Logistics – Physical Distribution

18

Abstract

This chapter considers the strategic role of logistics in retail management, particularly the issues that provide the context for structuring logistical systems and designing processes. Alternative logistics models for online purchases will also be discussed.

18.1 Logistics as a Core Competency

Traditionally, retailers' warehousing and distribution systems have been viewed as an operational instrument, delivering goods at minimal costs. "Modern retailers, however, realise the advantages that can be derived from investment in such systems and view them as a trade-off between costs to the company and providing optimal service to the customer. As such, distribution and warehousing systems are an integral part of the companies' strategy and a major tool of competitive differentiation" (Bell and Davison 1997, p. 88).

Gaining a competitive **advantage** through warehousing and distribution systems requires managing control of the supply chain, i. e., **logistics leadership** (Zentes et al. 2012, pp. 618–621). For example, as Pablo Isla, Chairman and CEO of the Spanish vertical fashion company *Inditex*, states: "One of the pillars that underpins our global expansion is the high efficiency of our logistics system" (Inditex 2013, p. 11).

Retailers' **logistics management responsibility** is concerned with managing the components of the "logistics mix" (Fernie and Sparks 2014, p. 4). The following basic components can be identified:

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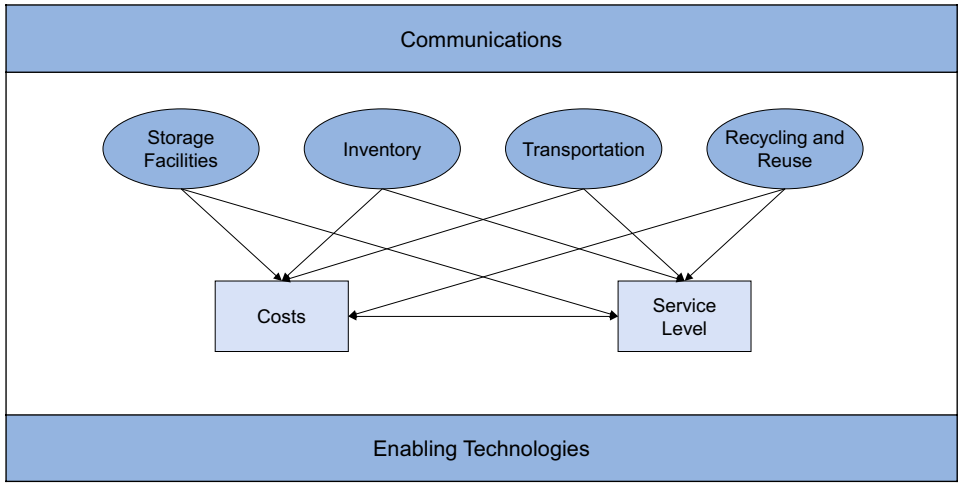

Fig. 18.1 Management tasks in logistics

- **Storage facilities**: Stock rooms in retail stores, warehouses or distribution centres.
- **Inventory**: The amount of stock held for each product or stock-keeping unit (SKU).
- **Transportation**: Transport of products – by ship, truck, rail or plane – from the factory to warehouses or distribution centres (**primary distribution**) and from there to the retail outlets (**secondary distribution**).
- **Recycling/reuse**: In recent years, retailers have become increasingly involved in **reverse logistics operations**. This means increased return of packaging material and handling products for recycling and/or reuse. This trend towards **circulation** has been reinforced by the EU packaging directive (Fernie and Sparks 2014, p. 7).

Information exchange is another basic component. "To get products to where retailers need them, it is necessary to have information, not only about demand and supply, but also about volumes, stock, prices and movements" (Fernie and Sparks 2014, p. 4). The enhanced role of information exchange or communications can be demonstrated by reengineering the supply chain from a **push supply chain** to a **pull supply chain** (Bell and Cuthbertson 2004). **Enabling technologies**, such as identification/coding systems, standards for electronic data interchange (EDI), shared databases, etc., play a major role in both communications and the basic components mentioned above (see Chap. 19).

Managing retail logistics means balancing costs and service requirements (see Fig. 18.1). In order to do this, retailers may outsource certain operational functions to specialist logistics service providers, while strategic functions are mostly performed by the retailer: "Therefore, it is quite natural that we outsource very little of management control of the supply chain" (Cuthbertson 2004, p. 175).

