THE BUSINESS PROFILE SHAPING AND THE LOGISTICS INFORMATION SYSTEMS OF 2PL, 3PL, 4PL OPERATORS
Introduction

Before detailed presentation of the research results there is necessary to characterize briefly differentiating features of 2PL, 3PL, and 4PL operators and some factors affecting the use of IT systems by these firms. This one helps with better understanding of operator’s classification based on identifying the core of activities*.

2PL operator is logistics service provider which focuses on commodity capacity providing. This means that a firm called “2PL operator” focuses on basic logistics activities like transportation, warehousing, transshipment and provides services relating to these logistics areas. The scope of the core business of 2PL is tight. The main reason for the use of 2PL operators by firms is tending toward minimum operational cost of a logistic system and avoiding of costly capital investment. 2PL operators do not need advanced IT systems for coordinating their activities within the logistics systems and/or the supply chain (this sentence not means that 2PL operator doesn’t use IT solution and software at all).

3PL operator, sometimes may be called “lead logistics provider”, is a logistics provider of integrated logistics services. This sentence means that: 3PL is a firm that provides service to its customer (the service is outsourced by the customer and very often long-term contract must be signed), services can be adapted to a particular customer, logistics services are integrated and bundled together by the operator, 3PL provides first of all transportation, warehousing, cross-docking, inventory management, packaging, tagging services etc. Very often the services go beyond standard logistics activities – like information services and optimization/planning of logistics activities. In this situation 3PL becomes “a consulting company” for the customers. The firm called “3PL” usually uses advanced IT solutions for coordinating and managing of logistics activities within the supply chain. Main areas of using computer systems and software are related to: inventory and logistics management (inter alia – freight consolidation, shipment planning, traffic management, ordery management, carrier selection, inventory planning, and management), customer service (inter alia – order management, auditing of deliveries, fullfilment, carrier selection, help desk – sometimes solution related to on-line connection with customers), transportation (inter alia – fleet management, routing, planning and cross docking management, returns – management and control), warehousing (inter alia – packaging, labeling, capacity planning, and control). Within all these areas total logistical cost calculation and optimization has been usually applied.

4PL operator has been described as the integrator of the supply chain (both – up-stream and down-stream logistics activities). Some main factors can help with

* This part of the paper is based on: (WWW3; WWW 1; WWW6; WWW7).
identifying 4PL firms. The first one is related to the coordination of all activities of 3PL operators existing within the supply chain; in this situation 4PL firm is “virtual coordinator” of the supply chain and focuses on planning and management functions. The second one is connected with the factor that usually 4PL operators are “non-asset based logistics providers”. This one means that 4PL operator focuses on virtual planning of operations and optimizing them. Planning has been supported by advanced IT and software solutions. 4PL usually optimizes the whole network – the flow of good based on “real-time” information.

1. Information about the course and nature of the research

This study is the result of research on selected aspects of business development and logistics information system of operators. The research period is September-November 2011. The general objectives of this study was to gather information on: the impact that logistics operators may potentially have on the functioning of the information exchange field; the type of data available in the logistics information systems; identifying the types of IT and telecommunication tools used by a certain operator.

Specific objectives of the study were associated with determining whether there are barriers associated with the development of logistics operators and what areas they relate. The focus was on the barriers connected with the operation of information systems supported with IT technology. An attempt was taken to identify how the operators evaluate the aspects related to the functioning of their information systems and what is the knowledge on the impact of information systems on optimising the submission and execution of orders and estimating the costs of the operator. The study was conducted on the basis of the case study method. Case study was also supported by direct interview with the specialists employed by the operators and by the analysis of operators’ websites. Questions and answers sheet was used in order to standardize the research material gathered from provided responses.

