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PHASES OF THE DEVELOPMENT OF LOGISTICS SERVICE PROVIDERS: THE CASE OF BULGARIA

This paper describes the phases of the development of a sample of logistics service providers (LSPs) based upon their service capabilities. Data was collected from 136 Bulgarian LSPs. Scores of 40 service capabilities were subjected to hierarchical cluster analysis using Ward's method, and as a result, three distinct clusters of service capabilities were derived. On the basis of the differences in service capabilities the resulting groupings were labelled as: Typical transport providers, Transport providers in development, True third-party logistics providers. The clusters were characterised in terms of the LSPs' resources and some aspects of the customer service provided by the LSPs. The use of cluster analysis for understanding the phases of the development of LSPs will be useful for researchers who want to test the existence of these phases in their countries and for managers who could formulate a strategy based on their companies' level of development.

JEL: L89; M19

Introduction

The topic of logistics service providers (LSPs) attracts growing attention both of the academics and the practitioners because LSPs play a special role in the economy. Companies perform diverse logistics activities. They can use external organizations to execute some of those activities, which is known as “logistics outsourcing” (Lambert, Stock, and Ellram 1998, p. 34). Copacino (1997) states that the main reason for logistics outsourcing is the constant increase of logistics costs as a result of globalization. Razzaque and Sheng (1998), Song et al. (2000) and Mello, Stank, and Esper (2008) cited a number of other drivers for outsourcing logistics activities: opportunities to focus on core

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competencies and reduce inventory and lead time; expanding into unfamiliar markets; a need for expertise and upgraded IT capabilities; and many others. Firms increasingly use LSPs to improve their effectiveness and efficiency. Recent research shows a reduction of 9% in logistics costs, 5% in inventory costs and 15% in fixed logistics cost (Langley, 2015).

However, 22% of the shippers report they will return at least some of their logistics activities in-house. Some of the reasons to perform insourcing are (Langley, 2013): logistics is a core competency; loss of control over the outsourced function(s); cost reductions would not be experienced; difficulties to integrate the IT system with the LSP's system; issues with the assessment and control of the LSP; inefficient relationship management; loss of the ability to drive innovation in logistics. Some studies point out that part of the problems comes from the low customer service level, provided by the LSP (for example, Wang and Regan, 2003; Wilding and Juriado, 2004; Razzaque and Sheng, 1998). Apparently, the development of LSPs is determined by the increasing customer requirements concerning the service provided by them. Customer service is viewed as part of the product offering which adds value for the customers (Dimitrov et al., 2010).

There has been little research on the phases of the LSPs' development. Most of the authors consider that this development is a result of the shifts in the demand of logistics services. Originally, the activities that manufacturing and trading companies outsourced were related to transportation and warehousing. Other basic activities were added later and nowadays companies expect to receive modern and integrated services, related to order fulfilment, including reverse logistics and waste management, integrated information flow management between supply chain members, logistics network development, customer relationship management, etc. (Ying and Dayong, 2005). Thus, the provision of different logistics services is due to the fact that, on one hand, customers expect the LSPs to meet their requirements, and on the other, LSPs have to develop appropriate capabilities to meet the demand in order to stay competitive. Van der Veecken and Rutten (1998) consider that service capabilities represent the process of products delivery "in a way that creates added value to customers", and encompass all aspects of service provision, e.g. the different logistics activities performed by LSPs for their customers.

The purpose of this research is to identify the phases of the development of LSPs on the basis of their service capabilities and to gain an understanding of the different patterns of resources and customer service aspects that stand behind these phases. To achieve this purpose the article uses cluster analysis of quantitative data, which represent measures of service capabilities, resources and customer service aspects of 136 Bulgarian LSPs. The development phases are produced on the basis of 40 service capabilities. The specifics of the resources and customer service aspects of the LSPs in the resulting groups are discussed to provide theoretical and policy implications.

This article is structured as follows: Section 2 reviews the literature in relation to logistics service capabilities, LSPs and their development. Section 3 outlines some characteristics of the context, in which the Bulgarian LSPs function. Section 4 discusses the research methodology. The results of the survey are presented in section 5. The article ends with a conclusion.

1. Literature review

1.1. Logistics service capabilities

Outsourcing is broadly applied by companies as a strategy. The „make or buy” decision was firstly considered in manufacturing (Korbankoleva, 2010, p. 76). Subsequently outsourcing, including logistics one, becomes one of the key drivers for the development of the supply chain management concept as the last stage of the logistics evolution (Rakovska, Dragomirov and Vodenicharova, 2014, p. 8). The U.S. International Trade Commission (2005) defines logistics services as “a complex web of activities designed to ensure the efficient movement of raw materials, intermediate inputs, and finished goods between suppliers, manufacturers, and consumers”. Dimitrov, Velichkova and Rakovska (2008) support the assertion that all physical and management services that are related to logistics activities and can be performed by other companies should be defined as logistics services.

Due to the wide variety of logistics services, many authors tried to classify them. Vasiliauskas and Barysien (2008) group the services, on one hand, into physical and administrative, and on the other, based on the service complexity. Physical services that require basic assets and some organizational skills, like storage, receiving and expediting, have the lowest complexity. More complex services, like cross-docking or operating vendor management inventories in stores or stock-keeping facilities, require advanced organizational skills. Administrative services that are more complex, like forecasting, inventory management, implementation of logistics strategy, etc., require well-developed management skills of the LSPs. Gudehus and Kotzab (2009) also classify the logistics services into physical and administrative, but in addition to the basic logistics services like transportation, warehousing and handling services, the authors define another group of services - value-added services, and assert that LSPs need the basic services, so that the value-added services can be sold to the customers. This view is shared by other researchers too. Andersson (1997) considers that value-added services are related to the physical handling of the material flow, but separates them from the basic logistics services, administrative services (inventory management, customer service, etc.) and IT services (EDI, for example). Berglund (2000) suggests that value-added services are all types of activity, which traditionally are not part of the transportation and warehousing services that LSPs offer. He defines value-added services as “services that add extra features, form or function to the basic service”. Bowersox and Closs (1996) argue that by definition value-added services are unique to the specific customer and extend over the firm’s basic service offering. They clarify that in the context of value-added services LSPs can perform different activities to stimulate their businesses: providing unique product packaging to their customers, offering information services, creating customized labels, placing price labels on products, and so on. On the other side, Van Hoek (2000) asserts that most of the value-added services are more related to manufacturing and distribution than to transportation and warehousing.

A number of authors attempt to classify the value-added services. Lundberg and Schönström (2001) divide them into two basic categories. The first one includes product related services such as repackaging or customizing the product. The second category encompasses specialized services, which are not directly related to the physical handling of

the product. Such services, for example, are insurance or control of the information flow. Bowersox and Closs (1996) specify five major categories of value-added services: customer-focused services, promotion-focused services, manufacturing-focused services, time-focused services and basic services. Customer-focused value-added services involve alternative ways to distribute products, including picking, packing and repacking services to facilitate distribution of a standard product, but with a unique configuration requested by the customer. Promotion-focused value-added services involve variety of services aimed to stimulate sales, for example, shipping gifts and promotion materials related to promotion activities. Manufacturing-focused value-added services involve basically postponement activities. Such activities allow delaying the product finalization until the customer order with the product specification is received. Although outsourcing postponement operations could be more costly than incorporating them in the manufacturing process, it helps to reduce the risk related to manufacturing products that are still not demanded. Time-focused value-added services include sorting, mixing and sequencing inventory before the delivery to the manufacturing facilities. These activities eliminate unnecessary work and increase the speed of handling. An example of such kind of services is the just-in-time delivery. Small sized and frequent deliveries require tough schedules which bring to the forefront the role of the logistics service providers for the successful just-in-time implementation by their customers (Rakovska, 2013, p. 208). Basic value-added services involve inventory management, order processing, invoicing, reverse logistics, etc., i.e. activities related to the order fulfilment.

On the basis of the literature review, it can be concluded that all logistics services, except the basic ones related to transportation, warehousing and handling, can be viewed as value-added services as they make the service package more valuable to the customers. Two main value-added groups can be distinguished – services, which are directly related to the physical goods flow and services, which are related to the administration of the goods flow (Table 1). In addition, the first group of services related to the physical goods flow can be divided into two separated subgroups: 1) technological operations (cutting, drying and other production customization activities, assembly, installation), that add value to the product itself, changing the product and its functions; and 2) services such as labelling, consolidation, adding promotional materials, etc., that do not change the product itself but rather prepare it as per customer requirements. Some after sale activities such as spare parts delivery, recalled products handling, etc., can also be included in this group.