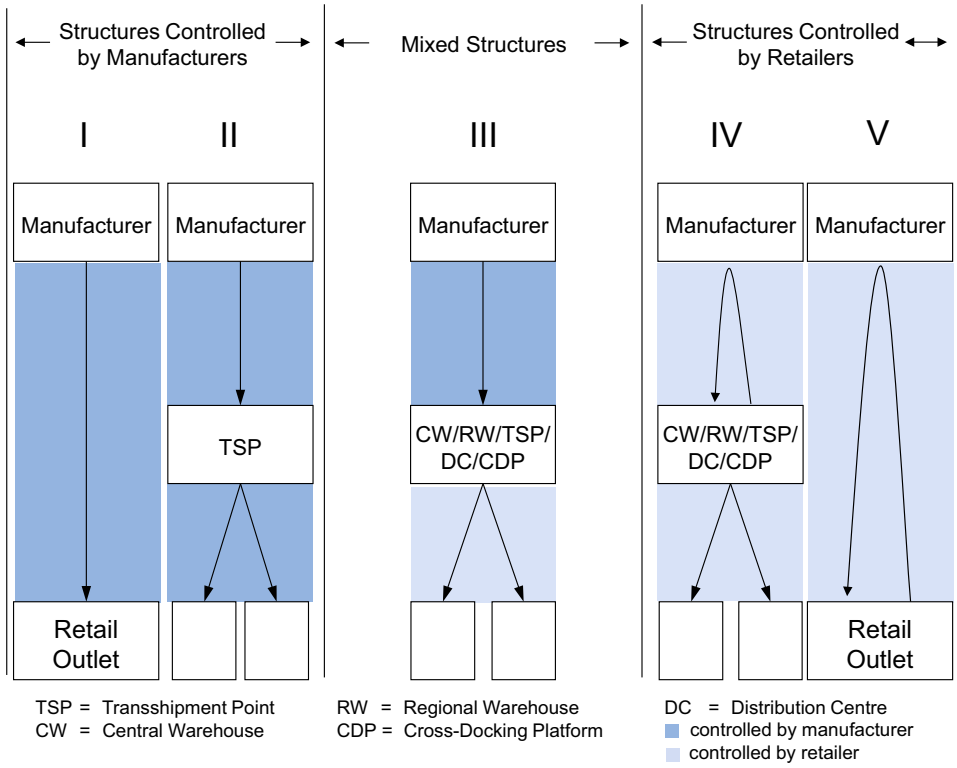

Fig. 18.2 Different supply chain structures. (Adapted from Thorndike and Waltemath 1999, p. 21)

18.2 Structuring Logistical Systems

18.2.1 Basic Options of Supply Chain Structures

Supply chain structures differ according to the actor responsible for delivering the goods (see Fig. 18.2). When this responsibility lies with the manufacturer, the manufacturer controls the retailer's delivery as part of its own distribution. Options I and II represent two kinds of **direct store delivery** (DSL), without and with a transhipment point, respectively. A transhipment point operates as a **break-bulk point**, e. g., a platform belonging to a logistics service provider from which the goods are delivered to the outlets.

Options IV and V characterise structures controlled totally by retailers ("**factory gate collecting**"). In option IV, the retailer controls **primary distribution**, that is from the manufacturer to the central warehouse or regional warehouses, to distribution centres, cross-docking platforms or transhipment points, and the **secondary distribution** from these places to the outlets. Option V illustrates a structure without (central or regional) warehouses or intermediate points.

Mixed or **hybrid structures** are illustrated by option III. In this option, manufacturers manage the primary distribution to retailers' central or regional warehouses, distribution

Table 18.1 Advantages and disadvantages of direct store delivery and central warehousing. (Adapted from Berman and Evans 2013, pp. 420–421; Sparks 2014, pp. 152–157)

	Direct Store Delivery		Central Warehousing	
	Advantages	Disadvantages	Advantages	Disadvantages
Time	Just-in-time delivery quick response to consumers' demands and stock shortages		Centralised/ coordinated time schedule	Quick response difficult, potential ordering delays
Costs		High-cost system, high(er) transport costs, high(er) coordination costs	Efficient transport costs, efficient storage	High cost for small retailers
Coordination		High coordination efforts necessary	Centralised coordination, coordinated merchandise	
Control	Greater control possibilities for store managers		Higher control of retailers	Excessive centralised control possible
Quality of Goods	Advantageous for perishable goods or goods with a limited shelf life, maximises products' residual shelf life			Extra handling of perishables

centres or cross-docking platforms or transhipment points. The secondary distribution is then coordinated by retailers.

Table 18.1 summarises the main advantages and disadvantages of the basic alternatives for direct store delivery and central warehousing, neglecting the other forms of intermediate points.

18.2.2 Increased Control Over Primary and Secondary Distribution

Because of increased competition, retailers, especially in the food and near-food sectors, have extended their control of the supply chain, both upstream and downstream. They have integrated primary and secondary distribution operations (Zentes 2006), and now manage

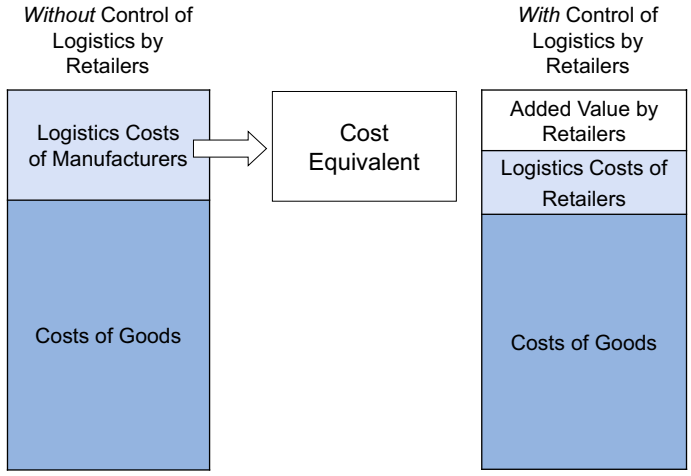

Fig. 18.3 Value added through retail logistics. (Adapted from Prümper et al. 2006, p. 819)

all transport operations and run them as a single network system. This vertically integrated supply chain has led to a new pricing structure for supplier-retailer relations: **factory gate pricing** (Ex Works, EXW).

Logistics not only constitutes a huge portion of total costs; they also make an essential contribution to the commercial value. If retailers can handle the distribution of goods more efficiently, they are creating added value (Prümper et al. 2006) (see Fig. 18.3).

The trend in food and near-food retailing (and also retailing of hard goods, e. g., electrical household appliances) is towards increased retailer control over the supply chain. In sectors characterised by the **downstream verticalisation** of manufacturers (see Chap. 6), in the form of **secured distribution** or **controlled distribution**, manufacturers dominate the supply chain, both in terms of logistical structures and replenishment systems (see Chap. 19).

18.2.3 Rationalisation of Warehousing

In a traditional (central or regional) warehouse, goods are stocked, which is a very costly activity (see Fig. 18.4). Inventory is expensive and can become obsolete. Furthermore, there are many operations associated with the physical flow of products: goods-in, let down, picking and goods-out (Bell and Davison 1997).

