NEW CHALLENGES FOR LOGISTICS PROVIDERS IN THE E-BUSINESS ERA

Ewa Płaczek

Akademia Ekonomiczna w Katowicach, Katowice, Poland

ABSTRACT. Companies that operate nowadays and provide logistics services are changing their own business attitudes while searching for new ways of development. They focus their searches on qualifications and common usage of information and communication technologies. Presentation of changes that might occur in the supply chain through introduction of e-business solutions for logistics providers is the main goal of this paper. E-business, as a commonly used term, on one hand causes many misunderstandings related to defining and on the other hand gives new possibilities of development and emergences of new services based on the Internet.

Key words: e-business, e-logistics, supply chain in e-commerce.

E-BUSINESS

Companies providing logistics services that have to operate under demand economy conditions (mass meeting individual customers needs) were constrained to change their previous activity strategies. The change lies in a greater trend towards business, that means in ability to earn money through focusing on own qualifications and greater assistance of information and communication technologies (ICT). It is commonly said that logistics providers act on the basis of widely understood e-business.

E-business is now a commonly used term but because of various definitions it causes a lot of misunderstandings.

A.Fisher treats e-business as an idea of reconstruction of the whole undertaking in a context of the best utilization of modern ICT [Gregor 2002]. This is each business process which activity is based on automatic information systems [en/wikipedia.org]. According to A.Szewczyk e-business refers to utilization of modern software, hardware and communication technologies to run economy activity in a global scale, in which significant part plays the Internet [Szewczyk 2006].
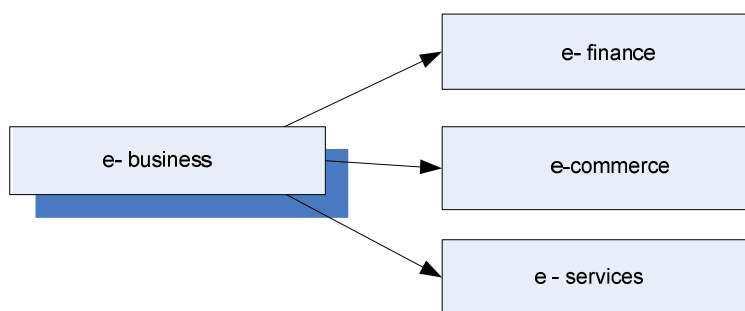
In general we can assume that e-business can be referred to business transactions accomplished with ICT, especially the Internet. This activity consists in running widely understood on-line business that uses available information systems (internet technologies).

Attempts of more detailed descriptions of this term can be encountered while reviewing various e-business definitions. The definitions by R.Wigand, A.Picot and M.Castells are examples of that. According to R.Wigand and A.Picot e-business is any form of resources exchange among undertaking participants accomplished via e-links and information exchange using multimedia and this exchange is

controlled by special intra-organization systems and between them as well as by general national and foreign agreements [Gregor, Stawiszyński 2002]. Whereas M.Castells defines e-business as "any business activity which key tasks are connected with management, financing, innovations or relations with customers and are accomplished in or via the Internet or other computer networks independently on the connection type that exists between virtual and real firm dimensions"[Rutkowski 2002].

On the basis of the quoted definitions it is clear that exchange has the principal significance in e-business.

In such context e-business can be identified with a computer network relied on the Internet between individual market transactors, producers, customers or service providers. It makes possible to consider e-business in domain of finances, commerce and services (fig. 1). It is necessary to remark that such terms as e-service or e-finance haven't been interchangeably defined.

Source: own study

Fig. 1. Types e-business
Rys. 1. Rodzaje sfer e-biznesu

E-finances include the whole of operations concerning finances carried out with electronic media [www.web.gov.pl]. They are often identified with e-finance services as financial services distribution channel provided on-line. First of all they concern e-banking and electronic payment systems.

In accordance with the article 11 of the regulation No. 1777/2005 UE e-services are services provided via the Internet or other e-network and the providing is automated with a little participation of people and their accomplishment without information technology is impossible [www.web.gov.pl]. Internet stock exchanges or logistics services based on the Internet like track& trace, e-fulfillment are examples of the above.

