

Slobodan Aćimović
University of Belgrade
Faculty of Economics

Veljko M. Mijušković
University of Belgrade
Faculty of Economics

Filip Ž. Bugarčić
University of Kragujevac
Faculty of Economics

LOGISTICS SYSTEM AS A FACTOR OF BUSINESS DEVELOPMENT: THE CASE OF THE REPUBLIC OF SERBIA

Logistički sistem kao faktor razvoja poslovanja – primer Republike Srbije

Abstract

Logistics is becoming one of the most important sectors of the economy and an indispensable element in the process of international trade and industrial development. The aim of this paper is to examine the role and importance of logistics system in improving the performance of companies in different industries and to identify its key dimensions that need to be improved in order to create a favorable business environment within a given economy. The logistics system is observed through two dimensions- "hard", which refers to the elements of physical infrastructure, and "soft" which includes segments related to logistics services and customs procedures. The research was conducted on a sample of 298 companies in the Republic of Serbia. The research methodology includes factor analysis based on which, the positive impact of the logistics system on the selected performance of companies has been proven. In addition, the difference in the importance of certain elements of logistics system between manufacturing and non-manufacturing companies has been proven. The results of the research can be of particular use for policy makers, as an instrument for improving the overall business environment through the development of individual logistics subsystems. Also, this evidence allows better insight for individual companies into the effects of different segments of logistics on business development, according to the industry.

Keywords: *logistics, physical infrastructure, logistics services, business environment, company performance*

Sažetak

Logistika postaje jedan od najvažnijih sektora privrede i neizostavan element u procesu međunarodne trgovine i industrijskog razvoja. Cilj rada jeste da ispita ulogu i značaj sistema logistike u unapređenju performansi preduzeća u različitim granama industrije, kako bi se identifikovale njene ključne dimenzije koje je potrebno unaprediti radi stvaranja povoljnog poslovnog ambijenta u okviru date privrede. Sistem logistike posmatra se kroz dve dimenzije- "tvrdu", koja se odnosi na elemente fizičke infrastrukture, i "meku", koja uključuje segmente vezane za logističke usluge i carinske procedure. Istraživanje je sprovedeno na uzorku od 298 kompanija na teritoriji Republike Srbije. Metodologija istraživanja uključuje faktorsku analizu na osnovu koje je dokazan pozitivan uticaj sistema logistike na odabrane performanse preduzeća. Pored toga, dokazana je i razlika u važnosti određenih elemenata sistema logistike između proizvodnih i neproizvodnih preduzeća. Rezultati sprovedenog istraživanja mogu naročito koristiti kreatorima ekonomske politike, kao instrument u unapređenju ukupnog poslovnog ambijenta kroz razvoj pojedinačnih podsistema logistike. Takođe, navedeni dokazi omogućavaju individualnim preduzećima bolji uvid u efekte individualnih segmenata logistike na razvoj poslovanja, shodno pripadajućoj grani industrije.

Ključne reči: *logistika, fizička infrastruktura, logističke usluge, poslovno okruženje, performanse preduzeća*

Introduction

Logistics performance within an economy plays an important role in different economic and industrial development areas. Logistics can be defined as a part of a supply chain that plans, implements, and controls the efficiency of the flow of goods, services and information from a place of origin to a place of consumption [20]. The importance of those operations and the level of development of national logistics system in modern economies is becoming more pronounced, especially in the global environment and with increasing internationalization of business. Demands for continuous economic growth and development, improvement of competitive position, and intensification of international trade impose a satisfactory level of logistics performance within a country as an imperative. These requirements are also in line with individual goals of different companies, which may significantly depend on the level of development in this sector and its individual determinants.

In the context of individual industries and companies from different sectors, there is no or scarce evidence in the existing literature about the influence and importance of logistics systems and their elements for business development. For that reason, the subject of this paper is to examine the role and contribution of logistics in improving business performance in companies from various industries in the Republic of Serbia. The main goal is to determine the importance of this sector and differences in the needs for individual industries in the context of national logistics system. As a starting point in understanding the quality of this system and conceptualizing statements and research hypotheses, the framework for research methodology is taken from the Logistics Performance Index (LPI), published by the World Bank, which contains and explains key determinants of the logistics system. The division of logistics into the “hard” dimension, which refers to physical infrastructure, and “soft”, which refers to service components [3], provides a basis for formulating the following research hypotheses:

H1: The quality of the logistics system has a positive impact on companies’ performance.