To reduce goods inventory and improve the speed of product flow, distribution centres and cross-docking systems have been developed and implemented. Unlike "silos", **distribution centres** or **transit terminals** are designed to run stocklessly. The retailer can transfer from keeping stock to a **just-in-time** approach. The products needed in the retail stores are delivered to the logistics platform (by manufacturers or collected/hauled by or on behalf of the retailer), bundled for the retail stores and transported to them. Ideally, no

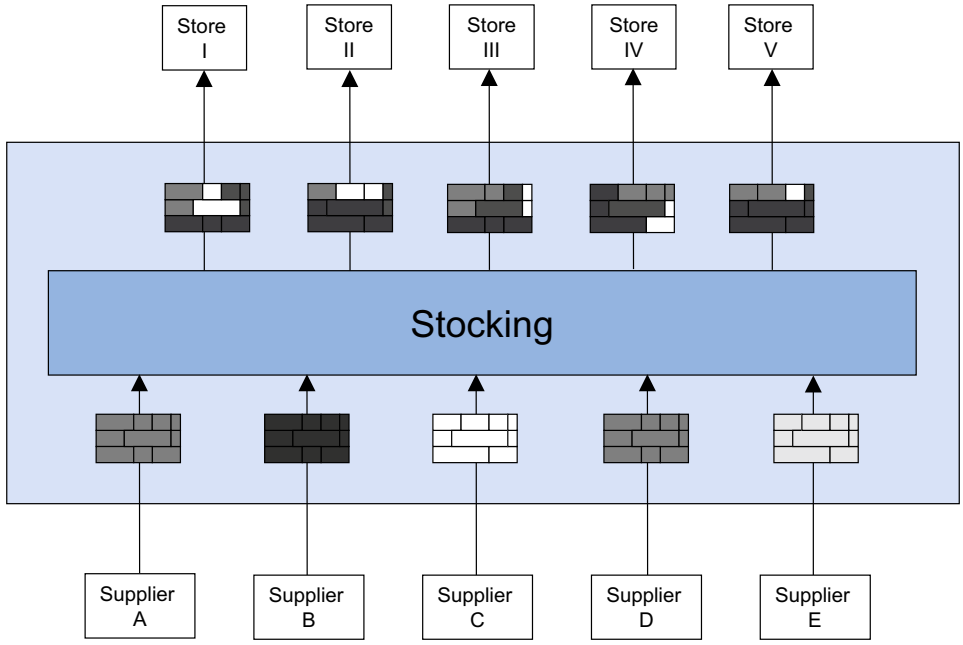

Fig. 18.4 Logistical structure of a warehouse

stock remains and the quantity delivered to the distribution centre is precisely that needed by the outlets. The role of the distribution centre is to partition (**break-bulk point**) the quantity delivered to the platform (usually on pallets) and to bundle (**consolidation point**) the different products for each store (usually on pallets or in roll cages).

In a pure **cross-docking system**, there is no partitioning. The products are delivered to the platform on separate pallets or in parcels for each retail store. The cross-docking process is reduced to the bundling of pallets or parcels for the various retail stores: "Cross-docking is a technique in which goods arriving at an RDC (regional distribution centre) are unloaded from the inbound vehicle and moved from the goods receiving area 'across the dock' for marshalling with the other goods for onward despatch without being put away into stock" (Whiteoak 2004, p. 143).

Both approaches involve greatly reducing order lead time and delivering smaller volumes more frequently. This has greatly increased the rate of stock-turn, i. e., decreased the amount of goods being stored. The logistics facilities of warehouses and distribution centres/cross-docking platforms are quite different: Warehousing is related to silos, whereas distribution centres/cross-docking platforms are related to "**marshalling yards**".

Most retail logistical systems combine all three approaches, e. g., warehousing for non-food products, for example imported from Asia, distribution centres for food and near-food products with high stock turnover and cross-docking for fresh products produced and/or delivered by regional manufacturers.

18.2.4 Integrating Reverse Logistics

The increased return flow of packaging material and the handling of recycling and/or reuse of goods have become a major challenge in retail logistics (Cuthbertson 2004, p. 179). The integration of reverse logistics has extended the traditional linear flow of goods. Recycling and reuse have produced a **circulation system** ("closed loop") in which retailers play an important role (Hertel et al. 2011, pp. 2–5).

18.3 Outsourcing and Joint Physical Distribution

In **new institutional economics**, there are two opposite approaches to carrying out activities: A value chain activity can be carried out internally (i. e., controlled or coordinated by **hierarchy/integration**) or externally (i. e., by other firms). Externalisation always means **buying** goods or services. In this case, the **market mechanism** takes up the task of coordination. In more practitioner-oriented terminology, these two basic alternatives are also called "**make or buy**" (see Morschett et al. 2015, p. 365).

If an activity currently being carried out internally is transferred to an external firm, this process is called **outsourcing.** Conversely, if an activity is integrated into the internal value chain (intra-firm transaction), this process is called **insourcing**. Between these two polar extremes, there are a wide range of **cooperative arrangements** with fuzzy delimitations between externalisation and internalisation.

Managing physical distribution systems does not necessarily mean fulfilling logistical operations internally. Retailers can outsource certain logistical functions such as transportation or warehousing to logistics operators, i. e., they can "**buy**" these services (**market transactions**). For example, transport pooling, a result of outsourcing by manufacturers and/or retailers, lets logistics services providers derive benefit along and across many supply chains (see Fig. 18.5).

These **consolidation opportunities** can also be achieved through joint physical distribution systems belonging to manufacturers and/or retailers (**cooperative arrangements**): "The broad principle here is that the greater the number of participants, the greater the synergy opportunities and the greater the chance of levering action within the logistics and network services provider community" (Whiteoak 2004, p. 159).

