (*Opel, Ford, VW*). Premium manufacturers (*Audi, BMW Group, Daimler, Porsche*), have for some time pursued higher production flexibility, which enables them to adopt a pull strategy where the entire car production is aligned with customer orders.[9] To ensure high adherence to deadlines despite a great variety of types and designs and thus fluctuating production complexity, the production sequence follows a pearl chain principle, which does not allow for a change of design or delivery date after a certain point.[10]

Logistics service providers assume an important role for the automotive industry as well. With regard to procurement, they manage the transport-logistical and

[8] Cf. Sommer (2003), p. 240.

[9] Cf. Sommer (2003), p. 242.

[10] Cf. Feldkamp (2001), p. 175.

warehouse-logistical tasks. Furthermore, they are responsible for supply and disposal of parts and components for production and assembly sites, as well as for supply of spare parts and the distribution of the finished cars to car dealers or customers.

Just like the automotive industry, the *electronics and computer industry* displays a strong division of labor. Providers of electronic products are, however, more and more focusing on product development and sales while outsourcing their production to specialized companies, so-called Electronic Contract Manufacturers.[11] Production predominantly takes places at sites in Asia.[12]

Hewlett Packard (HP), one of the leading manufacturers of computer systems, operates a world-wide production network; partly with own plants and partly with contract manufacturers. The individual production sites have their own geographical sales channels and are responsible for the regional distribution. Procurement of materials and primary products is done through global supply chains which are used by all sites. HP centralized their European logistics operations in Germany at their site in Böblingen near Stuttgart. A high-performance network of Europe-wide logistics service providers guarantees delivery of products within 24–48 h.[13]

In the consumer electronics sector, *Philips* has undergone similar developments of their logistics structure. Increased cost pressure, shortened product life cycles, increased product value, and higher service requirements of customers necessitated the set-up of a Europe-wide, international distribution system.[14] Due to this, national storage and distribution centers were given up and so-called platforms were created. These platforms are cross-docks, where pricing and transshipment of goods as well as consolidation of individual orders and possibly of part loads to complete loads takes place (see Fig. 12.2).

Another important sector is the *chemical industry* and its branches, such as petro chemistry. Compared to the production of packaged goods, chemical production processes exhibit some special features which have an immediate bearing on the design of the logistics systems.[15] There are procedural processes with special requirements for the flow of materials and goods. For one thing, the materials may be continuous or discrete, which invites questions regarding (intermediate) storage, provisioning of stocks and delivery services. Due to the chemical and physical nature of the materials, which may either occur in gaseous or liquid aggregate states (e.g. as acids) or in solid form as bulk goods, special facilities and vehicles are necessary for transport and storage.

These include tanks, silos, pipes, conveyors, tank/silo wagons and special freighters, all of which need to adhere to hazardous goods regulations.

[11] Cf. Vahrenkamp (2007), p. 172.

[12] Cf. Schorb et al. (2007), p. 625 et seq.

[13] Cf. Schmid (2001), p. 145.

[14] Cf. Lammers and Neubauer (2005), p. 52 et seq.

[15] Cf. Grunow (2001), p. 323 et seq.

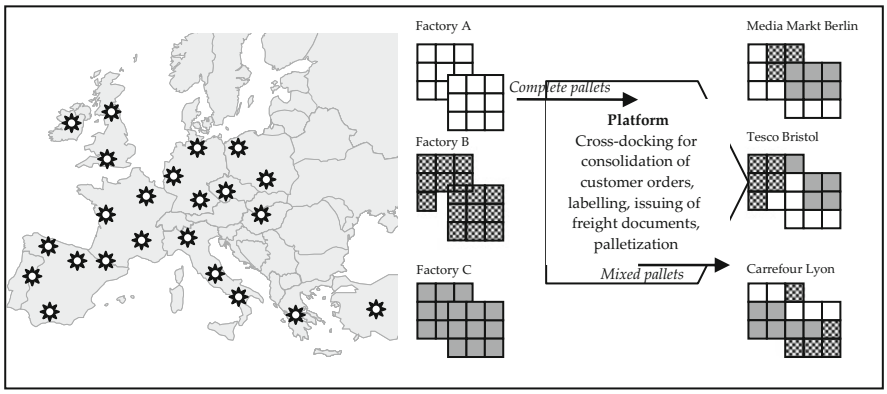

Fig. 12.2 Platform concept of Philips (Cf. Lammers and Neubauer (2005), p. 53)