H1a: The development of physical infrastructure has a positive impact on companies’ performance.

H1b: The quality of logistics services has a positive impact on companies’ performance.

The reason for individual formulation and separate testing for two segments of the logistics system is found in the evidence of their unequal importance [23]. Testing the degree of individual influence allows making conclusions about the need to improve certain dimensions within the national logistics system, where the overall sample can identify differences at the level of individual industries, which gives the reason to formulate the second hypothesis:

H2: The importance of logistics system components varies between companies within different industries.

H2a: The importance of physical infrastructure, as a component of logistics system, differs between manufacturing and non-manufacturing sector.

H2b: The importance of logistics services, as components of the logistics system, differs between manufacturing and non-manufacturing sector.

The structure of the article is as follows: after the introduction, the importance of logistics and its contribution to the development of various economic segments at a macro-economic level is presented, which provides a basis for examining the impact of logistics performance at the level of individual companies. After that, the level of development of logistics system in the Republic of Serbia is analyzed since the research was conducted in companies operating in this economy. The next part of the article presents the methodology of empirical research, followed by the presentation and discussion of the obtained results. In the end, concluding remarks are presented with given scientific and practical implications.

Importance of logistics for economic and business development

The existing literature provides ample evidence about importance of logistics at the level of overall economic and industrial development. The primary contribution of logistics system is reflected in its impact on increasing the intensity of international trade. The efficiency of countries’ participation in global markets and international trade

initiatives [4], placement of industrial products, and smooth running of goods transport, significantly depend on the quality of logistics system and its continuous development [9]. Improving logistics performance can have different effects depending on the level of development of countries [6], especially affecting developing countries [20] and small open economies [30] where it leads to strong growth of foreign trade flows. Logistics operations have a significant impact on costs, time, reliability and complexity in performing import and export activities [11]. There is evidence of significant and positive impact of logistics on international trade intensification, which makes it one of the key non-tariff trade facilitation factors [14, 5]. Improving logistics performance also provides evidence of reducing the cost of the distance between countries [5], as a major obstacle in the process of international trade. In this way, the quality of the logistics system provides a basis for individual market players to achieve various goals related to improving business performance. A special challenge is the development of logistics systems in countries without direct access to maritime transport, as the most massive and cost-effective form of international trade [24]. These countries, including the Republic of Serbia, must find a way to improve their position for more efficient participation in international markets.

In the context of global economic competitiveness, according to the World Economic Forum [29], most economies are still far from satisfactory levels of competitiveness, which highlighted the need to find new patterns to improve the competitive position of countries and individual companies. The contribution to competitive advantage is recognized through the chance of logistics in reducing total costs, which can be a key factor in achieving various development goals, raising the level of national competitiveness and stimulating economic growth [7]. Logistics respects the relations between different economic sectors, providing a basis for economic activities related to the flow of goods, services, and information, where logistics activities contribute to reducing costs and raising the efficiency, which provides the potential for improvement in international environment and global supply chains [12]. Logistics also stands out as an important factor in making investment decisions and its quality has a positive effect on the

inflow of foreign investment [19]. From the institutional point of view, political stability, quality of infrastructure, application of modern technology, level of education, and quality of available labor force can be singled out as key determinants of logistics system development in the global environment [26]. The positive externalities and direct consequences of improvement in this sector have been identified through the regional development in various sectors, including tourism [16]. In the period of extraordinary circumstances and crisis conditions, the situation caused by the COVID-19 pandemic additionally emphasized the importance of all elements of global supply chains. Efficient logistics activities such as timely distribution and synchronization of operations, together with respect for various restrictions in the execution of activities and realistic assessment of costs and time, can greatly contribute to amortizing the negative consequences of the crisis [15]. Modern industries have to be considered in the context of international production and trade, where complexity is particularly pronounced in extraordinary circumstances such as the COVID-19 pandemic. This crisis has highlighted the need for countries to participate more effectively in global supply and value chains [17], with logistics as a key element in this process. The identified importance of logistics in different economic circumstances provides an opportunity to examine its contribution to business development within an economy.

