Online retail and new customer demands for third-party logistics providers

A literature study on the implications of e-commerce customer requirements for third-party logistics providers

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Marijn Wever
961119947060
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Supervisor
prof. dr. J. H. Trienekens

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Abstract

The last decade, e-commerce market has grown tremendously. More and more retailers see the advantages of e-commerce, which leads to severe competition in the Business-to-Consumer (B2C) e-commerce market. To retain customers, it is important for retailers to create customer satisfaction. Satisfaction forms the base for loyalty and trust, which are indicators for repurchase at the retailer. It can be created by meeting customer requirements. Research has shown that the fulfilment process is of great importance for creating customer satisfaction. Six dimensions of customer requirements exist: cost, quality, time, flexibility, reliability and the ease of returns and refunds.

Most online retailers outsource the logistics function to third-party logistics (3PL) providers. Therefore, the question is how third-party logistics providers can deal with the current customer requirements and how their role has changed as a result of it.

Meeting customer requirements is of great importance for third-party logistics providers to be an attractive outsourcing partner. Whereas the outsourcing decision regarding the logistics function used to be based on cost consideration, it has shifted to being a quality based decision.

Several implications for 3PL companies regarding the current customer requirements are identified. First of all, inventory liquidity is the base for fast and on-time order delivery. Next to that, shipping options can be broadened and flexibility can be increased by employing order pick-up points or automated parcel stations.
Moreover, 3PL providers should seek for solutions to concur the increasingly complex last mile. In the short run, accurate planning should prevent delivery delays, but in the long run, innovative solutions are needed.
To meet the demand for sustainable delivery, 3PL providers should gradually implement the use of electric delivery vans or seek for other environmentally-friendly delivery options. Lastly, to allow retailers to make their return policy more lenient and increase satisfaction, 3PL providers can offer extra return shipping options, such as pick-up at home.

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1. Introduction

1.1 The problem background

There are many terms used to describe people who regularly spend time on the internet. The terms 'digital native' and 'digital immigrants' are used to divide people into two categories. Digital natives are those who have grown up using technology and the internet. However, digital immigrants are those who have been introduced to this technology later in life (Hockly, 2011). The group of the digital natives keeps growing each day, while the group of digital immigrants is only getting smaller.

Those digital natives have also found their way in ordering consumer goods online. In the Netherlands, there are 13.6 million internet users, of which 12.9 million shop online. Online shoppers spend on average €1,242 per year. In 2015, e-commerce grew by 16.1% (Ecommerce Europe, n.d.).

Multi-channel retail is a retail format that not only includes physical stores, but also other channels, such as online stores (Kim and Park, 2005). With the growing reach of the internet and the increasing competition in the marketplace, several retailers shift from being a single- to multi-channel. The internet is the most common multi-channel complement to an existing physical store (Rao et al., 2009). Besides multi-channel retail, there are also web-only retailers.

In e-commerce, satisfaction with retailers is of great importance. Some criteria that play a role in deciding where to buy in a brick-and-mortar context, are no longer relevant in e-commerce. Distance, for instance, is no longer of importance, because all online retailers are the same mouse click away (Xu, Munson & Zeng, 2017). Therefore, it is essential to attract customers by meeting customer requirements. Moreover, maintaining customers is of great importance as well. To retain customers, a retailer should create satisfaction by meeting customer requirements. Satisfaction is likely to foster repurchase. It is created when the consumer receives the right product, at the right time, meeting their expectations (Xu, Munson & Zeng, 2017). In this description, a major role is given to logistics. To receive the right product at the right time, good performing logistics are needed.

According to researchers, transaction costs in online retailing can be exceptionally high (Laseter et al., 2006). Outsourcing business processes is one of the activities which firms try to bring down the transaction costs (Rao et al., 2009). Outsourcing, an alternative to internal processing, is the deploying of an activity to an external supplier (Aubert et al., 2004). Different functions of a business can be outsourced, but most interesting is outsourcing the logistics function. Logistics do not belong to the core competencies of an (online) retailer, but performing well is important for satisfaction. Moreover, outsourcing logistics can also be cheaper than having it in-house. Web-only retailers outsource to a bigger extent than multi-channel retailers (Rao et al., 2009).

Businesses that offer logistics services are third-party logistics companies. Third-party logistics is described as 'relationships between interfaces in the supply chains and third-party logistic providers, where logistics services are offered, from basic to customized ones, in a shorter or longer-term relationship, with the aim of effectiveness and efficiency' (Bask, 2001).

This paper will focus only on Business-to-Consumer (B2C) e-commerce in Europe, rather than the wider perspective that could include Business-to-Business (B2B) and Consumer-to-Consumer (C2C) as well. This type of e-commerce is relevant for third-party logistics (3PL) providers and thus the main subject.
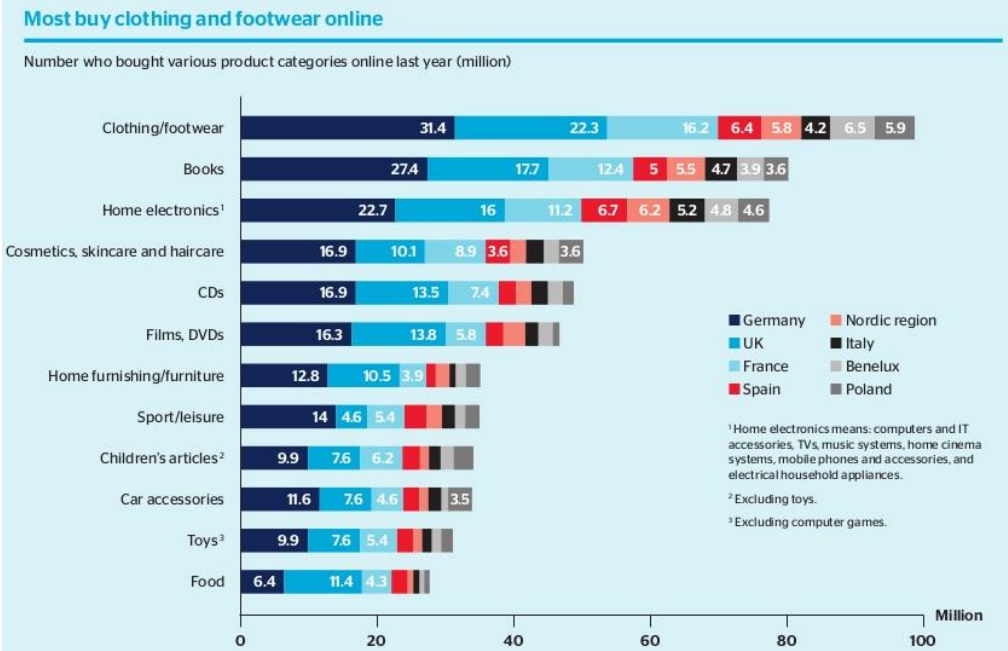

Most buy clothing and footwear online

Number who bought various product categories online last year (million)

Figure 1. The ecommerce market in Europe in 2013. Reprinted from Ecommerce News Europe, 2014, retrieved April 5, 2017, from https://ecommercenews.eu/240-million-europeans-spent-e170bn-online-last-year/

Figure 1 illustrates from what product categories people purchase online the most. Food is a relatively small category, compared to the total. Due to the fact that this category consists of a large share of perishable products, the distribution of these products differs from the transportation of the other product categories. Road transport refrigeration is used to control temperature requirements for these products (Tassou, De-Lille & Ge, 2009). Also in warehousing, a large part of food products has to be stored refrigerated. The different handling of food products, in combination with the fact that food is a relatively small part of e-commerce, is the reason that food is excluded and this literature study will focus on general products.

1.2 The problem statement

E-commerce has grown tremendously and there are more and more companies engaged in this form of business. With the severe competition, it is important for retailers to retain their customers by creating satisfaction. Research addresses a great role for logistics for customer satisfaction. Online retailers often outsource their logistics to third-party logistics businesses. These 3PL businesses are thus very influential for customer satisfaction and the continuation of existence of a company. Therefore, it is interesting to gain insights in how 3PL can respond to the importance of satisfaction and the changing customer requirements which it entails.

How changes the role for third-party logistics providers as a result from current customer requirements?

Sub questions

- What are characteristics and developments of e-commerce and online retail?
- What are the functions of distribution in e-commerce and what place has 3PL in e-commerce distribution?
- What is the importance of customer satisfaction and customer requirements in e-commerce?
- What is the relationship between distribution and e-commerce customer satisfaction?
- What customer requirements exist in e-commerce and what customer requirements are developing?
- What are the implications of customer requirements for third-party logistics providers?