E-commerce (electronic commerce) is the best-defined area. It comprises the widest group of e-business. It is considered concerning various criteria:

- communication - means providing products, services, information and payment fulfilment via the Internet and www,

- interface - comprises various information and exchange transactions,

- business processes - concerns activities directly supporting e-commerce using network connections,

- services - a tool supporting company, consumer and management development in order to limit the costs, make delivery faster, increase the level of customer service etc.,

- on-line perspective - electronic environment that makes possible purchasing and sales of goods, services, information on-line via the Internet,

- market perspective - means global business network,

- structural perspective - comprises various media: data, text, WWW sites, video [Olszak 2004].

In literature the terms e-business and e-commerce are often used interchangeably as synonyms, what is incorrect from the methodological point of view. E -business concerns accomplishment of

transactions and processes via IC networks within a company, whereas e-commerce is a process of selling and purchasing products and services, that is to make commercial transactions (company-customer) using electronical means and conducted via the Internet.

It can be assumed that it "comprises every form of economy activity through electronic links". Such interpretation of e-commerce indicates the existence of two important elements; those are economy activities understood as economy transactions and electronic links [Wigand 1997].

According to the Department of Commerce and Industry OECD e-commerce is "an information exchange inside a teletransmission network at any level of the supply chain or inside an organisation between a provider and a customer, or between transactors of public and private sectors that run activities"[Szymanowski 2006].

In the professional literature there are various criteria of e-commerce Exam, what is shown in table 1.

Table 1. Examples of e-commerce division criteria
Tabela 1. Przykłady kryteriów podziału e-biznesu

Criterion of division	E-commerce division	Characteristics
Kind of goods and services	− Indirect commerce	Ordering goods via network and delivery via physical channels by public and courier institutions or own network
	− Direct commerce	Ordering and delivery of goods and services via the Internet
Principle of use over network	− traditional	Network is used for sending data
	− internet	Network is the medium of transmission
Destination	− e-procurement − e-sell − e- fulfillment − e-cooperation among companies	

Source: own study based on [Szymanowski, 2006]

The following forms of e-commerce are most often identified:

− business-to-business B2B,

− business-to-customer B2C,

− customer-to-customer C2C,

− business-to-administration B2A,

− customer-to-administration C2A.

In the further considerations we will limit to consider two forms B2B and B2C in the context of implementation in logistics processes delivered by logistics providers.
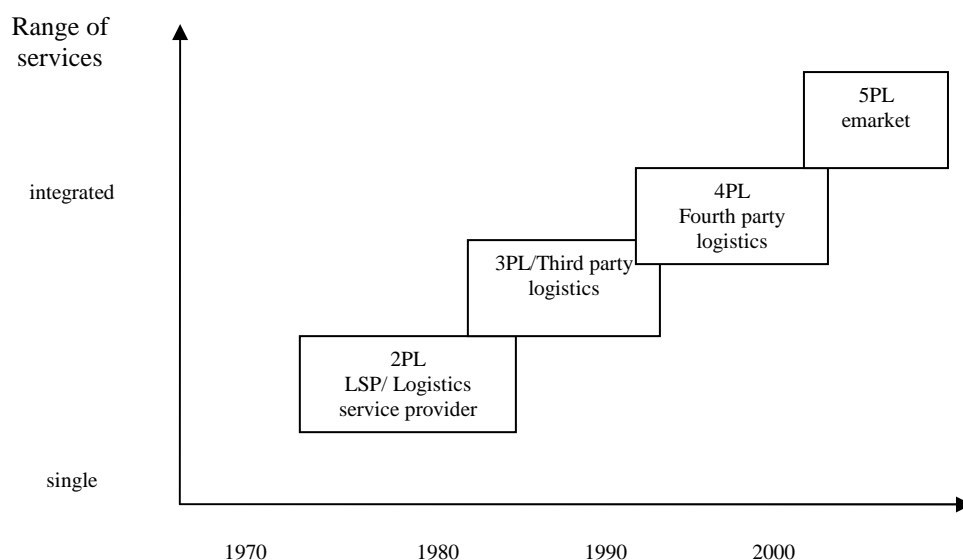

LOGISTICS PROVIDERS

Everyday operators that provide logistics services are described in a very diverse way. Most often, omitting the character of provided logistics services, we can meet the following terms: logistics service provider, supplier of logistic services or logistics operator. A phenomenon of "logistics operator" excessive use by most of subjects providing logistics services is noticeable.