The questions were of the following nature. The first group consisted of general questions, which were related to a company’s characteristics (the scope of its activities), performed tasks, structure of the company. The second group of questions was related to information technology solutions used in a firm. First of all, it was to identify whether and what type of software the company applies, or whether ICT solutions, integrating all activities in terms of orders processing are applied* The third group of questions concerned the operator’s customer support

* The main objective was to determine whether, and under what actions, an integration of activities in the cycle of orders submission and execution is possible.
for the selection of software, processes mapping, or the exchange of know-how used in actions integration in the cycle of orders submission and implementation of automatic identification tools. The fourth group of questions concerned the costs. The essence of the questions was to determine whether a certain company collects, in its system, information on costs related to the implementation of contracts in a continuous manner; what areas the costs can be attributed to; whether on the basis of the appropriate grouping of costs the profitability of orders, specific routes or areas service can be estimated; if the level of service delivery can be determined, and whether the level of costs and its fluctuations can be observed continuously. The fifth group of questions concerned the use of Web pages in the activities of operators, types of software and the use and knowledge of EDI standards. The sixth group was associated with, made within 2-3 years, changes in the information systems functioning – the question was whether the changes have taken place at all, and whether they are planned in the same period in the future. The seventh group of questions was related to obtaining information on the experts’ subjective assessments on the importance of planning activities in the logistics system; the prevention of emergency or undesirable situations, and decision-making by top management in a year or longer. The experts were also to express their assessment associated with provided statements **. The aim of the question was to investigate whether the respondent (a company) sees the relation between these elements and the possibility to achieve a synergy effect in the company’s activities by an appropriate combination of them (receiving and execution of orders, deliveries, an impact on the quality of operations, planning), or whether they are completely distinct areas. Participants also had to decide whether they agreed or not with certain statements, giving them adequate Lickert scoring scale. They were also asked to explain briefly why they chose a particular answer ***. The eighth group of questions is a so-called impressum. The questions were related to company size, geographic area of business, the company or branch office, as well as how the

** There were a few of these statements. One of the questions contained, divided into two variants of the answer, various aspects of a comprehensive formation of logistic service. The first variant (a) included such items as: company image, price flexibility for delivered services or sold products, the competence of people in contact with the client and executing sales, introducing the customer suggestions in the company. The second variant (b) was related to the accuracy of services, speed and flexibility in operation, developing IT systems, information exchange in real time between suppliers and customers.

*** The analysed statements were as follows: "1. Today, customers are more interested in a particular logistics service provider, than a service provider is interested in a particular customer", "2. Your company processes the logistics functions much better than other logistics service providers", "3. Logistics service providers operating in Poland offer the same level of services as the one in other European countries and the world", "4. The level of logistics services offered by your company can still be improved with relatively low expenditures on the IT system", "5. Our company has a very good IT system used to the full extent in the cooperation with other companies".
specialist classifies the company — whether it is the 2PL, 3PL or 4PL operator. The research results on individual operators are presented below.

2. Research results

2.1. First case characteristics

This paper will present the results obtained from cases examination of three logistics operators. The companies (operators) adapted to the study are in the rankings of “Top 500” for the years 2004-2006, 2005-2007, 2009-2010*.

The first operator is a company classified, according to an expert opinion as a medium-sized enterprise. Analysis of data contained on the operator’s website confirms this statement because of the number of employees as well as self-owned stock. The company’s activities cover Poland and Europe. In the answers provided, it was identified as the 2PL operator. Analysis of the information posted on the company’s website does not allow to unequivocally state that the company is the 2PL operator. The company may in fact seek to focus on the chosen niche and, even being the operator of 3PL or 4PL even, implement certain functions traditionally attributed to all 3PL operators. Headquarters of the firm is located in the voivodeship of Mazovia, and the examined branch in Silesia. Company is engaged in freight forwarding and transportation. The company has several branches, in which the forwarding tasks are performed. There’s the company’s common policy, for planning costs and customer service for all branches, determined by the headquarters. As for the tasks performed in the course of the order, the firm itself does all the tasks related to the implementation of logistics (orders adoption, scheduling, cost optimization, purchase, etc.), from placing the order by the client/customer, to delivery. However, this concerns freight forwarding actions. While implementation of certain deliveries, the company passes to outside carriers. This information is confirmed on the company’s website.