1.3 Relevance

In an environment as dynamic as e-commerce, all companies have to adjust constantly to changing customer requirements in order to create satisfied customers and provoke repurchase. This research can gain insights in the importance of satisfaction for online retailers, the relationship between e-commerce customer requirements and third-party logistics and how the functions or 3PL are changing because of developments in e-commerce and its customer requirements. Plenty of literature exists about 3PL and e-commerce as well as for the importance of satisfaction in e-commerce, but information about the relationship between this is lacking. In this literature study, the relation between 3PL and e-commerce customer requirements is revealed and this gap in literature will be filled. Furthermore, it can serve as a base for research into this relationship in specific product categories. Practically, for retailers and 3PL providers, this study can gain insights in expected future changes and how to respond to it.

2. E-commerce and online retail

2.1 Globalization and the internet

The world is globalizing and the different parts of the world are getting more and more integrated. Additionally, the last decades, information and communication technologies (ICT) have been adopted on a large scale. The combination of those two trends can be quite powerful. People with Internet access can easily connect with each other, eliminating the problem of time and space (Aydin & Savrul, 2014). Technology is both 'driven by and the driver of globalization' (Kraemer, Gibbs & Dedrick, 2005). Also businesses make use of internet, not only to communicate to their customers, but a great deal of businesses use internet for e-commerce.

The first serious attempts to trade on the online market emerged around the mid-1990s, by innovative, technical companies that responded to the development of the internet and the opportunities that came with it. The success of those first websites, designed to serve customers at home, was in this early stage of e-commerce very uncertain. Most predictions were optimistic, but it was unclear how the internet would change the principles of retailing (Doherty & Ellis-Chadwick, 2010).

E-business or e-commerce, short for electronic commerce, is defined as 'the sharing of business information, the maintaining of business relationships, and the conducting of business transactions through the use of digital telecommunications networks' (Zwass, 1996). Ching and Ellis (2014) have described electronic commerce in a wider definition, as 'technologically mediated exchanges'.

2.2 Drivers for retailers

The use of the internet for retail is appealing. The internet offers new possibilities for retailers. It has global reach, is easily accessible, offers possibilities for interaction between retailers and consumers, is flexible and fast, cost efficient and easy to maintain. Furthermore, the internet facilitates the low-cost promotion of services and goods, because advertorials are not space-restricted. Moreover, internet has the potential to provide consumer information to the retailer and collect data for market research. On top of that, the internet offers possibilities for two-way communication between the retailer and the customer (Doherty & Ellis-Chadwick, 2010). The internet offers retailers the possibility to deliver products and services to customers they have never met, seen or spoken before. Using the internet effectively can free up resources that can be used to increase the level of value to customers in new ways (Kassim & Abdullah, 2010).

For retailers, electronic commerce offers different advantages. First of all, it enables retailers to broaden their target market. This is mainly due to the fact that online retail is less bound to a specific place. The range of a retailer is as big as the range of delivery. Retailers can compete to retailers that are located way closer to the consumer because of the internet (Doherty & Ellis-Chadwick, 2010). Moreover, e-commerce offers possibilities for a broader product range and faster transactions (Srinivasan, Anderson & Ponnavolu, 2002). Next to that, electronic commerce gives retailers the possibility to increase the level of individualization (Kassim & Abdullah, 2010) and customization (Srinivasan et al., 2002).

2.3 Typology of e-commerce

There are three main types of e-commerce: Business-to-Business (B2B), Business-to-Consumer (B2C) and Consumer-to-Consumer (C2C). B2B e-commerce are all internet-enabled technologies that make it possible for businesses in a supply chain to buy, sell and exchange information with each other (Sila, 2013). The percentage of transactions resulting in buying are very high compared to B2C. It usually consists of a commercial transaction between businesses, with high transaction volumes (Yu, Wang, Zhong & Huang, 2016).

Business-to-Consumer e-commerce is open for any user to get service (Vallamsetty, Kant & Mohapatra, 2003). A consumer visits a website and orders one or multiple products or services. The company where the order is placed makes sure the item or service is delivered to the customer (Miangiaracina, Marchet, Perotti & Tumino, 2015). Some advantages of B2C e-commerce for businesses is the access to a larger market and low operating costs. Moreover, because of the interactivity of internet, companies can improve customer service and obtain knowledge about their customers. In turn, the internet gives consumers access to information about the performance of companies. These advantageous circumstances, together with the advantages appointed in section 2.2, create an attractive market for retailers. Together with low entrance barriers, it leads to high competition, resulting in a greater online choice for consumers (Alzola & Robaina, 2006).

In consumer-to-consumer (C2C) e-commerce, the internet is used by consumer to buy from and sell to other consumers. In the Netherlands, C2C transactions take place on websites such as Marktplaats and eBay, but also in places as online communities, discussion forums and chat rooms (Leonard & Jones, 2010). This type of e-commerce is frequently used, because it is relatively easy for consumers to enter and exit (Rotem-Mindali & Weltevreden, 2013).

2.4 The scope of the market

In Europe, 75% of the population uses the internet, of which 57% are online shoppers. The B2C e-commerce in Europe has grown by 13.3% in 2015, compared to 2014 and has generated a turnover of €510 billion. Especially in Western Europe, e-commerce is quite fruitful and responsible for €253 billion of the European e-commerce turnover. The turnover is 2.59% of the total gross domestic product (GDP) of Europe (E-commerce Europe, 2015). Figure 1 illustrates the size of different product categories in e-commerce in million euro's in Europe. Clothing and footwear is the largest category. E-commerce firms that sell clothes are often fully dedicated to this product category, such as companies as H&M. Multiple retailers combine product categories on their website. Bol.com, for instance, sells books, home electronics, CD's, DVD's and children's articles, but offers furniture as well.

The growing trend of using wireless devices, such as laptops, tablets and mobile phones, for electronic transactions, is also known as m-commerce or mobile e-commerce (Niranjanamurthy, Kavyashree, Jagannath & Chahar, 2013). With the wide-spread use of this mobile technology, customers are able to shop wherever they are and whenever they want, through an electronic commerce platform (Zhang, Wang & Huang, 2016). In the Netherlands, the percentage of people using the internet has doubled over the last fifteen years. In 2000, almost 44% of the individuals in the Netherlands used the internet, while in 2015, more than 93% of the Dutch were online (ITU, 2016). Moreover, the usage of mobile phones and smartphones also grew tremendously in the Netherlands. In 2012, 56,5% of the Dutch inhabitants possessed a mobile phone or smartphone, whereas almost 85% used one in 2016 (Centraal

Bureau voor de Statistiek, 2016). Mobile commerce is getting increasingly important in Europe. In the Netherlands, the most of the mobile commerce traffic comes from tablets (59%), the rest of the traffic arises from smartphones (Ecommerce News, 2015). As a result of the rapidly growing number of web-enabled devices, shopping through multiple channels is prevailing (Beck & Rygl, 2015).

In a response to the quick developing e-commerce market, many physical retailers started to use the internet as an extra channel to sell their products. Moreover, a lot of pure-player online retailers are opening physical shops or collaborate with traditional retailer to complement their online channel (Agatz, Fleischann & van Nunen, 2008). They are engaged in the so-called multi-, cross- or omni-channel system, also known as the click-and-mortar. This strategy attracts two segments of customers. The online channel attracts the type of customer that prefers to view product descriptions online and save travel and purchasing time. On the other side, the physical store captures the loyal clients, that prefer to shop in a store rather than online. But also consumers prefer different channels at different moments, becoming multi-, cross- or omni-channel shoppers (Lu & Liu, 2013).

Companies can be fully, partially or not engaged in e-commerce. Firms that are only based on e-commerce are also called virtual (pure-play) organisations. Click-and-mortar (or click-and-brick) means that organisations are partially engaged in electronic commerce but operate a physical store as well, and brick-and-mortar companies are not engaged in e-commerce at all (Turban, Strauss & Lai, 2016). In case of multi-channel retailing, the retailer offers more than one channel at the same time, but these channels coexist without interaction. For instance, products bought online can not be picked up at the physical store. Interaction between channels does exist cross-channel retailing. The consumer can trigger interaction between those channels, but not for all channels widespread at the time. The last form of retailing through multiple channels is omni-channel retailing. The retailer offers all channels (online, physical store, catalogue, telephone, mobile shop), and the customer can trigger full interaction between those channels (Beck & Rygl, 2015).