Table 1

Services provided by LSPs

Basic logistics services (physical)	Value-added services			
	Services, directly related to the physical goods flow		Services, related to the administration and management of the goods flow	
	Services that do not change the product itself	Technological operations that change the product itself	Administrative services	Management services
Transportation Road Rail Maritime Inland waterways Air Intermodal Multimodal/ Combined „Door-to-door“ Courier services Express delivery Transportation of goods with special requirements (fresh, frozen, dangerous goods, out-of-gauge, etc.) Warehousing Receiving, handling, storage Storage of goods with special requirements (fresh, frozen, dangerous goods, out-of-gauge etc.) Bonded warehousing	Cross-docking Packing, repacking Labelling/ relabeling Consolidation/ deconsolidation Kitting Quality control/ product testing After sales service (spare parts, recalled products, etc.) Exhibition of products	Product assembly/ disassembly Installation Production customization (like dyeing, cutting) Product repair Recycling	Freight forwarding Cargo insurance Customs clearance Financial services (invoicing, factoring, logistics costs audit, etc.) Tracking and tracing Administration of the orders of the customers' customer IT services Call-centre services	Consultancy Inventory management Procurement (of non-critical items or packaging, for example) Delivery planning and management Development and implementation of individual logistics solutions Development and implementation of supply chain management solutions

Source: Authors' interpretation

1.2. Logistics service providers

Coyle, Bardi, and Langley (2003, p. 425) define a logistics service provider as “an external supplier that performs all or part of a company’s logistics function”. The Council of Supply Chain Management Professionals suggests a more general definition: “Any business which provides logistics services” (Vitasek, 2013, p. 117). Even though LSPs provide a great variety of logistics services, they can still be classified into one of the following categories in terms of the basic service, on which they are focused, without excluding the provision of

other services (Coyle et al., 2013, p. 120): Transportation based, warehouse/distribution based, forwarder based (non-asset based LSPs - the logistics services they provide are based on partnerships with other LSPs), financial based (provide freight payment and auditing, cost accounting and control, etc.), information based (provide web-based platforms for logistics services like transport, warehousing or “door-to-door” services). As it can be seen, all of these LSPs provide services based on assets or skills. Some LSPs cannot be classified in just one of these categories because they may provide transportation, warehousing, forwarding and financial services all together, for example. The number of these LSPs is constantly growing.

Berglund et al. (1999) divide LSP into the following three groups: Asset-based logistics providers – the services they provide primarily include the usage of their own fleet, warehouses and equipment; Network logistics providers – express parcel companies, started in the 90s, that have built global networks in order meet new customer requirements as a result of globalization; Skill-based logistics providers – typically, they don't possess assets and provide financial, consulting, IT, supply chain management services, among others.

Any attempt to classify LSPs would be incomplete without regarding the work of Langley, Allen, and Colombo (2003). Many studies have been conducted with the usage of their classification as a basis. It includes four groups of LSPs depending on the number of logistics services they provide: Second Party Logistics Providers (2PL) provide one or more single services which are not bundled together. Third-Party Logistics Providers (3PL) provide several or all logistics services a customer needs bundled in a package. Lead Logistics Providers (LLP) organize, manage and control outsourced logistics activities, that are performed by subcontractors (2PL or 3PL), and represent single points of contact for the customers. Fourth Party Logistics Providers (4PL) are defined in 1996 by Arthur Andersen (now Accenture) as integrators that assemble resources, capabilities, and technology of its own organization with other organizations to design, build and run comprehensive supply chain solution (Bade and Mueller, 1999). The Council of Supply Chain Management Professionals considers 4PL as being a separate entity established as a joined venture or long-term contract between a primary client and one or more partners (Vitasek, 2013). In the ideal case, all aspects of the client's supply chain are handled by the 4PL.

The development of the LSPs can be assessed not only by the number of the services they provide, but also based on their customization capability. Using this criterion, Hertz and Alfredsson (2003) classify LSPs into four groups: The Standard logistics service provider provides basic standardized services like transportation, warehousing, brokerage, etc.; The Service developer offers several sets of standardized services combined in packages, which can be adjusted to specific customer requirements. The idea behind these sets is to create economies of scale and scope for the LSP. The Customer adapter typically has very few but close customers. LSPs of this kind provide dedicated solutions such as taking over the customer's transportation and they are often seen as parts of the customer's organization. The Customer developer is the most advanced type of LSPs that can fully integrate with the customers and even take over their whole logistics operations.

We can notice an analogy between this classification and the one of Langley, Allen, and Colombo (2003) presented earlier. For example, the Service developer from Hertz and

Alfredsson' classification corresponds to the 3PL, and the Customer developer to the 4PL. Both classifications are well structured, with clear grouping criteria. However, the classification and terminology of Langley, Allen, and Colombo (2003) are well-known both in theory and practice. This classification is a basis for research on the structure of the logistics sector in terms of the extent of the LSPs' development, measured with the types of services they provide.

1.3. Phases of LSPs' development

We have mentioned in the previous section that Berglund et al. (1999) classify LSPs in three categories. The authors state that these three categories correspond to three periods of the LSPs' development. Every period is characterized by the type of LSPs that is prevailing in the sector in that period. The typical LSP in the first phase, which continued until 1980, provides a single basic service (transportation or warehousing) in accordance with the logistics activities outsourced by manufacturing and trading companies. The second period began in the 90s when companies like UPS and DHL started offering additional administrative services. In the third period, companies providing IT, consulting and financial services became part of the sector and contributed to the service package.

Papadopoulou and Macbeth (1998) describe the evolution of LSPs in the following five phases according to the type of services provided, the level of control that customers exercise on the services and the role of logistics in customers' strategies:

- *Introductory period (until late 1950s)*: LSPs are specialized in one service, transportation or warehousing, i.e. these are single service providers. Customers do not consider using a LSP except for the cases of a lack of capacity or a significant cost advantage.
- *Awareness period (late 1950s until mid-1960s)*: LSPs provide transportation and warehousing services, but not as a combination. Basically, these are logistics providers of separated services. Companies start to consider LSP as an alternative, because they need to stay competitive and profitable. However, losing the control over logistics activities is a big concern.
- *Necessity period (mid-1960s until the end of the 1970s)*: LSPs offer integrated transportation and warehousing services. Market changes as well as legal changes make distribution more complex. This drives companies to search for the assistance of LSPs.
- *Integration period (from the end of 1970s until the end of 1980s)*: LSPs provide not only the traditional transportation and warehousing services, but some administrative and planning services as well. The use of LSPs gets more and more attractive because of the augmented complexity of the distribution channels as a result of the internationalization.
- *Differentiation period (from the end of the 1980s until the end of the 1990s)*: LSPs provide complex combined services, including yard management, information management and many more. The role of globalization and the importance of building partnerships increase in this phase. The use of external logistics provider helps companies to differentiate themselves and stay competitive.

These five evolutionary phases have the same logic as those of Berglund et al. (1999) The additional criteria, which Papadopoulou and Macbeth (1998) use, enrich the understanding of LSP's evolution. Considering the time of conducting the research, the contemporary period, beginning in the 2000s with the advent of the supply chain management concept, has not been included as a phase. This period is characterized by extensive complex services that LSPs provide on the basis of IT and supply chain management systems.

The above mentioned studies are focused mainly on the historical side of the LSPs' evolution. It is also interesting to understand the LSPs' development from the organizational point of view. The growth of the sector and the related increasing competition are the drivers for the internal organizational changes of the LSPs. Another important factor is the growing customer requirements. Research works outline several key development directions rooted in the LSPs' strategies that allow the satisfaction of customer requirements and the increase of competitiveness. Lieb (2005) defines the following strategies that American LSPs use: Development through partnership – LSP broaden their service portfolio through the use of other LSPs' services and building partnerships; Strategy "everything for everyone" – a focus on the supply of integrated services to the clients; Customer-selective – a focus on services for satisfying a segment of attractive customers.

Carbone and Stone (2005) reveal the strategies used by the European LSPs: Growth in terms of service provision and geographical coverage through mergers and acquisitions or joint-ventures; widening market segmentation on a global scale; specialization in several complementary services; and building alliances to provide broader service coverage.

Comparing the LSPs' strategies for growth and development on the two continents, we can conclude that the basis of the strategies is the desire to meet customer requirements concerning a wide range of integrated services or a narrow range of specialized services, global or regional coverage. This is achieved by mergers and acquisitions, alliances, or specialization.

The literature review brought up the following research questions:

1. Do the LSPs in Bulgaria follow the development of the LSPs on a global scale and what are the phases of their development?
2. What resources and customer service aspects characterise the different phases?

In addressing these important issues it is possible to provide a contribution to knowledge about the dynamics of the development of LSPs.

2. Context of functioning of Bulgarian LSPs

Bulgaria has a strategic central position on the Balkan Peninsula being a crossroad between Europe and Asia. The country is crossed by 5 TEN corridors: corridors IV, VII, VII, IX and X. Although that brings a lot of obligations for the government, it creates opportunities for the logistics sector.

The volume of industrial and logistics space has doubled between 2008 and 2014 and reached 803 thousand sq. m. Specialists expect even more investments and as a result more available logistics space. In addition, the costs for logistics space are competitive in comparison with the costs in the region. Only in Romania, Hungary and Slovakia the price per sq. m is lower than the one in Bulgaria with less than 0.5 euro.

On the basis of statistical data and expert opinion, the registered companies in Bulgaria, which can be identified as LSPs, are between 10000 and 12000. One third of the most profitable companies in the top 30 of the transport companies in Bulgaria are government-owned companies (Capital Daily, 2015).

3. Methodology

3.1. Data collection

A survey questionnaire was developed to collect information from LSPs in Bulgaria. This method is widely used to research the logistics sector (Selviaridis and Spring, 2007). The use of a survey questionnaire requires reliability and validity assessment to assure that the instrument measures what is supposed to be measured and produces the best results (Dunn, Seaker, and Waller, 1994). A thorough literature review and a pilot test were conducted to ensure content validity of the questionnaire. Most of the questions use 5-point Likert scales to get an understanding of the level of agreement, usage, demand, etc. Managers in five Bulgarian LSPs evaluated the questionnaire for statements clarity. As a result some of the scale items were reformulated or dismissed.

