

# Success Factors for Retail Logistics in an E-Commerce-Environment

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**Abstract:** Retail logistics by itself is a complex task due to different products, time schedules and lot sizes. In e-commerce suitable e-logistics processes are usually one of the cornerstones of a successful online retail channel. But as this analysis of success factors for e-logistics in the online environment shows, the relationship is also characterised by dependencies the other way round as logistics depends on e.g. attractive and online presentable products as well as low return ratios of the product sold online. Therefore e-logistics and e-commerce should be developed together in retail companies in order to achieve a successful supply chain and business model.

**Keywords:** E-Logistics, E-Commerce, Retail Logistics, Success Factor Analysis.

## 1. Introduction

The development of the retail industry in Germany is currently characterized by concentration and infiltration of international business groups. Using the internet as an additional distribution channel is one opportunity for the thereby challenged companies to hold out against this stress of competition [29]. The online market offers huge entrepreneurial chances owing to its high potential in the future. Even though, the risks of this new opportunity should not be underestimated due to the fact that numerous attempts of companies to implement e-commerce as an additional distribution channel failed in the past [1]. Estimates by BVH (German Retail Federation) actually assume an e-commerce turnover potential of at least 100 billion euros for Germany. Comparing this figure with the annual online turnover in 2006 amounting to 15 billion euro, it shows that currently only 15 % of the potential is tapped [33]. Up to now small and medium sized retailers do not capitalise on the distribution channel e-commerce as much as they could - so their possible share in the potential turnover is still unused [34].

Due to rising cost pressure in consequence of the price setting of consumers and retailers, optimized processes are a necessary condition to participate in the strong e-commerce-growth [29]. In this context order processing has to be aligned with the customer wishes and needs to generate an added value which might be the determining factor to make up the customer's mind for the particular e-commerce-supplier [26]. This shows that, in case of using e-commerce as an additional distribution channel, far-reaching organisational and financial arrangements have to be considered in order to provide a successful implementation [2]. In this context logistics is of particular importance. After the first wave of e-commerce development without close attention towards logistics nowa-

days evolved scientific as well as business concepts are derived from the assumption that logistics is one of the key success factors for e-commerce [13].

## 2. Business Background

### 2.1 E-Commerce

The e-commerce term can be defined as initiation, negotiation and implementation of commercial activities in the sales division by using the internet. This definition establishes the basic definition for this article [10]. All e-commerce definitions have the following basic idea in common: On the one hand the connection between supplier and consumer has to be strengthened and on the other hand the relationship between company and customer has to be redefined and improved by the new web-platform [16].

So e-commerce can be both, the distribution oriented part of an e-business-system and a stand-alone solution [9]. Transactions within e-commerce are characterised by replacing goods with remuneration (e.g. buy, rent, and lease) and offer presentation and order processing electronically via internet [12]. Thereby the - also electronically implemented - functions of payment and distribution have only secondary priority [24]. Due to bi- or multilateral communication opportunities via internet, e-commerce becomes possible for all products until then being offered only in the physical world [2]. However not every company is suitable for e-commerce, due to its offered products or services and the behaviour of potential consumers [9].

According to the selected definition the sales process is a essential base for e-commerce-processes. It includes all business activities with the objective of selling products via internet [10]. Regarding content, e-commerce can be divided into provision of information about the offered products in electronic catalogues, the possibility for the customers to order these products online, accounting, marketing and customer services [4]. Therefore the use of e-commerce does not focus only on the sales-phase but also the pre-sales- and after-sales-phase [6].

The following sales process is based on the 'customer buying cycle'. This represents a generic model to describe the problem solving within a sales process. This 3-phase-process includes pre-sales, sales and after-sales. In case of a satisfaction of the customer a following repurchase is possible. According to e-terminology the phases of the customer buying cycle are renamed as e-pre-sales, e-sales and e-after-sales. To accentuate the importance of logistics and payment

for the complete e-commerce process the sales-phase is divided into agreement and transaction. The agreement takes place in the sales-phase, the transaction in the phases e-logistics and e-payment [10]. During the realisation of e-commerce the focus is upon a complete and consistent process chain, especially in the pre-sales- and sales-phase, to realise the advantages of e-commerce to the full extend. The sequence of e-sales, e-logistics and e-payment depends on the selected payment-system [12].