2.5 Drivers for consumers

One of the reasons for consumers to shop online is that is allows them to be more efficient in their buying process. This efficiency results from the low costs of information and the low time and costs of acquiring this information (Reibstein, 2002). For consumers, it is possible to compare competing products and services worldwide, with minimal costs, time and effort (Srinivasan et al., 2002). Consumers will be fully informed with regard to their options, as a results of the exceedingly easy accessible information. However, there is also a possibility of information overload, that may result in suboptimal decisions (Reibstein, 2002). Moreover, online shops are always 'open', they are 24 hours a day accessible, so consumers are no longer limited to opening hours. On top of that, all online shops are only a mouse click away. Shopping online increases the choice options tremendously, because consumers are no longer limited to the few shops in the neighbourhood and their offerings. Meanwhile, when shopping online, consumers do not even have to leave the house. Another driver of shopping online is the ease of transaction and communication. In the case of dissatisfaction with a product, it is often easy to contact the retailer and return the product (Pabalkar, 2014). The downside of the online shopping for consumers, however, is the waiting time for a product to arrive. In contrast to physical stores, where people immediately posses the purchased item, consumers have to wait for their item when shopped online (Reibstein, 2002).

3. Distribution and e-commerce & 3PL

Electronic commerce has a massive impact on logistics. In a physical retail context, the warehouse or distribution centre is running on orders placed by the retailers, wholesalers and intermediaries. They order products in relatively large batches. Those orders are based on planned and executed sales in a response to the market demand. However, as a result of online retail, the number of orders has increased tremendously. Orders are no longer only placed by the retailers, wholesalers and intermediaries, but also by consumers. This results in a higher amount of orders, while the value and complexity of the orders reduces (Zurek, 2015). This influences the key components of distribution: inventory management, warehousing and transportation (Stadtler & Kilger, 2005).

3.1 E-commerce and distribution

The fulfilment of online orders differs from the traditional channel. In the online channel, packages tend to be small, single-order ones. When delivering to a physical store, mostly larger packages are delivered, containing multiple identical products. Firms need to decide which processes to separate for both channels, providing the optimal processing for each, and what processes to combine, to find a compromise between efficiency and effectiveness and costs (Agatz, Fleischann & van Nunen, 2008).

With the growth of the B2C, the amount of small lot-size and dynamic arrival of customer orders has increased tremendously, making order picking and delivery with short lead times more important (Zhang, Wang & Huang, 2016). To make this possible, flexible and timely warehousing is needed. However, the great number of small orders and irregular items makes this more complex. Warehouses need to lower the processing times, while offering great service (Hu & Chang, 2010). The warehousing function is responsible for the storage and handling of inventories, beginning with supplier receipt and ending at the point of consumption (Ross, 2015). Moreover, warehouses are often not only used for storage, but also to consolidate or sort goods (Ghiani, Laporte & Musmanno, 2013). The main functions of warehousing are receiving, put-away, storage, order picking and shipping (Sainathuni et al., 2014).

- *Receiving* is concerned with the receipts of materials coming into the warehouse.
- *Put-away* is the moving and placing materials in storage. An important consideration in put-away is deciding the place and amount of materials to store, since there may be several storage systems or modes in most warehouses.
- *Storage* is involved with physically housing material until requested. There are two types of storage systems: unit load systems and small load systems. Small load systems house small loads, such as small boxes. Unit load storage systems are used for housing large loads, such as large boxes or full pallets.
- *Order picking* is the act of meeting a specific customer order by retrieving items from storage. This can include packaging of individual products or assortments. Depending on the picking strategy, it may be necessary to sort and/or accumulate products into individual orders when an order consists of more than one product. Order picking is important since it has a critical impact on customer satisfaction. Consumers expect fast and accurate processes of their orders, which is influenced by the efficiency of order picking activities.
- *Shipping* is the process of packing and accumulating orders by outbound (sending materials out of the facility) carrier for loading (Manzini, 2012).

Online sales can basically be met from any location in the distribution network, as long as it has enough stock to fulfil the order. Click-and-mortar firms can benefit from this, by combining (pooling) the inventory for online sales with the inventory set aside for physical retail. Pooling inventory can improve the service level and decrease the operational costs (Dondoly et al., 2007). Supply chain inventories include finished goods, assemblies, components and raw materials. In the e-commerce context, relevant inventory concerns mainly finished goods. Inventories exist to support demand throughout the supply channel. The main dilemma concerns the amount of inventory. For quick fulfilment of demand requirements, inventory is necessary and useful. On the other side, too much or the wrong inventory at the wrong location is very expensive and reducing profitability (Ross, 2015).

Three major organizational models for order picking for online retail have been identified: store-picking, warehouse-picking and drop-shipping.

With store-picking, the consumer places an order online and the information is sent to the nearest or designated store. An employee packages the ordered product of the shelves. This strategy is only operable in case of a click-and-mortar retailer.

Warehouse-picking has warehouses dedicated to internet orders. The internet orders are packaged in the warehouses and shipped out to the consumers. This form of inventory management necessitates investment in warehouses and lead times can be long, because of the single, centralized, warehouse.

Lastly, drop-shipping is an organizational model in which the supplier handles the stock and the order completely. When a customer places an order, it is send directly to the supplier. The supplier decides the quantities to produce and handles the order delivery. The retailer is not concerned with over-stocking costs due to wrong forecasts (Hovelaque, Soler & Hafsa, 2007).

As a result of the growth in online sales, fulfilment facilities for e-commerce are developed. There are five different types of e-commerce facilities (Morganti, Seidel, Blanquart, Dablanc & Lenz, 2014):

- Mega e-fulfilment centres: these centres are the place where the products are stored and picked in order to compose the orders.
- Parcel sorting centres (hubs): the parcels are sorted in these centres, before being forwarded to the local parcel delivery centres.
- Local parcel delivery centres: these centres are the starting point of the 'last mile' fulfilment.
- Local urban logistics depot: these depots are especially found in larger cities, to ensure rapid order fulfilment.
- Return processing centres: in these centres, the processing of the return items takes place. This is not necessarily separated from the mega e-fulfilment centres, it can be a separate department in there.

According to a research of Weltevreden and Rotem-Mindali (2009), the majority of online orders is delivered at home or at work (78%). Around 10% of the online orders is delivered and collected at a post-office or pick-up point in a shop. 7% of all online orders is delivered digitally and 6% is picked up =101%at a private address by the consumer. The tremendously increased amount of orders, that is mainly delivered at home, has an immense influence on transportation.

In the e-commerce context, particularly the last mile is of great importance. The urban 'last-mile' in logistics en distribution systems is responsible for as much as 75% of the total supply chain costs (Boyer, Frohlich & Hult, 2004). For both retailers and manufacturers, the last-mile is becoming more

complex and strategic. The complexity of the urban environment rises from the great number of firms, with a lack of integration, operating and delivering their products and services in a dense area.

E-commerce is the most rapid growing retail market in Europe, with online sales increase of 20 percent (Centre for Retail Research, 2016). This growth has led to a new problem: the large volume of customer returns (Ghadge, Yang, Caldwell, Köning & Tiwari, 2016). This problem is especially present in product categories where the 'touch and feel' element is important to determine if a product is suitable, for instance the clothing category. The relevant attributes for consumer decision making for such products are difficult to communicate online (Ofek, Katona & Sarvary, 2011). Product returns is a challenging issue for online retailers. It includes a large number of activities, such as the receiving of the package, inspecting the product, re-palletizing, repackaging and re-labelling the product. Next to these activities, it also requires the re-integration of the product into the system and the reimbursement to the customer (Kumar Jain, Gajjar, Shah & Sadh, 2017).

3.2 Third-party logistics providers

Deploying an operational distribution network by a company itself comes with quite some disadvantages. Heavy investment is needed for vehicles, machines, etcetera, and considering the costs, revenue and operational flexibility, outsourcing is often a better solution for companies. It allows for a more effective and controlled way to fulfil orders. It is important to keep in mind that logistics is a very important issue, but it is not the core competence of a retailer. It is a function that is necessary for online retailers to sell their products and complete the order fulfilment process (Yu, Wang, Zhong & Huang, 2016).

Outsourcing the logistics function may be advantageous for different reasons. From a transaction cost perspective, online retailers may decide to outsource their fulfilment activities to a third party when the costs of doing so is lower than the expense of keeping the activities within the company. However, outsourcing may bring some internal costs along that should be taken into consideration. Monitoring and controlling the service level of the third party logistics company can be costly as well (Rabinovich, 2004).

Logistics can be outsourced to a third party logistics service provider. Several narrow and broad definitions of third-party logistics (3PL) exist. Some researchers define third-party logistics as the outsourcing of transportation and or/warehousing to a 3PL provider, while others use a more complex concept, covering the entire logistics process (Marasco, 2008). It involves an external company, that company (Coyle, Bardi & Langley, 2003) that can offer a wide variety of services, such as professional logistics transportation, warehousing, logistics information system, product return service, inventory management, and product packaging (Kumar Sahu, Kumar Sahu & Kumar Sahu, 2015). Third-party logistics providers offer the traditional logistic functions, such as warehousing and transportation, but can also assist with other services, such as reverse logistics (Wilding & Juriado, 2004).