Data were collected through personal interviews or by e-mail from February 2015 to July 2015. The contacted companies were 200 and a total of 136 responses were received. Most of the researched companies are Bulgarian privately owned companies (85%). More than 1/3 (39%) of the companies have been in business for over fifteen years, 42% were registered between 2001 and 2010 and 15% - in the last 5 years. The last shows that the logistics sector is still attractive for starting companies.

A large part of the companies (63%) are micro and small ones with less than 49 employees. Approximately one of every five companies has over 250 employees. Typically, these companies operate in several cities such as the courier companies, for example, but also haulage companies with truck drivers as main employees as well.

Concerning the LSPs' clients, most of them are local private companies, followed by foreign companies - 33%, and those with foreign ownership - 16%. The government owned companies are barely 5% of the clients. Almost 70% of the clients are located in Bulgaria and Western Europe, followed by those from Eastern Europe, Russia, the Commonwealth of Independent States countries and the Middle East. Clients from Asia, Africa, America, Australia and New Zealand are very few.

3.2. Data analysis

The phases of development of the LSPs were derived through clustering the companies based on their service capabilities. The literature review revealed that service capabilities are widely used for the assessment of the logistics sector. The cluster analysis, applied in this research, classifies the respondents in groups with similar characteristics within a group, but with different characteristics between groups (Lai, 2004). Thus, it is easy to predict the characteristics of an organization, based on its affiliation to a group.

Hair et al. (1998) suggest using both hierarchical and non-hierarchical cluster methods. The first one is used to determine the number of the clusters, and the second one – to produce the clusters. The Ward method of agglomerative hierarchical cluster analysis, which is considered as a very effective method, was used to determine the number of clusters through squared Euclidean distances. Then, a K-mean cluster analysis of the LSPs' service capabilities was performed to form the clusters. Using 7-point Likert scales, Liu and Lyons (2011) interpret the relative magnitude of the service capabilities across the clusters as high (mean ≥ 5), medium (mean ≥ 3 and <5) and low (mean < 3). The division points on a 5-point scale can be estimated as 3.7 and 2.3. Thus, LSPs with scores above 3.7 are supposed to possess high-level corresponding capabilities, between 2.31 and 3.69 – medium-level capabilities, and below 2.3 – low-level capabilities. SPSS, version 17, was used to conduct the statistical analyses.

Each cluster is characterized in terms of the LSPs' resources and different customer service aspects. Wong and Karia (2010) assert that LSPs acquire physical, human, information, knowledge and relational resources and bundle them together in various manners to create inimitable and firm-specific capabilities. Physical resources are tangible assets, related to the movement and storage of goods, and include logistics hubs, transport vehicles, warehouse facilities, and material handling equipment. Information technologies, like the physical resources, require an access to capital, but both resources allow LSPs to provide a wide range of logistics services in an effective manner. Human resources represent the employees that form the organization with their skills and qualification. The knowledge and skills help the organization bundle its resources to provide effective logistics services. Another important resource is the capability to build and maintain relationships. This capability is considered as a core capability as it is difficult to imitate and at the same time it helps LSPs to grow faster. In the logistics sector relationships can be considered in two directions. On one hand, relationships can be built between the LSP and the customer, and on the other, relationships between the organizations in the sector are important too. For example, freight forwarders' operations are based mostly on the relationships they have established with other LSPs. Such cooperation suggests knowledge transfer and information sharing and coordination, which help reduce costs and improve the quality of logistics services. The result of bundling the resources is the services that LSPs provide, i.e. the level of the service capabilities is related to the resources that LSPs possess.

Different aspects of customer service were assessed within the clusters too such as methods used by LSPs for customer service assessment, factors that influence the determination of customer service levels, causes for low-level customer service and the customer service level itself.

4. Findings

The hierarchical cluster analysis showed that the most appropriate number of clusters was 3. Subsequently, the K-means cluster analysis was used to assign the LSPs into the clusters. Cluster 1 has the least number of respondents, which represent 27% of the total number (Table 2). Cluster 3 is the biggest one with 56 respondents (41%).

Table 2

Distribution of the LSPs in the clusters

Clusters	Number of respondents	Relative share
Cluster 1	36	27%
Cluster 2	44	32%
Cluster 3	56	41%
Total:	136	

Source: Authors.

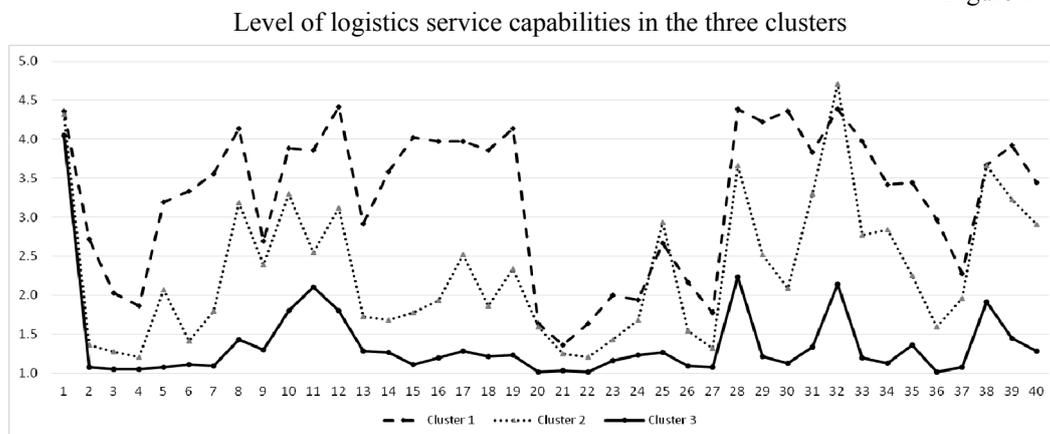
The three-cluster solution is shown in *Figure 1*. On the basis of the division points, described in Section 4.2., it can be asserted that Cluster 3 is characterised with low-level capabilities concerning almost all services, except for road transportation (mean 4.05). Thus, we can conclude that LSPs in this cluster are traditional transportation-based providers.

The second cluster consists of companies with a high level of road transportation and tracking and tracing capabilities (the last ones are part of the administration services). They assess as medium-level their capabilities concerning some other transportation related services (“Door-to-door”, courier services, express delivery, transportation of products with special requirements), warehousing and almost all administrative services (except for customs clearance), delivery planning and management, development and implementation of individual logistics solutions and supply chain management solutions. Hence, it appears that this cluster consists of LSPs that try to extend the range of their services, providing additional administrative and some management services.

LSPs in Cluster 1 possess medium or high-level capabilities in $\frac{3}{4}$ th of the services in the list. This suggests that LSPs in this cluster provide a wide range of services, which can be bundled in a package depending on the customer needs.

presents the firm age per cluster. The results clearly show that the number of the younger firms rises steadily from Cluster 1 to Cluster 3, i.e. LSPs in Cluster 1 with a broader range of logistics services have been in business for a longer time than those in Cluster 3 with prevalingly single service providers. Based on this, it can be concluded that these clusters have characteristics corresponding to different phases of the development of the Bulgarian LSPs.

Figure 1

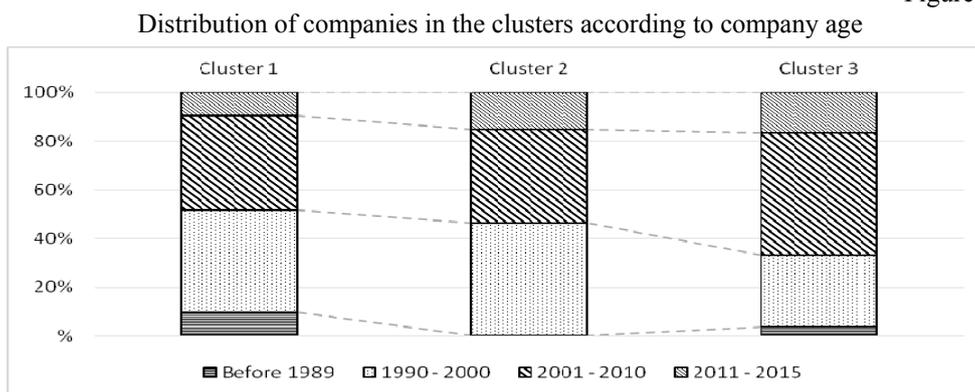


Notes: 5 – Very high, 1 – No such a capability

Legend: 1-Road transportation, 2-Maritime transportation, 3-Rail transportation, 4-Inland waterways transportation, 5-Air transportation, 6-Intermodal transportation, 7-Multimodal/Combined transportation, 8-“Door-to-door”, 9-Courier services, 10-Express delivery, 11-Transportation of goods with special requirements, 12-Warehousing, 13-Storage of goods with special requirements, 14-Bonded warehouse, 15-Cross-docking, 16-Consolidation/deconsolidation, 17-Packing, repacking, 18- Labelling/relabeling, 19-Assembling, 20-Installation/deinstallation, 21-Production customization, 22-Recycling, 23-Product testing/quality control, 24- Product repair, 25-Call-centre operation, 26-After sales service, 27-Exhibition of products, 28-Freight forwarding, 29- Cargo insurance, 30-Customs clearance, 31-Financial services, 32-Tracking and tracing, 33-Administration of the orders of the customers’ customer, 34-IT services, 35-Consultancy, 36-Inventory management, 37-Procurement management, 38-Delivery planning and management, 39-Development and implementation of individual logistics solutions, 40-Development and implementation of supply chain management solutions.

