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LOGISTICS COOPERATION: INTEGRATED LOGISTICS SERVICES

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Abstract. High quality service delivery is one of the key factors to survive in the market. It is highly important to meet the needs of the client since business survival depends on the client's use of business services. In recent years, the requirements of customers for the companies providing logistics services, known as third party logistics (3 PL), are continuously rising. It is obvious that the clients, insisting on the total complex of logistics services, expect additional services which would enable them to compete in the market on more favourable terms. The present article is aimed at analysing theoretical and practical aspects of third party logistics and suggesting the integrated logistics services model based on the Lithuanian example.

Keywords: logistics; third party logistics; logistics cooperation; service; sector; integrated; company.

JEL Classification: M10, M19, N70, R41

LOGISTINIS BENDRADARBIAVIMAS: LOGISTIKOS KOMPLEKSINĖS PASLAUGOS

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Santrauka. Aukštos kokybės paslaugų teikimas – vienas pagrindinių veiksnių, skatinančių išlikti rinkoje. Kadangi verslo išlikimas priklauso nuo to, ar klientas naudojasi verslo paslaugomis, svarbu suteikti klientui tai, ko jis nori. Kuo toliau, tuo didesnius reikalavimus klientai kelia kompanijoms, teikiančioms logistikos paslaugas ir vadinamoms trečiosios šalies paslaugų teikėjomis (3 PL). Tai natūralu, nes klientai, reikalaudami viso logistikos paslaugų komplekso, tikisi papildomų paslaugų, kurios sudarytų jiems galimybę ir palankesnes sąlygas konkuruoti rinkoje. Šiame straipsnyje keliamas tikslas – išanalizuoti teorinius ir praktinius trečiosios šalies logistikos aspektus, pasiūlyti kompleksinių logistikos paslaugų modelį, kuris būtų sudarytas remiantis Lietuvos pavyzdžiu.

Reikšminiai žodžiai: logistika, trečiosios šalies logistika, logistinis bendradarbiavimas, paslauga, sektorius, kompleksinis, kompanija.

1. Introduction

Business entities, operating in increasingly difficult competitive conditions of the continuous development of business and its environment, are forced to strengthen their positions by focusing more on the core (i.e. value generating) activities and gradually moving the performance of other activities outside the company (Nunez-Carballosa, Guitart-Tarres 2011; Rahman 2011). These circumstances have influenced the emergence of the concepts of logistics cooperation, logistics alliance, third party logistics and contract logistics, used to describe such organizational practice in which all of the logistics functions, which were previously conducted by a business entity (i.e., the company) via contracts internally, are now reassigned to other (external) entities to perform.

Nowadays, it is not enough only to deliver the product at the right time to the right place. According to Caceres and Paparoidamis (2007), the clients are demanding more than just a transportation service, not just the high quality of delivery which does not guarantee their competitive advantage anymore. Pollack (2009), Selviaridis and Spring (2007) have agreed with that, emphasising the fact that the clients demand the complex of the services instead of the individual ones. Thus, the practice of outsourcing these services to specialized companies is becoming more common in the business fields since the clients are trying to receive the services of the higher quality, which would enable them to stay competitive (Fecikova 2004; Jaiswal 2008; Rahman 2011; Hsiao *et al.* 2011; Large *et al.* 2011).

Competitive logistics companies, setting the long-term goals, should offer their clients the service package characterized by a wide variety, complexity and customization (Jayawardhena 2010; Bitner *et al.* 1997). The clients are becoming less loyal to one business entity and are looking for new business entities which are able to better satisfy their needs. Yan Yeung *et al.* (2006) have argued that, nowadays, the practice of outsourcing the logistics services to third parties is continuously increasing; therefore, it is particularly important for the third parties to deliver these services properly (Lee 2005; Kang 2006; Seth *et al.* 2006; Donnelly *et al.* 2006; Ismail *et al.* 2006; Pantouvakis 2008; Lonial *et al.* 2010; Kersten, Koch 2010; Juga *et al.* 2010; Rodrigues *et al.* 2011; Banomyong 2011).

According to Chowdhary, Prakash (2007) and Ismail *et al.* (2006), consumers and providers of the service usually have different service quality vision. Consequently, it is highly important for the service provider to know what the client expects whereas the client must be sure that the service provider is aware of the expectations (Parasuraman 1998; Donnelly 2006; Seth 2006; Busacca 2005; Gilbert 2006).

