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The Selected Areas of E-logistics in Polish E-commerce

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Abstract

The paper presents the selected areas of logistics based on information technology solutions, supporting logistics processes using ICT systems and tools, and the Internet, i.e. e-logistics. The concept of e-logistics and the grounds for the development of its areas has been approached, also with particular emphasis on the factors influencing the future logistics and supply chains. There have also been indicated the applied solutions of e-logistics in Polish e-commerce.

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Keywords: e-logistics ; supply chain ; e-commerce ; e-stores ; Internet sale

1. Introduction

The present management conditions on the local and global markets of supply and distribution oblige enterprises to use the support of developed logistics processes more frequently by using information technologies. The globalization of economic cooperation combined with the innovativeness of the activities taken and increased competition exert pressure on changes in dimensions of the provided logistics service – shorter lead times, global scope of operation, greater operating flexibility and reliability. To follow the above tendencies, the contemporary business, particularly in the area of logistics, cannot function without broad support from information technologies.

In the paper, there has been introduced the problem of logistics based on the solutions proposed by information technologies to support the development of logistics tasks and logistics management of enterprises, i.e. e-logistics. There

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have been indicted the conditions for development of the area of e-logistics, among others, including the factors influencing the future logistics and supply chains. Moreover, there have been discussed the solutions in the field of e-logistics, applied in Polish e-commerce.

2. The concept of e-logistics

According to the Organization for Economic Cooperation and Development, the business in which information technologies are used in internal and external economic processes is called e-business[1]. Among others, D. Graham, I Manikas, D.K. Folinas[2] specify the logistics based on information technology solutions, i.e. supporting logistics processes using ICT systems and tools, and the Internet as e-logistic. P. Dura[3] and B. Śliwczyński[4] claim that e-logistics is the implementation of logistics processes using modern information tools. On the other hand, M. Fertsch[5], in his proposal of the concept definition, specifies that e-logistics uses three basic Internet tools, such as: e-mail, website, data exchange protocol to accelerate the exchange of information in the logistics supply chain. On the other hand, according to W. Wieczerzycki[6], e-logistics amounts to a broad use of the latest information technologies to support logistics management of the enterprise, e.g. in the field of production, warehouse management, supporting the cycles of order processing, as well as supporting the board with its business environment, especially supply chains (e.g. procurement, distribution).

Nowadays, it is difficult to imagine a company which does not have its own website, which informs about its products and/or services. A really important aspect characteristic of e-logistics is using electronic business portals, whose number and popularity is increasing year by year. The use of this type of services brings about the opportunity of significant reduction in costs of the company operation and allows for the effective configuration and management of the supply chain[7]. The most important Internet business services include:

- e-commerce,
- e-banking,
- e-procurement,
- electronic catalogues,
- electronic auctions (English auction, 'reserve price' auction, 'buy it now' auction, multiunit auction and 'sale on behalf of another person' auction),
- e-marketplaces,
- electronic order aggregation (e-wholesale).

W. Wieczerzycki[8], while comparing e-logistics to e-business, notices the following characteristics of e-logistics:

1. Concentrating on material products and services. In case of digital products, supply chains are usually significantly reduced. Similar logistics activities referring to digital products are incomparably easier than in case of material products.
2. A very significant role of ERP systems, without which modern large and medium enterprises cannot operate efficiently on the increasingly demanding and competitive market.
3. Effective, credible, significantly automated communication, e.g. EDI standards.
4. Using specialized mobile computers and wireless telecommunications.
5. Using automatic identification devices, e.g. barcode readers.
6. Repeatedly supporting distribution of a variety of resources and other logistics activities.

3. The conditions for e-logistics development

For contemporary logistics functioning in a turbulent environment, under the conditions of a crisis, activities that remain specific include the following [9,10]:

- limiting inventories (e.g. the just-in-time concept) - purchasing smaller lots of goods, making savings in storage and frozen capital, increasing the number of carriages,

- increasing the competitiveness in the market of logistic services, which drives the enhancement of flexibility (e.g. short-term contracts), the increase in the popularity of cheaper standard services, and the better adjustment of the offer to the customer needs,
- increasing the integration of supply chains - setting up production-distribution centres, purchasing platforms, disseminating information on changes in demand, fairly dividing costs, risk and profit,
- extending logistic network - logistic centres, distribution centres - sorting plants, cross-docking terminals, shuttle transport connections,
- migration of logistics chain control from manufacturers to distributors,
- new distribution channels - the Internet, direct marketing, etc.