The special requirements of this business leads to a low level of outsourcing on the one hand and causes a restrictive market offer on contract logistics services on the other hand. Growing market pressure, globalization and hence newly structured supply chains promoted the outsourcing process within chemical industry with contract service providers. A number of logistics service providers specialized in the chemical industry are available for storage and transport. Of major importance are the transport modes of water, road, pipeline and rail.[16]

12.2.2 Industry Solutions in Trade

Several business models can be distinguished in the trading sector, which falls into the categories of stationary trade, distance mail-order trade, and e-commerce. At a first glance, the following business models can be listed for stationary trade:

- Subsidiary and non-subsidiary (retail) stores
- Department stores
- Consumer markets
- Self-service department stores
- Specialist stores and discounters

The structure and number of supply points and the range of products influence the storage-logistical and transport-logistical structures of these business models to a great extent.[17] The physical nature of the goods (size, volume, weight, sensitivity)

[16] Cf. Buchholz et al. (1998), p. 87.

[17] Cf. Hardt and Kasch (2007), p. 641 et seq.

as well as the design and packaging have a bearing on the handling of the goods. In particular, the logistical characteristics of these types of businesses are[18]:

Specialist stores without subsidiaries do in most cases not operate a logistics system of their own. Generally, they are supplied directly by the producers or by wholesalers.

The logistics of *department stores* depends on their articles' properties and their range of products and is either effected as direct supply with decentralized storage or differentiated according to products in a decentralized manner. In this way, inventory risks can be minimized and costs may be saved by bundling goods for the supply of the stores.

Consumer markets and *self-service markets* are often directly supplied. However, more and more parts of their product ranges are supplied from central warehouses. Concepts of consolidation, such as cross-docking, are increasingly employed as well (see Sect. 8.3.3). Subsidiary chains, for example *Aldi*, *Lidl* or *Deichmann*, are normally supplied directly from central warehouses.

Large *discounters* operate more than 60 central warehouses in Germany to minimize the distances and thus the transport costs to the individual stores. This indicates that the logistics of discounters is rather cost-oriented and characterized by the simplicity of their inventory management and logistical processes.[19] All the more so as the product range of discounters is steadily growing and may comprise approximately 700–1,000 products, which are mainly fast moving consumer goods.

Depending on their sales strategy and store size, *full-range traders* offer up to 15,000 articles, a large share of which are slow moving consumer products. The logistics systems of full-range traders and discounters have to meet different requirements due to the contrasting movement of their goods (fast/slow moving consumer goods).[20] The picking of slow moving goods is usually carried out on picking vehicles, thereby largely separating the bundle units. Logistics systems for fast moving goods, however, are rather designed for large quantities which are mostly compiled to loading units on pallets. The storage systems vary accordingly. Full-range traders pick their goods from the easily accessible lower shelves while the buffer stock is placed on the upper shelves. The shipping of pallets with only one type of article renders the storage and warehouse design of discounters rather simple.

There are also a number of product-related business models, such as *textile trade*. These models strongly rely on global procurement and production structures, mainly to make use of considerable (labor) cost advantages abroad.[21] The logistics chains are in these cases often regulated by the trading companies. Thus, local forwarders are commissioned with the pick-up and composition of shipments in the country of origin. They then consolidate the shipments into container loads and

[18] Cf. Merkel and Heymann (2003), p. 170 et seq.

[19] Cf. Brandes (2003), p. 202.

[20] Cf. Auffermann (2007), p. 26.