Selviaridis (2007) has pointed out that, considering the client's time, expenditures, resources and etc., it is more convenient to receive the whole complex of logistics services from one company than to order them from different companies.

The aim of the present article is to create the integrated logistics services model by carrying out the analysis of the theoretical and practical aspects of third party logistics.

In order to achieve the objectives of the topic of the methodological triangulation, the use of different research methods and analysis of different types of data have been employed: analysis of scientific literature, comparative analysis, systems analysis, methods of conceptual synthesis and expert evaluation.

2. Logistics cooperation: PL types

Party logistics (PL) could be classified according to the principle of the distribution of work. Considering the concept's originality, usage and its analysis in the scientific literature (Gol, Catay 2007; Bolumole 2001; Bottani, Rizzi 2006; Bourlaki, Melewar 2011; Ferahani *et al.* 2011; Neubauer 2011), the following two groups of party logistics could be distinguished: the basic and the derivative.

The *basic* group is presented by the following logistics concepts: 2 PL (i.e. the oldest term used, also known as 1 PL), 3 PL, 4 PL and LLP (the latter two are relatively new concepts). Other concepts, such as 3.5 PL, 5 PL and XPL, are equivalent to neologisms and considered as *derivatives*.

1 PL is the oldest concept used, often associated with *2 PL*, since the only difference between them is the division of responsibility along the supply chain; therefore, in literature, this concept is not analysed in detail and is used to define the entity of the chain (Ferahani *et al.* 2011). *2 PL* term is used when the manufacturer (i.e. first party) provides all the logistics services required while delivering the products to the purchaser (i.e. second party). *3 PL* term is used to define such logistics cooperation in which all the necessary logistics operations are delegated to the logistics service provider (possessing the material resources required) when delivering the products to the second party (Neubauer 2011). *4 PL* term is used to describe such centralization of the logistics operations in which the performance of all operations is concentrated in one command centre. 4 PL is often compared with "driving", as the logistics service provider of this party is responsible for the planning, construction and integration operations while controlling and optimizing physical, financial, information and knowledge flows in the delivery, manufacturing and distribution processes and performing all the necessary activities, which are usually carried out by several 3 PL providers.

LLP defines such division of logistics operations in which all the operations are carried out by the optimal number of 3 PL service providers. LLP is often considered the synonym of 5 PL. LLP service providers deliver the same services as 4 PL service providers; however, there is one essential difference between them: 4 PL providers use their

own resources whereas LLP providers ensure the quality of the performance by using information systems and networks and outsourcing all the necessary activities to 3 PL providers (Gol, Catay 2007). Distinguishing information systems, Farahani *et al.* (2011) have used the e-business concept in order to define *5 PL* (LLP). *3.5 PL* concept, which is rarely found in the literature, performs similar functions, i.e. the centralized management of the logistics operations performance through 3 PL providers, organized and controlled by the manufacturer or the supplier (1 PL or 2 PL) (Neubauer 2011). *XPL* (Extended Party Logistics) term is used to describe all kinds of party logistics.

Outsourcing the services to one of the logistics service providers mentioned above depends on the quantity of services required to receive, or refused to receive, from these providers.

3. Justification of the decision to choose third party logistics services in order to achieve competitive advantage

Like the majority of the decisions, the decision to outsource the logistics operations to third party (3 PL) is related to both positive and negative consequences. In the scientific literature (Berglund *et al.* 1999; Lieb 1999; Skjoett-Larsen 2000; Gattorna *et al.* 2004; Hoiland 2004; Sohail *et al.* 2006; Yeung *et al.* 2006; Selviaridis 2007; Rahman 2011; Rahman 2011; Large 2011; Nunez-Carballosa, Guitart-Tarres 2011), much attention is paid to the analysis of possible selection criteria, i.e. the techniques for effective decision making, as each entity requires its own different decision, selected regarding its unique characteristics, needs and expectations. According to Large (2011), the decision to outsource the logistics operations to third party should not be treated unambiguously, i.e. the company should evaluate its alternatives and decide whether it is worth outsourcing all the logistics operations, or some of them, to the logistics service provider or not and what services to outsource.