In Table 1 below, there are indicated the most important factors influencing the field of e-logistics, comparing the impact in the past and at present.

Table 1. Factors influencing e-logistics – the comparison of the impact in the past and at present[11,12,13].

Factor	Impact in the past	Impact now
Economic globalization	searching for sources of supply and sales only in the immediate vicinity	sources of supply and sales – not dependent of the location
Individualization of preferences	standardization of products, lower availability of products, thus a client bought what was in stock	research on client preferences and opinions, individual approach towards a client , professional customer service and consultancy
Development of information technology	manual entering barcodes when selling, a long time of information flow, extended time of ordering goods	information systems integrating many different fields of activity, rapid information flow, quick ordering goods
Integration of clients	treating clients as a whole, not enough attention to each client	orientation towards a client
Development of global networks	lack of deeper relationship with suppliers and clients, attention of companies in networks was, above all, focused on themselves	cooperation with suppliers, information flow between companies and suppliers and between companies and clients, transfer of customer feedback to suppliers, distance management of stores with no necessity to leave the office
E-business development	lack of Internet access	possessing own website, communication with clients, suppliers and inside the company using the Internet, ordering online, working on the Internet panel that enables clients shopping with home delivery

The key importance of many of the above-mentioned objectives, also in the future logistics and supply chain, is indicated by the results of the Cap Gemini studies conducted since 2005, published, e.g., in a report entitled „2018 The Future Value Chain”[14], issued by the Global Commerce Initiative, and then supplemented with subsequent reports related to supply chains in the years 2020[15] and 2022[16]. These reports were drawn up as a result of surveys carried out in the largest production companies and retail trading firms and concerned their vision of logistics and the supply chain in the future and factors and trends influencing the growth of this sector. Fig.1. illustrates how the supply chain will look like in the year 2018. The results of the report show that the key factors influencing the future

supply chains will include primarily changes in the purchasing behaviours of consumers, specially a greater use of modern technologies in information and physical flows.

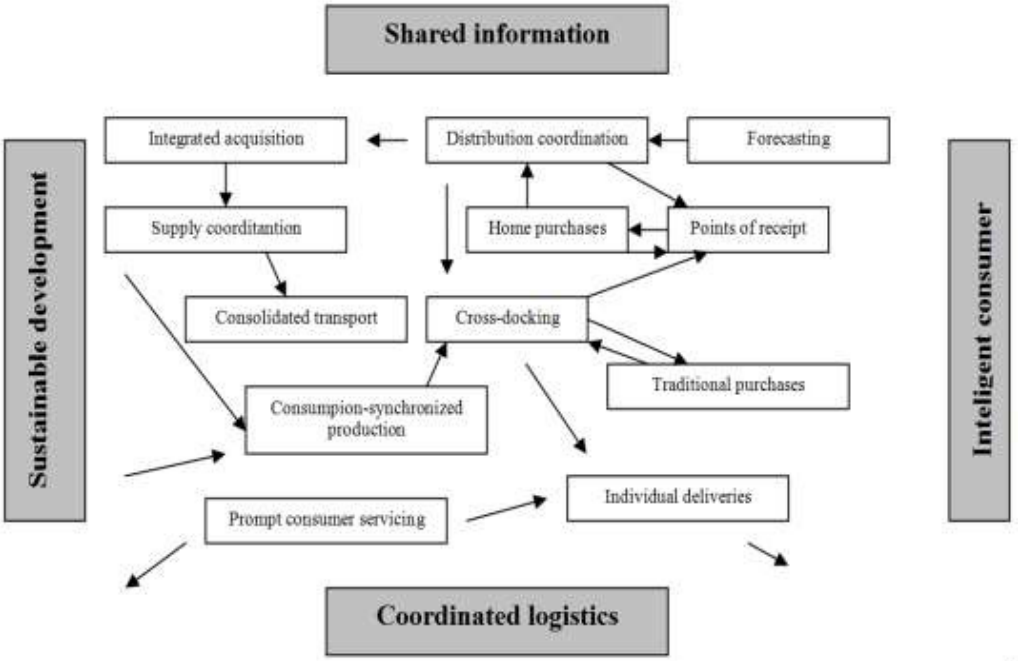

Fig.1.The supply chain 2018[17].