## 2.2 E-Logistics

By using electronic communication logistics becomes e-logistics. E-logistics can be defined as the strategic planning and control of all logistics systems and processes which are necessary for electronic transaction processing as well as their administrative and operational physical form [17]. Therefore e-logistics is a specialised part of retail logistics, developed within the part of distribution logistics. The main focus is, especially in the B2C-division, on the distribution of midget quantities [11].

During the e-logistics-phase delivery of the product takes place. Thus logistics are not only a success factor but also a basic condition for e-commerce [18]. To tap the full potential of optimised processes with automated data streams it is important to integrate logistics as an interface between the specific process components over the whole e-commerce-process. E-logistics provides for maintaining the quickness of retail to the customer's front door. Therefore logistics service providers not only have to be characterised by the connectivity to data networks but also support the quickness of processes to the customer by intelligent data processing [4]. The integration of logistics service providers enables a fast reaction to unexpected developments, reduce the stock level of suppliers and customers, increase the production output and reduce the costs of transport, administration etc [31].

The term 'fulfilment' within e-logistics defines a complete order processing from purchase order to storage, transport, delivery and payment [25]. This definition applies to both e-commerce and traditional distance selling [27]. Electronic receipts and an intensive integration of logistics processes into internet-solutions, e.g. Tracking & Tracing, enable customers to plan and trace deliveries. Logistics service providers use this transparency to build up customer confidence, because just the faith in a punctual delivery convince the customer to order via internet [18].

## 3. Effects of E-Commerce on Retail Logistics

### 3.1 Variance in E-Commerce and Retail Logistics

The variances of logistic processes being caused by e-commerce can be summarised as (a) changed customer requirements, (b) heterogeneous assortments, (c) high number of deliveries with low volume of delivery and order as well as (d) direct delivery [29].

(a) Customer requirements are changing by experiences they have made with other innovative business areas and the ensuing transfer to e-commerce. The new requirements primarily consist of information availability and delivery

time. The customers expect high information availability via internet, referring information about product and price as well as reliable information about the anticipated delivery-date and the current order status. Therefore it is necessary to allocate the needed information in real-time. Furthermore due to the faster order transmission via internet, the customers expect an accelerated order processing and therewith a shortened delivery time. Even though the time of order transmission is just a small part of the complete order processing. One result of the changed customer requirements is that the placement of order happens later to avoid decisions under uncertainty [14]. To fulfil the customer requirements it is necessary to optimise the processes between retailers, logistic service providers and customers with focus on decreasing process costs and an increasing process rate [7].

(b) During the past development of e-commerce the offered assortments expanded. At the beginning especially digitiseable or easily packable and deliverable goods were sold. By now a multiplicity of heterogeneous products are offered. The range of products goes from small- to large-volume, from one-piece to multi-part, from private to commercial and from robust to perishable goods, which have to be supplied, stored and transported to the customer [13].

(c) The structure of consignments, especially B2C, changes from few, large-volume consignments to downstream parts of the value added chain (e.g. stores of a retail business) to many small-sized consignments with a low order volume direct to the end customer. This demands an adapted process design and the scalability of resources [7]. However, the integration of B2C-orders into an existing distribution system is not possible offhand, because the existing storage and distribution systems are not designed for the handling of midget quantities. So the picking has to take place at the point-of-sale, which is not economical, or a new picking location for direct orders needs to be set [13].

(d) The nationwide transport to the end customer also referred to as direct supply or 'last-mile-delivery' poses a challenge for e-commerce. The transport of the online-sold small-volume products to the customer could be made by a parcel service. On the one hand this causes additional fixed costs. On the other hand it reduces the quantities of goods of the distribution system and therewith the utilised capacity, which results in cost increase. Large-volume and bulky goods or quantitative large orders of many small articles causes high logistic costs. The limitation of the supply area could be a possible solution but conflicts with the fundamental idea of e-commerce to generate additional sales outside the target area of the chain stores [9]. Whereas expenses and costs for pickup and return transport do not apply to the customer by direct supply, the retailer has got to bear the costs of additional activities to supply the several customers [4]. In the traditional retail the customer undertakes the task of picking and delivery at the point-of-sale, by ordering via internet these activities causes additional costs for employees and operating resources. The value added chain extends to the customer's front door, where