In order to indicate the basic potential alternatives, Rushton (2010) has offered the scheme of the spectrum of choices of the logistics cooperation activities that potentially helps to answer the following questions: "Is it worth to cooperate?" and "What functions are better to be outsourced?". Meanwhile, Rao and Young (1994) have suggested evaluating the five key factors affecting the decision whether to outsource the logistics operations to third party or not.

Van Damme (1996) has suggested evaluating the situation systematically when dealing with the issues related to the outsourcing the logistics functions to a third party. Selviaridis (2007) has pointed out that the following choice/opt-out factors should be considered when evaluating the situation: the centralization of the logistics functions; risks and controls; cost/service trade-offs; information technology (Davidavičienė, Meidutė 2011; Meidutė *et al.* 2012); and the relationships with the logistics service providers. The author has distinguished four discussion categories related to the economic viability, market issues, personnel/equipment feasibility and the level of supplier's dependence. Selviaridis (2007) believes that the characteristics of the shipper's company (e.g. its size) are particularly important when making the decision regarding the selection of the 3 PL services since, when these characteristics are considered, it may become obvious that the company is able to perform the logistics activities independently. The decision to outsource the performance of the logistics activities could be influenced by the circumstances related to the resources and capabilities Bolumole 2001; Selviaridis 2007; Meidutė, Raudeliūnienė 2011). When the relationships with 3 PL service providers are formed effectively, the required quality of service performance could be achieved even without investments in the property or additional capacities. Hence, the companies could focus on the core business development.

According to Skjoett-Larsen (2000), the decision to start using 3 PL services is influenced by the desire/need for reorganization of the entire logistics system of the company. At the same time, Yan Yeung *et al.* (2006) and Meidutė (2007) have stated that the preference is given to 3 PL service providers, instead of relying on the logistics service providers, since the logistics service consumers demand more than just the delivery of basic and low-cost services whereas 3 PL service providers are able to deliver specialized and higher value adding logistics services. Ana Nunez-Carballosa, Guitart-Tarres (2011) have agreed with the opinion of the latter authors; according to them, 3 PL service providers specialize in the delivery of the services of this are the only; therefore, they could offer all their knowledge, skills and experience in creating value in the supply chain. Hence, the logistics service consumers are now willing to pay a higher price for the higher-value services that meet their requirements.

To sum up, the main challenge of 3 PL providers could be identified. According to Berglund *et al.* (1999), the ability to provide the services creating the higher value for clients' business than they can create themselves is the main challenge to 3 PL service providers.

Hence, according to the results of the analysis of the reasons influencing the decision to start cooperating with 3 PL service providers, it could be concluded that the minimization of costs, as well as the price, is the most significant factor when dealing with the decision considering the delegation of the logistics activities to specialized companies to perform. The second important factor is the higher quality of the services. Thus, the competitive advantage could be gained by choosing 3 PL service providers since the quality of the service is improved and the costs are reduced.

4. The research on the application of the principles of third party logistics: the case of Lithuania

4.1. Logistics Services Needs Survey

The personal, indirect survey, during which the respondents were offered to complete the online questionnaire, was carried out. Two-variant, multivariate and the graduated response questions were asked.

There were 61 companies interviewed, 3 of which did not meet the requirements of the survey as the logistics demand was irrelevant to them; therefore, their data was not included in the analysis. The questionnaire was completed by the representatives of the companies surveyed, i.e. the employees considered as competent to evaluate and indicate the company's activities and needs for logistics services.

The main aim of the survey was to evaluate the need for integrated logistics services in the Lithuanian market.

In order to achieve the main aim, the following objectives were set:

- to indicate the scope of the integrated logistics services in Lithuania;
- to provide the assessment of the logistics services of the customers;
- to evaluate the need for multi-modal transportation in the Lithuanian market;
- to identify the specificity of the integrated logistics services in the Lithuanian market.