Source: Authors

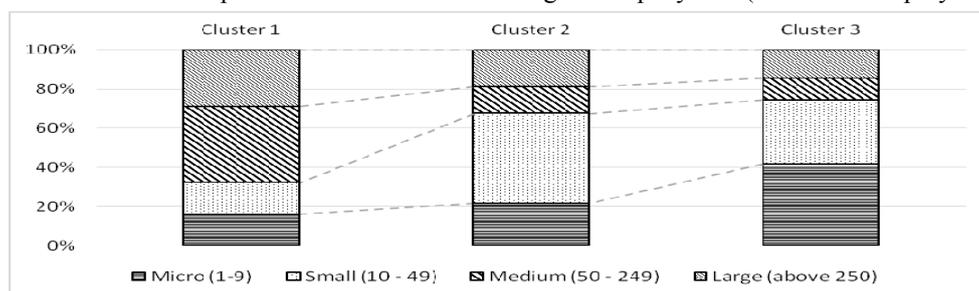
Figure 2



Source: Authors.

Another specific feature is related to the size of the LSPs in the clusters. Most of the smaller LSPs are part of Cluster 2. As it was stated earlier, this cluster is constituted of LSPs that broaden their logistics service package. These LSPs are in development and would hire more employees with the provision of new services. The share of the small firms in Cluster 2 is almost equal to the share of the micro LSPs (with less than 9 employees) in Cluster 3, confirming that most of the transportation firms are small in size.

Figure 3
Distribution of companies in the clusters according to company size (number of employees)



Source: Authors.

Source: Authors.

presents the type of the organizations in the three clusters. Two-thirds of the companies in Cluster 3 are transportation companies. Cluster 2 consists mostly of transportation/freight forwarding companies and couriers. These companies are under a great pressure to enrich their service offerings in order to stay competitive. Every second company that considers itself a third-party logistics provider and/or a warehousing company is part of Cluster 1. More than 2/3rds of the companies, which consider themselves consulting companies or customs brokers, fall in this cluster too.

Figure 5 presents the number of the services provided by LSPs across the three clusters. The differences can be clearly seen. LSPs from Cluster 3 provide a relatively small number of services and 1/3rd of them provide between 1 and 3 services. Cluster 2 is characterised by a larger scope of offered services and providers with less than 8-10 services are rare. Almost all of the providers assigned to Cluster 1 provide at least half of the listed logistics services.

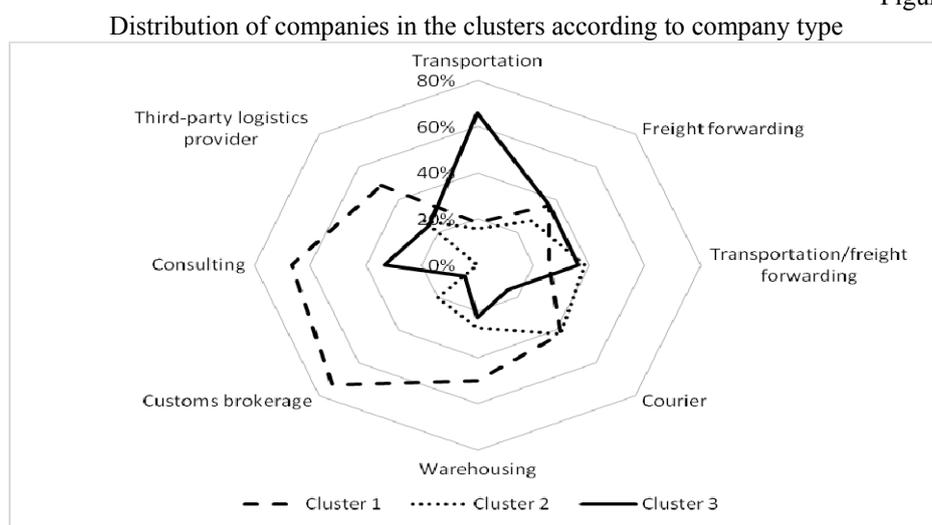
Thus, the following can be summarized regarding the clusters:

Cluster 3 accounts for 41% of the companies, which are basically small ones with less than 15 years of business operations and road transportation as a main provided service. This leads to the conclusion that LSPs in this cluster can be labelled as “*Typical transport providers (TTP)*”.

Cluster 2 accounts for 32% of the companies. One of every two LSPs in this cluster has between 10 and 49 employees and considers itself a transport/freight forwarding or a courier company. The analysis revealed that such LSPs try to broaden their service package

through the provision of additional administrative services and some management services. These are “*Transport providers in development (TPD)*”.

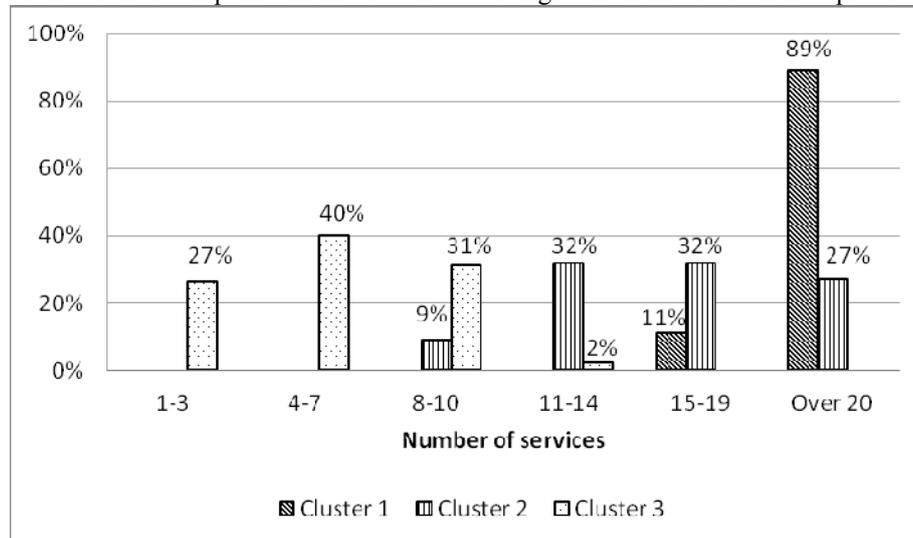
Figure 4



Source: Authors.

Figure 5

Distribution of companies in the clusters according to the number of services provided



Source: Authors.

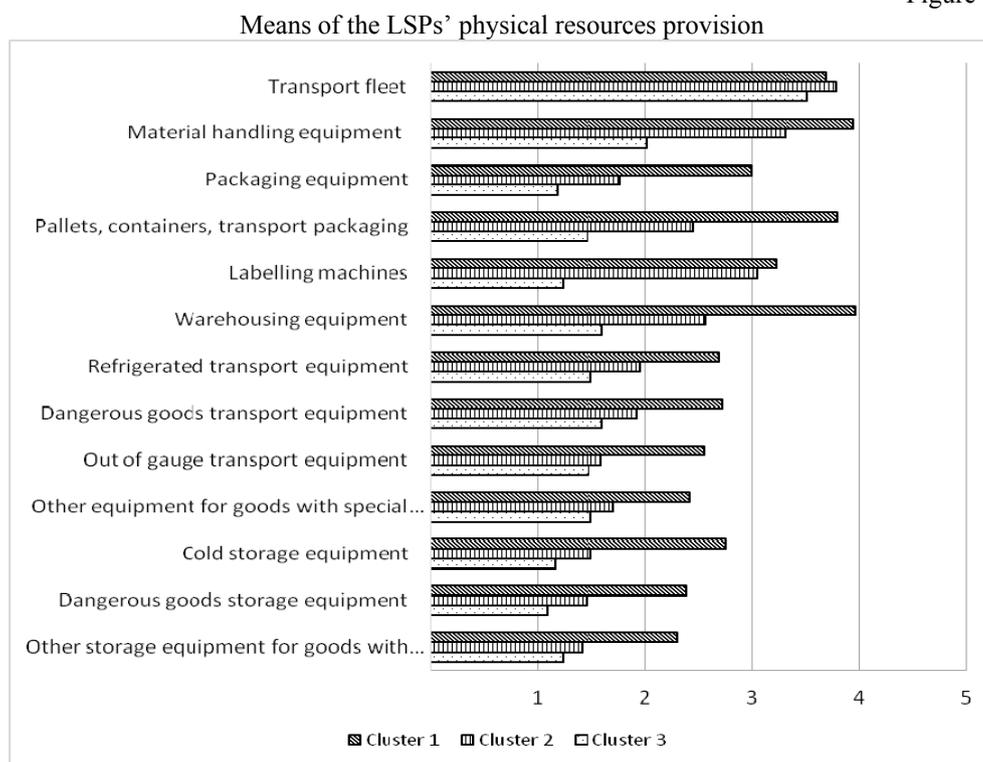
Cluster 1 has the least number of companies but they have medium or high-level capabilities for most of the listed services. These are “*True third-party logistics providers*”

(TTPL)”. Most LSPs in this cluster are medium and large ones (39% and 29% of all the LSPs in the cluster, respectively). It is the cluster with the biggest number of LSPs, which consider themselves 3PLs.