Regarding the use of IT tools and telecommunication, the company uses ICT network, which includes mobile phone network and transportation management by an integrated GPS system. The system determines the travel time, fuel consumptions analysis, supervision of the safety-transported goods. The company also provides software (e.g. by web or direct contact and by providing devices) to support the tasks and the execution of contracts/orders. The company conducts continuous analysis of the costs associated with orders fulfilment, transportation and supply, complaints and their causes, and finally the costs for delayed delivery. Costs can be assigned to customer orders, routes or service

* Verified with other information provided on web pages: (WWW8; WWW4; WWW2; WWW5).
areas in order to optimize the supply, the calculation of profit or loss. Customers can place orders by the Web-form, they can also track shipping space on the Web page. The company uses ERP and CRM software, but does not use EDI standards. The IT system was not changed in the last 2-3 years. This is an important result of the research. Although a company uses integrated software, it may not fully exploit its capabilities and functions that enable the introduction of standard electronic messages such as ANSI, EDIFACT, etc. Interesting marks appear in the importance of information flow for planning activities in the logistics system (score 6)*, prevention of emergency situations, undesirable (score 7) and decision-making by top management through 1 year or more (score 3). These results may suggest a lack of recognition of the importance which occurs between planning activities and their implementation regardless of the level and time horizon. In addition, the difference (though small) between the assessment of planning activities in the logistics system, and prevention of emergency situations may suggest that more important than planning is the performance of current activities, or the need to focus on the elimination of factors and undesirable situations (positive aspect). A positive fact is that both elements were highly evaluated, what suggests noticing a close link between them (good activities planning can eliminate some errors and emergencies).

The question concerning the importance of contrasting factors such as company image, price flexibility for services provided or sold, etc. (variant a.) and flexibility in operation, developing information systems, exchange of information in real time, etc. (variant b) a respondent stated that he or she would have chosen option a. and b. However, in the absence of alternative, variant b. was finally chosen. This demonstrates the awareness of the correlation of all mentioned elements. The essence of the question shows that the factors in variant a. are achieved somehow "automatically," if the factors from group b are accomplished. The answers to a question, which included the Lickert scale**, were assessed sequentially, according to a scale: 1, lack of answer, 5, 4 and 2. The results show contradictory answers. For example, low rating of statement 1*** is accompanied by very high rating of statements 3 and 4, and low for statement 5.

* The evaluation was on the scale from "1" to "7", where "1" meant the lowest, and "7" – the highest grade.
** According to the statements given in footnote 3.
*** The surveyed subject strongly disagrees with the statement "Today, customers are more interested in a particular logistics service provider than the service provider is interested in a particular customer;" he or she strongly agrees with the statement "Logistics service providers operating in Poland offer the same level of services as the one in other European countries and the world" and agrees that "Offered by your company level of logistics service can still be improved with relatively low expenditures on the IT system," and also does not agree that "Our company has a very good IT system used to the full extent in the cooperation with other companies."
2.2. Second case characteristics

The second of the studied operators is a large enterprise. It is the operator of 3PL. However, you can point out the areas in the company that in literature are indicated as features of 4PL operators. The company operates globally. The headquarters is located in the Wielkopolska voivodeship, and the examined branch is situated in Silesia. The company has several branches. The company provides services to small, medium and large enterprises that decided on comprehensive outsourcing of logistics services. The company provides services in freight forwarding, transport and storage of products. Together with the client, the company determines the terms and conditions of storage and completion of products (even for individual orders and goods), analyses the stages of work together with the customer. Product labelling (e.g. bar codes) is not done for the customers. Headquarters make strategic decisions for all departments (purchasing, analysis and planning of the costs level, scope and level of customer service). The company owns and handles itself its own supply network across Europe. Among the activities of tasks performed by the company that should be mentioned at first, there is a contract logistics, warehousing, transportation, including international one, freight forwarding by sea and air. The company performs its own tasks related to deliveries. However, there are areas where it uses external services – most of all in terms of external drivers in the FTL delivery, and warehouse staff (staff outsourcing). The company also leases and manages the warehouse space. The company has an ICT network – computer network and other telecommunication devices forming a coherent system (e.g. mobile network). For example, the use of electronic tools includes mobile phones which the drivers use to send a message regarding confirmation of delivery after delivering the consignment.