The decision criteria for outsourcing logistics activities are based mainly on cost and service level (see Fig. 18.6) (see Hertel et al. 2011, pp. 52–55). The decision to outsource logistics also depends on the importance of these activities for the company's success. This importance particularly depends on, and is measured by, the extent of profiling and the company's differentiation of these services. Despite possible saving potentials through outsourcing, differentiation effects may be stronger if the company properly executes the relevant activities itself.

Naturally, the decision to outsource also depends on the availability of competent partners within the supply chain. These partners need to be capable of taking over the relevant

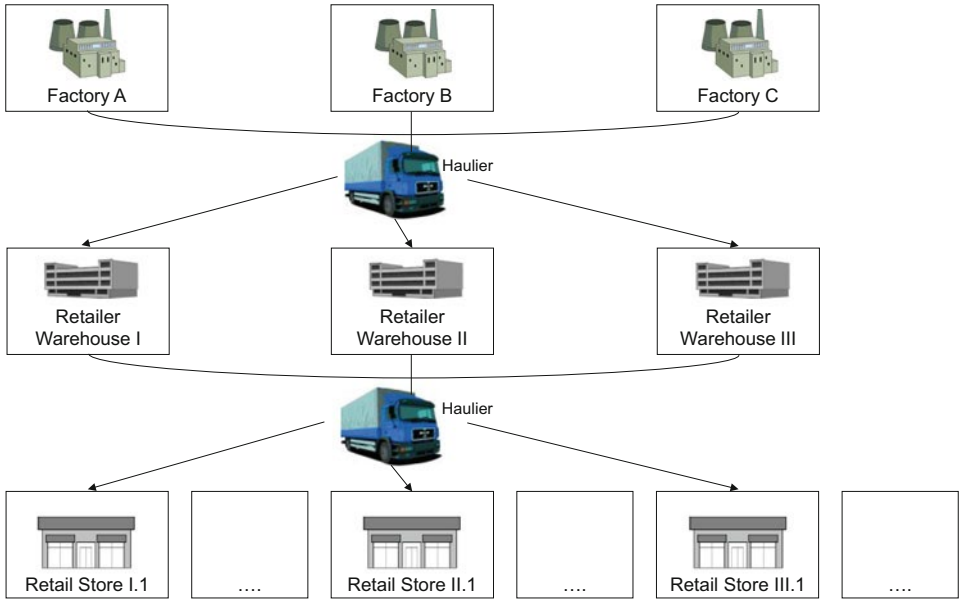

Fig. 18.5 Consolidation opportunities along and across many supply chains. (Adapted from Whiteoak 2004, p. 155)

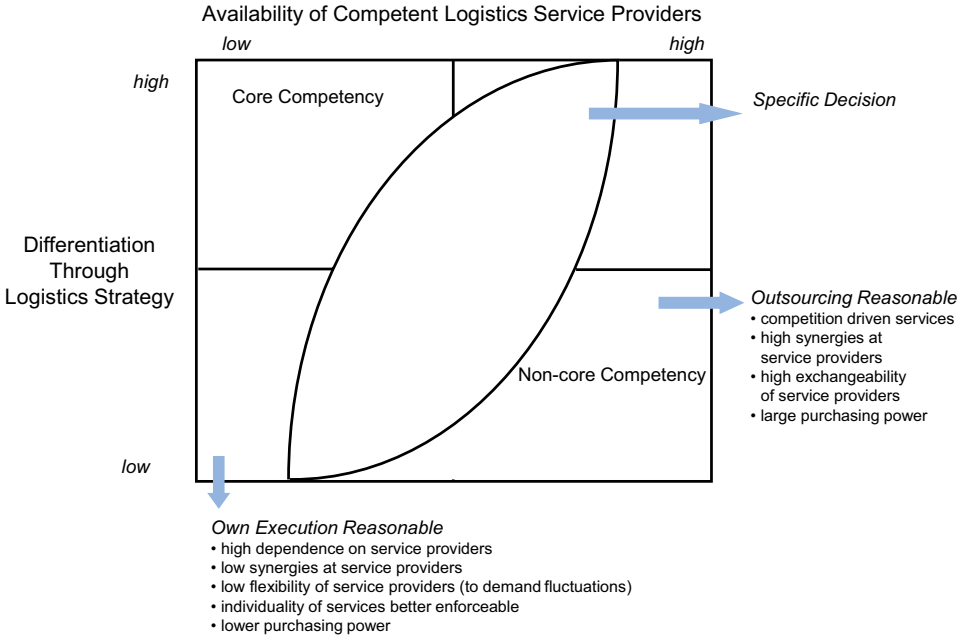

Fig. 18.6 Outsourcing logistical activities. (Adapted from Pirk et al. 1998, p. 259)

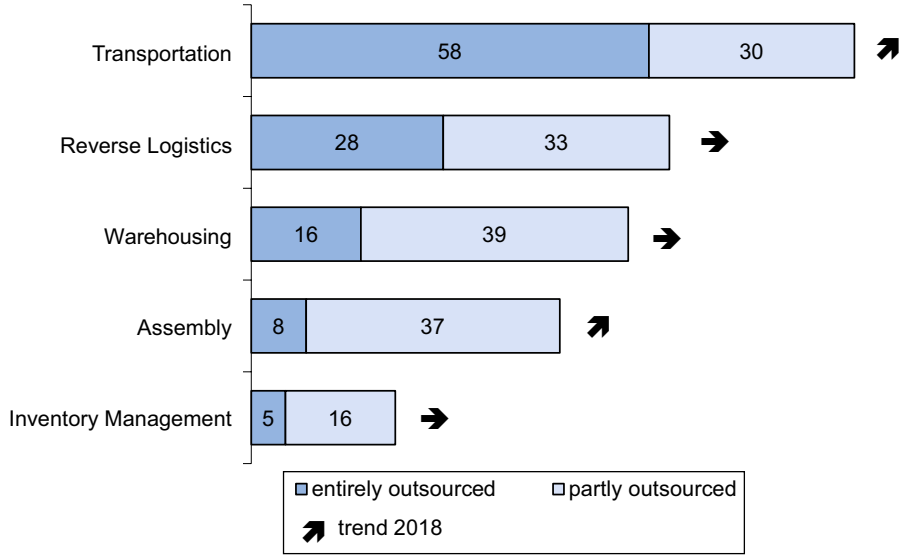

Fig. 18.7 Degree to which manufactures and retailers outsource different processes. (Handfield et al. 2013, p. 57)