As follows from Fig.1., the characteristic directions of growth of the future logistics and supply chain[17] encompass already currently observed phenomena, such as the emergence of an intelligent, Web-knowledgeable consumer, a multimedia access to wide product information, a customized approach to the consumer, offering with products a wide range of services facilitating access to the products, and an increased role of quality, both in products and in services. A customer will place orders via the Internet using his/her cell phone for this purpose, scanning codes on the packaging and making use of offered online discounts. The good will be delivered either to estate receipt points or directly to the customer's home. Data on current customer choices and preferences will be available on an ongoing basis also for the manufacturers thanks to a shared information platform functioning within the logistics and supply chain. This will make it possible to implement the synchronized production concept adjusted to the current market needs and will enable a significant reduction of time between the production start-up decision and the delivery to the final consumer.

In the view of the above, supporting the implementation of logistics processes using, among others, information tools and technologies is an indispensable condition to achieve success while taking logistics operations in every enterprise. The technologies connected with transferring information and communication are particularly important. The opportunities they bring about to the enterprise, among others, refer to[18]:

- increase in the rapidity of the flow of information and products,
- significant reduction in transaction costs,
- increase in the scale of production capacity of logistics hubs,
- intensifying the relationship between the actors in the supply chain,
- possibility to adapt many logistics strategies.

4. E-logistics and the solutions applied in Polish e-commerce

E-logistics takes on a special meaning in the context of e-commerce development[19], i.e. by means of the Internet which, at present, is the most rapidly developing distribution channel of Polish trade[20]. The characteristic features of e-commerce, among others, are: the lack of direct contact with the product or verbal and non-verbal contact with the seller or the necessity to deliver goods to a large number of individual recipients. These characteristics, at the same time, are the basic differences with respect to traditional trade and they are the determinants of making decisions concerning shopping. To level the negative effects of these differences for clients, the level of e-logistics offered by e-stores, being the basic units of e-sale, should be as high as possible. Customer service, creating logistics value, should include the operations, which allow to satisfy clients' needs at the level of commonly accepted standards and innovative activities, which go beyond the standards and create the uniqueness of the offer.

E-stores allow clients to get acquainted with goods, place an order, pay for the purchased goods and receive the assurance of goods delivery to the selected place by means of electronic exchange of data via the Internet[21]. Nowadays, e-stores are one of the most popular forms of trade activity on the Internet between the enterprise and the client[22].

As it is shown in the research by M. Maciejczak and V. Schyrsky[23], conducted among the owners and employees of Polish e-stores, they notice the greatest opportunities for building competitive advantage, on the Polish market of e-stores, by means of improvement in the level of e-logistics. According to the results of this research, for more than 35% of the investigated shops, logistics is the source of competitive advantage, whereas 1/3 of the research sample, by appropriate development of logistics tasks, raise the level of e-logistics, particularly important in the area of timeliness of deliveries. On the basis of the whole of the conducted research, it is possible to come to the conclusion that one of challenges for e-stores should be searching for innovative solutions, amounting to building coherent logistics concepts, adjusted to very individualized clients' needs, referring to the expected level of e-logistics.

The level of e-logistics of an e-store, among others, is determined by the availability of products and services. The research on more than 700 Polish e-stores and nearly 6300 of their consumers, carried out in 2011[24], indicates that 1/3 of the surveyed clients of e-stores acknowledge this attribute of logistics as the one conditioning their choice between the forms of traditional and Internet sale. Nearly half of the surveyed consumers indicated time-saving and convenience as reasons to buy over the Internet, occupying the first position among the responses, before the prize of the product or service. The significance of the listed elements of the logistics service is appreciated most by online clients purchasing over the Internet the longest. The results clearly confirm that with experience in online shopping there is also increasing awareness of clients with respect to arguments which could give them an incentive to increase the frequency of purchases. The most commonly listed argument was reduced price of products or services but it was just followed by their availability and shorter delivery time.