[21] Cf. Christopher et al. (2009), p. 112 et seq.

carry out pre-carriage as well as on-carriage. The same applies to the takeover by logistics service providers in the target country, which are responsible for separation, processing and tagging of the textiles as well as their delivery to the stores.[22] These structures in the textile industry, however, are undergoing changes since successful business models in textile trade are subject to shortening fashion cycles with ever increasing demand for broad product ranges. This requires logistics systems to offer shorter pre-carriage, processing and delivery times. The concept of supplying stores directly from Asian production sites, for example, is supposed to meet these requirements.[23] Store-related picking, packing for export, and consolidation in containers for main carriage are all carried out at these production sites. After de-consolidation of the containers in the country of destination, the goods packages are delivered to the stores using the networks of the respective delivery services. In comparison to traditional logistics systems, transit times are reduced from 12 to 6 days for air freight and from 45 to 39 days for sea freight. The logistics costs can be cut by close to 15 %.[24]

In *mail-order* or *distance trade,* no delivery to business sites or stores takes place since the goods are delivered directly from the warehouse to the customer. Warehousing structures are normally organized centrally in the mail-order business.[25] Delivery services are critical for the success of a mail-order business. To achieve the highest possible delivery service level, different warehouse and shipping systems are used for different components of a product range. The handling takes place in shipping hubs which are often highly automated to keep operating costs low. For example, shelving racks, conveyors, cross-belt sorters, and parcel machines are thus utilized. Handling capacities of more than 160 million articles at one location per year can be achieved in high-rack warehouses.[26] Reliable and flexible delivery – which is paramount for mail-order systems – is greatly reliant on the technological equipment for storage and picking processes, on the organization of the *order processing* and on the means of transport used. The use of (partly) automated picking systems (Pick by Light, Pick by Voice) can positively influence the picking reliability and overall speed. On the other hand, manual picking strategies (pick lists) provide a high degree of flexibility against fluctuating demands as well as speedy processing of urgent orders.[27] Different concepts are offered for *delivery*. These include 24 h service, desired date delivery, defined delivery windows, and evening or Saturday delivery. Moreover, further delivery and collection concepts such as parcel shops integrate kiosks, gas stations, or lottery shops in the delivery process. Parcel delivery systems at gas stations are

[22] Cf. Buchholz et al. (1998), p. 90 et seq.; Nothardt et al. (2007), 688 et seq.

[23] Cf. Clausen et al. (2007), p. 26 et seq.

[24] Cf. Clausen et al. (2007), p. 28.

[25] Cf. Kloth (1999), p. 53.

[26] Cf. Witten and Karies (2003), p. 190.

[27] Cf. Femerling (2003), p. 217.

completely independent of opening hours. Track and tracing services make for a better co-ordination of the delivery between customer and sender, by which more accurate advance notifications can be issued and more reliability can be achieved. The *distribution of large goods* – i.e. of *white* and *brown* goods such as washing machines, refrigerators, TV sets, furniture and kitchens – is especially demanding for mail-order businesses.

In approaching these challenges it is important to bring parallel distribution channels together. In many cases distribution is effected within established structures. White and brown goods while high-volume goods are delivered ex works.[28] These delivery structures, however, lead to varying service agreements between sender and customer, which is met with less and less acceptance.

12.2.3 Industry Solutions in the Service Sector

Logistics for service providers is a business field for industry solutions that goes beyond physical logistics processes. These service providers offer, for instance, service for banks, insurance companies, public administration (back office), as well as the administrations of industrial and trading companies. Accordingly, logistical goals – such as providing the right persons, data, documents, information or even materials at the right time, in the right quality and quantity at the right place of demand – also play an important role in these areas. In particular, document and information logistics are becoming increasingly important for the service sector as they constitute an essential factor of production for immaterial products. Services of physical and electronic postal logistics as well as physical and digital archiving need to be rendered, including the necessary IT systems. Services like these are more and more offered by logistics service providers.[29]

Postal logistics includes:

- Mail processing (incoming mail, outgoing mail, distribution)
- Letter shops (printing, enveloping, dispatch, courier services)

Archive logistics includes:

- Document reception, indexing, and management
- Document shredding according to legal regulations
- Archive management including scanning and integration into document management systems
- Process management using document management systems with workflows

Other service-sector industry solutions are available for health services. For these purposes, procurement and distribution logistics are most important in hospital wards where consumable articles (surgical dressings, syringes, medication etc.) and

[28] Cf. Gleißner (2003), p. 202 et seq.