In the context of individual companies, logistics is increasingly perceived as a potential for change in business management, with key importance given to national logistics resources and competencies. The potential and quality of logistics performance could aid the efficiency of the operations and help companies in achieving the expected economic results in different markets [21]. The continuous growth of this sector is particularly important in developing countries as Western Balkans economies, where adequate planning, management, and control system is a key determinant of profitability in this [25] and other related sectors of the economy that depend more or less on the efficiency of logistics activities. The importance of logistics can also be identified in the current era of digitalization, where the application of modern technologies through the concept of Logistics 4.0

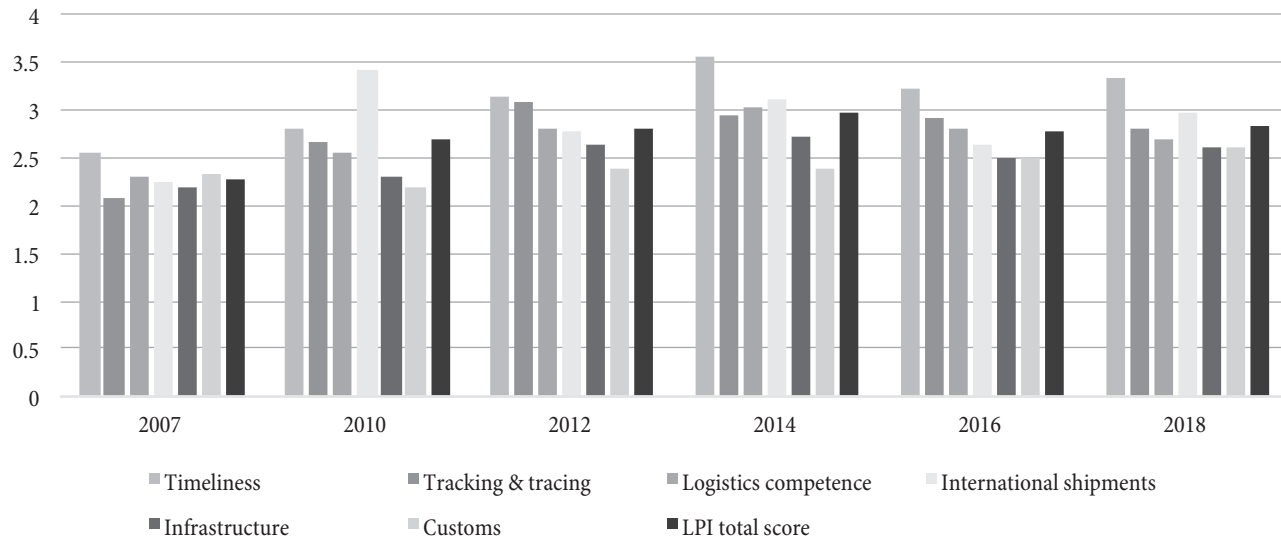
provides a basis for improving the efficiency of business activities, which consequently affects the development of the entire economy [18]. One of the key contributions of logistics from a microeconomic aspect is to increase the level of customer satisfaction based on the quality of logistics services [22], which could determine the success of companies from different industries, especially those that largely depend on distribution and transport systems. In addition, the development of logistics performance within an economy provides the basis for the realization of sustainable development goals and the practical implementation of green supply chain and development of reverse logistics systems, which among other factors [13; 1; 2], requires appropriate infrastructure and service support within the national logistics system. This indicates the assumption that, in addition to identified contribution at the macroeconomic level, the logistics system provides strong potential for improving the business performance

of individual companies from different industries within a particular economy.