Fourth-party logistics providers (4PL) can form a partnership with 3PL companies. 4PL can provide services for 3PL, such as technology and supply chain strategy skills (Papadopoulou., Manthou & Vlachopoulou, 2013). A fourth-party logistics provider manages different providers with complementary services that collaborate together, being the single point for contact for the companies

that use the provider. With the forming of these horizontal relationships, a fourth party logistics provider can serve a large customer (Jharkhaira & Shankar, 2007).

Outsourcing motives around 2000
At the beginning of the century, FedEx was the most progressive firm in adjusting their services to the e-commerce trend. They stepped away from only offering the traditional logistics services, and have changed to total supply chain management. They offer the 'transportation, information and logistics solution for other companies'.

The main reason for companies to collaborate with a firm as FedEx is to enhance their effectiveness. By outsourcing to 3PL providers, and to a certain extent to couriers, express and parcel services, companies are using remarkably efficient distribution systems (Hesse, 2002).

In a review of 3PL literature from around 2000, reasons for outsourcing logistics were identified. The main reason, by far, happened to be cost reduction. Other reasons were the improvement of service levels, the increase in of operational flexibility, the possibility to focus more on the core competencies of a company (Wilding & Juriado, 2004), the reduction of technological complexity and the possibility for innovation of logistic processes (Azadi & Saen, 2011).

The importance of the development of third-party logistics services has been increased during the last decade. The focus on core competencies and the need for efficiency evoked many business opportunities for third-party logistics service providers (Rajesh, Pugazhendhi, Ganesh, Ducq & Koh, 2012).

Outsourcing motives now
The drivers for outsourcing the logistics function to third-party logistics providers has changed over the years. As a result of the globalization and the global economic development, the competition between firms has grown, especially the competition between supply chains. It is crucial for the whole supply chain to be highly competitive, otherwise an enterprise will not survive in the long run (Wang, Guo & Chen, 2008). Retailers have to focus on their core competencies, and therefore choose to outsource some of the processes to third-party providers, such as logistics providers. 3PL has become common practice.

One of the main reasons to outsource logistics functions is the capability of providers to offer great service, with expertise and experience, which would have been very costly to have in-house or difficult to acquire (Azadi & Sean, 2011). The main reason for outsourcing is no longer only the cost advantage it can bring. Retailers nowadays are aware of the importance of well functioning logistics, and want to ensure a high quality fulfilment process. The quality a 3PL provider can offer is hard to match for the retailer. Both quality and cost wise, outsourcing to a 3PL provider is attractive nowadays.

4. The importance of meeting customer requirements

Loyal and satisfied customers are key for business survival, especially in the e-commerce market, with severe competition and low entry barriers. Loyalty and satisfaction are great predictors for customer retention and repurchase (Kassim & Abdullah, 2010). Before a customer is loyal to a retailer, a customer needs to be satisfied with a retailer. To reach satisfaction, the quality of electronic services needs to be high. However, for consumers with no prior experience with a retailer, reputation and word-of-mouth can be crucial in deciding at which retailer to buy.

Customer retention is the ability of a retailer to retain its customers over time, reusing the retailers online channel. It is considered to be one of the key success factors for retail businesses. This is of such importance, because the costs of acquiring new customers is five to seven times higher than retaining current customers. Moreover, retained customers are less sensitive to price changes and are likely to attract new customers (Khalifa & Liu, 2007). In an e-commerce environment, retention of customers is a challenging issue, because of severe competition en minimal switching costs for customers (Anderson & Srinivasan, 2003). Customers can switch easily and can gather near-perfect information using the internet. There is little to inhibit customers from switching between retailers, armed with information and prices of different products at different retailers (Reibstein, 2002).

4.1 Reputation and word-of-mouth

Reputation in e-commerce is important, because there is no physical distance between different retailers and the consumer. They are all the same mouse click away, so distance does no longer play a role in deciding where to buy (Xu, Munson & Zeng, 2017). The location of a retailer has traditionally been viewed as the most important factor in deciding where to buy. With the adoption of e-commerce, the importance of location is reduced or eliminated for online retailers (Esper, Jensen, Turnipseed & Burton, 2003). Reputation is generally defined as 'information that represents a publicly held perception of a specific referent' (Fuller, Serva & Benamati, 2007). Reputation is especially important when a consumer has little personal knowledge or experience with an online retailer. A positive reputation can increase consumer trust and loyalty and commitment towards a company, and reduce concerns with regard to the purchase (Fuller, Serva & Benamati, 2007). Having a favourable reputation has always been a key issue for a company. The decision to buy a product is often influenced by recommendations from others (Zhang, Bin & Sun, 2015). With the development of the internet as an easy method to share and read reviews and compare different companies, the importance of reputation is only increasing. Customers are not able to visit an online retailer, in contrast to a brick-and-mortar store. The interaction between the customer and the retailer is in that case solely based on the online presence of the retailer (Yan, Jing & Pedrycz, 2017).

As a result of the high amount of companies engaged in e-commerce, there is an enormous number of alternatives when shopping for a product online. Customers generally create a certain custom for shopping online: first looking at the reviews online, afterwards deciding to buy or not (Yan, Jing & Pedrycz, 2017). Discussion forums and message board are places suitable for consumers to express their opinions and views on a product, service or company, or ask for the opinion of others (Zhang, Bin & Sun, 2015). Additionally, web shops of companies, for example Bol.com, allow (or even stimulate) customers to publish a review on the webpage of a product. Lastly, there are independent consumer community intermediaries, such as Tweakers.nl, that publish an extensive review of an item and allow

consumers to complement the review in the comments (Zhang, Bin & Sun, 2015). Moreover, as a result of the increasing popularity of social media, consumers have the possibility to share their product experiences and interact with other consumers (Lin, Li & Wang, 2017).

Moreover, not only on the internet but also offline, the recommendations of others play a role. Loyal customers are likely to express positive word-of-mouth to consumers that are unfamiliar with a retailer (Kassim & Abdullah, 2010).

4.2 E-commerce service quality

E-commerce services can provide supplementary value and utility to the order itself to customers. The quality of these services is crucial (Xu, Munson & Zeng, 2017). E-service can be defined as the degree to which an online retailer facilitates effective and efficient shopping, purchasing and delivery (Bresolles, Durrieu & Senecal, 2014). E-commerce services, also called e-services, can be distinguished into information search services, agreement services, fulfilment services, and after-sales services (Xu, Munson & Zeng, 2017). Services of high quality can increase the purchase intentions of customers, increase loyalty, meet new customers' demands en can provide additional product value. However, when the services are of poor quality, it can lead to enormous online sales losses (Xu, Munson & Zeng, 2017). The quality of the e-service aspect of online retailing can influence satisfaction (Bresolles, Durrieu & Senecal, 2014).

4.3 Satisfaction

An important factor for customer retention is satisfaction. It is a very strong predictor for repurchase. When a consumer is satisfied with a particular retailer, the likelihood of shopping there again increases. Another factor explaining repurchase is the perceived usefulness of shopping at a particular retailer (Khalifa & Liu, 2007). Satisfaction can be defined as 'the consumers' judgement of their internet retail experience compared to their experience with other online or traditional retail stores' (Bressolles, Durrieu & Senecal, 2014). E-satisfaction has been mentioned as one of the main factors in the formation of e-loyalty. However, e-trust does also play a role in the formation of loyalty (Safa & Ismail, 2013).

4.4 Trust

Many online retailers even try to go beyond satisfaction and create customer trust to ensure long-term commitment from the customer to the online retailer. Creating trust can reduce the perceived risk of using the service of a particular retailer (Kassim & Abdullah, 2010). Trust can be defined as 'the willingness of a party to be vulnerable to the actions of another party' (Fuller, Serva & Benamati, 2007). For an online retailer, it is key that consumers have trust in the company. Without this crucial trust, consumers are very unlikely to purchase products at this particular online company. Loyalty, or long-term customer commitment, results in long-term profit for online sellers (Safa & Ismail, 2013). Moreover, trust between the customer and the retailer may result in the disclosure of personal details by the customer. Based on this information, the retailer is able to personalize the services and website. Retailers can provide proper services and products accordingly to this information, because they are more familiar with the consumer (Safa & Ismail, 2013). Personal information is not only necessary for shipping the order, but also crucial for building and managing customer relationships. With the creation of trust, customers will feel that the information they supply to the retailer is confidential and will not be sold to others (Kassim & Abdullah, 2010).