The above analysis leads to the conclusion that the Bulgarian LSPs follow the development model of the LSPs in the world. This model is expressed in the gradual expansion of the scope and complexity of the provided logistics services as the company develops.

It’s interesting to examine the resource provision across the three clusters. The results concerning the physical resources are shown in Figure 6. The TTPL providers have a higher level of provision of all the resources in comparison with the companies in the other clusters. The exception is the transport fleet, which has relatively equal means for all the clusters. We can observe that the scores of the TTPL for material handling equipment, pallets, containers and transport packaging, and warehousing equipment are relatively high (around 4) and well above the scores of the other two clusters.

Figure 6



Notes: 5-Excellent, 1-Missing or not corresponding to the requirements.

Source: Authors

Employees’ education/qualification is another criterion that can be used for the comparison of clusters. The results presented in

show a certain gap between clusters regarding the lowly qualified employees. In particular, the education and qualification of the lowly qualified employees in the TTPs (Cluster 3) are lower than the requirements for the position, while in the TTPL providers the education and qualification of these employees meet the requirements. That leads to the conclusion that LSPs in their first phase of development (Cluster 3) entrust the lowly qualified employees with functions that are unusual for their education/qualification. A possible reason for this is that they neglect the importance of the human resources education and qualification for the organisational growth. Another reason may be the lack of financial resources to hire and pay highly qualified employees. From the figure below we may notice also that, with the increase of the qualification, the difference between the clusters decreases.

Figure 7

Mean values of the compliance between employees' education/qualification and their positions' requirements

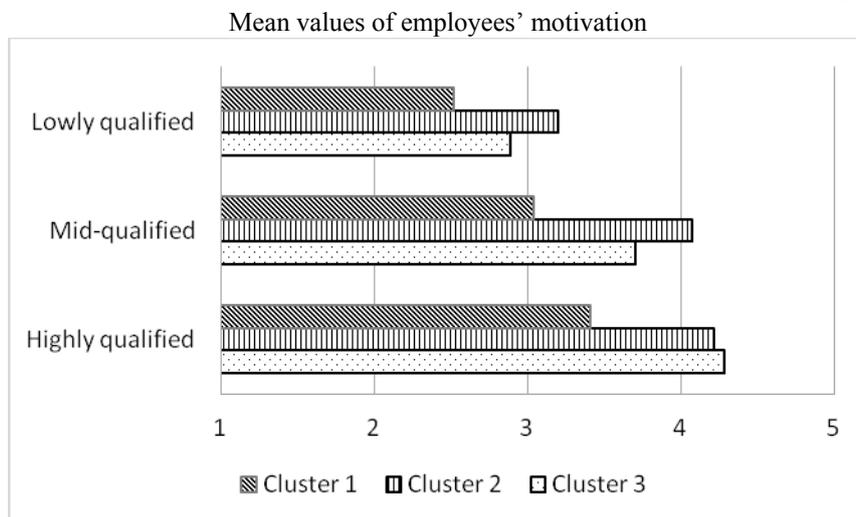


Notes: 5-Education and qualification are much higher that the requirements for the position, 1- Education and qualification are much lower that the requirements for the position.

Source: Authors

As for the human resources motivation, the survey results clearly show that with the increase of qualification, the employees' motivation also increases (Figure 8). However, there is a difference between the clusters. In Cluster 1 employees are generally less motivated. Bearing in mind that 1/3rd of the companies in this cluster are large companies, we can infer that the motivation in the bigger companies is lower. On the other hand, the mean values of Cluster 2 for lowly qualified and mid-qualified employees show the highest level of motivation among the three clusters. Thus, the companies in development, as we have defined them earlier, seem to provide growth opportunities for their employees and that leads to their higher motivation.

Figure 8



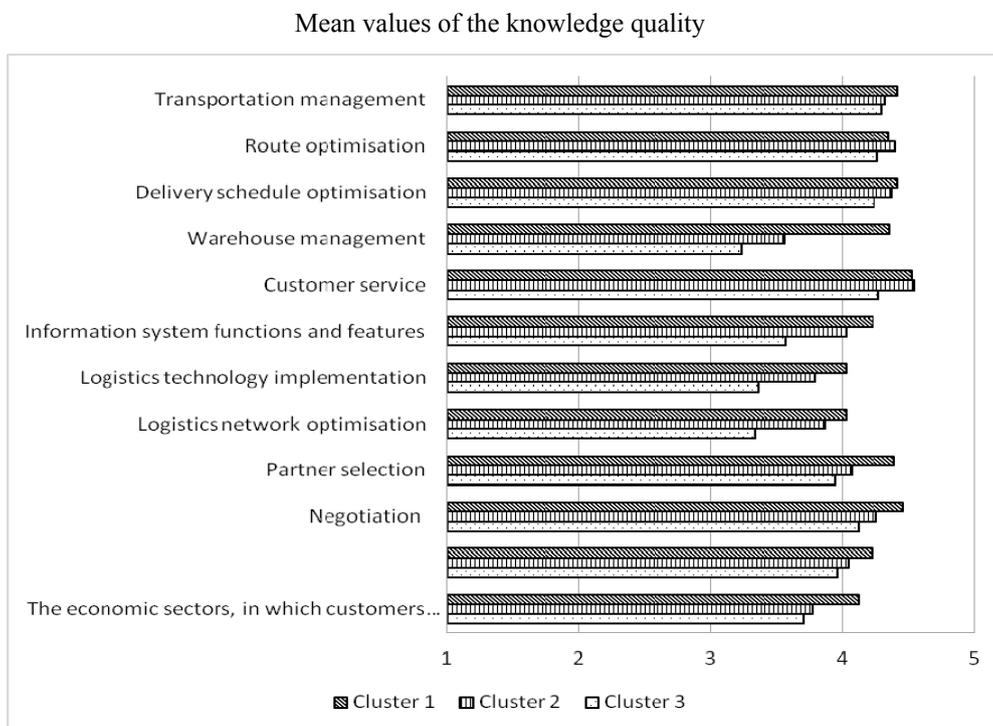
Notes: 5-Very high, 1- No motivation.

Source: Authors

The declared expert knowledge does not differ much between clusters in relation to transportation activities (transportation management, route and delivery schedule optimisation) and customer service. The mean values of the software that companies use in different areas clearly show a pattern among the three clusters (Figure 10). The values of the TTPL providers are the highest, followed by the values of the TPDs. The TTPs have the lowest mean values. Some of the areas, such as radio-frequency identification that is mostly neglected, and invoicing, transport management, tracking and tracing and EDI, which are more broadly encountered, do not differ much between clusters (Figure 9). However, the clusters have different levels of warehouse management knowledge. The assessment of Cluster 1 (which includes most of the 3PLs) is much higher than the one of the other two clusters. Cluster 1 also exceeds them in the knowledge of information systems, logistics technologies, logistics network optimization, partner selection and negotiation. This cluster's higher knowledge of the economic sectors, in which its customers operate, is a prerequisite for providing higher customer service levels.

The mean values of the software that companies use in different areas clearly show a pattern among the three clusters (Figure 10). The values of the TTPL providers are the highest, followed by the values of the TPDs. The TTPs have the lowest mean values. Some of the areas, such as radio-frequency identification that is mostly neglected, and invoicing, transport management, tracking and tracing and EDI, which are more broadly encountered, do not differ much between clusters.