28% of all the companies surveyed operate in the local market only, i.e. selling the products in the domestic market; 81% of these companies are small businesses. 22% of all the companies surveyed both import and export the products sold. Considering the evaluation of the statistical import-export balance, which, being negative, is currently staying reduced, it is indicated that most products are imported, which is easy enough to believe, as the difference is quite significant: 81% of the respondents import their products and only 43% of the respondents export them. Most of the international trade relations, 62%, are developed with European countries and 33% are developed with CIS countries. Evaluating import and export, it is mainly worked with European countries compared with other regions. Considering Asia and North America, the products are imported only. It is worth noting that, evaluating export-import indicators for specific types of enterprises, even 72% of small businesses import their products from European countries, whereas only 31% account for the medium-sized enterprises. Evaluating the data received, it could be assumed that most of the imported products are sold in the domestic market and only a small part is re-exported to other countries.

The results of the analysis of all the companies (Fig. 1) have shown that 9% of the companies use only their own resources (e.g. private or rented commercial vehicles and storage facilities) to perform the logistics operations; moreover, these companies do not use the services offered by other logistics companies since they have their own logistics experts, which are responsible for managing and allocating the available resources.

Even 31% of the respondents have a regular logistics service provider and 10% of these respondents are completely satisfied with their provider; however, only 10% of the individual providers are able to offer a full range of services. 21% of the respondents have several providers and, in practice, only these providers could get the requests for the services; hence, the provider offering the best alternative receives the order to perform. Evaluating the quality of the service delivered, only 58% of the respondents have stated that they are satisfied with the existing quality; however, they would like to have better quality. Thus, it could be assumed that logistics providers fail to adapt to the client's expectations and completely meet all the requirements.

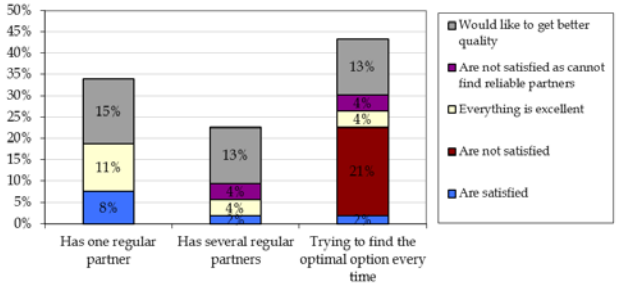

Fig. 1. The Companies: according to the number of partners and the satisfaction with the services provided by these partners (created by authors)

Up to 40% of the respondents select a new partner, offering the best conditions, out of a large number of other partners who were offered for the same project every time they have to perform certain logistics operations. Unfortunately, even 57% of these respondents are not satisfied with the logistics service quality, and 9% of them fail to find a reliable partner at all. Therefore, the following hypothesis may be raised: if these companies were able to find a reliable partner, they would outsource all logistics operations to that partner.

72% of all the companies surveyed order the performance of different logistics services at different companies; however, 55% of them believe that it would be better to outsource all the logistics functions to one external company, which could help to save time (Fig. 2). According to the opinion of the rest 45% of the companies mentioned, it is not worth delegating all the logistics functions to one company. The main reason of such opinion is related to the costs, as there is a risk that the company could lose its perception regarding the real price of the logistics services; moreover, this fear remains considering the fact that the

prices could be fixed contractually. There is also another reason not to delegate absolutely all logistics functions to other company: the risks related to the manufacturing processes are increasing, i.e. logistics service provider is untrustworthy. Considering the companies ordering the full complex of the logistics service from one of the logistics service providers, it could be stated that such companies believe that, by doing this, they could save both time and finances, as the price paid is the prevailing market price at the time of the contract signing.

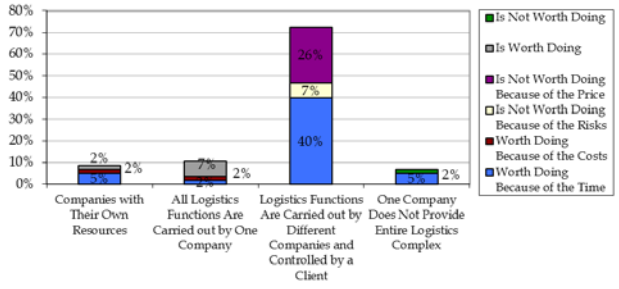

Fig. 2. The attitude towards the possible centralization of the entire package of the logistics services (created by authors)

Evaluating the companies that still do not choose to buy the logistics service complex mentioned above, it could be noted that 75% of them believe it is worth concentrating all of the logistics functions in one centre but fail to implement that as they could not find a reliable partner who could provide such a service; whereas the remaining 25% of the companies consider it useless, without specifying the reasons of such decision.