several deliveries are necessary due to absence of the customer [13]. Furthermore, production and structure of consignments are geared to the demand of the end customer instead of the stock movements of the retailer. So the value added chain is launched by the customer's order, according to the pull-principle [18]. In result the increasing costs have to be compensated by the lower costs of an online-shop compared to the chain stores [14]. From this follows further challenges for logistics service providers by the need of new distribution structures [29]. The basis for their accomplishment is a co-operation in partnership between all participants of a value added chain. Logistic service providers need to adjust their companies according to the new challenges to be able to exist in the e-commerce-environment. In addition to a wide product range with general and special solutions the investment in new technologies is necessary. The development from 3PL (Third Party Logistics) to 4PL (Fourth Party Logistics) is the result [5].

### 3.2 Market-Based Analysis

In the context of e-commerce the market-based view, adapted from porter's five forces, (a) customers, (b) suppliers, (c) industry rivalry, (d) potential entrants and (e) substitutes, shows possible business and competitive strategies [6].

(a) Customers: Reasons for the customers to buy at an online-shop are to order uncomplicated and anytime, the possibility of targeted product search within a wide range of goods, appropriate prices, fast availability of goods as well as direct delivery and the possibility to complain [21]. Hence customer orientation is a central condition for a business' success in e-commerce [10]. The customer requirements increase with their experience and supply of information. However, bad service and a lack of logistics may change the customer confidence to tend towards the negative [28]. The altered market power of customers bases on reduced information asymmetry. This causes the possibility to choose a product merely due to the price and/or the quality. The information search can take place anytime and with decreasing costs. Thereby the available range of products becomes more and more transparent for the customer and basis of decision broadens. The price turns to the key purchase criterion. The suppliers counter by slashing the product-associated benefits or trying to complicate the comparability by differentiation. As a result of aggregated information the customers transaction costs decreases and additional benefit is generated [3]. However, due to the increasing market transparency the customers loyalty towards the specific supplier declines. The experience rule '1.000 web-visitors – 10 purchaser – 3 repurchasers' points this out [32]. The offered range of products has to be attractive to the customer. This attractiveness bases on the required product mix width and depth as well as customer accepted prices. A high product mix width and depth conduces to a company's differentiation at the market. A wide range of goods satisfies the customers need of one-stop-shopping at a reliable and well-known vendor. Though, the systematic and consequent optimi-

sation of the range of goods is necessary for an actual and permanent success [20]. Furthermore the customers expect an immediate availability of online-ordered products. Contrary to the brick and mortar business all online-offered products have to be deliverable. But the emotional buying sensation cannot be satisfied completely at e-commerce. The online-shop is not able to feature the personal communication in the counselling interview or the social and emotional aspect of a shopping expedition. Moreover the customer has to renounce both sensory impressions and the material presentation of the product. High quality requirements, detailed product information and realistic images compensate the missing relationship and strengthen the customer's confidence [21]. The interaction between supplier and customer conduce to intensify the customer relationship and so to achieve customer satisfaction and long-term customer retention. The analysis of the collected data about the buying behaviour of a customer and the following combination with the customer data gives a customer profile. Based on this profile the sales approach is aimed [24].

- (b) Suppliers: The balance of power between suppliers and companies shifts in aid of the bargaining power of companies due to technological innovations [6]. The bargaining power of the suppliers behaves complementarily, because the information asymmetry changes for the benefit of the buyer. Information can take place anytime and with decreasing costs. This leads to an increasing transparency of the range of products and therewith to a wider basis of decision-making in procurement [24].
- (c) Industry rivalry: The numerous competitors vying for customers with equal or similar products under pricing pressure and the increased bargaining power of consumers strengthen the competition in the scope of e-commerce. One alternative for the companies is to cooperate to strengthen their own market power. The involved companies concentrate on their core competences. Consequently they are able to offer a more extensive service package than they could individually [6].
- (d) Potential entrants: The market entry barriers decline due to the use of e-commerce. Hence producers and suppliers are able to avoid distribution levels, e.g. by an own internet presence. These new competitors raise the stress of competition on the established companies. The capacities of the industry sector increase and the price level falls [10]. The success factors of the new competitors are quickness, the organisation of new infrastructures for the new business purpose (independent of old workflows, processes and organisational structures) as well as innovative business-concepts [8].
- (e) Substitutes: Due to new applications and services resulting from e-commerce accretive more substitutes of foreign suppliers are available within a market segment. The effect of these substitutes is similar to those of the industry rivalry. As a result of the numerous substitutes to equal or favourable prices the bargaining power of consumers and therewith the competition increases [10].