Insight into the level of logistics system development in the Republic of Serbia

In order to assess the quality of the logistics system in the Republic of Serbia, an insight into the current level of development is expressed through the World Bank’s LPI composite index (Chart 1). This index, published in 2007 for the first time, provides an assessment of logistics system quality, biannually, based on six components: customs, infrastructure, ease of arranging international shipments, quality and competence of logistics service providers, ability to track consignments, and timely delivery. Individual as well as overall assessment of these dimensions indicate the quality of logistics in an economy. The last available data is from 2018, where the LPI score for the Republic of Serbia

Figure 1: LPI scores for the Republic of Serbia for the time period 2007-2018



Source: Authors according to the World Bank report- *Logistics Performance Index* [28]

Table 1: LPI score and rank for selected countries in 2018

Country	LPI Rank	LPI Score	Customs	Infrastructure	Internat. shipments	Logistics competence	Tracking & tracing	Timeliness
Germany (Best performer)	1	4.20	4.09	4.37	3.86	4.31	4.24	4.39
Croatia	49	3.10	2.98	3.01	2.93	3.10	3.01	3.59
Serbia	65	2.84	2.60	2.60	2.97	2.70	2.79	3.33
Bosnia and Herzegovina	72	2.81	2.63	2.42	2.84	2.80	2.89	3.21
Montenegro	77	2.75	2.56	2.57	2.68	2.72	2.58	3.33
North Macedonia	81	2.70	2.45	2.47	2.84	2.74	2.64	3.03
Albania	88	2.66	2.35	2.29	2.82	2.56	2.67	3.20

Source: Authors according to the World Bank report- *Logistics Performance Index* [28]

is at the level of “partial performers”, which indicates that there are significant logistics constraints and is in line with the results in lower and middle-income countries [3]. This fact indicates the need for further improvement, especially because of the potential impact of those components on companies from different kinds of industries.

The presented indicators can be compared with other countries, primarily in the Western Balkans region, in order to see the level of logistics performance development. Table 1 provides an insight into the score and rank for the best performer, as well as for other countries in the region, which according to the presented data have a lot of space for improvement in this area.

When it comes to the physical infrastructure component, which occupies special attention within the strategic goals and focuses of economic policy in developing countries, the assessment of this dimension can be further presented based on the infrastructure component within the Global Competitiveness Index [29]. Table 2 provides an insight into the level of development for various components of transport infrastructure in the Republic of Serbia.

Table 2: The assessment of transport infrastructure quality for the Republic of Serbia in 2019

	Score (0-100)	Rank/141
Infrastructure	73.8	51
Transport infrastructure	58.7	46
Road connectivity	84.5	43
Quality of road infrastructure	41.6	98
Efficiency of train services	26.8	82
Airport connectivity score	43.6	76
Efficiency of air transport services	55.3	88
Efficiency of seaport services	34.6	111

Source: *Global Competitiveness Report 2019* [29]

In the context of customs and other bureaucratic and service procedures related to export and import activities, which are integral “soft” elements of the logistics system, according to the latest World Bank report *Trading across Borders* [27], the Republic of Serbia, as an open and export-oriented economy, is ranked as 23rd according to the overall ranking of countries in assessing the efficiency and costs associated with the administrative activities of cross-border trade. Also, as additional part of “soft” dimension, specialized companies from logistics sector, 3PL and 4PL providers can have a significant impact on business

development. Concerning LPI components, the possibilities and ease of organizing international shipments, as well as the competence of logistics providers, participation and the level of quality and availability of these services creates a more favorable environment for conducting logistics operations within an economy.

Empirical research methodology

The collection of primary data for empirical research and examination of presented assumptions was conducted during March and April 2022. The electronic on-line version of the questionnaire was handed over to the corresponding service department of the Serbian Chamber of Commerce, which subsequently forwarded the questionnaire to its members. The questionnaire was filled in by key informants in companies, who agreed to participate in the survey and fill in the questionnaire. It was specifically stated that the research is anonymous and that the collected data would be used exclusively for scientific purposes. In this way, a total of 298 valid questionnaires were collected.