Figure 9

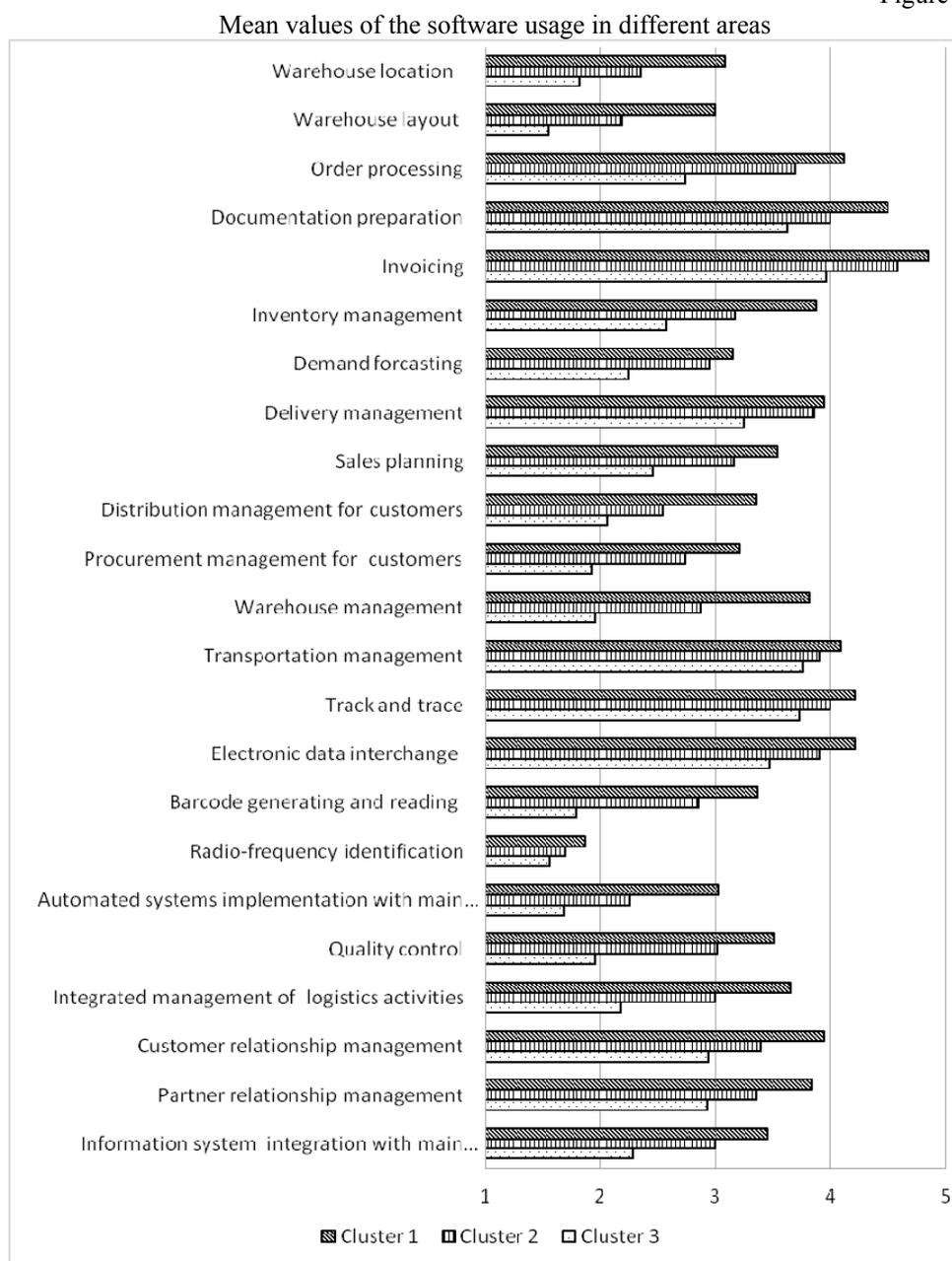


Notes: 5-Very high; 1-Very low.

Source: Authors

Relationships can be considered in two directions: 1) relationships between the LSP and other logistics providers, and 2) relationships between the LSP and its customers. Figure 11 reveals that generally the means of the first cluster (TTPLs) are higher than those of the second cluster (TPDs) except for the following items: “Providing confidential information to reduce costs”, “Sharing performance indicators” and “Each party considers the financial interests of the other one”. Most of the organisations in the second cluster are micro or small, relatively young and with future prospects for development. Thus, the higher means of the above mentioned items show the willingness of these firms to be more flexible. They need more financial resources to grow and sharing information to reduce costs seems quite reasonable. This conclusion is confirmed by their readiness to consider the other party’s financial interests. Sharing performance indicators is also important to show the direction of LSPs’ development.

Figure 10

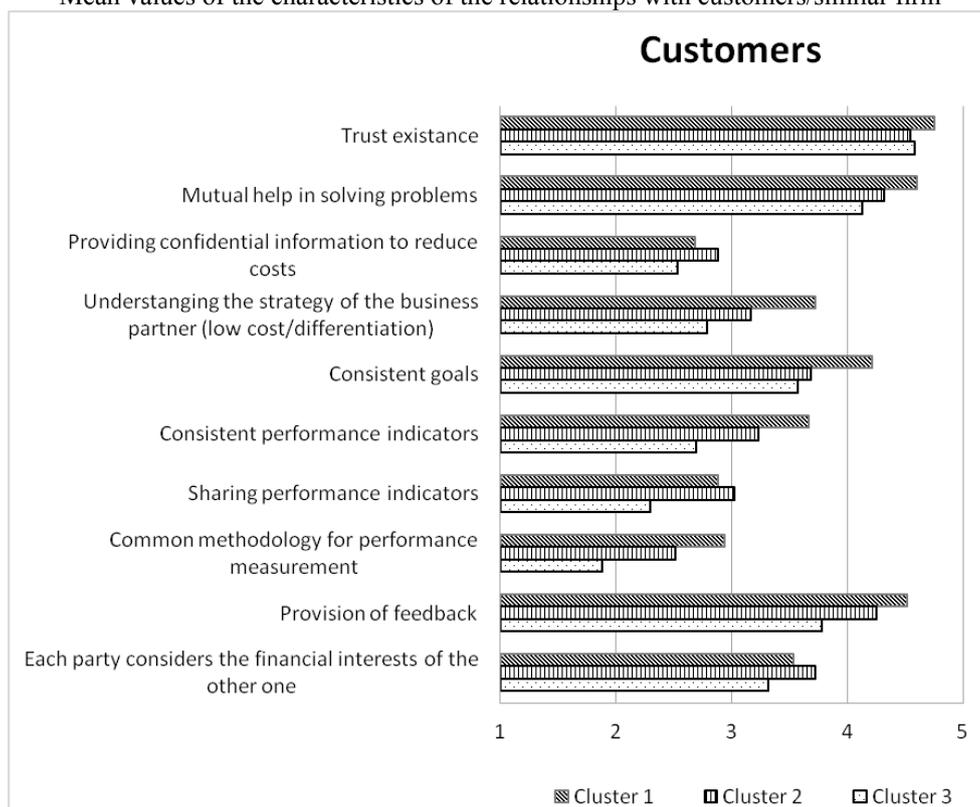


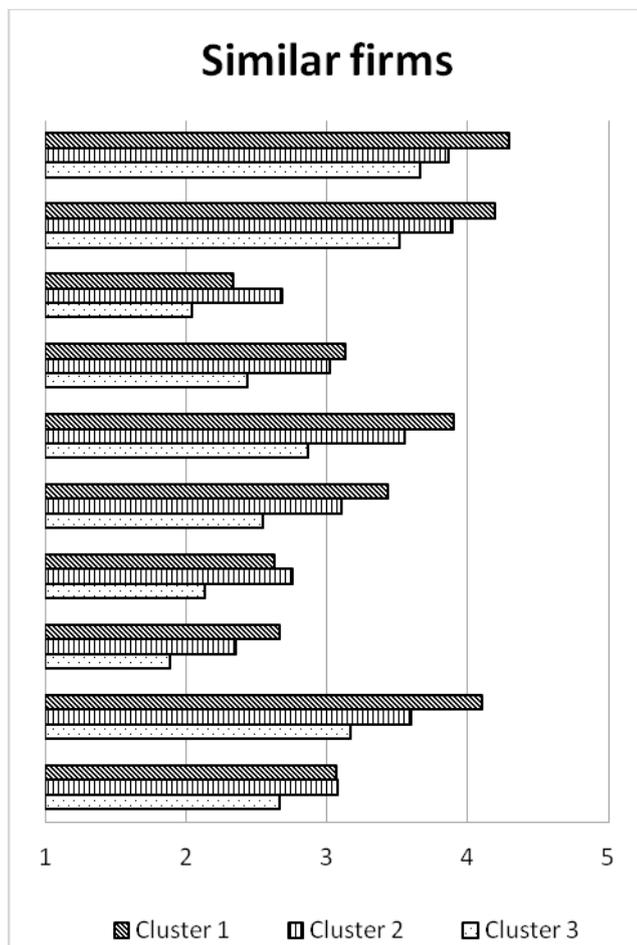
Notes: 5-Intensive usage, 1-Not at all used.

Source: Authors

We observe the same results for the relationships with similar firm, although to a lesser extent. This means that firms in Cluster 2 have recognised the importance of building partnerships within the logistics sector and rely on such a type of resources to achieve their goals.

Figure 11
Mean values of the characteristics of the relationships with customers/similar firm



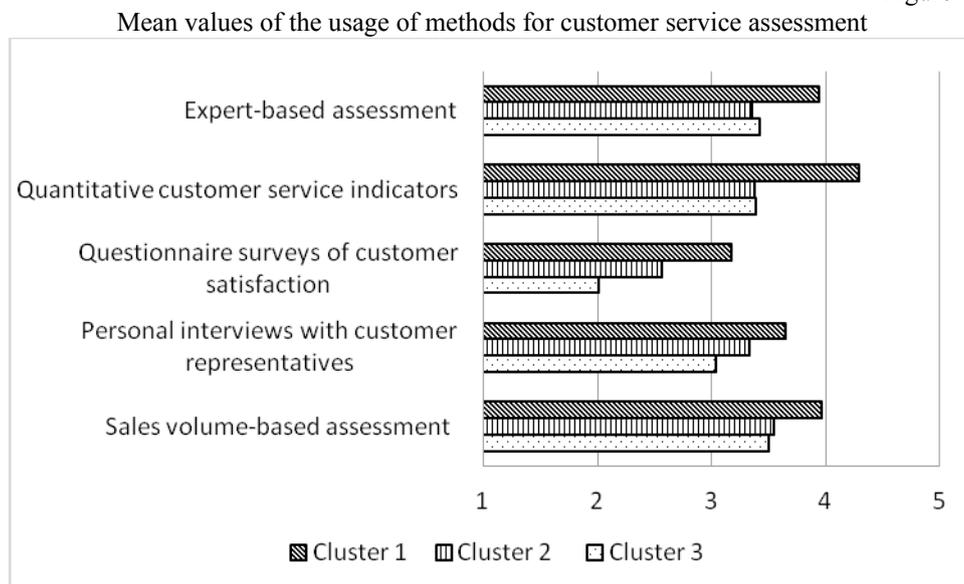


Notes: 5-Relevant to a very great extent, 1-Not at all relevant.