Not to become involved in methodological considerations concerning conceptual differences we will use a general term "logistics provider".

"Logistics provider" is a specialized external enterprise providing logistics services on the principle of outsourcing. This is an external provider that carries out a part or the whole of logistics functions of the ordering company.

As a result of changes, that are taking place, trends of companies providing logistics services towards better use of e-business tools can be observed. It makes possible for logistics providers to achieve higher levels of evolution development (fig.2).

Source: own study

Fig. 2. Evolution logistics service providers
Rys. 2. Ewolucja podmiotów świadczących usługi logistyczne

Referring to the evolution the following can be distinguished:

- simple logistics provider (2PL) providing simple logistics services (standard) e.g. transport services, storage. They mostly originate from transport, shipping or warehouse companies, which activities are based on legal regulations enclosed in civil law. They are the most diverse group of operators characterized by a large variation in terms of possessions, organization, capital, size and range of services provided. These companies are highly specialized operators in their domains. They aren't engaged in coordination and administration for their customers:

- complex logistics provider (3PL) providing selected standard services in a set of logistics services in accordance with customers' wishes, so-called comprehensive packed services. They are the best group of operators that reflect servicing activities in the market of logistics services.

- "dedicated" logistics provider (4PL) are higher form for future developments 3PL. These operators offer comprehensive logistics services on the basis of resources, information, control and integration, thereby providing specialized services to the special customer's order. They most often design logistic systems to the needs of a customer. They take over from the customer responsibility for the coordination and administration. They also offer services not directly related to logistics functions e.g. financial activities.

Progressive changes in the market of logistic services show visible trend towards search for new ways of logistics service provider's development. It is possible by offering new logistic services in particular services of considerable value added, as a consequence, it leads to logistics service providers

transition to a higher evolutionary level or to single out new subjects. An example could be selecting from among the complex logistics service providers so-called 3PL leading logistics operator (LLP-Leading Logistics Providers), which is an indirect form between 3PL and 4PL. In the group of dedicated logistics operators 4PL an electronic logistic platform, which is expected to be a logistics integrator, can be an example. Its activities are heading towards e-markets, being virtual trade platform linking characteristics of a virtual transaction platform (stock exchange) and virtual logistics processes service.

E-LOGISTICS

Many companies noticed possibilities to use e-business in logistics. In this way a new term e-logistics was set up, which characterizes logistic processes carried out using modern information technology solutions. It has changed the logistics approach to the traditional logistic processes related to the physical traffic of goods and services. It was necessary to introduce a new type of infrastructure and organization to that traffic. Transformations became visible e.g. in the process of distribution, order cycle time, restocking procedures or configuration of warehouses/distribution centres (table 2).

Together with a rapid spread of e-business in logistics, solutions based on high-speed and flexible chains of electronic providers were created. Concerning this, e-logistics is mostly seen in the context of supply chain management, describing goods traffic, information and financial resources by all links in the supply chain.