The questionnaire was specially designed for this research and contains several parts. The first part defines the statements through which the respondents expressed their views on the quality of various determinants of the logistics system in the Republic of Serbia, including sharing their experience on the quality of physical infrastructure, customs procedures, and logistics services. The statements were formulated based on Logistics Performance Index (LPI) Questionnaire, which implies an assessment of “hard” and “soft” logistics components [3]. In addition, the statements are adapted to the subject and objectives of the research, as well as the language area in which the research was conducted.

The second part of the questionnaire is dedicated to assessing the performance of the company. The statements were formulated based on previous research conducted by Hartnell, Ou and Kinicki [10]. Similar to the previous one, the statements were adjusted and harmonized with the needs of the research. Finally, part of the questionnaire is dedicated to collecting demographic data on respondents (gender, age, education, etc.), as well as basic data on business operations (age, company size, industry within which it operates, etc.).

The sample includes companies that have an active foreign trade. Out of 298 collected questionnaires, 116 came from the managers of production companies. The rest of the sample consists of trade companies (21.14%), construction companies (10.4%), transport companies (9.06%), and companies engaged in other activities. In terms of size, micro and small companies predominate (43.29%), followed by medium-sized (33.9%), and the rest of the sample consists of large companies with over 250 employees (22.81%). Out of the total number of surveyed companies, as many as 235 of them have been operating on the market for more than 10 years. The sample is dominated by domestic private companies (75.17%), while the rest are foreign (17.79%) and state-owned companies (7.04%).

Results and discussion

Several latent variables were created for the research purpose. First, physical infrastructure as a component of logistics system includes all forms of transport, communication, and warehousing infrastructure. The second component refers to logistics services that include the efficiency and quality of customs procedures, conditions for implementation of various forms of transport, export and import operations, as well as the competence and quality of logistics service providers. Finally, the performance of the company refers to monitoring not only the financial, but also the operational effectiveness of observed companies. The conducted factor analysis singled out certain statements that are grouped into given factors, which created the basis for further

Table 3: Reliability analysis

Variables	ID	Statements	Cronbach's alpha
Hard	4.	<i>My experience so far shows that Republic of Serbia has... ... high quality of transport infrastructure.</i>	.913
	5.	<i>... provided conditions for efficient realization of river transport.</i>	
	6.	<i>... provided conditions for efficient realization of road transport.</i>	
	7.	<i>... provided conditions for efficient realization of railway transport.</i>	
	8.	<i>... developed information and communication technology for the implementation of logistics activities.</i>	
	9.	<i>... developed network of warehouses and distribution centers.</i>	
	30.	<i>... rarely/almost never faces delivery delays due to storage inefficiencies.</i>	
	31.	<i>... rarely/almost never faces delivery delays due to inadequate transport infrastructure.</i>	
	32.	<i>... rarely/almost never faces delivery delays due to inadequate connections with port centers and inefficient intramodal transport.</i>	
	Soft	1.	
2.		<i>... high transparency of the customs procedure.</i>	
12.		<i>... transport operators which are very competent to provide logistics services.</i>	
24.		<i>In our practice so far the import takes place without any difficulties.</i>	
25.		<i>... the import of goods is always done as planned.</i>	
26.		<i>... the export takes place without any difficulties.</i>	
27.		<i>... the export of goods is always done as planned.</i>	
Company performance	33.	<i>... rarely/almost never face delays in delivery due to criminal activities.</i>	.918
	34.	<i>... rarely/almost never face problems in paying for logistics activities.</i>	
	36.	<i>... there is a possibility to choose the location for customs clearance.</i>	
	61.	<i>Our company is able to reduce operating costs.</i>	
	62.	<i>Our company is ready to increase exports.</i>	
	63.	<i>Growth/stability of our company's revenue is better than the competitors'.</i>	
	64.	<i>Opportunities to increase the number of clients are great.</i>	
	65.	<i>Opportunities for conquering new markets are great.</i>	
	66.	<i>Opportunities for revenue growth are great.</i>	
	67.	<i>The productivity of employees in our company is better than that of competitors.</i>	
	68.	<i>The level of profitability of our company is better than that of competitors.</i>	
69.	<i>The sales volume of our company is higher than that of competitors.</i>		
70.	<i>Employees of our company on average have higher salaries than employees in our main competitors.</i>		
71.	<i>We can invest more in fixed assets and working capital than our competitors.</i>		

Source: Output from SPSS

analysis (selected statements are shown within Table 3). Since the variables were created, a reliability analysis was performed using Cronbach's alpha coefficient, with values above 0.7, indicating their high reliability [8]. Based on Cronbach's alpha coefficient ranges from 0.913 to 0.925, it can be concluded that there is high reliability between the statements covered by the given variables (Table 3).