The survey was also aimed at indicating the most important logistics activities. The results are as follows: all the companies surveyed (100%) have mentioned transportation and 97% have mentioned warehousing, whereas other logistics functions are not as popular as the latter ones. Therefore, it could be concluded that the Lithuanian market lacks the appropriate level of the development of the systemic approach and the adapting of the ideas, related to the complexity of the services, in the field of logistics as one of the key functions in the effective business management.

The local distribution is relevant to 81% of the respondents, 13% of which (mostly medium-sized) use the services provided by one logistics partner, who could offer the full package of logistics services. The customs brokerage service is important to 48% of all the respondents. Marking, as well as other additional functions, are relevant to only 24% of all the respondents surveyed.

Evaluating the characteristics of the key logistics services, the respondents have mentioned the price, which was indicated as the most important characteristic by 62% of the respondents. The speed is the second characteristic mentioned (by 24% of the respondents). Finally, 9% of the respondents have mentioned the stability as the characteristic ensuring the continuous process of the product turnover.

The analysis of the spread of multimodality has revealed that none of the respondents use this way of transportation; moreover, some of the respondents (9%) are not aware of the ways of the transportation of their products. Even 67% of the respondents have never been offered to transport their products by using the means of multimodal transportation, which could be indicated as one of the main reasons for the unpopularity of the multimodal transportation in Lithuania. The fact mentioned is a good example of the existing gap in the national logistics market system, which should encourage innovative logistics companies, seeking long-term goals and investment returns, to offer the logistics service in question in addition to other services offered, thus increasing the integrated logistics service package by extending the proposed nomenclature.

As many as 9% of the respondents are not aware of the ways of the transportation of their products as they are interested in the results only, i.e. their products should be delivered on time to the right place. The respondents mentioned could be potential multimodal transportation users as 5% of the respondents, who have never been offered multimodal transportation services, are not aware of the ways of the transportation of their products. 12% of the respondents do not use multimodal transportation services as, according to them, the price of such transportation do not meet their expectations; moreover, 83% of these respondents consider the geographical area of the flow of the products as too small to effectively combine the ways of transportation with each other, whereas the remaining 17% of the respondents have never received multimodal transportation offers. 12% of all of the respondents find multimodal transportation unsuitable because of the specific parameters of the products. As many as 21% of the above mentioned 67% of the respondents, who have never received multimodal transportation offers, know nothing about the multimodal transportation, whereas the remaining 46% would consider the way of transporting their products by using multimodal transportation if they received real offers from the logistics companies. All these percentages illustrate the gaps in logistics service field perfectly.

Only 36% of the respondents surveyed use their own commercial vehicles in transportation, mainly in local transportation (31%), i.e. when the products are distributed in the local market, often without leaving outside Lithuania. 5% of the respondents only use their own commercial vehicles in international transportation. All those 5% of the respondents have defined themselves as middle-sized companies.

The need of the respondents for self-coordination of logistics operations and its relation to the information recei-

ved from the logistics service providers has been evaluated by applying the questionnaire survey method, according to the results of which, the need for integrated logistics services could be identified. The survey has shown that the vast majority of the respondents still have to coordinate the logistics operations, e.g., transportation is usually coordinated with warehousing, moreover, as many as 12% of the respondents do not receive information regarding the performance of certain logistics activities; therefore, the additional problems, related to the process of organization, appear. These respondents form the group of the potential users of the integrated logistics services. It could also be noted that as many as 50% of the respondents, who do not have to worry about the process of coordination of the certain logistics activities, still receive all the essential information regarding the products, e.g., the location, the terms of delivery, etc. At the same time, 7% of the respondents consider such information unnecessary.

The survey has helped to identify the logistics operations which are required for users. Taking into account the results of the survey, the model of the integrated logistics services is presented in the next chapter.

4.2. The Model of the integrated logistics services

The model is divided into two parts in accordance with the prevailing approach to logistics and understanding of its activities (Fig. 3).

The upper part of the model is based on the traditional approach, according to which logistics is the activity aimed at planning, operating, managing and controlling the material flows.