4.5 Loyalty

Repurchase both mirrors and constitutes one important dimension of loyalty (Khalifa & Liu, 2007). Loyalty can be defined as the continuing relationship that is established between a consumer and a brand or retailer (Bashar & Wasiq, 2013). It is customer commitment and a favourable attitude towards a retailer. It can be seen as one of the factors for consumers to resist to change between brands or retailers, and leads to repurchase behaviour. Important characteristics of loyalty are the willingness to pay more, a higher buying intent and a resistance to switch between retailers or brands. Loyalty can also be phrased as 'the frequent purchasing over a period of time with satisfaction towards a subject', with a clearer emphasis on the importance of satisfaction (Safa & Ismail, 2013). Another important benefit of loyalty that has been found, is that loyal customers are less sensitive for negative information about a retailer than non-loyal customers. Loyalty is generally expressed in two ways. First of all, loyal customers are very likely to repurchase at the retailer they are loyal to. One can say that loyalty leads to customer retention. Secondly, loyalty is also expressed in positive word-of-mouth. Satisfied as well as loyal customer are more likely or willing to provide positive word-of-mouth to consumers that are unfamiliar or have no relation with the particular retailer (Kassim & Abdullah, 2010).

Retention is also indirectly the consequence of habit. Without the habit of online shopping, the likeliness of returning to a particular online retailer decreases, despite satisfaction with the previous purchase. For habit formation, prior experience is one of the key ingredients (Khalifa & Liu, 2007). Since e-commerce has been developing for a while, most people do have some prior experience with online shopping. Some products or services are very difficult to purchase without the use of internet, increasing the experience with online shopping of consumers. However, prior experience with a retailer is less probable, because of the large, and still increasing, number of retailers. This again stresses the importance of word-of-mouth and reputation, and thus indirectly the importance of loyal customers.

4.6 Customer requirements

Satisfaction, the base of both trust and loyalty, is created when the consumer receives the right product, at the right time, meeting their expectations (Xu, Munson & Zeng, 2017). An increase in customer satisfaction can be obtained through superior service quality (Gefen, 2002). A crucial part of the likelihood to return to a particular online retailer takes place at the end of the purchase process (Reibstein, 2002), because the quality of it is key for creating satisfaction and thus for the creation of trust and loyalty as well. The fulfilment services require a certain level of quality for a customer to be satisfied. These required levels of service can be called 'customer requirements'. An example of this can be linked to transparency. Customers may find it required to see where their order is and when it will arrive at their home, so a customer requirement may be access to 'tracking and tracing'.

5. Relationship between customer requirements and logistics

E-fulfilment is one of the processes that significantly influences the consumer's shopping experience and the repurchase intention of customers (Kumar Jain et al., 2017).
In online retail, the e-fulfilment process is a key process and the main interface between the online retailers and the customers (Kumar Jain, Gajjar, Shah & Sadh, 2017). The e-fulfilment process is about meeting the customer expectations and satisfying the customer. The process starts at accepting the customer order (Kumar Jain et al., 2017) and ends when the customer receives the right product at the right time, meeting the expectations (Xu, Munson & Zeng, 2017). E-fulfilment can be classified into two categories: the order procurement and the order fulfilment process. The order procurement process contains the capturing and processing of the order, while order fulfilment consists of four physical distribution service quality (PDSQ) dimensions: availability, timeliness, condition and reverse logistics (Kumar Jain et al., 2017).

For customer satisfaction, after-sales and support services are a key issue, with an important role for physical delivery, the order fulfilment process. Satisfactory is established when a customer receives the right item, at the right time that meets exactly their expectations (Ramanathan, 2010). The fulfilment process is of much greater importance for satisfaction than the global quality of the transaction (Wolfinbarger & Gilly, 2003).

The final or last mile is the critical link between the internet ordering of consumers and the delivery of the order to the consumers. Generally, it is considered the most important part of the order fulfilment process (Esper, Jensen, Turnipseed & Burton, 2003). Especially taking into account the consumer satisfactory elements described in the 'right item, right time, meeting expectations'-statement, which mainly occur during this last part of the delivery process.

For instance, research has shown the importance of delivery time for satisfaction. It can be explained by a difference between the physical and online retailer. An important difference between these is the shopping experience. When shopping online, the consumer has to wait for the product to be delivered, while when shopping at the retail store, the consumer receives the product immediately. As a result of this difference, the online and the traditional retailer focus on different elements. For the online retailer, delivery time is a key issue. Inventory is the most crucial factor for the traditional retailer (Li, Lu & Talebian, 2015).
Rao et al. (2011) have examined the importance of service aspects of order delivery in online retailing. The quality of physical distribution services partly explains immediate purchase satisfactions.

The last mile is the most important element of the order fulfilment process, especially the on-time delivery. Delivery-related matters are of great importance to consumers. It has been found that customers who received their order on time would repurchase at the online retailer again, in contrast to 33% of the customers that would repurchase when they did not receive their order on time (Esper, Jensen, Turnipseed & Burton, 2003).

As stated earlier, electronic commerce has led to an increase in the amount of orders, but a decrease in the size of the orders (Zurek, 2015). Carriers are responsible for the very last phase of the delivery process, the actual delivery at the home of the consumer. Receiving the delivery from the carrier is the

only physical contact during the online ordering and delivery process (Esper et al., 2003). Consumers are especially aware of the carrier that delivers their order, so their perceptions of the image and the performance of the carrier can influence their purchase decisions (Esper et al., 2003).

6. Logistic e-commerce customer requirements

Customer requirements regarding the fulfilment process can be categorized into five different categories: cost, quality, time, flexibility and reliability (Harrington, Srai, Kumar & Wohlrab, 2016). Different customer requirements were identified in different researches are categorized and discussed in this chapter. Heim and Field (2007) have the ease of returns and refunds identified as important for satisfaction as well. Since it is hard or not possible to place it in one of the five categories, it is treated as a separate category in this chapter.

6.1 Cost

As for costs, the main customer requirement identified is the absence or minimisation of shipping fees.

Shipping charges (Rao et al., 2011)

Shipping fees are a complex issue for retailers. As a result of the physical distance between consumers and retailers, costs for the assembly of an order and transaction costs exist. These costs are often of such a proportion, that some retailers feel the need to charge so called 'shipping fees' (Lewis, 2006). These charges may cover the assembly and transaction costs, but can negatively affect the number or orders. Moreover, the charging of shipping fees can induce the size of orders, because fees are often not charged above a certain value of the order.

It has been found that shipping fees have a negative influence on customer retention, implying a negative effect on satisfaction. Another interesting finding is that retailers with a strategy to only charge shipping fees under a certain value of the order outperform retailers that offer free shipping in terms of profitability (Lewis, 2006). However, the absence of shipping fees is the most lucrative for customer satisfaction. Not having to pay for assembly and transactions costs makes shopping online more attractive than with shipping fees and more attractive with respect to shopping at an offline retailer. Especially when competition does charge shipping fees, the absence of them can be a competitive advantage (Lewis, 2006).

6.2 Quality

Multiple customer requirements regarding quality have been identified. They refer to different aspects of quality. This section will deal with the quality of packaging, the communication through e-mail and text messages during the fulfilment process and the offering of environmentally-friendly delivery options.

Well packaged (Wolfinbarger & Gilly, 2003)

Damaged products lead to dissatisfied customers. To prevent damaged products, customers expect their order to be well packaged. Products should be protected from mechanical, chemical and biological damage. Protection can be ensured with the use of appropriate packaging materials and the appropriate packaging design. There are different possibilities to protect a product, such as the use of air pillows and bubble wrap. To create customer satisfaction, a retailer must make sure to design a package that opens and closes easily. Easy closure of the package is necessary for the ease of returns, later discussed in this section. In that case, products have to be repacked and the package should offer the possibility for this (Regattieri, Santarelli, Gamberi & Mora, 2014). Another important aspect of a

package is the 'handleability', the ease of handling and the user-friendliness of the package. It has been found that this is the main requirement of consumers (Regattieri et al., 2014). With the current global warming, consumers are increasingly demanding environmentally-friendly packaging of their orders. Packaging is environmentally-friendly when the packaging is reduced to the minimum, minimal plastic stuffing is used, the package is recycled or recyclable or reusable (Regattieri et al., 2014).

Communication through e-mail and text message (Harrington et al., 2016)
Harrington et al. (2016) have defined real time communication with the customer as a customer requirement. The possibility to engage, interact and communicate in real time should exist. This communication can take place through the use of e-mail or text message. An example of this communication can be a text message with information when the delivery of a product is delayed due to unforeseen circumstances of the carrier, such as bad traffic. In this way, customer expectations can be adjusted and the negative influence of the delay on satisfaction may be reduced.

Environmentally-friendly delivery options (Harrington et al., 2016)
Next to environmentally-friendly packaging, there is also a demand for environmentally-friendly delivery of customer orders. Delivering orders in a sustainable way, using electric delivery vans, is often more expensive than delivering orders in the common, fuel-based, way. Customers that want to use this option instead of regular delivery are often willing to pay a little extra for this service, because they value the environment (Harrington et al., 2016).