In order to test hypotheses H1a and H1b, multiple regression analysis was conducted by testing the impact of physical infrastructure development and the quality of logistics services, as a component of logistics system (independent variables), on companies' performance (dependent variable). The value of R square parameter is 0.194, which means that changes in values of dependent variable were explained in 19.4% of cases by changes in values of independent variables. The F statistic for a given regression model is 35.463 and is statistically significant at a level less than 0.001. The value of VIF indicator is less than 5, which shows that there is no problem of multicollinearity. Based on obtained results presented in Table 4, it can be concluded that there is a positive statistically significant impact of both components of logistics system on companies' performance, with a stronger impact identified in the case of "soft" component. Thus, hypothesis H1 is confirmed.

Table 4: Results of the multiple regression analysis

Independent variables	β	t	sig.
Physical infrastructure	.198	2.272	.024
Logistics services	.265	3.042	.003

$R^2 = 0.194$; $F = 35.463$ ($p = .000$)
Source: Output from SPSS

In the next step, the H2 hypothesis was tested, and the results of t-test for two independent samples were presented. In this way, it was tested whether there is a statistically significant difference in terms of the importance of logistics system components between manufacturing and non-manufacturing companies in the sample. First, differences were found in terms of statements regarding the importance of physical infrastructure in the analyzed companies. According to the values presented in Table 5, it was proved that there is a statistically significant difference in some statements related to the importance of physical infrastructure when comparing manufacturing

and non-manufacturing companies, so hypothesis H2a is partially confirmed.

Table 5: T test results for two independent samples (physical infrastructure)

State-ments	Manufacturing companies M (SD)	Non-manufacturing companies M (SD)	t value	sig.
4	3.2672 (0.83778)	3.3352 (0.97639)	-.618	.035*
5	2.7845 (0.93999)	2.9286 (1.01391)	-1.230	.894
6	3.7069 (0.80236)	3.6044 (0.99033)	.936	.012*
7	2.7500 (1.06220)	2.8352 (1.12984)	-.649	.723
8	3.4828 (0.93700)	3.4725 (1.04950)	.085	.180
9	3.5776 (0.89589)	3.6044 (1.04991)	-.227	.040*
30	3.6552 (1.05586)	3.2912 (1.16952)	2.719	.171
31	3.5948 (1.10318)	3.2033 (1.21564)	2.809	.422
32	3.3707 (0.99153)	3.1429 (1.10320)	1.807	.627

* Values statistically significant at the level 0.05; M- mean; SD – standard deviation
Source: Output from SPSS

Similar to the previous one, Table 6 presents the results of t-test when it comes to logistics services as a component of logistics system. A comparison of arithmetic means for manufacturing and non-manufacturing companies was performed, and it was determined that there is a statistically significant difference in the case of individual statements. A statistically significant difference shows that the greater importance of observed components was identified in manufacturing companies. Due to the identified difference only in some of individual statements, it can be concluded that hypothesis H2b is partially confirmed.

Table 6: T test results for two independent samples (logistics services)

State-ments	Manufacturing companies M (SD)	Non-manufacturing companies M (SD)	t value	sig.
1	3.6466 (0.90654)	3.3516 (1.03394)	2.516	.239
2	3.6034 (0.94067)	3.3681 (1.09830)	1.905	.068*
12	3.8017 (0.83635)	3.5275 (0.95583)	2.533	.037**
24	3.5517 (1.12168)	3.3187 (1.06038)	1.809	.417
25	3.5000 (1.03420)	3.2582 (1.14396)	1.846	.273
26	3.7328 (1.05795)	3.3901 (1.12063)	2.630	.177
27	3.7414 (1.02253)	3.4286 (1.10391)	2.454	.094*
33	4.0345 (1.06265)	3.7198 (1.12900)	2.400	.148
34	4.0259 (0.91804)	3.6703 (1.05699)	2.977	.013**
36	3.9483 (0.95867)	3.6758 (1.10717)	2.180	.055*