### 3.3 Resource-Based Analysis

The fundamental idea of the resource-based view is that a company's success depends on the internal material and immaterial resources which generates a competitive advantage for the company. Instead of a quick growth the focus is on the employment of the resources in support of the core business' profitability [3]. The expansion of business operations always happens in the direct environment of the core business. In the following the (a) financial, (b) human and (c) organisational resources are regarded [6].

- (a) Financial resources: All in all the use of an e-commerce-system and the resultant process optimisation slash the costs [19]. An online-shop can be built-up and carried relatively cost-effective and quick with a nearly unlimited sales area. Especially personnel costs for sales and services may be reduced by the high automation level [24]. The reduction of transaction costs may be made by the fast electronic transaction processing, the increased transparency and the decreased costs for overcoming distances. The possibility to pass all these cost advantages to the customer by reduced prices results in a important competitive advantage. However, there are additional investments for planning and realisation of e-commerce-systems as well as for the integration in existing systems. Current costs result from system service and maintenance as well as marketing activities. The distribution logistics composed of storing, picking, packing, despatch, collection, inspection, warehousing of returns, invoicing and dunning is important part of the distance selling's cost structure. These mentioned activities have become part of the range of services of logistics service providers. Thereby in the beginning corresponding investments can be avoided [30]. The strictly monitoring of the arising expenses conduces to focus on core-business' process improvement. In this context the effect of the invested funds has to be checked in time [3].
- (b) Human resources: Available human resources are mostly insufficient to plan and realise an e-commerce-system. The therefore required know-how is not available yet. It has to be provided or bought [6]. For this purpose the internet offers new alternatives for personnel recruiting and development [23].
- (c) Organisational resources: A low organisational complexity level produces a high flexibility, quickness and marketability. For this reason it serves a faster realisation of e-commerce. The customer's convenience is the main argument to buy via internet. The processing composed of order taking, delivery of goods, returns processing and complaint management has to happen very customer-friendly and service-oriented [21]. Hence, the central success factor of e-commerce is the delivery time and so the logistics as well. The delivery of the ordered goods shortly and undamaged to the right place is necessary to

satisfy the customer and dispose him to repurchase. However the conditions for the warranty of delivery time and reliability are the company's abilities and resources or a co-operation with a corresponding logistics service provider [20]. The catchment areas of e-commerce are wider and more diffuse than at the bricks-and-mortar-retail because of the expenditure of time and costs due to the delivery of ordered goods. The consumers have to schedule the delivery of goods and the supplier has to bear the expenses for picking and delivery. The installation of an online-shop can take place shortly independent of zoning plans or building regulations. Furthermore the offered range of goods is not restricted by the available shelf space or print catalogues. The distance selling via the internet is excluded from the shop closing law. The automation makes an online-shop available 24/7 at low operating costs [24]. A household name is a basic condition to prevail in the increased competition. The established mail order companies and brick-and-mortar-retailer have created it before they moved into e-commerce [15]. In case of combining the proved sales channel and e-commerce two different organisational structures are necessary, whose coordination is very complex [23]. Another disadvantage for these companies is the risk of cannibalisation of the brick-and-mortar-turnover [8]. However, the two sales channels are able to support each other by appropriate measures [30].