[29] Cf. Peters (2003), p. 109 et seq.

reusable surgical instruments are needed. This includes purchasing processes, such as price negotiations, framework contracts, standardization of product range and scope of delivery and procurement processes, such as repeat orders, central warehouse storage and fine distribution on the wards.[30] Service providers specialized in this segment are responsible for the coordination of the supply chain between suppliers, producers, distributors and the hospital administration.

12.2.4 Industry Solutions in E-Business

Todays business models are significantly shaped by the Internet. *Electronic management of business processes* not only helps optimize traditional business processes but also forms the basis for entirely new business models. Prominent examples of this are online marketplaces where supply and demand are aligned in virtual space, where pricing processes are organized and where transactions are supported by information-technology.[31] *E-business* is above all carried out within business-to-business (B2B) models for transactions both between companies and their value-adding partners and between companies and their business clients. *E-commerce* is mainly employed within business-to-consumer (B2C) models, which describe transactions between companies and end consumers. Depending on the organization of the (business) processes, e-business is also used to support both procurement processes (Buy-Side or *E-Procurement*, *E-Purchasing*) and sales processes (Sell-Side or *E-Commerce, E-Sales*).

B2B and *B2C business models* describe markets or sales channels that are based on marketplaces on which providers and consumers meet. Therefore, as a first step it needs to be analyzed which markets or sales channels are to be targeted.[32] In doing so, it is crucial to determine whether business is being made with an end consumer or trading partner (wholesaler, retailer, subsidiary retailing business) and which of the basic models of B2B and B2C need to be employed. Providers of E-commerce can be:

- *Multi-channel providers;* established producers and trading companies which make use of the Internet as an additional sales channel
- Exclusive *Internet providers* which use the Internet as their only sales platform
- Traditional *mail-order businesses* which offer Internet solutions to their customers as a new communication and ordering medium, along with letter, fax, and telephone

One of the most fundamental consequences of e-business is in any event a further expansion of the markets. This is true both for the procurement markets, in which the globalization of purchase and procurement is further accelerated, and for the sales markets, where entirely new sales channels can be opened up. Since product ranges

[30] Cf. Pintsch (2004), p. 252.
[31] Cf. Femerling (2003), p. 211 et seq.
[32] Cf. Femerling (2003), p. 208.

are offered on the Internet, a substantially larger distribution area than with traditional mail-order trade is to be serviced. This directly affects delivery services, especially with regard to delivery times. The advantages of global sourcing may lead to increased costs in the procurement process due to longer transport distances, more frequent transshipment and more complex processing (customs clearance, import documents). On the other hand, cost advantages can be realized by utilizing the Internet for purchasing activities (*e-procurement*) in the form of Desktop Purchasing (DP) systems, especially for the purchase of standardized products.

E-business makes direct selling possible for producers but also for individual sales stages. If such (intermediary) sales stages are skipped, the order structure is inevitably affected. Few substantial orders, which had previously been delivered to businesses, are then superseded by many small orders being sent directly to end customers. This has direct effects on the logistics costs. The order processing costs rise since economies of scales do no longer apply for storage and picking facilities. Costs per transport item increase because deliveries involve many stops, few items are delivered at each stop, and several delivery attempts sometimes have to be undertaken, especially to private addresses (*last-mile problem*).[33] The logistical challenges are thus largely the same for distribution logistics as they are for the mail-order business,[34] where primarily small shipments need to be delivered to customers within a narrow timeframe. However, e-commerce systems additionally have to meet customer requirements with regard to speediness and reliability. This is subsumed under the term *fulfilment*, which comprises the entire physical, informational, and monetary order processing.[35] To this end, all existing systems of parcel services, mail organizations or forwarders and carriers are called into action. Equally important to order processing is the processing of return deliveries, subsequent deliveries in cases of shortfall quantities, wrong deliveries, or technical complaints.