** Values statistically significant at the level 0.05. * Values statistically significant at the level 0.1; M- mean; SD – standard deviation
Source: Output from SPSS

Confirmation of H1 hypothesis indicates the unambiguous importance of logistics system for individual business development, which confirms the statistically significant

and positive impact of both observed dimensions of logistics performance. Hypothesis H2, with its partial confirmation, imposes a conclusion on different importance of logistics system for certain sectors in the economy. According to the above statements, there are some differences in the importance of individual segments of logistics system between manufacturing and non-manufacturing companies.

Research implications, limitations and further lines of research

Given the identified growing importance of logistics for all segments of industrial and overall economic development, a specific analysis of logistics impact on selected business performance provides the necessary evidence on the manner and level of impact of this sector on the relevant sample of 298 companies in the Republic of Serbia. The research represents a unique step forward and a new direction of research in the scientific literature, which, through the connection between the macroeconomic environment and the needs of individual companies, provides practical and theoretical implications in this area. Earlier considerations have proven the positive impact of logistics in intensifying the process of international trade, improving the competitiveness of countries, raising the living standards of the population, as well as in mitigating and eliminating the consequences of economic shocks and crises. Also, the ubiquity of logistics operations in most modern companies emphasizes the logistics system as one of the key elements in national economies. The conducted research can serve as a valid basis in theoretical terms for the treatment of logistics systems as one of the key determinants in improving the economic environment and business development. In this way, the isolated subsystems of logistics can be treated in a practical sense as a basis for realization of economic goals aimed at business development within a particular economy.

The concept of the research and the obtained results can serve for future research aimed at combining macro and micro aspects. Despite the size of the observed sample, the survey was conducted only within one national economy which is the main paper limitation. Also, chosen research methodology is factor analysis and t test, but the sample size

allows valid implementation of different methodologies in order to conduct further research. Therefore, the directions for future research can focus on examining the role of logistics systems in other economies, which would be a continuation of the initial idea of identifying the importance of logistics for business and overall economic development. Another recommendation is to provide a more detailed analysis by surveying a number of companies in different sectors, based on which conclusions would be drawn on the contribution of logistics systems and subsystems in particular industries.

Conclusion

The paper analysis distinguishes two dimensions of logistics, where it has been proven that the improvement of both “hard” and “soft” dimensions have a positive impact on companies’ performance. The “soft” component shows a greater impact on business success, and as a valid conclusion, based on the identified statements within this dimension, we could report the need for efforts to raise the quality of logistics services in the Republic of Serbia, including customs procedures, which can contribute to raising the quality of the business environment in the country. At the same time, the continuous development of various components of physical infrastructure make an additional contribution to improving the domestic business environment. Confirmation of the first assumption gives theoretical implications that the system of national logistics with both its dimensions can be adequately treated as an important factor in business development within the national economy. The practical contribution is reflected in the specific recommendations for economic policymakers, and the focus on improving this sector of the economy can be treated as an independent instrument of economic policy. The practical connotation from companies’ point of view is the ability to assess a particular business environment based on the quality and impact of logistics system, with identified differences in individual components between manufacturing and non-manufacturing companies. According to particular statements, in the case of physical infrastructure, the quality of transport, primarily road infrastructure, as well as the quality of warehouses and distribution centers, show a

statistically significant difference between manufacturing and non-manufacturing companies. In logistics services, a statistically significant difference was identified in transparency of customs procedures, competence of logistics operators, fulfillment of defined plan for export operations, as well as in the reliability of payment, and the possibility of choosing a location for customs clearance. All statements related to logistics services show a higher value of arithmetic means for manufacturing companies. In a general conclusion, it can be stated that both dimensions of the logistics system favor the development of companies' performance. This indicates the justification of attention that should be paid to improving various logistics components. At the same time, the exact contribution to observed industries can be established based on identified differences in individual statements.