The knowledge of clients' needs, defined in this way, seems to be also confirmed by the representatives of e-stores. The use of the knowledge by the representatives of e-stores is revealed by the respondents' answers to the questions concerning, among others, the issue of the storage of products with respect to the perception of the significance of their availability. E-stores, which possess all goods in stock, constitute twice as large percentage (more than 32%) as shops applying the contrary solution, i.e. possessing up to 10% of their offer (15.5%) in stock[25]. The main reason for limiting the use of warehouses is to reduce costs and the use of transfer of shipment to the supplier or manufacturer. In this case, the solution can be an online store used as a specific type of platform for collecting orders, charging and communication with the client[26].

Comparing the obtained research results to the results of the similar study from previous years, there should be noted the fact of a significant increase in the share of shops possessing all their assortment in stock. Generally, it is possible to state that the number of stores possessing almost all of the offered items has increased and the number of shops which have only a percentage of the offered assortment in stock has fallen. Such a tendency may prove searching for a possibility of adjusting the volume of the maintained stocks to the demand reported by clients, by the representatives of online stores and, therefore, paying greater attention to the importance of the availability of products and rapidity of order processing and, at the same time, improving the level of customer service.

The dependency between the duration of running an online store and the percentage of the assortment in stock can also be the subject to the analysis. It is possible to develop a hypothesis that the shops operating on the market

for less than a year have lesser access to capital, thus they possess a smaller percentage of the offered assortment in stock. Actually, among the stores operating for less than a year, as much as 24.5% have less than 10% in stock, whereas among the shops operating for more than 5 years, this percentage amounts only to 13%[25].The stores operating for less than 5 years are, undoubtedly, less aware of the significance of appropriate e-logistics for the profitability of an online business, therefore, more frequently, they decide on extreme solutions (less than 10% and 90% and more of the assortment in stock). It is worth noting that there is a clearly emerging tendency showing that the stores operating for more than 5 years use extreme logistics solutions more rarely (i.e. they have less than 10% of the assortment in stock or 90% and more), and more and more often – intermediate solutions (possessing 10% to 80% of assortment in stock). A greater share of intermediate logistics solutions among the shops operating the longest may prove searching for new solutions by them, the ones optimizing warehouse management.

Reducing the time of processing clients' orders is possible due to appropriate transport. A vast majority of Polish e-stores use delivery services (87.5%) and Polish Post (75.9%) to deliver consignments. It is also worth noting that the majority of shops (61.2%) allows the personal collection of the assignment in the company office. Among the other responses listed by the respondents there were: 'Paczka w Ruchu', and also delivery by personal transport and online delivery. Innovative logistics solutions like (self-service) parcel pick-up stations are still not very popular and only 6.7 % of stores use them[25].

Among the problems in the conducted activity reported by the representatives of the investigated e-stores, just after difficulties resulting from the economic situation of the country, the most frequently indicated answers referred to the logistics activity. Almost every third store (32%) noted the problems with suppliers, out of which the majority (61%) cooperated with minimum 10 suppliers and 23% with as much as 50. Another difficulty concerning e-commerce was the cooperation with delivery services which 28% of the respondents complained about. The logistics activity was the impediment to 24% of stores collaborating with at least 3 logistics companies[26]. These problems clearly indicate the field for innovative solutions in the area of e-logistics[27]. At the same time, almost every of the listed problem areas reduced its percentage share among all the given responses compared to previous years. This means that highly estimated value of e-logistics for the development of their business imposed, on the entrepreneurs, the necessity to take effective efforts to improve the implementation of logistics tasks. Presumably, the entrepreneurs follow them, repeatedly implementing innovative solutions in the field of e-logistics, though still insufficiently.

5. Conclusions

The improvement of logistics areas based on the use of modern information and communication technologies to support logistics management of the company brings about positive results in all of them[28]. In e-commerce, transactional elements of logistics service are crucial, particularly the availability of products and services, communication rapidity between the contractors of commercial operations, lead time, scope of the activity, flexibility and reliability of supply. The dynamic of changes of the contemporary environment of business entities requires the necessity to introduce changes, among others, in the field of optimization of e-logistics processes by searching for innovative solutions aimed at adapting to new conditions. In the era of global competition, it is also extremely important to react fast to the changeability of client needs and apply modern technologies and information systems to support the field of management. Business entities, operating in the conditions of high competition on the market, are forced to constantly adapt processes, technologies and systems to produce goods and provide services to satisfy buyers' needs. The direction of development of e-logistics is determined by consumers, therefore, the implementation of innovative technologies and the search for their new applications are the necessary operations in this segment.

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