All the statements made about the *structures of distribution networks* (see Chap. 8) basically hold true for the B2B and B2C concepts discussed here. Especially important are the substitutionary relations between the number of warehouses and storage stages and the delivery time. The more warehouses are operated in a specific area, the shorter become the possible delivery times, and the higher are the infrastructure costs of the network. Considering the costs, a centralization of the warehouse structure is suitable especially also for e-commerce solutions and can thus frequently be observed in B2C systems.[36] A decentralized network of warehouses, however, brings with it the advantage of extremely quick delivery times. Segmentation of the network structure specific to the product range is also favourable for the e-commerce sector. Depending on the product and customer requirements, parts of the product range can thus be stored centrally while other articles are stored in regional warehouses or are delivered via stock-less transshipment points. Moreover, more and more producers

[33] Cf. Witten and Karies (2003), p. 193.

[34] Cf. Bretzke (1999), p. 228.

[35] Cf. Schubert (2001).

[36] Cf. Lasch and Lemke (2002), p. 3.

and suppliers as well as wholesalers are integrated with their distribution logistics. Such differentiations may appear sensible if e-commerce offers from (centralized) European distribution networks are to be taken advantage of. From a cost and delivery-service perspective, however, part deliveries should be avoided.

12.3 International and Global Business Models

International and global business models may refer to procurement, production, and distribution and show effects on the respective logistics systems. The frameworks for international business models are continually changing while internationalization strategies and logistics strategies can be mutually dependent. Amongst others, the key factors for this development are[37]:

- Continued globalization through open borders
- Development of new growth markets in Eastern Europe and Asia
- Increasing offer range of logistics service providers
- High volatility and tendency towards falling transport prices
- World-wide differences in factor costs and, above all, labor costs

In designing *international distribution systems*, the contents about warehouse management and transport network planning explained in Chap. 8 can be extrapolated to the challenges of global logistics systems. Most important in doing so are the target values of delivery service and logistics costs.[38] Regarding the delivery service, it is of major importance to reach destinations within a reasonable time while distributing internationally. The requirements for this vary in different geographical regions. For example, within the EU, in large cities or agglomeration areas the same requirements apply, regardless of national borders. Compared to national structures, the number of stakeholders and institutions in global logistics systems is on the rise.

Thus, several transport modes and a multitude of forwarders and logistics service providers are integrated into world-wide logistics chains.

Existing national logistics structures often distribute goods internationally, as is the case of *Eurologistics systems* or when opening up new markets. This, however, entails a significant (re)structuring of the existing institutions and structures.[39] Several phases can be distinguished. In the first phase, finished products are exported from the country of origin to the country of importation. Distribution in the individual regions is carried out by importers, wholesalers or wire a own central warehouse of the manufactors (OEM). Depending on the state of development, this results in a multi-tier distribution system with one central warehouse for one sales region and regional warehouses for the respective countries. In another phase, the production or

[37] Cf. Neher (2005), p. 34 et seq.
[38] Cf. Freichel (2002), p. 267.
[39] Cf. Freichel (2002), p. 264.