activities. The availability of competent partners depends, among other factors, on the degree of specificity of the logistical activity required (e. g., transport and stock resources) and the service levels the partners can provide.

Outsourcing potential can be identified by comparing the differentiation potential of the respective logistical activity and availability of competent logistics service providers (see Fig. 18.6) (Pirk et al. 1998; Zentes et al. 2012, pp. 638–642).

Processes and activities that make up a company's **core competency** and thus contribute greatly to differentiating the company should be executed internally. There are also opportunities for differentiation in logistics, e. g., through high flexibility, short lead times, high customer proximity and high service levels. However, **non-core competencies** that only contribute slightly to the company's differentiation offer higher outsourcing potential.

According to the findings from a current study into "Trends and Strategies in Logistics", most manufacturers and retailers have entirely outsourced their transportation processes. The degree of transport outsourcing will probably continue to increase in the coming years (see Fig. 18.7).

18.4 Distribution of Online Purchases

Online retailers (pure players) or cross-channel retailers (see Chap. 4 and 5) that provide delivery to customers' homes, especially in the grocery sector, face strong logistical challenges: "Over the past decade many e-tail businesses have failed primarily because of an inability to provide cost-effective order fulfilment. Initial market research studies identified

Table 18.2 Return rates in German online retailing in 2013. (Deutsche Post, bvh 2014, p. 9)

German Online Retailers with a Return Rate of …	Share (in %)
0 –5 %	27.3 %
5–10 %	21.2 %
10–20 %	15.2 %
> 20 %	36.4 %

delivery problems as a major constraint on the growth of home shopping" (Fernie et al. 2014, p. 221). In (traditional) store retailing (**brick-and-mortar stores**), these "fulfilment activities" (picking, transport to home) are carried out by consumers.

Traditional catalogue mail order companies have long experience of home delivery, and can extend this experience to online purchases. Therefore, they play an important role in online retailing, e. g., the *Otto Group* in Germany (see case study in Chap. 10). For new players in web-based retailing (e-commerce), online shopping imposes new logistical requirements, such as new distribution centres and vehicle fleets or delivery systems. The greatest challenge of e-commerce is to solve the "last mile problem", i. e., to deliver from a store or an order picking centre (e-fulfilment centre) to the customer's house (Fernie et al. 2014).

Besides this fulfilment problem, online retailing faces another challenge: handling the huge and growing amount of returns. Table 18.2 shows the return rates in German online retailing.

Distributing online purchases often involves very different logistics models. Some retail companies use store-based picking, very often when starting out with online selling. Other possibilities include order picking in existing regional distribution centres, which is difficult and complex because of the different processes and quantities of picking for stores and customers, or establishing e-fulfilment centres as order picking units. Products are then delivered to customers' homes from the stores, regional distribution centres or e-fulfilment centres by van.

Two new solutions in the field of e-commerce are **drive-in concepts** or **click & collect concepts**: Consumers order by phone or via the Internet and pick up the goods themselves, which are commissioned by the retailer in an order picking centre. These solutions have achieved a high degree of consumer acceptance in France.

18.5 In-store Logistics

In-store logistics is a major part of store retailing. Optimising in-store shelf maintenance and reducing handling operations are major objectives in supply chain optimisation. This is because existing floor space is generally the most expensive in the entire chain and the sales staff should primarily handle other tasks.

At the same time, in-store logistical processes are closely related to other upstream logistical processes, such as commissioning processes. Stocking roll containers, which are the

basis of retail outlet deliveries, may lead to inefficiencies in retail outlets when stocked by storage layout. This is because the goods are commissioned in the sequence of the storage layout and not in the sequence of the retail outlet layout. Consequently, retail outlet staff are required to move the roll container through the entire store from one item location to another. This problem can be reduced via **roll cage sequencing**.

Roll cage sequencing primarily involves central warehouses. The roll containers are loaded in the reverse order to which they will be unloaded in the store. Ideally, the store layout determines the central warehouse layout. This means that articles from the same assortment segment are placed on the same roll container. Additionally, articles are sorted by store layout within the roll container, meaning articles which will be unloaded in-store first are placed on top.

Radio frequency identification (RFID) uses radio waves to exchange data between a reader and an electronic tag attached to an object for identification and tracking. Some tags can even be read from several metres away, beyond the line of sight of the reader. Most RFID tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a radio frequency signal and other specialised functions. The other is an antenna for receiving and transmitting the signal. Bulk reading enables tags to be read virtually in parallel.

RFID is mostly used in retail during transport and storage (e. g., attaching RFID tags to pallets, outer packaging or individual products). Additionally, RFID can be used in back store areas or in-store sales areas, e. g., in connection with "**intelligent shelves**", which transmit information on shelf inventories based on RFID systems. RFID can also be used in **payment procedures**, with purchases automatically registered based on RFID tags on each article or consumption unit.