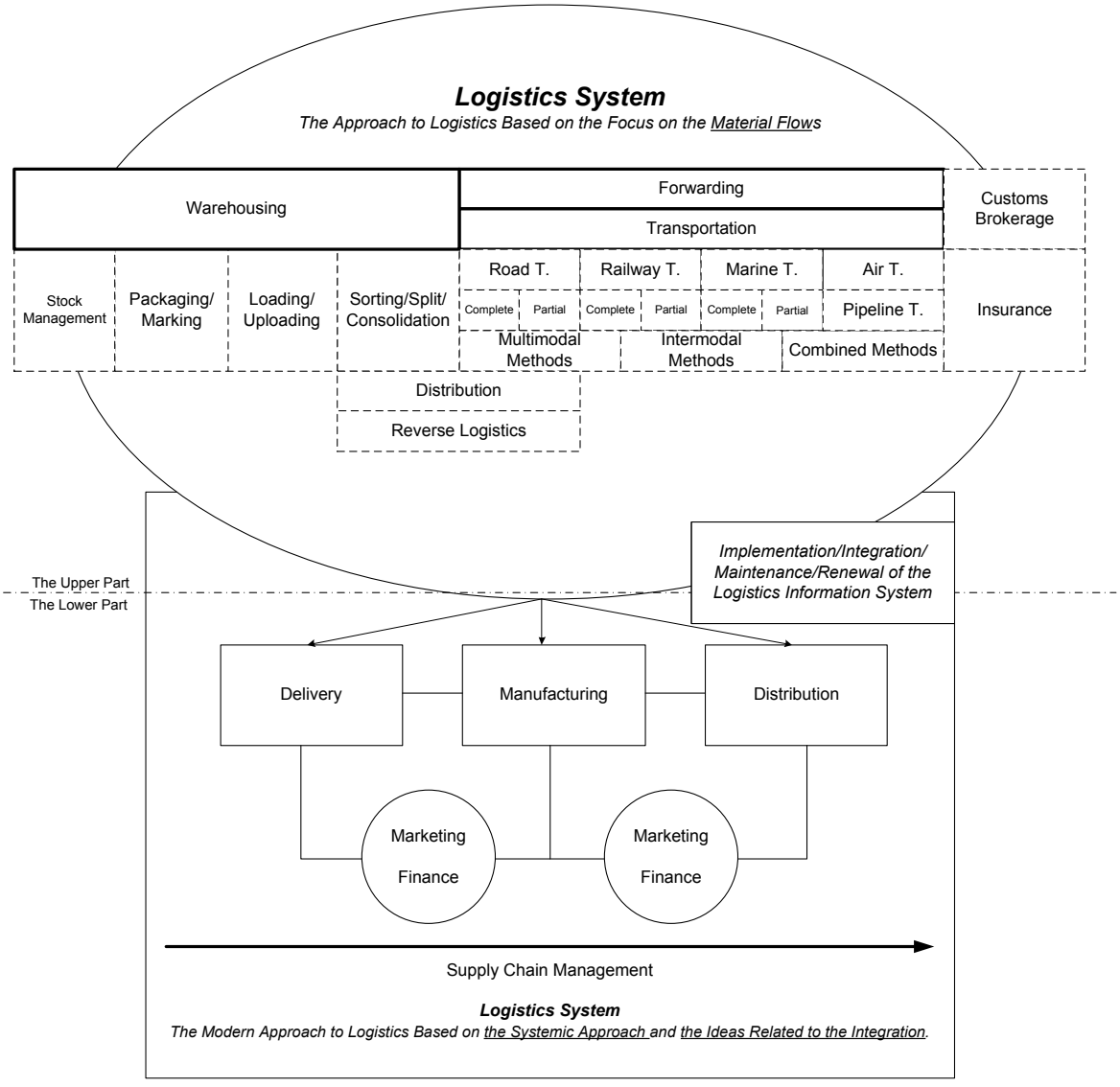

Fig. 3. The Model of the integrated logistics services (created by authors)