The company’s activity is not limited only to providing transportation or storage. The company helps its clients/customers/suppliers in choosing the right software in order to accelerate and automate the implementation of contracts/orders and the corresponding data compilation and information exchange; it provides software (e.g. web or direct contact and providing the devices) to support tasks and fulfilment of contracts/orders; it shares the ideas, e.g. in the form of meetings and exchange of information on implementing a comprehensive system for orders placing, deliveries, and automatic identification of the reception and deliveries. The company conducts continuous analysis of the increase or decrease of the costs level. Cost can be referenced to contracts/orders, routes or service areas, and they can be assigned to internal orders to determine the level of service delivery.

* See annotation 4.
Regarding the use of a web page, all customers can place orders in the Internet, they can also control the implementation stage of the contract and delivery by the web (if they have the payer’s order number for the consignment). Ambiguous enough is the answer about the EDI standard in the company. Although the answers were that EDI was used, it was not possible to determine what the standard was. Further analysis and the provided answer concerning the type of software which has been used suggest that it can be a standard based on the ERP and CRM system. The system is used for a comprehensive vehicle management. This includes such activities and areas as: the entry and exit control of means of transport, logistics controlling, return logistics, optimization of logistics costs, planning and optimization of loading, route planning and shipments scheduling, RFID, wireless technology (including mobile technology), Transport Management System, Warehouse Management System, management of supply security, international trade management, relations with suppliers management, orders management and inventory management. However, not all of the elements integrate all activities in the chain. It confirms the answer that within the next 3-5 years an integrated suite supporting the management of delivery chain would be needed. A fundamental change of the system functioning (2-3 years ago) concerned the introduction of the program to enter the orders by customers.

The respondent emphasized the answer relating to activities planning in the logistics system (7 pts.), emergency or undesirable situations prevention (7 pts.) and decision-making by top management in 1 year or longer (4 pts.). In the context of analysis of all activities carried out by the operator and the functioning of the solutions in the IT system, it may mean that planning for shorter time and flexible response to current changes based on the data in real time are essential elements of success in implementing tasks and logistics operations. The function of planning by the top management should set a general, long-term framework for business. This does not automatically mean that the long-term planning is less important. It, however, begins paying “a supporting role”.

Interesting data also comes from answers to the question on determining the value of contrasting factors such as a company’s image, price flexibility for services delivered or sold, etc. (variant a) and flexibility in operation, developing information systems, exchange of information in real time, etc. (variant b). According to the specialist providing the answer, how the company is perceived in the market is reflected in the position it occupies; the price flexibility provides greater opportunity for trade negotiations, which entails more sales; proper and competent staff is one of the most important value of the company, the pro-client attitude enables to enter customer suggestions. Hence, an indication of point a. as a group of major factors. It can also be stated (information provided in the
course of the research) that the given answer basically refers to the need to implement the items listed in point b. As for the questions, where the Lickert scale was used, they were assessed sequentially according to the scale: 1, 2, 4, 3, and 4. Interpretation of the selection is as follows. According to statement 1*, a service provide is more interested in the customers (particularly those large contract ones, for which individual projects are carried out); in case of statement 2: a company tries to perform logistics functions as well as possible, but it should be noticed that there are areas where it will stand out as a leader in the market and vice versa – competitors will be the leaders in other areas; the third statement: the level of domestic and foreign service providers is comparable, the only exceptions, and obstacles at the same time, in obtaining the same level, may be legal regulations; the fourth statement: the company continuously improves the IT system with additional modules for the new services introduced for newly acquired customers; the last statement, fifth: from the point of view of an operation worker, the system is fully used to co-operate with the client.

2.3. Third case characteristics

The third examined operator is a company which main scope of services is set by freight forwarding business, but also advanced storage services. The company has several branches in Poland and it is connected with an international company. Its domain actions are freight forwarding services, organization of transport services, periodic storage, including reloading and completion, additional services provision such as product labelling and advising the client on selecting a route optimization and method of delivery (for example, you can optimize delivery through consolidation, change the route, etc.). The company uses other entities in the tasks implementation, including in particular the transport companies (it can be noticed in its basic range of activities, as a shipper and delivery of cargo organizer). The company may be qualified as a large company operating in Poland only. The company was described as 4PL operator. The feature that proves it is the lack of fixed assets for the direct implementation of logistics (implementation of physical delivery) and organizing this operation with the involvement of other entities. Headquarters is located in the voivodeship of Mazovia, and the examined branch is situated in Silesia.