RFID "has been over-hyped and raised many concerns, but there seems little doubt that it holds some promise for improving key aspects of logistics and supply chain performance" (Sparks 2009, p. 234). However, there are still a number of problems with RFID implementation, such as technology (e. g., scanning accuracy, size and data storage), costs (infrastructure costs), standardisation and consumer privacy (Sparks 2009, p. 243).

18.6 Conclusion and Outlook

Physical distribution systems in retailing or the consumer goods industry are not only influenced by technological innovations. Environmental and societal issues play an important role, too. **Sustainability** has become a hot topic in business strategy, including logistics. Looking at logistics or physical distribution systems from this perspective leads to questions of **climate protection** and reducing CO_2 emissions. When it comes to supply chains or logistical systems, transport activities and warehousing are the primary concerns. Responsible solutions include alternative consolidation opportunities, e. g., cooperative arrangements or striking a new balance between different modes of transportation (rail, truck, shipping), between stock and delivery frequency or between national/global production and transport (see Chap. 10).

Further Reading

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- Leeman (2010). *Supply chain management: Fast, flexible supply chains in manufacturing and retailing*. Düsseldorf: Books on Demand.

18.7 Case Study: Walmart

18.7.1 Profile, History and Status Quo

Walmart[1] dates back to 1962 when Sam Walton opened the first *Walmart Discount Store* in Rogers, Arkansas. *Walmart's* fundamental strategy was and still is: "The Lowest Prices Anytime, Anywhere". As a result of this low price strategy, *Walmart* was quickly successful. Just five years after Sam Walton opened his first store, the outlet network had grown to 24 stores and a period of rapid national expansion began.

In the 1980 s, the company extended its distribution format portfolio by opening the first *Sam's Club* in 1983 in Midwest City, Oklahoma, and the first *Walmart Supercenter* in 1988 in Washington, Missouri.

Sam's Club serves small businesses and individuals with bulk groceries and general merchandise. With an average area of 134,000 square feet, most *Sam's Clubs* offers speciality services in addition to groceries and bulk merchandise, e. g., opticians, tyre and battery centres and pharmacies. They are typical warehouse clubs – customers need to be members of *Sam's Club* to shop there and most merchandise is sold directly off pallets. Today, *Walmart* operates more than 600 *Sam's Club* outlets in the USA and 100 clubs internationally.

[1] As well as the explicitly cited sources, sources used for this case study include the websites http://www.corporate.walmart.com, http://help.walmart.com/, http://blog.walmart.com/sustainability/, press releases and various annual and CSR reports.

In contrast, a *Walmart Supercenter* combines a full-scale supermarket with a huge assortment of general merchandise, including apparel, electronics, toys and home furnishings. *Walmart Supercenters* can also contain banks, pharmacies, hair and nail salons, health clinics and restaurants. Each *Walmart Supercenter* employs about 300 associates, is about 182,000 square feet in area and most are open 24 hours.

In 1998, *Walmart* extended its distribution format portfolio again by opening *Walmart Neighborhood Markets*. With an average size of 38,000 square feet, they are approximately one fifth of the size of a *Walmart Supercenter*. *Walmart Neighborhood Markets* sell groceries, household supplies, health and beauty aids and also contain a pharmacy.

Since 2000, *Walmart* has also been active in online retailing with its own online shop *Walmart.com*. This offers a huge assortment of goods – over one million products – and additional services like music downloads and 1-hour photos. *Walmart* aims to provide consumers a seamless shopping experience, whether they are in a store, using a mobile device or online. Therefore, in addition to home delivery, customers can also order products online and pick them up at their local *Walmart* store.

In comparison to other retailers, *Walmart* started its international expansion quite late. Almost 30 years after Sam Walton opened the first *Walmart* store in Rogers, *Walmart* entered into a joint venture with the Mexican retailer *Cifra* and established a *Sam's Club* in Mexico City. In the following years, *Walmart* continued its international expansion strategy, expanding into Canada in 1994, China in 1996, Germany in 1997, South Korea in 1998, UK in 1999, Japan in 2002, Chile in 2009, India in 2010 and South Africa in 2011. *Walmart*'s foreign activities have not all been successful. *Walmart* left the German and South Korean markets in 2006. In the case of the German market, *Walmart*'s exit was partially rooted in cultural differences. For example, German consumers could not get used to employees packing their purchases into bags and greeting them at the entrance. At present, *Walmart* is active in 28 countries. Fig. 18.8 provides an overview of *Walmart*'s international market presence.

Today, according to *Forbes'* "Global 2000: The Biggest Retailers of 2014" list, *Walmart* is the biggest retailer in the world (Forbes 2015). In 2013, *Walmart*'s retail revenue was 4.5 times higher than that of its nearest competitor, *Costco* (Deloitte 2014). In 2014, *Walmart* had total revenues of approximately 485.7 billion USD and employed 2.2 million people worldwide. Its international outlet network encompasses 11,453 retail units, including 5163 units in the USA and 6290 units abroad. An overview of key indicators is shown in Table 18.3.