Table 2. Change in logistics operations
Tabela 2. Zmiany w czynnościach logistycznych

Logistics activity	Traditional logistics	E-logistics
Orders	Predictable	Variable
Order cycle time	Weekly	Daily or hourly
Customer	Strategic	Broader base
Customer service	Reactive, rigid	Responsive, flexible
Replenishment	Scheduled	Real- time
Distribution model	Supply-driven (push)	Demand-driven (pull)
Demand	Stable, consistent	More cyclical
Shipment type	Bulk	Smaller lots
Destinations	Concentrated	More dispersion
Warehouse reconfiguration	Weekly or monthly	Continua, rulet -based

Source: own study based on [Pache 2001]

Citing J. Witkowski a supply chain is defined as "cooperation in various functional areas of mining, production, commercial, service companies and their customers, between which streams of products, information and financial resources flow"[Witkowski 2003]. Most tasks and therefore the most active operators in the supply chain are widely understood service providers (shipping-transport companies, logistics service providers, computer service providers), who at any stage of creation and development of product/service contribute to increase the added value.

Generally speaking, a supply chain is a network of producers and service providers who cooperate with each other in order to processing and handling goods - from the phase of obtaining raw material to the end user[Bozarth, Handfield 2007].
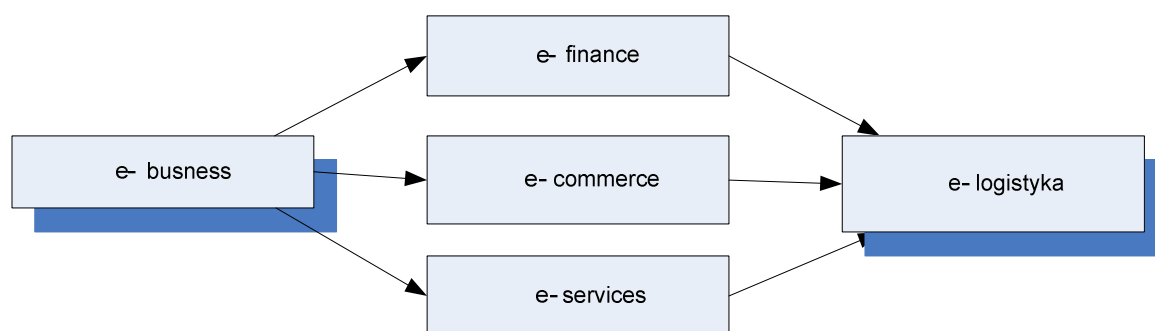
Therefore it can be assumed, that e-logistics consists in the use of modern information technology solutions in particular the Internet to coordinate and integrate logistics actions by all supply chain

links, leading to delivery of the products from the upper (supply) to the lower (demand) segment in the supply chain (from manufacturers to retailers or consumers).

With reference to B2B and B2C terms e-logistics is mostly seen as the e-logistics processes fulfillment (prefix "e" shows on-line support). Therefore we can talk about e.g. e- fulfillment, e-procurement and e-logistics services. However, e-logistics is a broader term than those listed above (fig.2). From the point of view of e-logistics use in the supply chain management, it covers interactive (based on the Internet) network connections between producers, customers and service providers.

E-procurement is a process of orders and supplies using e-commerce platforms. It covers the whole supply process, allowing coordination of planning, budgeting and monitoring of purchases.

E-fulfillment is a virtual service of contracting and transactions accomplishment. This is a process of a contract accomplishment made by a customer via the Internet. It only covers the activities related to the contract accomplishment such as: valuation and planning, price calculation, an individual supply plan establishing, booking of a specified means of transport and storage, tracking an order route and shipping-storage events, documents preparation and exchange of non-paper documentation, invoicing, checking creditworthiness, payments and value added services such as co-packing (individualized supplies), sorting, assembly [Rutkowski 2002, Archutowa, Żbikowska 2003].