The opinions expressed by a respondent in an interview on the operation system, telecommunication solutions, Internet application and supporting customers by additional services and activities, are as follows. The company uses, on a limited scale, IT solutions for customers' orders. They are used to a full extent

* See footnote 3.
only in the implementation of national groupage transport. The company has never helped their suppliers/customers in the selection of software for order processing, processes mapping; it neither offers software via website nor supports the logistics activities and placing orders via website. With the additional examination of the operator’s website, it can be stated that the provided answers for the information sharing via website (in particular services orders and shipment tracking) are correct with the facts given by the person interviewed (website contents in December 2011). After web searching it can be stated that there are traces of a system enabling the company’s customers to place orders via web page (there is a booking system via web, track & trace system, and an internal Intranet). Although the subject stated that these solutions are only available for a specific group of customers and deliveries, a positive aspect is that it is possible to qualify the operator as a 4PL provider. However, what should be remembered is the fact of previously reported claims and the lack of possibility to clearly identify the actual facts. Perhaps the operator was of a 2PL type and it is currently evolving towards 4PL. Additional explanations, given by a participant of the research, in terms of the IT system functioning seem to confirm this assumption.

Interesting are the answers concerning the costs identification and data collection in the relevant sections of the computer system. Although the answer given was that the company collects data on costs related to orders processing, transport, delivery, and storage, but above all, in the opinion of the respondent these are classic terms of accounting; the expenses are not directly related to the logistics processes (orders, deliveries, transport). Detailed data on costs, however, is related to the delayed deliveries. This demonstrates the possibility of obtaining this type of detailed data in the system. However, they are probably not connected with the current decisions and operational actions in any way. They are not used by professionals in their daily work or they are but only by certain positions*. Thus, the answer to the question whether the company is able to investigate or applies continuous analysis, which allow to specify the degree of decrease or increase in a certain group of costs and associate them with the increase or decrease in another group of costs, was negative. Another feature is the presence of a system with integrated IT system characteristics, but it cannot be determined whether and what EDI standards are present in the company. It is not known what areas are integrated and supported in the IT system (lack of knowledge and vision of the examined person). The importance of activity planning in the logistics system, however, as well as the undesirable emergency situations prevention and decision making by top management in 1 year or longer, were graded with the highest number of points (7 points). According to the expert’s opinion, it is necessary to integrate all the operations in a cycle of an

* Assumptions could not be clearly verified.
order and delivery processing, regardless to the time scale. The whole vision of the examined person is also confirmed by an answer in the question regarding the value of intentionally contrasting factors such as a company image, price flexibility in terms of services provided or sold, etc. (variant a) and flexibility in operation, development of IT systems, real time exchange of information, etc. (variant b). The answer relates to the choice of variants a and b. While the answers to the questions, for which the Lickert scale* was used, were evaluated in sequence: 2, 4, 4, 4, and 2. the interpretation of the choice is as follows. With regard to a statement 1**, a logistics service provider is forced to take the competition fight, since there are many subjects of high quality services; statement 2: it is about the individual, implemented by the company, approach towards the customer; statement 3: a similar level of subjects’ services in Poland and abroad is proved by their actual level and the customer evaluation; statement 4: what results from the opinion of employees, is that it is necessary to improve the Internet solutions; statement 5: the need to improve the IT system is proved unsatisfactory data, the need to improve the track & trace system.