### 3.4 Success Factor Model for E-Logistics

Potentials for success result from the degree of coverage of entrepreneurial strengths and environmental opportunities. In this context first of all the success factors responsible for success or failures of a company have to be regarded [6]. Using the SWOT-structure the strengths, weaknesses, chances, opportunities and threats are discussed in a two-dimensional representation [22]. By means of the success factors mentioned above an evaluation scheme is developed. In the further steps it can be used to evaluate different decision options. For this evaluation criteria are set according to the identified opportunities and strengths. Afterwards these criteria get specified and balanced against each other by using the fishbone-model. The following percentage weighting results in the illustrated influences of the critical success factors on the return on investment. In each case the decision pro or contra the balanced criteria happens by means of guidelines and economics of the concerned company. The weighting illustrated below complies with an exemplary retail enterprise (Fig. 1). It provides as a basis for a recommendation. The evaluation of the parameter values is individual. The chosen weighting may not apply to every company.

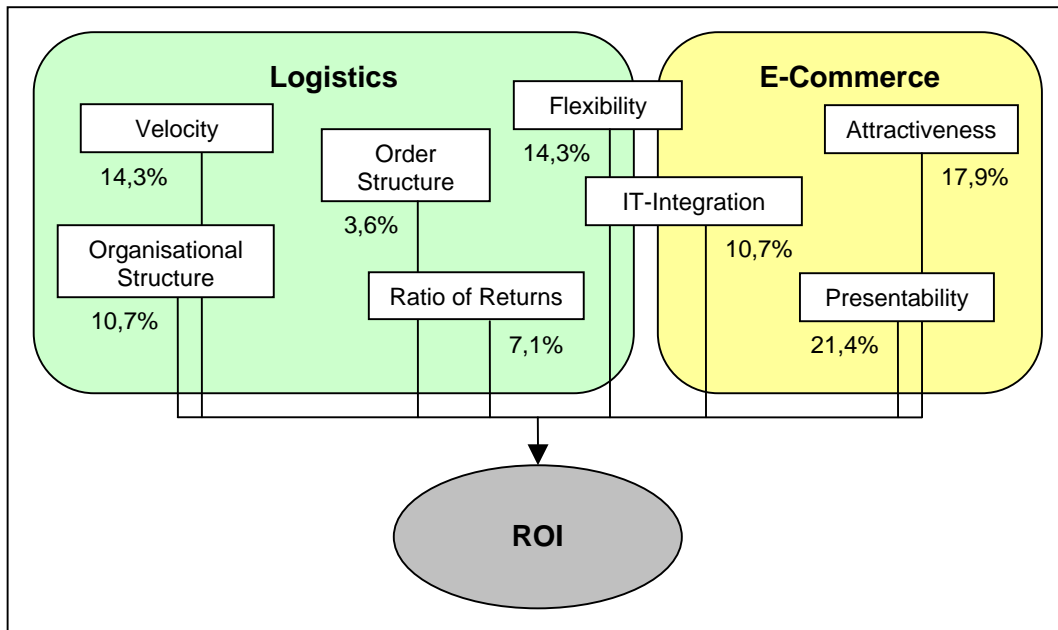


Fig. 1. Success Factors in Retail E-Logistics (Company-Specific, Example).

#### 4. Conclusions

After the thematic presentation of e-commerce against the background of retail logistics followed the analysis of effects of e-commerce on retail logistics from a resource- and a market-based point of view. Therefore the critical success factors were elaborated by the four bullets of the SWOT-analysis.

The reflection of critical success factors was made on basis of a logistic perspective. Though previous to a concluding decision about the realisation of e-commerce reflections based on a marketing perspective have to be made as well. The exclusive online-presence is not enough for a successful online-shop. In addition to the logistic organisation the profitability of the offered goods and the internet-affinity of the target group have to be regarded. Furthermore a high demand and an established brand name (especially for clothes and cosmetics) are fundamental prerequisites for an online distribution with good prospects. That is why due to the high ratio of returns the implementation of e-commerce as an additional sales-channel for clothes and cosmetics is not reasonable until the company is established as a brand. Concerning the target groups of e-commerce a congruence with the internet user groups needs to be analysed and secured.

The potentials featured by e-commerce are very inviting for companies. However in case of joining the e-commerce market segment upon the new market segment the risks should not be disregarded. The attractiveness of e-commerce depends on the individual circumstances of a company. The full potential can only be tapped with the right basic prerequisites of a company. These are an attractive range of products with online-presentable attributes, an existing logistic organisational structure and the possibility of integrating e-commerce in the IT-environment of a company. Thereby the customer's demands, especially a perfect delivery service, will be met and an added value for the customer will be created.

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