Source: own study

Fig. 3. Type e-business with reference to e- logistics
Rys. 3. Ewolucja Rodzaje sfer e-biznesu w nawiązaniu do e-logistyki
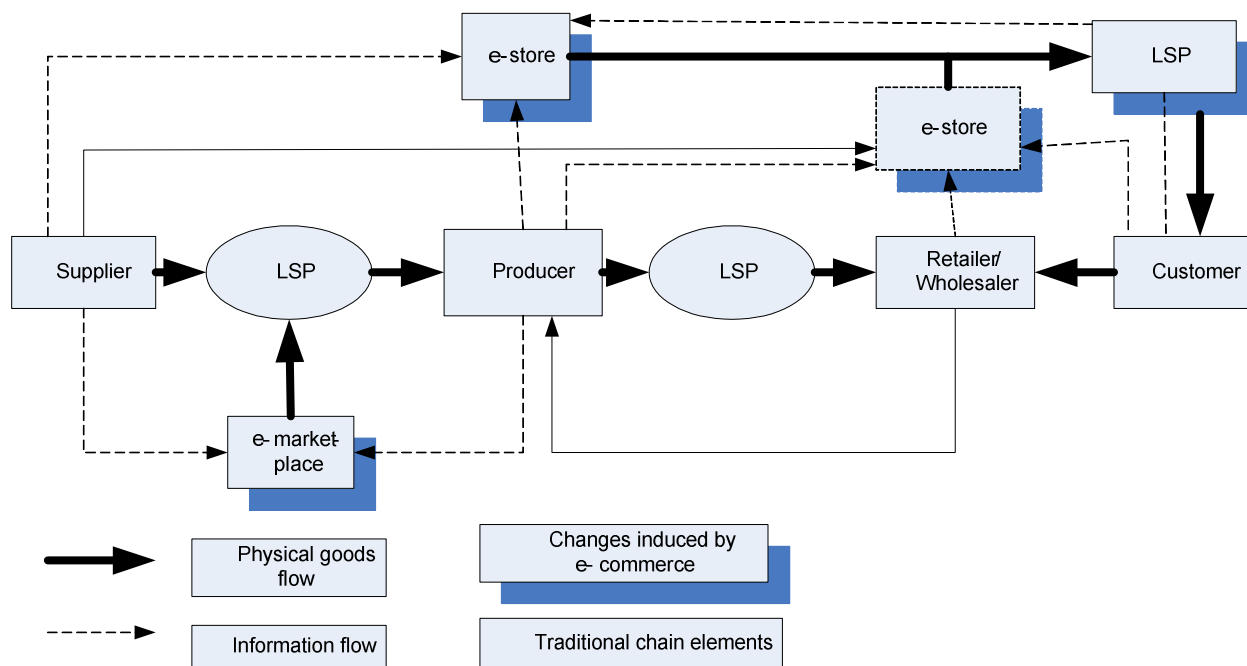
E-logistics service is an action that supports supply chains functioning, and they have nothing to do with the physical goods traffic, possession of transport fleet or storage facilities. Examples of this type of services are available cargo and vehicles databases, transport databases, managing relationship with the customer.

The increase in interest in new computer technologies has a significant impact on the increase in demand for high speed, reliable logistic services offered by specialized logistics companies acting as logistics service providers.

Further evolution of e-logistics processes will result in more and more companies will be interested in on-line support of their activities. The demand for new services offered on-line will start to arise, which will also create the demand for further virtualization of logistic processes. It will create new development opportunities for logistics service providers who as a result of owning suitable IT systems will be able to provide e-logistic services. At the same time, this will enable logistics service providers to provide services for a specific individual customer and to become a full range provider of logistics services (full service provider).

CHANGES IN THE SUPPLY CHAIN USING E-COMMERCE

In the traditional supply chains service providers play the main role, while goods may be moved by the particular supply chain links. Their role and importance results from the range of provided logistics services and from the characteristics of service providers and differ depending on industries and sectors. Figure 3 shows the model of supply chain using e-commerce.

Source: [Delfmann i inni 2002]

Fig. 4. Model supply chain to use e-commerce
Rys. 4. Model łańcucha dostaw przy zastosowaniu e- commerce

Coloured fields are new elements added to the supply chain that may supplement or replace traditional structure of the supply chain.

Referring to the definition and forms of e-commerce, there can be identified three principal subjects in the supply chain:

– web portal - offers information and looks for goods and services to its clients. It serves as an entry on the market.

– market maker - their task is to "create market" e.g. to ensure possibilities of making uninterrupted transactions. They create the most suitable conditions for customers, making economic transactions possible

– service provider - companies, which sell directly via the Internet. They are an indirect link between the Internet and a final user.