Conclusions

According to the research in mentioned companies, which are logistics operators, we can point out:
1. A diverse range of activity of companies identifying themselves as operators 2, 3 or 4PL. It seems that the diversity arises from the need to adapt by a certain operator to the requirements of the various entities serviced. This element is the main determinant of the undertaken activity direction. Less commonly, the scope of activities is a result of reliance on the analysis of the operator’s so-called “core competence” and a development of it. It can be assumed that the competence, the most important for the operator and standing for its advantage, “form” in the course of gaining practical experience and crystallization of its operation concept (evolution). The competence is not always formed as result of deliberate and conscious planning of activity in relation to the logistics sphere or performed tasks; a long-term behaviour is not always adopted in order to use it practically. Thus, in practice it appears difficult to clearly qualify the company as an operator of 3/4PL or 2/3PL type. What is interesting in this regard, is qualifying two different companies of similar profiles and a scope of activity (the first and the third one in the research description) once as a 2PL operator, and in the second case, as a 4PL operator.

* According to the statements given in footnote 3.
** See footnote 3.
2. A varied level and scope of the IT solutions. In all of the studied cases there is probably a large gap between the integration of the company development planning and the development of its IT system. Although the level and scope of IT solutions may vary and it does not constitute a negative feature, it seems that two elements play the primary role in the evaluation of the IT solutions effectiveness. The first element is the system connection of all activities in the process of implementation of the customers orders/contracts and linking the operator’s systems with the systems of its customers. This condition, as studies show, is not always true or it allows full exchange of information in real time. The second element is a possibility of costs estimation in the process of ongoing activities related to the contracts implementation in order to optimize the delivery routes and making decisions related to the consolidation of cargo, etc. The analysis of the obtained results shows that these conditions are not fully met by the operators yet.

3. A lack of full application of the submission cycle concept and orders processing (related to point 2). The obtained results allow to conclude that, in fact, this concept is not known at all or it is not used in the operations of companies that are partially operators. This may have serious consequences in the implementation and development of computer-supported information systems.

4. Gaps in obtaining the cost information at any cross section desired in order to make appropriate decisions.

5. Lack of information whether a certain operator sets the EDI standard.

6. Not all operator companies provide full support to their customers (including the re-engineering processes in the area of logistics). The action to improve the efficiency of the materials physical flow, for example by mapping existing processes, exchange of know-how and experience, logistics consultancy, etc. is not being implemented almost at all.

7. The level of the respondents knowledge and awareness of the use of IT solutions, which support the processing contracts/orders, tracking shipments, etc. (lack of an overall vision of the whole system operation) is varied. Some of the answers seem to be inconsistent with the facts. In fact, the information provided in the direct research, and verified on the certain operator’s website, demonstrate at least a trace of existence of integration in the information exchange, e.g. in the case of the third of the operators and the possibility of orders processing by the web.

These conclusions do not generalize the status quo. They are the observations of the obtained research results. These results, in relation to set goals and objectives of research, involve identifying the potential barriers in shaping the development of logistics operators and companies which are their customers.
Regardless of the type of an operator (its maturity and stage of development) there are problems associated mainly with the creation of a clear and coherent vision of the development and application of specific IT solution suited to its needs, the know-how knowledge, the range of applied solutions and their impact on operational activities. It is also important to support this development with the appropriately shaped knowledge and the development of skills of personnel in the enterprise. However, other conclusions also arise. Barriers and gaps in the functioning of the operators will always occur due to the limits resulting from the knowledge and skills, because of the capital constraints, and also because of the strong competition in the TSL sector. Some of the subjects, consistently pursuing its vision and plans for the development, achieved and continue to develop an appropriate range of services using the knowledge and tools in the form of IT systems and telecommunication. An example of this type of companies is the operator described in section 2.2.

Comparing results of of the research with the newest information related to this research field in the world some conclusions have joints*. First, activity fields of operators has been broaden for the last years. It means that logistics service providers try to provide services adjusted to the customers, meeting at the same time the global scale of operations (in many cases) and very high service level for customers. Second, today operators (especially 3PL and 4PL) are not only physical services providers, but set up new activities especially related to providing accurate logistics information in real time. For this reason, 3PL and 4PL operators in the world use advanced information systems, concepts and supporting software to obtain competitive advantage. Third, comparing the scale of practical application IT systems in polish firms (operators) described in the research with leading solutions in the world is rather difficult to say that the level of using IT technology is better or worse. But probably more attention should be paid in the nearest future in Polish firm (operators) relating to implementing and developing of IT systems for supporting logistics activities. The result should be visible for example in increasing level of logistics management (because of better integration and coordination logistics activities within supply chain, lower total cost).