Warehousing and transportation, considered the fundamental logistics operations, form the basis of the services provided. Such activities as inventory management, packaging, marking, loading, uploading, sorting, split, and consolidation are defined as complementary ones, carried out in the storehouse, in addition to the warehousing. In the transportation sector, the forwarding is also distinguished, in addition to the transportation, since the entities are not always able to allocate the available capital required for the transportation properly, especially, considering time and the place; therefore, the alternative methods of transportation are required, i.e. the use of the relations related to logistics cooperation and the employment of various services delivered by other 3 PL service providers. Forwarding certainly helps the logistics service provider to gain the additional income, since this activity is not restricted to the existing limited transportation resources. Regardless of the kind of resources (e.g., the available individual ones, or delivered by the other 3 PL providers), involved in the process of the transportation of the material products, the customer should be offered the opportunity to transport the products in different quantities, i.e. either complete, expressed by the certain units of measurement (e.g., the full container, trailer, etc.), or partial, adapted to customer needs in accordance with the principles of the consolidation.

The transportation should be implemented by using all the available means of transport. The transportation involving multiple means of transport, i.e. regarding the needs, combining, minimizing costs and risks, and saving time, is often considered the most appropriate one. Thus, the integrated service provider should be ready to offer logistics solutions applying multimodal, intermodal and combined methods of transportation.

Distribution and reverse logistics are relatively new activities for most logistics service providers. These two activities are combined, covering both warehousing and transportation. The terms refer to the same material flow movement; however, its organization is performed in different directions. The process of moving in reverse direction, aimed at delivering the product from user to manufacturer, is not easy in terms of the organization, as it requires additional resources and skills; however, it is considered the necessary component of the logistics services complex, as, according to the global quality-based principles, the manufacturer seeks to meet the needs of the customer maximally (e.g., after-sales service). In order to achieve the economies of scale and reduce the costs, the customers resort to customs brokerage (developing the business with third parties) and insurance services (which is related to cargo insurance in the logistics cycle).

The lower part of the model illustrates the modern approach to logistics by identifying the "business logistics" concept, in which the logistics is presented as the way of the organization of the whole business. In this case, the customer should be offered management services, performing all the functions in other areas of supply chain – from delivery to distribution. Each of such stages of the supply chain includes either the entire logistics system (which is discussed in the upper part) or the part of it, based on the traditional approach to logistics activities. Each stage of the supply chain has a different need for the activities ensuring the material flows; however, transportation and warehousing, marked by a solid line, are considered the main activities which are involved in all the stages, whereas the activities, or the transportation means, marked by a dashed line are used depending on the need. According to the systemic approach, each stage of the supply chain is affected by other strategic business functions, i.e. marketing and finance, the management of which is considered the competence of the company providing the logistics (or business logistics) services. All the processes managed are closely related to the additional competitive advantages influenced by the economies of scale and provided to the company through the centralization of the functions related to planning, organization, management and control. In order to properly manage the activities assigned, the organization of the processes mentioned should be based on the systemic approach and the ideas of the integration.

The delivery of the integrated logistics services is difficult to understand without the efficient information system required for the control of the informational flows. The integrated information system only could enable the monitoring of the majority of the processes and their quality.

5. Conclusions

The results of the analysis of the scientific literature have shown that the main challenge of 3 PL service providers is related to the delivery of the services creating a higher value for clients' business than they can create themselves.

The survey has highlighted the need for improving the quality of the logistics services provided in Lithuania. Moreover, the low level of customer satisfaction (i.e. the needs of individual customers are not considered) and complexity of the logistics service package have been noted. In addition, there is a lack of the systematization (i.e. the customer has to take care of the compatibility of the logistics activities). Logistics-intensive companies lack the information regarding the principles of the logistics cooperation, the benefits provided, the characterization of the transportation means (in terms of their compatibility opportunities), and the application options of the logistics as the way of the management of the entire business.

According to the results of the analysis carried out, the Lithuanian companies providing the integrated logistics services are focused on the logistics as the form of the organization of the material flows; therefore, the services related to transportation and warehousing, diversified by

various additional activities, are usually offered. It has also been identified that the Lithuanian companies providing the integrated logistics services could not offer the services related to the logistics (or business logistics) as the way of the management of the entire business.

The model, combining the logistics system activities related to the organization of the material flows with the activities forming the part of the logistics as the way of the management of the entire business, has been offered. This model has also identified the logistics system, based on a modern approach, as the system built on the systematization and the ideas of integration.

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