The most important for e-logistics implementation are market makers and service providers, because they generate both physical traffic and information flow. Their activity leads to the emergence of new supply chains structures.

In the traditional supply chains, service providers play a main role, while accomplishment of the goods traffic by distribution chain is essential. Use of e-commerce in supply chains changes their action models. New elements added to a supply chain by applying e-commerce may be affected in two ways: either to complete the existing structure or to change the traditional structure in the supply

chain. In the case of demand chain (lower chain segment) e-market is possible to appear (sector B2C), while in the supply chain (upper chain segment) it is possible to exclude an intermediary (B2C sector) by e-store. Therefore, e-stores represent a goods/services supplier and e-market-place represents a market creator. Depending on the type of delivery or service, the effect of transaction will be a physical or digital delivery of goods or certain service.

The first and most visible point of change is the relationship customer-retailer. Traditionally products were sliding down the supply chain in accordance with the "last mile" that is carried out by a customer. Besides a customer, who is the last link in the supply chain, bears the largest costs, because each link involved in goods' physical traffic increases costs due to additional operations such as reloading and transport. It is also important to mention amount of time that a customer wastes before taking a decision to purchase.

In the new supply chain the costs can be significantly reduced by eliminating particular links. In e-commerce customer's activity is limited only to the choice of product using a computer in the Internet shop. A customer saves much time related to the purchase, because in an e-shop he may check other suppliers/producers product offers, their prices and read opinions of other users. A supplier handles other activities related to accomplishment of a transaction. Functioning of e-shop can be seen in two aspects. The first one concerns operations of the company as a typical agent who must negotiate favourable rebates with the producers, so as not to raise prices. The second one concerns producers of traditional markets for which the Internet is an additional distribution channel and lets a company hold all products in the store.

Changes in the upper segment of the supply chain resulting from the situation that a supplier in the supply chain does not offer goods to a consumer or retailer, which causes isolation of the lower segment in the supply chain. E-commerce is seen by electronic market. In a classic supply chain relation producer-supplier or producer-retailer is characterized as a permanent network with a limited number of partners connected via electronic network. Whereas e-commerce through e-market implies an increased number of potential partners in a supply chain, because e-market customers have a better review of logistic services offers and may choose more easily providers that meet their expectations best. This allows creation and formation of new links between supply chain partners and their essence is based on principles of mutual trust and cooperation.

Orientation towards a customer implemented in each link of a supply chain creates new opportunities for logistics service providers as they contribute most to increase added value to products, at the same time they contribute to reduction of total costs while providing services to customers at the highest level.

CHALLENGES FOR THE FUTURE - CONCLUSIONS

Changes that have been caused by the development of the Internet and the same e-business have an impact on implementation of all logistic processes. Owing to e-business there is a highly progressive integration of chain links, changing previous structure in the supply chain.

Business models of e-business (e-commerce) differ from the traditional about greater interactivity and accessibility. In particular, due to the fast development of e-commerce companies will be forced to searching for new logistics solutions. Separation of a product from a physical traffic will create new opportunities for logistics service providers.

As a result of e-business solutions implementation in the area of logistics on the logistics services market, a new subject - described as e-logistics operator, may appear.

Therefore a question can be asked: who of logistics providers will benefit most from e-business solutions? The answer seems to be simple. A simple logistics provider (2PL) and complex logistics provider (3PL) can gain most benefits from the implementation of e-business solutions as e-business (e-commerce) solutions will be the most visible in the sphere of transport and storage.

Together with a rapidly changing customer market, service providers will be forced to reorganize their existing transport systems, which are more and more often not able to meet a customer requirements concerning accomplishment time of a service. Service providers will have to have more flexible transport systems through changes in the supply structure and the degree of mediation exclusion in existing supply chains.