The questions included in the question spreadsheet, along with explanations for the respondents**

1. What group of entities can your company be included in? Please respond describing the activities of your company most fully (3-4 sentences) e.g. shipping company, trans-

---

* See footnote 3.
** Explanations regarding questions have been given in brackets “[…]”
1. port-forwarding company, warehouse services company, company providing all the services mentioned in the point above, the IT service provider in terms of logistics, providing services in the field of inventory management, company operating in the [specify here] industry, a customer using the services of logistics (transport, or others), none of the above answers characterized our company properly.

2. Does your company have a network structure? Indicate whether there are headquarters that make decisions for the entire enterprise-network or whether decisions are made independently in different branches, subsidiaries, etc., and what these decisions concern mainly (e.g. possibility of cargo delivery by each branch independently of headquarters, but the purchasing decisions, the common cost or customer service policies- determined by the Headquarters) [In reply: Yes, for example, several warehouses, transport bases, etc., or not – a single company, one production plant, etc.].

3. What is the scope of your business? [Hint – you can choose one of the answers below: Our company provides transport services, Our company provides forwarding services, Our company provides range of services: interim storage of goods, their handling, completion, etc., Our company provides services such as transportation, warehousing, but also the additional functions e.g. related to packaging and labeling of products, All of the above statements fit in with our company, and additionally, e.g. advising a client, for instance, in order to optimize the route and method of delivery, Our company carries out the operations described earlier, but also advises on the optimal batch delivery, number of deliveries at a time to the customer, type of packaging used should be, etc. Our company has optimized all steps in the supply chain for clients / customers, After receiving an order our company optimizes the delivery from our point of view and performs certain standard activities related to the reception, release and delivery of the goods].

4. Does your company independently perform all the tasks related to the delivery or performance of other logistics tasks (acceptance of orders, scheduling, cost optimization, purchases, etc.), from placing the order by the customer / recipient, ending with the delivery? [Yes, no or I do not know, or any other comments; also look at the question 5].

5. Does your company independently perform all the tasks related to the delivery, from placing the order by the client / customer, through the delivery, but other entities handle the selected tasks and activities? [For example, these may involve (select up to three areas that most fully describe the actual operation, or describe in your own words) Transport (other transport companies), own transport, but the hired driver, Freight, Reception, releases, completion (staff outsourcing) operations, Storage area / warehouse management, IT network operation surveillance].

6. Does the company use information technology and various types of software with the aim of completing orders from customers / users (choose one of the most complete answers)? If so, what type? [For example, it may refer to: Information system and computer network, Telecommunication network (computer network and other telecommunication devices forming a coherent system, such as mobile network), The company does not apply advanced IT solutions, it is not necessary; The company does not use such solutions, as a considerable number of the customers / suppliers / consignees are not interested in such a solution, The company applies IT solutions but not to all its activities (state what it embraces and what not)].

7. If in the question 6 the answer “Telecommunication network (computer network and other telecommunication devices forming a coherent system, such as mobile ne-
twork)" was indicated, what exactly constitutes the system outside the computer network (up to three areas, most fully describing the actual elements of the system)? [E.g. solutions and electronic tools (scanners, pagers, other - what?)].

8. Has your company helped its clients / customers / suppliers (give one or max. 3 answers most fully describing the actual elements): In the selection of appropriate software in order to accelerate and automate the implementation of commission contracts / orders and compiling relevant data and information exchange; Provides software (e.g. via a website or direct contact and access to the media) supporting the tasks performance and fulfilling commission contracts / orders; Provides other ideas, such as meetings and exchange of information on implementing a comprehensive system for placing orders, effecting deliveries, automatic identification of the receiving and releasing; Helped in the mapping processes in order to obtain their optimal flow and standardization; Not helped in any of the areas listed in paragraphs.

9. Does the company continuously collect the following data in the computer system (specify any number of responses, most fully describing the actual elements): Data on costs associated with order fulfillment; Data on costs associated with the transportation, delivery; Warehousing cost data; Data on costs of complaints and their causes, Delayed deliveries cost data.