6.3 Time

Time concerns the item availability, necessary to deliver orders fast and on-time, and the option for same-day delivery.

Item availability (Rao et al., 2011)
In contrast to shopping at the classic brick-and-mortar store, customers can not physically see product availability when shopping online. Therefore, it is important to display the availability status of products in the fulfilment centre on the website. The real availability and the availability displayed online should be aligned. If not, and there happens to be a shortage of a product in the fulfilment centre that is not presented at the retailer's website, it may lead to delay in delivery. This leads to a decrease in customer satisfaction. When the particular ordered product is available, customer satisfaction may increase when the customer receives the message that their order is packed and shipped. When the desired product is not available, the online retailer should inform consumers about alternatives, to prevent them from ordering at the competition. Gratifying alternatives may convince the consumer to order at the retailer anyway (Kumar Jain et al., 2017).

Same-day delivery option (Lin, Zhou & Du, 2017)
Late deliveries, not necessarily delayed deliveries, lead to dissatisfaction. It is for this reason that more and more online retailers start to experiment with delivering an order at the same day it is ordered. It has been found that a high willingness to pay exists for same-day delivery (Brusch & Stüber, 2013). It makes sense that satisfaction increases when people are able to touch and feel their new product as soon as possible after ordering. This is also to the big difference between physical stores and online stores. When shopping in a brick-and-mortar store, people can take their purchase home immediately,

in contrast to ordering online. This might be a reason for people to prefer the classic brick-and-mortar store for shopping. However, with introducing same-day delivery, this gap is shrinked a little. Same day delivery is key for clients who require maximum speed for their deliveries (Ghiani, Manni, Quaranta & Triki, 2009).

6.4 Flexibility

The flexibility section will deal with shipping options and delivery frames as customer requirements. Offering multiple shipping options and delivery frames increases the flexibility of customers.

Shipping options (Rao et al., 2011)

Consumers desire, regarding the fulfilment of their order, 'minimal shipping and delivery times, maximum product availability, assurances of reliable delivery, minimal shipping errors, and minimized personal travel (Heim & Field, 2007). It is found that retailers who offers a wide range of delivery options better satisfy customers (Heim & Field, 2007). Different combinations with different levels of the requirements exist. This also makes sense with regard to the heterogeneity of preferences (Bressolles, Durrieu & Senecal, 2014). Different people prefer different shipping options and different situations suit different delivery options. Examples of shipping options are home delivery and order pick-up points.

However, an important finding is that if one of the delivery options is not performing well, it might have a negative impact on the delivery satisfaction of customers. It could be that this low quality is more harmful than not offering the option at all. In that case, customers might use delivery options that do not perfectly fit to their preferences, but with high quality (Heim & Field, 2007).

Delivery frames (Morgani et al., 2014)

Flexible hours for delivery is getting more and more common and has evolved into a customer requirement (Morgani et al., 2014). Customers can choose between different time frames and different days for their order to be delivered. In this way, consumers are able to be more flexible. It prevents that customers have to be at home all day, waiting for their order to be delivered. Instead, they can indicate a time frame that suits them well, for instance when they would have been at home anyway. For people that work fulltime, evening delivery would suit them best, because they are not home during daytime. Moreover, time frame options may reduce the amount of missed deliveries, because people are more likely to be at home at their preferred delivery time, which is an advantage for both customers and the retailer.

6.5 Reliability

For reliability, it is required for orders to be delivered on-time. The availability of an accurate order tracking system can ease the customer during the waiting or when the delivery may be late.

On-time delivery (Rao et al., 2011)

On-time delivery is an important customer requirement, because it is, in contrast to most other requirements, a dissatisfier. This implies that when not fulfilled, satisfaction decreases. When delivery is on-time, it does not particularly lead to an increase in satisfaction. A delivery is considered on-time when it arrives in the time period displayed on the website (which mostly states a particular day or a

frame of multiple days), and subsequently is delivered in the further specified time frame that a consumer is notified of after ordering (Ramanathan, 2010). On-time delivery is important, because products are regularly ordered for a special occasion. This can be, for instance, a birthday or an upcoming holiday. When the product is delivered too late, it loses value for the customer. Furthermore, a delayed delivery can cause some troubles for the customer. When a customer adjusts his/her schedule to be home to receive the package, and the package does not arrive in the notified time frame, this leads to dissatisfaction. Staying at home was not necessary and the possibility of missing the package exists, because it is more likely that people are not at home after the time frame has passed (Kumar Jain et al., 2017). Waiting time has a negative influence on the satisfaction of the fulfilment service. Not knowing how long to wait for the package to arrive might cause feelings of unease and anxiety for the customer (Cao & Zhao, 2004).

Order tracking (Rao et al., 2011)
To ease the waiting of the customer, it is important to provide an order-tracking system for consumers. This is possible because of technology and cooperation with the courier. At every stage in the fulfilment process, the package is scanned and it is possible for the customer to see where the package is. This technique seems to make the waiting for the order more tolerable and leads to more customer satisfaction or a limitation in the decrease of satisfaction as a result of delivery delays (Cao & Zhao, 2004).
Different methods for order tracking exist. Most common is the online order tracking. Other alternatives are phone tracking, e-mail response and phone call back. Order tracking contributes to the reliable delivery criterion, as customers are able to see when their delivery will arrive. However, some of the options for order tracking are very inconvenient to use, and might decrease perceived quality because of the decrease in ease of use (Heim & Field, 2007).

6.6 Returns handling

Reverse logistics include the operations in the supply chain of product returns from the downstream members upwards, product reprocessing en remanufacturing (Guo, Shen, Choi & Jung, 2017). The ease of return refers to how an online retailer deals with unwanted, damaged or faulty products. This includes, for instance, how many channel options a customer has to return a product (Kumar Jain et al., 2017).

Several important factors have been identified when it comes to the quality and ease of returns and refunds. Most important, it has been found that people value easy return processes, with human customer support when necessary. The leniency of return and refund policies influence the ease of returns and refunds, and thus the satisfaction of the return process. It has been found that, especially in the case of ease of returns and refunds, the main part of the attributes of the fulfilment process can dissatisfy the customer rather than satisfy it. When the customer requirements are met, this does not contribute to a radical change in satisfaction. However, when these are not met, it affects satisfaction negatively (Heim & Field, 2007).

The leniency of return policies can influence the amount of returns. Return policies can be lenient in five different ways:

- Time leniency. Leniency is based on the specified deadline by retailers. Commonly, customer have 30 to 60 days to return their items. The longer they have, the more lenient the policy.
- Monetary leniency. Companies that are monetary lenient, allow customers a full refund for the returned products. Less lenient companies only refund the returned product partially, because of a 'restocking fee' or a 'shipping and handling' fee (Janakiraman, Syrdal & Freling, 2016). Logically, charging a restocking fee has a negative influence on satisfaction. You assign costs to the customer for making a bad decision, that could also have been the result of the information and decision tools that have been provided by the retailer (Heim & Field, 2007).
- Effort leniency. The less effort it costs for a customer to return a product, the more lenient the policy (Janakiraman, Syrdal & Freling, 2016). This does not only refer to the ease of physically returning the product, but also to the effort to find the details about a retailer's return policy. Requiring the customer to ask for the details of the return policy influences the satisfaction negatively (Heim & Field, 2007).
- Scope leniency. Some companies do not allow returns for all products. For instance, items that were in the sale are often non-refundable. The wider the scope, the more lenient the policy.
- Exchange leniency. Some firms offer cash refunds, while other companies only offer store credit or product exchange. Companies that allow cash refunds for returned products are more lenient than firms that do not (Janakiraman, Syrdal & Freling, 2016).

Return leniency increases both purchase proclivity and return proclivity. However, purchases increase more than returns. Especially monetary and effort leniency are likely to increase purchases. Time, scope and exchange leniency are most suitable to reduce returns (Janakiraman, Syrdal & Freling, 2016). In the light of meeting customer requirements for customer retention, customers are more sensitive to the return terms such as monetary leniency and the effort leniency and the focus should lay there (Heim & Field, 2007). It is safe to say that return policies are very important for online purchases, returns and customer satisfaction. Firms are becoming more and more aware of this, making returning increasingly lenient.

7. Implications for 3PL

The increasingly complex last mile forms, in combination with important customer requirements, a challenge for online retailers. However, when third-party logistics services offer suitable and effective measures, outsourcing can be the solution for retailers. They can focus on their core competencies, while logistic customer requirements are met. In this literature study, several implications for third-party logistics providers are identified. These implications are based on signalled trends and literature.