REFERENCES

Archutowska J., Żbikowska E., 2003, Nowoczesne usługi transportowo-spedycyjno-logistyczne (TSL) w Polsce (teoria i praktyka) w. Nowoczesne produkty na rynku usług transportowo-spedycyjno-logistycznym, B.Kos (red), Katowice, 18.

Bozarth C., Handfield R.B., 2007, Wprowadzenie do zarządzania operacjami i łańcuchem dostaw, Helion, Gliwice, 30.

Delfmann W, Albert S, Nehring M., 2002, The impact of electronic commerce on logistics service providers; International Journal of Physical Distribution & Logistics Management, vol. 32 nr 3.

Gregor B., Stawiszyński M., 2002. E-commerce, Bydgoszcz-Łódź, 78.

http://en.wikipedia.org/wiki/e-bizness

Olszak C. (red), 2004, Systemy e-commerce. Technologie internetowe w biznesie, Katowice, 22.

Pache G., 2001, Effective B2C electronic Commerce-The Reed for Logistics Structure, Network and Communication Studies, 15 (3-4).

Rutkowski K. (red.), 2002, Logistyka on-line PWE, Warszawa, 18.

Szewczyk A., 2006, Podstawy e-biznesu, Szczecin, 34.

Szymanowski W., 2006, Zarządzanie łańcuchami dostaw sektora produkcji żywności wykorzystujące technologie informacyjne, {w} W kierunku rozszerzonego przedsiębiorstwa. Analiza sektorowa rozwoju ICT w Polsce, (red) T. Kasprzak, Difin, Warszawa, 206.

Wigand R.T., 1997, Electronic commerce: definition, theory and context; The Information Society, Special Issuc: Theory and Practice of Electronic Commerce, vol.13 nr 1.

Witkowski J., 2003, Zarządzanie łańcuchem dostaw, PWE, Warszawa, 17.

www.web.gov.pl.

NOWE WYZWANIA DLA USŁUGODAWCÓW LOGISTYCZNYCH W DOBIE E-BIZNESU

STRESZCZENIE. Obecnie funkcjonujące przedsiębiorstwa świadczące usługi logistyczne poszukując nowych dróg rozwoju, zmieniają własną orientację na biznes. Swoje poszukiwania koncentrują na kompetencjach i powszechnym stosowaniu technologii teleinformatycznych. Celem artykułu jest przedstawienie zmian jakie mogą wystąpić w łańcuchu dostaw dzięki wdrożeniom rozwiązań e-biznesowych u usługodawcy logistycznego. E-biznes jako pojęcie powszechnie stosowane z jednej strony wywołuje dużo nieporozumień związanych z definiowaniem, z drugiej daje nowe możliwości rozwoju i szanse na powstawanie nowych usług opartych o Internet.

Słowa kluczowe: e-biznes, e-logistyka, łańcuch dostaw w e-commerce.

NEUE HERAUSFORDERUNGEN FÜR LOGISTIK-DIENSTLEITER IN DER ZEIT VON E-BUSINESS

ZUSAMMENFASSUNG. Die Unternehmen, die derzeit die Logistik-Dienstleistungen bieten, bei der Suche nach neuen Wegen der Entwicklung, verändern ihre eigene Orientierung auf das Geschäft. Sie konzentrieren ihre Suche auf Kompetenzen und die umfassende Nutzung von Informations- und Kommunikationstechnologien. Das Hauptziel dieser Arbeit ist die Vorstellung der Änderungen, die in der Lieferkette durch die Implementierung der e-Business Lösungen bei Logistik-Dienstleister auftreten können. E-Business, als ein häufig benutzter Begriff, einerseits viele Missverständnisse bei der Definierung verursacht, auf der anderen Seite gibt neue Möglichkeiten der Entwicklung und Gelegenheiten für die Entstehungen von neuen und auf dem Internet basierten Dienstleistungen.

Codewörter: E-Business, E-Logistik, Lieferkette im E-Handel.

Dr Ewa Płaczek
Akademia Ekonomiczna w Katowicach
Katedra logistyki Ekonomicznej
e-mail: eplaczek@ae.katowice.pl