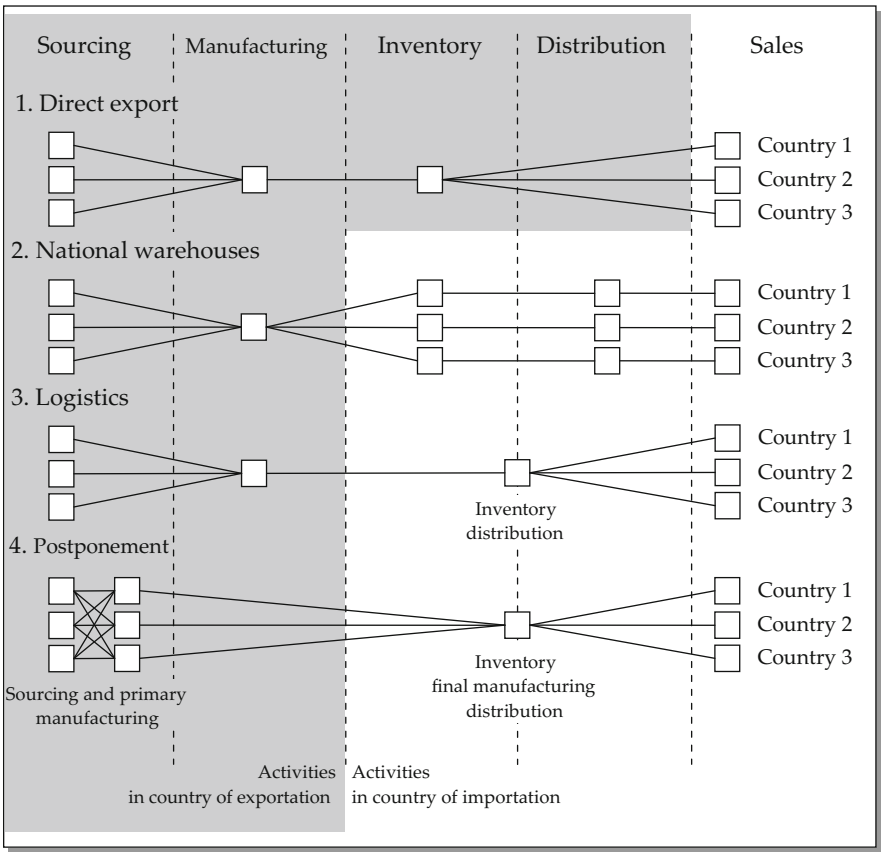

Fig. 12.3 Models of international logistics systems (Cf. Neher (2005), p. 41)

at least the assembly of (country-specific) product versions in the country of importation is carried out, followed by their distribution within the country.

Figure 12.3 shows the complex spectrum of possible international logistics systems and their characteristics. Distinctions are made between variants such as direct export to the sales region, national organization of warehouses and distribution in the countries of importation, centralized logistics solutions for combined sales regions (e.g. continents, cultural regions etc) and production or assembly in the country of origin to make allowances for regional idiosyncrasies.[40]

[40] Cf. Giesa/Hagen (2003), p. 1 et seq.

12.4 Development of Logistics Services Offers

On the basis of business solutions in the industry, service, and trading sectors, different business models have been developed for logistics service providers. With increased outsourcing of logistical activities to service providers, new concepts are continually arising, which incorporate contract-logistical services along with transport and storage tasks (see Sect. 5.5.3). With regard to sector-specific business models, a distinction can be drawn between services focusing on consumer goods and industrial, contract-logistical services.[41] The characteristics of *consumer goods distribution* are:

- Staple goods (which can be placed on a pallet) in cardboard boxes
- Use of barcodes
- Not labeled for distribution to a particular receiver; instead, article-specific distribution
- Sell-by dates and production batches (which both are controlled)
- Distribution from production sites and central warehouses of the producers to the warehouses and stores of the trading sector
- Single-User-Systems for individual customers or Multi-Client-Warehouses for several customers from one or several sectors

Through *consumer goods contract logistics*, leading logistics service providers offer comprehensive distribution networks with corresponding storage facilities, transshipment, and cross-docking points. To operate distribution centers, warehouse management systems and integrated order processing systems are available. Other critical success factors include a regional or even national truck-distribution system, access to transport networks, high IT competence, qualified staff, and high-quality technical equipment.

The following success factors are prevalent in *industrial contract logistics* business models[42]:

- IT competence and capability of IT integration
- Willingness to offer additional non-logistical services
- Customer-specific and sector-specific know-how
- Innovation skills to improve business models of clients

The service portfolio in industrial contract logistics mainly includes non-logistical tasks, apart from the merely logistical ones. Examples of this are assembly and mounting services, packaging, operation of call centers for customer service, and quality inspections in production logistics. IT competence plays an essential role in this business model since suppliers, producers and logistical service providers need to be information-technologically connected according to sector-specific standards.[43]

[41] Cf. Tripp (2004), p. 12 et seq., Klaus (2007), p. 97 et seq.