7.1 Inventory liquidity

In order to provide fast and on-time delivery, inventory liquidity is of importance. Inventory liquidity can be defined as 'the availability of in-stock inventory to promptly fulfill consumer orders and the ability to source out-of-stock product from suppliers to fill those orders' (Rabinovich, 2004).
With the severe competition that online retailers are dealing with, an online retailer may promise a short lead time to increase a consumer's willingness to buy. However, to meet this guarantee, a retailer is not only dependent of the correspondence between the actual and signalled time to take the order to the destination. The actual order-to-shipment time should also match the signalled order-to-shipment time. So, the ultimate quality of the on-time delivery is a result of the performance of both stages in the fulfilment process. To meet overall fulfilment guarantees, an online retailer must be sure that the source orders faster than the signalled order-to-shipment time signalled to the customer, to compensate for any delays in the delivery process (Rabinovich, 2004).

7.2 Increasing shipping options and flexibility

One of the flexibility requirements is the offering of multiple shipping options. For 3PL providers, this means that they have to look beyond home delivery alone. However, to create customer satisfaction, it is important that all shipping options employed perform well. Quality of shipping options is in this case more important than the quantity. 3PL providers have to look at options to deliver the order of which quality is relatively easy guaranteed.

Pick-up points have developed as an alternative to home delivery. Pick-up points are locations to collect items ordered online. The most frequent type of pick-up point is the parcel service point, a staffed point that you can often find in supermarkets and stores. Alternatively, unstaffed pick-up points exist, as for instance lockers. Delivering at a pick-up point gives the consumer more flexibility. Once delivered, the consumer can collect the product whenever suits them. In the Netherlands, the number of pick-up points increased from 900 in 2006, to about 2500 in 2013. The use of pick-up points is often free of charge, or cheaper than the delivery fee, in case a shipping fee is applied. This should make the option to collect the order at a pick-up point more attractive for consumers. For businesses, delivering to a pick-up point is often cheaper than home delivery, because orders can be consolidated (Visser, Nemoto & Browne, 2014). Moreover, the risk of missed deliveries is avoided (Morgani et al., 2014).
Next to manned pick-up points, automated parcel systems that are equipped with lockers have developed as another alternative to home delivery. These lockers are often placed at often-visited locations, such as at train stations (Morgani et al., 2014) or even at Wageningen University.

Online retailers as well as third-party logistics operate pick-up points in the Netherlands. Bol.com, for instance, cooperates with Albert Heijn and offers pick-up points in their supermarkets (Bol.com

Bestellen & Levering, n.d.). DHL, a 3PL provider, deploys more than 1.300 pick-up points in different stores in the Netherlands (DHL, n.d.).

Offering the possibility to deliver parcels at manned or unmanned pick-up points leads to a wider range of shipping options, which can, when employed well, lead to higher customer satisfaction. Moreover, pick-up points can increase the flexibility of the customers, because they do not have to wait at home. They can pick the parcel up when it is convenient for them.

7.3 Last mile and on-time delivery

For logistics, cities are a challenging area. As a result of the high population in cities, demand for goods and services is high as well as the density of buildings (Melo, Baptista & Costa, 2014). Another source of the complexity of the urban environment rises from the great number of firms, with a lack of integration, operating and delivering their products and services in a dense area (Harrington, Srai, Kumar & Wohlrab, 2016).

The complex last mile needs innovative solutions from third-party logistics providers. They need to ensure online retailers as well as customers that they are reliable concerning the delivery. They have to reach a high rate of on-time delivery and deliver within the time frame selected, to meet one of the most important customer requirements regarding logistics. The regular way of transportation, using delivery vans, is very vulnerable to traffic circumstances. It requires good planning, taking rush hours and road work into account. This precise planning should lead to accurate delivery times. However, the long run, with the increasing urbanisation, asks for more innovative solutions that are less dependent of traffic. Several retailers and third-party logistics providers have been experimenting with innovative ideas to overcome this last-mile challenge. This could either improve on-time delivery or extend the shipping options for customers. Moreover, improving the last mile of e-commerce can also increase the ability to deliver on the same day as the order is placed.

Starship Technologies, an Estonian firm, was founded in July 2014 by two co-founders of Skype. They want to revolutionise local delivery with their delivery robots. After two years of business, the first 5000 kilometres were driven by their robots. Only two months later, they surpassed the 10.000 kilometres threshold. Several partnerships are formed and in December 2016, the first Just Eat takeout meal was successfully delivered by a Starship robot (Starship Technologies, 2017a). Just Eat wants to operate the robots in 2017 for delivery of their meals.

The self-driving delivery robots can carry items within a 5 kilometres radius. When a client requests a delivery through a mobile app, the delivery process from parcels and groceries is set in motion immediately, either from a store or a specialised hub. Within 5 to 30 minutes, the shipment can be delivered and the robot's entire route can be tracked on a smartphone. The robot is locked the entire journey and can only be opened by the receiver (Starship Technologies, 2017b).

Drones may be another mode to deliver parcels, especially for the last-mile delivery (Murray & Chu, 2015). Amazon has launched Prime Air, a transportation mode to deliver parcels up to 5 pounds in less than 30 minutes using small drones. This is still in an early testing phase, but according to Amazon, this will be reality one day (Amazon, 2017). In addition, Google and DHL are also testing with drone-delivery of parcels.

Although parcel delivery with drones may sound like science fiction, it has several advantages. It cuts the cost of human labour and it can shorten wait times. It is not obstructed by the dense traffic and drones deal with a shorter route to a location than a delivery truck to the same place. Nevertheless, in economical perspective, it is hard to see the profitability. Drones can, in contrast to delivery trucks, usually only carry one package. After delivery, it has to return to the base to recharge and to pick up the next parcel. It is necessary for a parcel not to be too heavy and to be delivered within only a few miles of a warehouse. However, in documents of Amazon is written that 86% of their parcels weighs under five pounds. Furthermore, for supermarkets, distance is not as big of a problem, since most people live close to a supermarket (Wang, 2016).

In the United States, federal law prohibits flying with commercial drones over populated areas. For now, Flirtey flight is the only exemption for freight delivery in the United States so far. Flirtey flight is a start-up that transports medicine through drone delivery, but still on a very small scale (Wang, 2016). In the Netherlands, there are a lot of limitations for the use of drones. First of all, a firm need to have a license and the drones has to be controlled by a pilot with a pilot licence. This is quite expensive and cuts the advantage of not using human labour. Moreover, drones need to fly at least 150 metres away from crowds of people, from highways and from urban areas (Rijksoverheid, n.d.). Regardless the technical possibilities of drone delivery, as long as current regulations apply, parcel delivery by drones is impossible.

7.4 Sustainable delivery

Research worldwide is addressing that consumers tend to favour firms which they perceive as socially and environmentally responsible (Simpson & Radford, 2012). Being sustainable can be a competitive advantage for a business. This can be obtained by, for instance, sustainable delivery. With the future urban population projections, social, environmental en economic pressure exists to develop solutions for both the environmental and urbanisation problem (Harrington et al., 2016). For third-party logistics providers, this means that they have to search for solutions to be both sustainable and cost-competitive. The transition to being fully environmentally-friendly can be very costly. For example, the replacement of regular delivery vans by electric vans is very cost-intensive. Therefore, 3PL providers implement this gradually. Customers may be charged a little for selecting the sustainable option to earn the investment partly back. Electric delivery vans and bicycle messengers are ways to offer the green shipping option to consumers. Their shipping options are increased and, moreover, bicycle messengers are a way to deal with the urban last mile.
Moreover, adding the sustainable delivery option also increases the shipping options, contributing to meeting this requirement as well. Sustainability can improve the perception of well-packaged orders as well. Recycled and recyclable packaging is sustainable, and gives customers the impression that the packaging is thought well-through.

As a result of rising fuel prices and stricter emissions regulations, some firms choose to use electric vehicles as an alternative to petrol or diesel powered cars. Electric vehicles consist of less moving parts, components and systems than petrol or diesel powered cars, which reduces maintenance costs (Kleindorfer, Neboian, Roset & Spinler, 2012). Small electric vehicles (SEV's) might be perfectly satisfying to meet both the environmental en urbanization problem. The smaller dimensions of the vehicles, compared to the commonly used vehicles, make it convenient for use in urban areas. The vehicles are easier to park than the regular trucks and vans, which makes on-street parking for

unloading less often necessary. When on-street parking is the only option, they occupy less space and are viewed as less intimidating than conventional delivery vehicles. As a result, unloading is less problematic when using a SEV (Mela, Baptista & Costa, 2014).