10. Can the individual cost data be attributed to (select any, the most comprehensive answers): Customer orders, e.g. to calculate the profit or loss incurred on the contract or contracts; Routes or service areas, e.g. to optimize deliveries; Internal orders to determine e.g. the level of service implementation and maintenance costs; I do not know [If the answer is I DO NOT KNOW - give short explanation if the lack of information stems from the fact that the respondent does not have a thorough knowledge of the functioning of the whole system in the company?].

11. Is the company able to investigate or apply continuous analysis, which will allow it to specify the degree of decrease or increase in a given cost group and associate it with the increase or decrease in another cost group? [Possible answers: Yes; No; I do not know; It's hard to say].

12. Can all your company's customers place orders through the web site? [Yes; No; I do not know; You can choose an answer and a short comment].

13. Do your company's customers have a possibility to control the order through the Web page (preview)? [Yes; No; I do not know; You can choose an answer and briefly comment on - for example, whether such a possibility will exist in the future].

14. Can the recipients control the phases of completing the contract through the web site? [Yes; No; I do not know; You can choose an answer and briefly comment on - for example, whether such a possibility will exist in the future].

15. Does your company use EDI standards (e.g. based on ANSI) in the exchange of information between suppliers and customers [Yes; No; I do not know; You can choose an answer and briefly comment on - for example, whether such a possibility will exist in the future. If the answer is "yes" please give examples of types of standards].

16. What kind of software (in what areas) do you use today? It is possible to provide some answers. [i.e. CRM, DRP / MRP, ERP; In the field of Ecologistics; Mans of transport entry and exit control; Logistics controlling; Reverse logistics; Optimization of logistics costs; Planning and optimization of loading; Route planning and shipments scheduling; RFID; Simulations and forecasting; Wireless technology (including mobile),
TMS; WMS; E-business support; Security management; Product lifecycle management; International trade management; Demand management; Supplier relationship management; Order management; Inventory management; Integrated package of supply chain management support; Other - what?].

17. Which of software groups (see the explanation in the previous question), if it is not used today, would it be necessary to use in about 3-5 years?

18. Were any changes to the IT system implemented within the last 2-3 years? If so, please shortly describe their cause and what area they referred to? Does the company intend to introduce some changes in the computer system within next 2-3 years? What are they likely to affect, what are they resulting from?

19. What is the importance, on a scale from 1 (lowest rating) to 7 (highest rating), of the exchange of information in the event of [Enter in the column next to the endorsements:

Planning operations in the logistics system; Emergency situations prevention; Decision-making by top management within 1 year or longer time span].

20. Please express your opinion to the statements in Table 1.

<table>
<thead>
<tr>
<th>INDICATE ANSWERS “X”</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>I don’t know</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Today, customers are more interested in a particular logistics service provider than the service provider is interested in a particular customer

Your company performs much better the logistic functions than a) the answer for logistics service providers (transport companies, warehouses, etc.): other service providers; b) the answer for the manufacturing or trading companies: logistics provider

Logistics service providers operating in Poland offer the same level of services as in other European countries and all over the world

The level of logistics service offered by your company can still be improved with relatively low expenditure on IT system

Our company has very good computer system fully used in cooperation with other companies

21. Do you think that more important are such factors as: a) company image, price elasticity for services rendered or products sold, the competence of people in contact with the client and executing sales, implementing in the company customer suggestions; b) service accuracy, speed and flexibility in operation, developing information systems, exchange of information in real time between suppliers and customers [You can indicate point a or b but also to express your (short) opinion in addition to your choice] IMPRINT: – Is your company one of the following: • a small business, • medium-sized enterprise, • a large company. – Does the company operate: • in Poland only, • in Poland and in Europe, • around the world (global). – Is your company the following type of operator: • 2PL, • 3PL, • 4PL, • I do not know, • Difficult to say, • Customer logistics operators. – What voivodship in Poland is the registered office of the company? If this is a network enterprise, with several plants and / or branches, please indicate the location of the Head Office and branch of the respondent (in the indicated order).
References

(WWW2) www.grafik.rp.pl/grafika2/700259 (16 September 2011).