18.7.2 Walmart's Logistics Mix

As explained in this chapter, retailers' logistics management responsibilities include managing the five basic components of the logistics mix: storage facilities, inventory, transportation, recycling/reuse and information exchange. The following section will discuss two

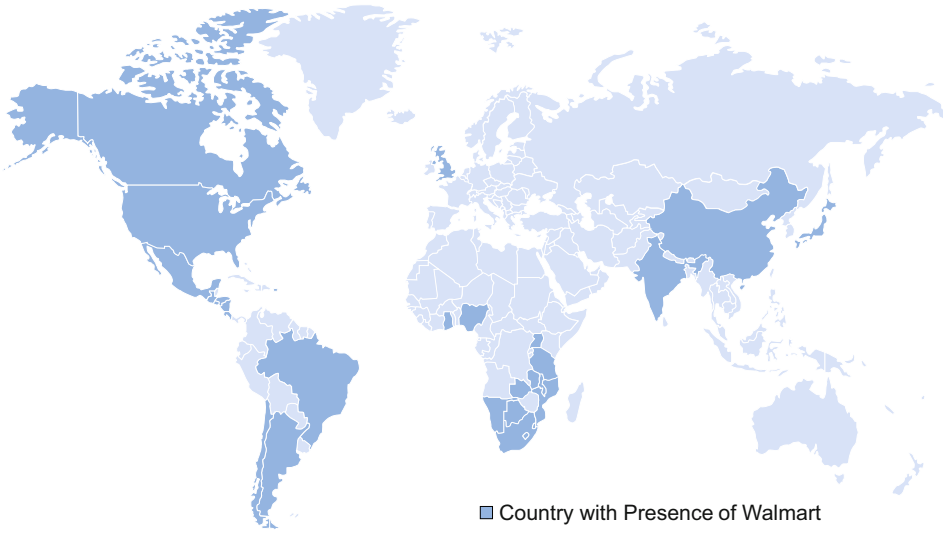

Fig. 18.8 Walmart's international market presence. (Walmart 2015a)

basic components of the logistics mix, storage facilities and transportation, in the context of *Walmart*.

18.7.2.1 Storage Facilities

With a distribution network of 158 distribution centres, *Walmart U.S.* runs one of the largest distribution networks in the world. However, *Walmart's* distribution network is not homogeneous. Instead, seven main types of facility can be identified, depending on the goods they store and the logistical task they fulfil (MWPVL 2015):

- **Regional general merchandise distribution centres**: These are primarily established to distribute non-food products, e. g., electronics, sporting goods, toys and health and beauty aids. They are usually within the range of 1.0–1.6 million square feet and employ over 1000 people each. The average one-way travel distance to *Walmart* stores is about 124 miles. A typical regional merchandise distribution centre serves 90–170 stores.
- **Full-line grocery distribution centres**: These serve as the backbone of *Walmart*'s food distribution network, including frozen food, dry groceries, deli meats, fresh meat, dairy and produce. They are usually in the range between 0.85–1.0 million square feet and employ approximately 750 associates. The average one-way travel distance to a *Walmart* store is around 134 miles.
- **Import/redistribution centres**: These are massive facilities, positioned near major US ports, in Long Beach (California), Norfolk (Virginia), Chicago (Illinois), Savannah (Georgia) and Houston (Texas). Import centres receive containers of merchandise from all around the world and redistribute it to *Walmart*'s full-line grocery distri-

Table 18.3 *Walmart's* key indicators. (Walmart 2014; 2015b)

	2013 Fiscal Year (revenues in million USD)	2014 Fiscal Year (revenues in million USD)
Total Revenues	476,294	485,651
USA Revenues	338,681	348,227
International Revenues	137,613	137,424
Number of Employees Worldwide	2,200,000	2,200,000
Number of Retail Units USA	4835	5163
Number of Retail Units Internationally	6107	6290

bution centres and regional general merchandise distribution centres. Thus, these distribution centres do not ship directly to stores. Most of these facilities are operated by third party logistics providers.

- **Fashion distribution centres**: These are usually large, highly mechanised facilities with conveyance systems. A typical *Walmart* fashion distribution centre is within the range of 0.64–1.6 million square feet and employs over 700 associates. They are designed to service 1000 stores and more.
- ***Sam's Club* distribution centres**: At around 40,000–100,000 square feet, these facilities are fairly small. They are long rectangular cross-dock facilities, with docking doors on both sides of the building. Full pallets are received by associates on one side and then brought via forklift to a staged trailer on the other side. The majority of these facilities are operated by third party logistics providers.
- **Specialty distribution centres**: These handle specific commodities, e. g., there are pharmacy distribution centres and tire distribution centres. *Walmart.com* distribution centres also belong to this category.
- **Centre point distribution centres**: These consolidate inbound merchandise from domestic suppliers before sending it to the distribution centres. They are similar in size and shape to cross-dock facilities. Centre point distribution centres are strategically located around the USA to minimise inbound transportation costs.

While *Walmart* is a titan in the world of brick-and-mortar retailing, with more than one billion USD in sales per day, *Walmart* lags far behind its competitor *Amazon* in terms of e-commerce (The New York Times 2015). Fig. 18.9 shows *Walmart's* position in the USA's mass merchant e-commerce market. Although *Walmart* has the second largest market share of mass merchant e-commerce, with a market share twice as high as its nearest competitor, *Sears*, *Amazon's* market power is six times greater than *Walmart's*.

To expand its e-commerce business, *Walmart* launched a new logistics strategy in 2013 called "Next Generation Fulfilment Network". *Walmart* is opening new distribution centres dedicated to fulfilling online orders (The New York Times 2015). The newest one opened