[42] Cf. Tripp (2004), p. 24.

[43] Cf. Giesa and Hagen (2003), p. 43 et seq.

Logistics service providers internationalize their network structures in accordance with the requirements of the industry and trade sector, whereas there are differences between individual providers and their service offers. No service provider offers comprehensive, world-wide transport networks yet.[44] European networks, however, are well developed. Specialized, multi-modal service providers have emerged on the basis of (standardized) inter-modal network services in conjunction with (individual) logistics services. These so-called *integrators* act as both CEP service providers as well as road, air, sea, and rail freight transport providers, while offering a number of additional logistics services (see Sect. 5.5.2).[45]

Apart from contract-logistical service providers and integrators that offer *logistics from a single source*, niche providers may also assert themselves on the market. Niche providers specialize their logistics services in a specific industry segment (e.g. liquid raw materials transport for the food industry) or a special service (e.g. crane services). Business models for rendering standard logistics services, such as transport by making use of economies of scale, have been reviving for some time. IT-aided management (route planning, GPS tracking etc.) and a sufficiently large fleet of trucks can help position an economically attractive offer on the market.[46]

Figure 12.4 summarizes the logistics service offer. As a whole, it shows the service elements of a multi-modal full-range provider who specializes in many industries.

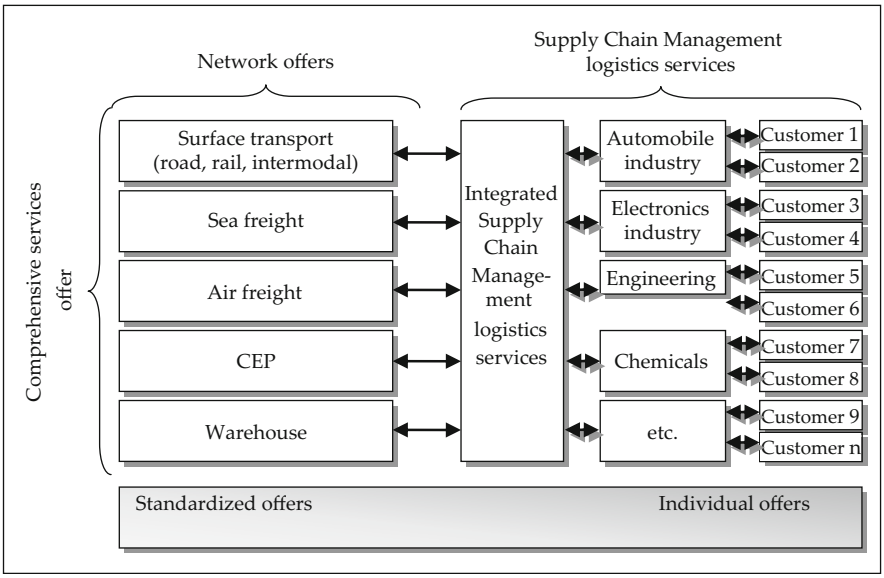

Fig. 12.4 Possible combinations of logistics services (Cf. Lange (2000), p. 199)

[44] Cf. Lieb and Lang (2003), p. 448.

[45] Cf. Lieb and Lang (2003), p. 454.

[46] Cf. Klaus and Kille (2008), p. 89 et seq.

Review Questions

1. What are logistical industry solutions?
2. Name business models for the distribution of consumer goods.
3. What are the logistical requirements for the mail-order business?
4. How does the Internet change business models and logistics systems?
5. What internationalization strategies and logistics strategies associated with them do you know?
6. How are Europe-wide and global distribution systems designed?
7. What requirements do business models have to meet in industrial contract logistics?
8. Which business models are supported by logistics service providers?
9. Explain the supply chain of the textile trade.
10. What are the logistical requirements of e-commerce?

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