Source: Authors

Concerning the methods used for customer service assessment, the TTPL providers outperform the LSPs in the other two clusters in all methods (Figure 12). Cluster 2 and Cluster 3 show identical results (around 3.5) for three of the five methods, but firms in Cluster 2 exceed in the usage of surveys with questionnaires and interviews. This speaks about their striving to gain an understanding of the customer satisfaction.

Figure 12

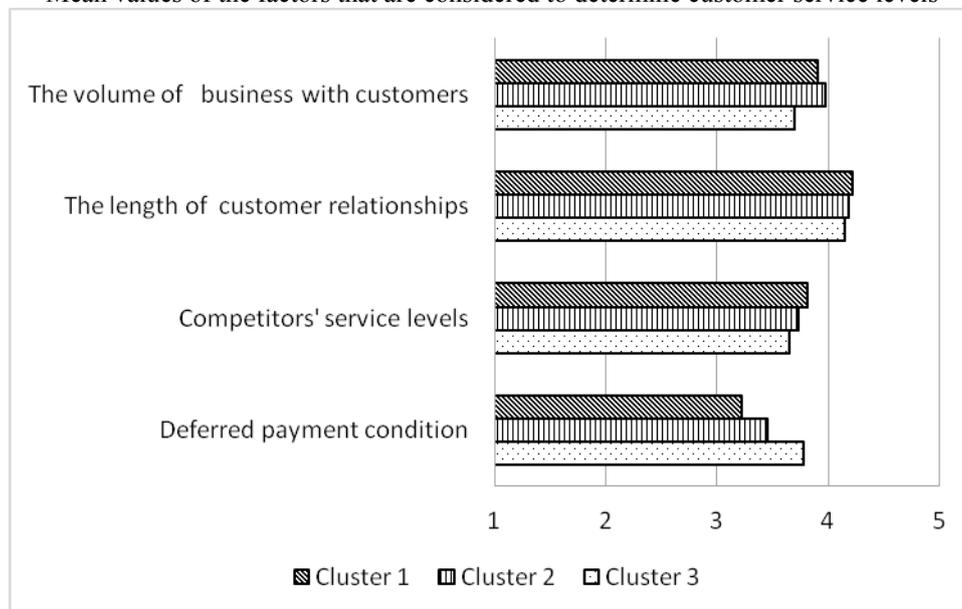


Notes: 5-Intensive usage, 1-Not at all used.
Source: Authors

Figure 13 presents the mean values of the factors that are considered by LSPs when determining customer service level. We can notice that the means for the three LSPs are almost the same. Only the deferred payment condition is an exception with an interesting pattern among the three clusters. This pattern seems to be related to the type of the LSPs that constitute the clusters. For Cluster 1 the factor “deferred payment condition” has the lowest mean. This is the cluster with larger companies, which are supposed to have enough financial resources to perform their operations even with longer deferred payment terms, if such behaviour will bring them positives. However, most of the companies in Cluster 2 and Cluster 3 are smaller in size and the longer is the deferred payment term, the bigger is the threat of worsening their financial state. Thus, this factor is considered to a greater extent when customer service levels are determined.

Figure 13

Mean values of the factors that are considered to determine customer service levels



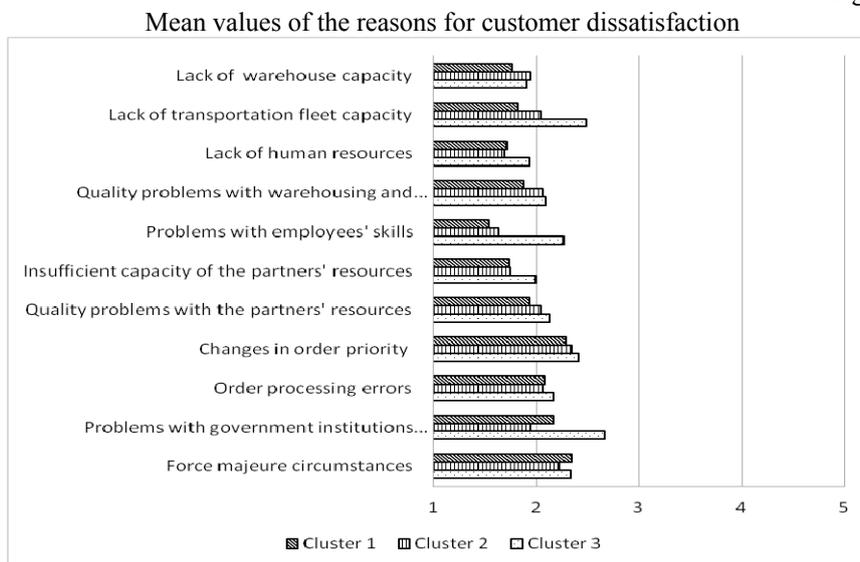
Notes: 5-Very often considered, 1-Never considered.

Source: Authors

The mean values of the reasons for customer dissatisfaction, presented in *Figure 14*, reveal that the cluster with the true third-party logistics providers has the lowest values of all measures, except for two, which are considered external to the “firm-partner-client” chain - problems with government institutions and force majeure circumstances. Thus, firms in this cluster can manage most of the reasons for customer dissatisfaction, but should concentrate on reducing the influence of government institutions and force majeure circumstances on customer service.

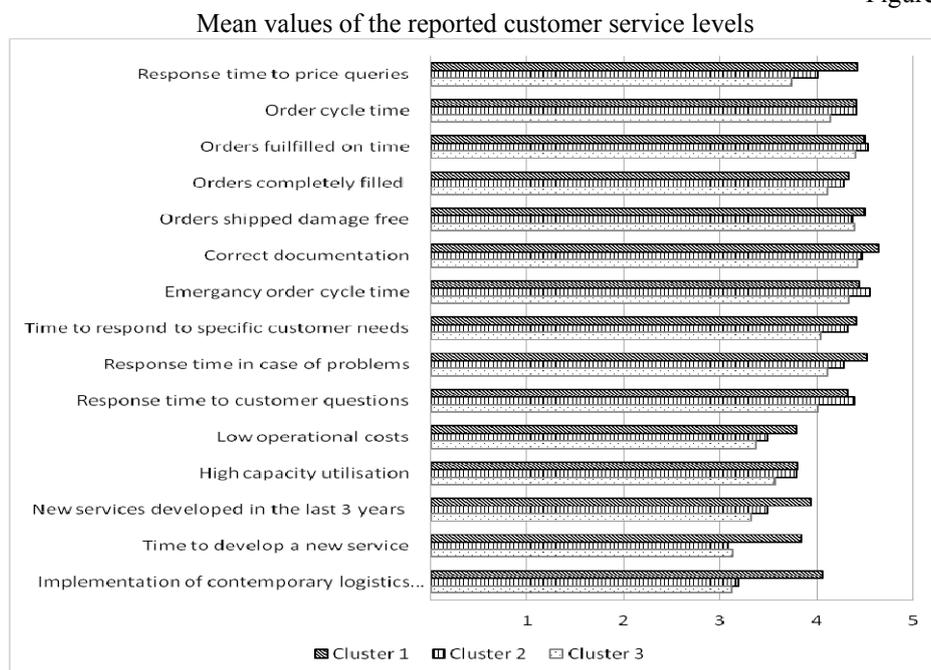
Figure 15 presents the mean values of the reported customer service levels. All the clusters have close values for all the measures except for three of them, which have higher scores for Cluster 1 - new services developed in the last 3 years, time to develop a new service and implementation of contemporary logistics technologies. These three measures are related to the company ability to be flexible and innovative and thus determine the LSPs’ competitiveness. An important aspect to understand the results better is the service portfolio of the firms in Cluster 1. As it was stated earlier, these LSPs provide a large number of logistics services in order to respond to the growing needs of their customers in a timely manner. That explains the higher values of this cluster for the above mentioned three measures.

Figure 14



Notes: 5-Very frequent reason, 1- Not a reason.
Source: Authors

Figure 15



Notes: 5-Much higher than the industry average; 1-Much lower than the industry average.
Source: Authors

Conclusion

The logistics market is growing constantly over the last five years, increasing the interest in the logistics sector. In support of this fact is the doubled volume of the industrial and logistics space in Bulgaria since 2008. Meanwhile, the sector is growing although at a slower pace. For the 10 years between 2003 and 2013 the number of the firms in the logistics sector has increased by 16%, but the structure of the sector, with regard to firm size, has remained the same. LSPs play an important role in the economy because they contribute to the efficiency of supply chain processes through the development of service capabilities corresponding to the needs and requirements of customers.

This research work contributes to the knowledge of LSPs. Based on empirical data the article reveals the development phases of the LSPs in relation to their service capabilities and outlines the characteristics of these phases concerning company resources and different aspects of customer service. It is useful for LSPs' managers because it reveals the needed resources in the evolution of a LSP and the customer service aspects that should be emphasised on in order to increase competitiveness in the changing environment.