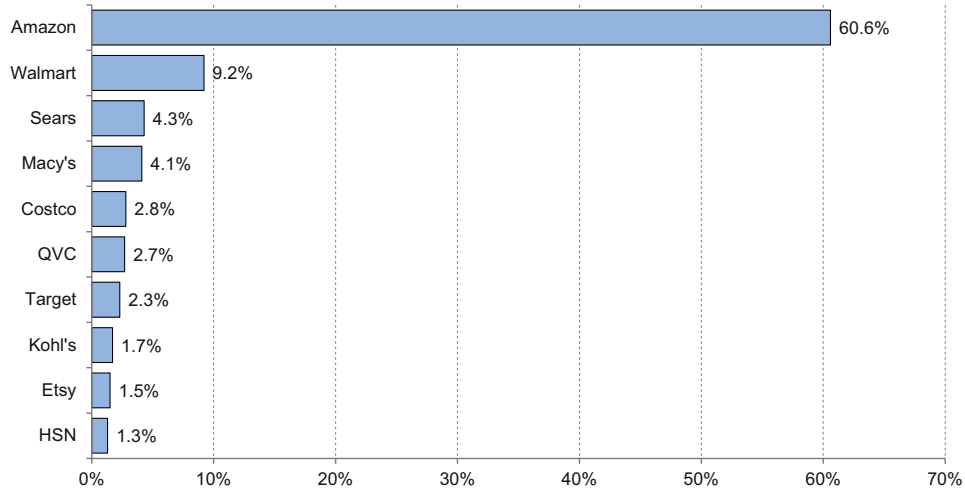

Fig. 18.9 Market share of leading mass merchant e-retailers in the USA in 2014. (Internet Retailer 2015, p. 48)

on July 22, 2015 in Bethlehem, Pennsylvania, in the *Majestic Bethlehem Center*. It spans 1.2 million square feet and is equipped with state-of-the-art automation and warehousing systems.

Walmart's new e-commerce strategy also involves the launch of drive-in and click & collect services. *Walmart* opened its first drive-in service, which is free for customers, in Bentonville, Arkansas. Customers can place their orders online, at any time from two hours to three weeks in advance. They then drive to the *Walmart* pick up warehouse and use a kiosk to notify *Walmart* staff they are ready to pick up their orders. *Walmart* attendants then bring the purchases to the customer's car (Forbes 2014). Consumers can also pick up their purchases at regular stores via *Walmart's* click & collect service, which is already widely applied. When shopping online at *Walmart.com*, consumers can select the store where they want to pick up their orders. After *Walmart* staff commission the order, the customer is informed via e-mail or text message that they can pick up the order. *Walmart's* e-commerce push is not limited to the USA; in fact some of *Walmart's* overseas subsidiaries are one step ahead of American stores. For example, *Walmart's* drive-in service is an adaptation of an idea already applied by its British subsidiary *Asda* (The New York Times 2015). Another major component of *Walmart*'s new Internet strategy is taking full ownership of its Chinese e-commerce arm *Yihaodian*, which occurred in July 2015. *Yihaodian* is currently the fifth biggest Chinese e-commerce retailer (Chain Store Age 2015).

18.7.2.2 Transportation

Transportation is another basic component of a retailer's logistics mix. *Walmart* can move goods to and from distribution centres by itself thanks to its private fleet of 6500 trucks, 55,000 trailers and 7000 truck drivers. Every year, the fleet drives 700 million miles de-

livering goods to *Walmart* stores, with each driver driving an average of 100,000 miles a year.

In recent years, *Walmart* has launched several projects to reduce the environmental impact of its fleet. *Walmart*'s goal is to double fleet efficiency by the end of 2015 compared to 2005, by making more deliveries while driving fewer miles. According to company information, *Walmart* has already reached an 84.2 % improvement over the 2005 baseline. Since 2007, *Walmart* has delivered 830 million more pallets while driving 300 million fewer miles.

Walmart and its suppliers are improving efficiency in various ways, including:

- **Effective driving techniques**: Including minimising idle times and progressive shifting to ensure optimal performance.
- **Advanced tractor-trailer technologies**: Including electrification, improved aerodynamics, lightweighting and fuel-efficient tires. In collaboration with many supplier partners, including *Peterbilt Motors, Great Dane Trailers* and *Capstone Turbine*, *Walmart* has developed a prototype called the *Advanced Vehicle Experience Concept Truck*. This futuristic looking vehicle, made almost exclusively with carbon fibre, weighs 4000 pounds less than a traditional truck in the *Walmart* fleet, allowing it to carry more freight. The *Walmart Advanced Vehicle Experience Concept Truck* also has a micro-turbine hybrid powertrain, allowing it to run on diesel, biodiesel and natural gas.
- **Improved processes and systems**: for driving efficient loading and routing of merchandise.

18.7.3 Summary and Outlook

This case study discussed two basic components of *Walmart's* logistics mix: storage facilities and transportation. *Walmart* operates one of the largest distribution networks in the world. The distribution centres are not homogenous, but differ according to the goods they store and the logistical role they have to fulfil. *Walmart* is a giant of brick-and-mortar retailing, but lags behind in e-commerce. To compete with *Amazon*, *Walmart* launched a new logistics strategy in 2013, named "Next Generation Fulfilment Network". As part of this strategy, Walmart not only opened new, automatised distribution centres, solely fulfilling online orders, it also developed and launched drive-in and click & collect services. These are not really innovative, having been used by others retailers, e. g., *Tesco* and *Auchan*, for years. So, time will tell whether *Walmart's* new e-commerce strategy will compete against other brick-and-mortar retailers as well as pure online players.

Sustainability factors are becoming increasingly important in retailing, especially in logistics. Walmart's sustainability efforts in logistics focus on improving the efficiency of its truck fleet. This raises the question as to whether the US retailer is doing enough to foster a sustainable image among consumers compared with other retailers.

Questions

1. *Walmart* operates different types of storage facilities. Why is this distinction used?
2. Discuss the advantages and disadvantages associated with outsourcing of physical distribution processes, both in general and for *Walmart* in particular.
3. Imagine you are a business consultant. Would you advise *Walmart's* officials to rethink their logistics sustainability campaign? When answering this question, compare *Walmart's* sustainability efforts in logistics with those of other retailers.

- 1. See Bell and Cuthbertson 2004 as well as Smith and Sparks 2009 for a description of different supply chains.
- 2. See, e. g., Levy et al. 2014 for a discussion of logistics outsourcing.
- 3. Check annual reports, sustainability reports and the Internet and social media presence of different retailers.

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