Bicycle messengers are people picking up and delivering items by bike. Such items can be letters and contracts that need to be delivered quite fast. In addition, bike couriers are also suitable for same-day parcel delivery. They operate as transport companies of smaller parcels and mails, that mainly transports in one city centre. Such firms are mostly found in central business districts of metropolitan areas. Shipments in urban areas through bicycle messengers has several advantages. Bike couriers suffer less from road congestion problems than delivery trucks and vans. They can easily pass along traffic jams and use small roads that are not suitable for motorized vehicles. As a result, delivery times are shorter. Bike couriers can offer reliability, because they can do their trajectory in a constant amount of time, regardless the weather, peak times and traffic jams, all year round. Moreover, they are not subject to on-street parking and loading regulations (Leonardi, Browne & Allen, 2012) (Maes & Vanelslander, 2012).

For third-party logistics providers, the sustainability requirement asks for heavy investments in electric delivery vans or other ways to deliver sustainable.

7.5 Returns
To meet the ease of returns customer requirements, it is important to make returning lenient. This leniency is based on a weigh-off between the amount of returns resulting from the leniency and the created satisfaction. This leniency is determined by the online retailer and not by 3PL providers. However, 3PL companies can provide services that allow online retailers to make their policy more lenient. A noticeable development in return policies to increase effort leniency, is parcel pick-up at home rather than bringing it to a post office. Zalando, a Dutch online retailer, was one of the first to initiate this. A postman stops at your house to pick up the parcel, in the timeframe that you have chosen. For this cooperation with PostNL, they charge an extra fee (Zalando, n.d.). Pull & Bear, an online retailer that offer relatively cheap clothes, also offers this service. However, you can only pick the day of the pick-up. There is no timeframe, so it is less convenient than Zalando's, but this is a free service (Pull & Bear, n.d.). Companies apply such a system in a way that matches their strengths, in this case service for Zalando, and price for Pull & Bear.
Introducing home pick-up is not only increasing the ease of returns, but also adds another 'reverse' shipping option, which increases flexibility as well.

7.6 Impact on third-party logistics providers
All in all, the variety of customer requirements asks for investments in multiple elements of the delivery process. However, some investments can improve meeting multiple requirements at the same time. As a base for reliability and on-time delivery, the providers needs to be sure that their inventory liquidity is sufficient to meet those requirements. Moreover, a provider can invest in electronic vehicles or bicycle messengers to broaden their shipping options and provide environmentally-friendly packaging. By developing environmentally-friendly and high-quality packaging, providers can extent their sustainability and reduce the delivery of damaged products. Pick-up points can increase flexibility, and when their use is stimulated, it can help 3PL providers to reduce the complexity of the last mile. Innovative solutions, such as the use of drones, can improve conquering the last mile in the future.

Lastly, it is important for third-party logistics providers to discuss the return leniency with the online retailer. A good return policy can decrease the amount of returns, but increase the ease of

It is important for third-party logistics providers to be aware of the changing customer requirements. For instance, when all providers offer same day delivery, some may try to deliver even faster to stay competitive. As a result, customers may demand this from other providers as well.

8. Conclusion

The development of e-commerce has accelerated with the ongoing globalisation and the improvements of the internet. For both retailers and consumers, online retail is an advantageous way of doing business. The target market of retailers is broadened, while the offer of different retailers has increased for consumers.

Distribution in general includes warehousing, inventory and transportation. The increase in the amount of parcels as a result of the growing online retail has influenced the different functions of distribution. Flexible and timely warehousing is needed to deal with the increased amount of orders. The service should be great and the processing times as short as possible. For the quick fulfilment of demand requirements, well-managed inventory is necessary and useful. Ideal is a balance between enough inventory to fulfil demand immediately on the one hand, and not more inventory than necessary with regard to the costs. Moreover, transportation has changed as well. A large amount of orders has to be processed, that are relatively small sized and have to be delivered to a great amount of (home) destinations.

In the beginning of the century, outsourcing logistic functions to third-party logistics providers was conventional, because it was cost-saving. Nowadays, outsourcing to logistics providers is common, because a high quality fulfilment is needed to compete. Outsourcing the logistics function allows retailers to focus on their core competence. It is safe to say that the role of 3PL providers in e-commerce has shifted from serving a cost-minimisation role to a provider that has to provide a high quality delivery process, meeting as many customer requirements to create customer satisfaction for retailers.

Satisfaction is created when a customer receives the right product, at the right place, at the right time. Customer satisfaction in e-commerce is of importance because it forms the base for trust and loyalty. Trust and loyalty increase the likeliness that a customer repurchases at the same online retailer. Satisfaction can be created by meeting customer requirements.

Customer satisfaction in e-commerce is heavily influenced by the fulfilment process. Satisfaction is a direct indicator for repurchase. As mentioned before, customers are satisfied when they receive the right order, at the right place, at the right place at the right time. In all those elements, distribution places a crucial role.

Logistic customer requirements can be classified into five different categories: cost, quality, time, flexibility and reliability. A sixth dimension is added to complete the customer requirements, the handling of returns.

For cost, the absence or minimisation of shipping fees has been identified as the main customer requirement. For quality, multiple requirements are identified. First of all, products should not be damaged, and therefore high quality packaging is needed. Moreover, high quality of the fulfilment process requires sufficient communication from the retailer to the customer through e-mail and text message. This communication regards details of the delivery. The last identified quality requirement is the offering of environmentally-friendly delivery options. The time category consists of the item availability requirement and the same-day delivery option requirement. Being able to chose between different shipping options and different delivery time frames are requirements that can be classified

as flexibility requirements. Reliability is build up on on-time delivery and order tracking. Lastly, ease and quality of returns and a sufficient lenient return policy are attributed to the last, additional, category, the handling of returns.

Several implications for 3PL companies regarding the current customer requirements are identified. First of all, inventory liquidity is the base for fast and on-time order delivery. Next to that, shipping options can be broadened and flexibility can be increased by employing order pick-up points or automated parcel stations.

Moreover, 3PL providers should seek for solutions to concur the increasingly complex last mile. In the short run, accurate planning should prevent delivery delays, but in the long run, innovative solutions are needed.

To meet the demand for sustainable delivery, 3PL providers should gradually implement the use of electric delivery vans or seek for other environmentally-friendly delivery options. Lastly, to allow retailers to make their return policy more lenient and increase satisfaction, 3PL providers can offer extra return shipping options, such as pick-up at home.

To conclude, meeting customer requirements is of great importance for third-party logistics providers. Whereas the outsourcing decision regarding the logistics function used to be based on cost consideration, it has shifted to being a quality based decision. Their role changes from being a cost-advantageous outsourcing partner to being a quality-ensuring partner. To be an attractive outsourcing partner, 3PL providers should ensure high quality in meeting customer requirements.

9. Discussion

This literature study describes the general current customer requirements in e-commerce and their implications for third party logistics providers. However, to be relevant for third party logistics providers, some additional research may be wise. For generalizable results, this research can be don by scientists to contribute to filling this gap in literature. Moreover, 3PL providers can do some additional research themselves, to generate information specific for their company and product category to tailor their services to maximise satisfaction.

The customer requirements that are identified and serve as a base for the implications for third party logistics providers, are described in general terms. However, it is important to keep in mind that customer requirements may differ between product categories. This literature study is based on products in general, so the general identification of customer requirements serves the objective of this study. Nonetheless, before actual implication of the recommendations made in chapter 7, third party logistics providers should evaluate the product category or categories that they serve.

Furthermore, the preferences of consumers are heterogeneous (Bressolles, Durrieu & Senecal, 2014). For the objective of the literature study, the customer requirements are described in general terms. However, various customers and their preferences are seldom identical. Meeting all the customer requirements will not per definition result in a satisfied customer. Priorities and hierarchy in customer requirements may differ widely between customers. However, tailoring the fulfilment process to every individual customer's wishes seems impossible, especially with regard to the preference for absence of shipping fees.

Moreover, the identified customer requirements may not be complete. The chapter covers all the segments of customer requirements, but different requirements belonging to these categories may be missing. Moreover, for different product categories, additional customer requirements may exist. However, the chapter should give a concise overview of current customer requirements. However, it is important to keep in mind that the chapter includes the current customer requirements. The dynamics of e-commerce might cause the quick development of new requirements.

For third-party logistics providers, the suitability of the different implications may depend on the scale of operations of the providers. For example, for small providers, it may be hard to employ pick-up points close to all customers, because it will not be profitable to use it for only a small number of customers. This limits their ability to offer multiple shipping options. However, this scale factor may be limited when the provider is small, but operates only in a small region.

Moreover, the degree of urbanisation and with that the complexity of the last mile may differ strongly between regions. This means that the generalizability of the implications may not be very high.

All in all, this literature study on the impact of customer requirements for third party logistics providers a contribution to fill the existing gap in literature on this relationship. Moreover, third party logistics providers can use this knowledge and use it as a starting point from where they can identify a category-specific hierarchy with possibly some additional requirements. The study gives insights in possibilities to meet these customer requirements, with a view to the changing last mile.

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