In relation to the raised research questions the study revealed three phases of the development of LSPs: *Typical transport providers*, offering one basic service, which is most commonly transportation. LSPs in the first phase are mostly small, considerably young firms with resources, related to the basic service they provide; *Transport Providers in development* that add some other administrative or management services. LSPs in the second phase are also mostly small, but they seek for opportunities to broaden the range of their services. Although the levels of physical resources are relatively higher for this phase, firms rely more on well-developed human resources and partner relationships to meet their goals; *True third-party logistics providers*, offering a broad range of logistics services that can be bundled in a package depending on the customer needs. The share of LSPs in the third phase of development is smallest but it is represented by many of the medium and large firms. Also, many LSPs that consider themselves third-party logistics providers have the characteristics of this development phase. They possess the highest level of resources in comparison with the companies in the other phases.

The groups formed as result of the cluster analysis and the characteristic resources and customer service aspects in each group provided a clear understanding of the typical features of these phases – what are the resources and customer service aspects in relation to which some LSPs lag behind and what are the resources and customer service aspects that are applied by the leaders. The outstanding aspect of this development is the addition of services to the main package and the development of the necessary resources for providing customers with an integrated solution.

The transition from one phase to another is accompanied by difficulties and constraints such as time and financial constraints, among others. Not all firms possess the needed capital to afford all the required physical resources, for example. The relatively small Bulgarian market does not allow the LSPs to achieve economies of scale. Thus using bank credits to support investments may not be attractive. An important constraint is also the variety of LSPs concerning the services, size, market orientation, strategic goals, etc.

Hence, LSPs should carefully select to offer those services that would contribute mostly to customer satisfaction. The organizational resistance to change can also be considered as a constraint. The implementation of new information technologies, for example, enables process automation, which leads to technological unemployment (loss of jobs caused by a technological change).

References

- Димитров, П., Величкова, Е. и Раковска, М. 2008. Развитие на логистичния сектор в България. УИ „Стопанство“, София. [Dimitrov, P., Velichkova, E. and Rakovska, M. 2008. Development of the Logistics Sector in Bulgaria. UI “Stopanstvo”, Sofia].
- Димитров, П., Толев, М., Тодоров, Ф., Величкова, Е., Корбанколева, И. 2010. Логистични системи. УИ „Стопанство“, София. [Dimitrov, P., Tolev, M., Todorov, F., Velichkova, E., Korbankoleva, I. 2010. Logistics Systems. UI “Stopanstvo”, Sofia].
- Корбанколева, И. 2010. Снабдяване. Част първа: Същност и планиране на снабдяването. УИ Стопанство, София. [Korbankoleva, I. 2010. Procurement. Part I: Nature and Planning of Procurement. UI “Stopanstvo”, Sofia].
- Раковска, М. 2013. Управление на веригата на доставките. Издателски комплекс - УНСС, София. [Rakovska, M. 2013. Supply Chain Management. Publishing Complex - UNWE, Sofia].
- Раковска, М., Драгомиров, Н. и Воденичарова, М. 2014. Развитие на логистиката в българските преработвателни и търговски предприятия. Издателски комплекс - УНСС, София. [Rakovska, M., Dragomirov, N. and Vodenicharova, M. 2014. Development of Logistics in Bulgarian Manufacturing and Trading Companies. Publishing Complex - UNWE, Sofia].
- Andersson, D. 1997. *Third Party Logistics - Outsourcing Logistics in Partnerships*. Ph.D. Diss., the International Graduate School of Management and Industrial Engineering, Linköping.
- Bade, D. J. and Mueller, J. K. 1999. New for the millennium: 4PL. *Transportation and Distribution* 40(2): 78-81.
- Berglund, M. 2000. *Strategic positioning of the emerging third-party logistics providers*. Ph.D. Diss., the International Graduate School of Management and Industrial Engineering, Linköping.
- Berglund, M., van Laarhoven, P., Sharman, G., and Wandel, S. 1999. Third-party logistics: Is there a future? *The International Journal of Logistics Management* 10 (1): 59-70.
- Bowersox, D. J. and Closs, D. J. 1996. *Logistical management: The integrated supply chain process*. McGraw-Hill Companies, New York.
- Capital Daily. 2015. Transport, freight forwarding, logistics. Special edition, October.
- Carbone, V. and Stone, M. A. 2005. Growth and relational strategies used by the European logistics service providers: Rationale and outcomes. *Transportation Research Part E: Logistics and Transportation Review* 41 (6): 495-510.
- Copacino, W.C., 1997. *Supply chain management: The basics and beyond*. New York: St. Lucie Press/APICS.
- Coyle, J. J., Langley Jr., C. J., Novack, R. A. and Gibson, B. J. 2013. *Supply chain management: A logistics perspective. (9th ed.)*. International edition: South-Western Cengage Learning.
- Coyle, J. J., Bardi, E. J. and Langley Jr., C. J. 2003. *The Management of business logistics: A supply chain perspective. (7th ed.)*. Ohio: South-Western, Thomson.
- Dunn, S., Seaker, R. and Waller, M. 1994. Latent variables in business logistics research: Scale development and validation. *Journal of Business Logistics* 15 (2): 145-172.
- Gudehus, T., Kotzab, H. 2009. *Comprehensive logistics*. Berlin-Heidelberg-New York: Springer.
- Hair, J F, Tatham, R L., Anderson, R E. and Black, W. 1998. *Multivariate data analysis. (5th ed.)* New Jersey: Prentice Hall International.
- Hertz, S. and Alfredsson, M. 2003. Strategic development of third party logistics providers. *Industrial Marketing Management* 32 (2): 139-149.

- Lai, K. 2004. Service capability and performance of logistics service providers. *Transportation Research Part E: Logistics and Transportation Review* 40 (5): 385–399
- Lambert, D. M., Stock, J. R. and Ellram, L. 1998. *Fundamentals of logistics management*. International edition. Singapore: McGraw Hill.
- Langley, C. J., Allen, G. R. and Colombo, M. J. 2003. *Third-party logistics study results and findings of the 2003 eighth annual study*. Georgia: Georgia Institute of Technology, Cap Gemini, Ernst and Young, and FedEx Corporate Services.
- Langley, J. 2013. *2013 third-party logistics study. The states of logistics outsourcing. Results and findings of the 17th annual study*. <http://www.3plstudy.com/> (accessed November 12, 2015).
- Langley, J. 2015. *2015 third-party logistics study. The states of logistics outsourcing. Results and findings of the 19th annual study*. <http://www.3plstudy.com/> (accessed November 12, 2015).
- Lieb, R. C. 2005. The 3PL industry: Where it's been, where it's going. *Supply Chain Management Review* 9 (6): 20–27.
- Liu, C. L. and Lyons, A. C. 2011. An analysis of third-party logistics performance and service provision. *Transportation Research Part E: Logistics and Transportation Review* 47 (4). Elsevier Ltd: 547–570.
- Lundberg, H. and Schönström, M. 2001. *Segmentation of the third party logistics market: Based on logistics requirements*. Thesis: No 2001:25, Graduate Business School, School of Economics and Commercial Law, Göteborg University.
- Mello, J. E., Stank, T. P. and Esper, T. L. 2008. A model of logistics outsourcing strategy. *Transportation Journal* 47 (4): 5-26
- Papadopoulou, C. and Macbeth, D. K. 1998. Third party logistics evolution: Lessons from the past. *Proceedings of Logistics & Supply Chain Management Conference*, Vienna.
- Razzaque, M. A., and Sheng, C. C. 1998. Outsourcing of logistics functions: A literature survey. *International Journal of Physical Distribution & Logistics Management* 28 (2): 89–107.
- Selviaridis, K. and Spring, M. 2007. Third party logistics: A literature review and research agenda. *The International Journal of Logistics Management* 18 (1): 125–150.
- Song, Y.Y, Maher, T.E, Nicholson, J. D., Gurney, N. P. 2000. Strategic alliances in logistics outsourcing. *Asia Pacific Journal of Marketing and Logistics* 12(4): 3–21.
- Van der Veecken, D. J. M. and Rutten, W. G. M. M. 1998. Logistics service management: Opportunities for differentiation. *The International Journal of Logistics Management* 9 (2). Emerald Group Publishing Limited: 91–98.
- Van Hoek, R. I. 2000. The purchasing and control of supplementary third-party logistics services. *Journal of Supply Chain Management* 36 (4): 14–26.
- Vasiliauskas, A. V. and Barysiene, J. 2008. Review of current state of European 3pl market and its main challenges. *Computer Modelling and New Technologies* 12 (2): 17–21.
- Vitasek, K. 2013. *Supply chain management terms and glossary*, Council of Supply Chain Management Professionals, https://cscmp.org/sites/default/files/user_uploads/resources/downloads/glossary-2013.pdf (accessed March 2, 2016).
- U.S. International Trade Commission. 2005. Logistic services: An overview of the global market and potential effects of removing trade impediments. Investigation No. 332—463, Publication 3770, <http://www.usitc.gov/publications/332/pub3770.pdf>, (accessed January 7, 2016).
- Wang, C, and Regan, A.C. 2003. Reducing risks in logistics outsourcing. *Proceedings of the TRB 82nd Annual Meeting*.
- Wilding, R. and Juriado, R. 2004. Customer perceptions on logistics outsourcing in the European consumer goods industry. *International Journal of Physical Distribution & Logistics Management* 34 (8): 628–644.
- Wong, C. Y. and Karia, N. 2010. Explaining the competitive advantage of logistics service providers: A resource-based view approach. *International Journal of Production Economics* 128 (1): 51-67.
- Ying, W. and Dayong, S. 2005. Multi-agent framework for third party logistics in E-commerce. *Expert Systems with Applications* 29 (2): 431–436.