References

1. Ćimović, S., & Mijušković, V. M. (2018). Which factors drive the reverse logistics process in practice: Evidence from Serbia. *Ekonomika preduzeća*, 66(7-8), pp. 412-423.
2. Ćimović, S., Mijušković, V., & Rajić, V. (2020). The impact of reverse logistics onto green supply chain competitiveness evidence from Serbian consumers. *International Journal of Retail & Distribution Management*. Vol. 48 No. 9, pp. 1003-1021.
3. Arvis, J. F., Ojala, L., Wiederer, C., Shepherd, B., Raj, A., Dairabayeva, K. & Kiiski, T. (2018). *Connecting to compete 2018: trade logistics in the global economy*, World Bank. <https://doi.org/10.1596/29971>
4. Bugarčić, F. Ž., Jurevičienė, D., & Janković, N. (2020, June). The new "Silk Road": global aspect, EU position and economic role of Serbia. In *11th International Scientific Conference „Business and Management 2020”*. <https://doi.org/10.3846/bm.2020.676>
5. Bugarčić, F. Ž., Skvarčiany, V., & Stanišić, N. (2020). Logistics performance index in international trade: case of Central and Eastern European and Western Balkans countries. *Business: Theory and Practice*, 21(2), pp. 452-459.
6. Çelebi, D. (2019). The role of logistics performance in promoting trade. *Maritime Economics & Logistics*, 21(3), pp. 307–323.
7. D'Aleo, V. & Sergi, B.S. (2017). Does logistics influence economic growth? The European experience. *Management Decision*, Vol. 55 No. 8, pp. 1613-1628.
8. DeVellis, R. (2003). *Scale development: Theory and applications*. (2nd ed.). Thousand Oaks, CA: Sage.
9. Gani, A. (2017). The Logistics Performance Effect in International Trade. *Asian Journal of Shipping and Logistics*, 33(4), pp. 279–288.
10. Hartnell, C. A., Ou, A. Y., & Kinicki, A. (2011). Organizational culture and organizational effectiveness: a meta-analytic investigation of the competing values framework's theoretical suppositions. *Journal of applied psychology*, 96(4), 677.
11. Hausman, W. H., Lee, H. L., & Subramanian, U. (2013). The impact of logistics performance on trade. *Production and Operations Management*, 22(2), pp. 236–252.
12. Havenga, J. H. (2018). Logistics and the future: The rise of macrologistics. *Journal of Transport and Supply Chain Management*, 12(1), pp. 1-10.
13. Ho, G. T. S., Choy, K. L., Lam, C. H. Y., & Wong, D. W. (2012). Factors influencing implementation of reverse logistics: a survey among Hong Kong businesses. *Measuring Business Excellence*.
14. Host, A., Skender, H. P., & Zaninović, P. A. (2019). Trade Logistics - The Gravity Model Approach. *Zbornik Radova Ekonomskog Fakulteta u Rijeci*, 37(1), pp. 327–342.
15. Illahi, U., & Mir, M. S. (2021). Maintaining efficient logistics and supply chain management operations during and after coronavirus (COVID-19) pandemic: learning from the past experiences. *Environment, Development and Sustainability*, pp. 1-22.
16. Kol, O., & Ziger-Korn, N. (2019, September). Integrated Logistics as a Competitive Advantage in Tourism Industry of Country. In *International Conference on Digital Technologies in Logistics and Infrastructure (ICDTLI 2019)*. pp. 416-421. Atlantis Press.
17. Kovačević, M., Stančić, K., & Jelić, S. (2021). Importance of the industrial production sector and Serbia's inclusion in global value chains. *Ekonomika preduzeća*, 69(6-7), pp. 289-305.
18. Krstić, M., Tadić, S., & Zečević, S. (2021). Technological solutions in Logistics 4.0. *Ekonomika preduzeća*, 69(6-7), pp. 385-401.
19. Luttermann, S., Kotzab, H., & Halaszovich, T. (2020). The impact of logistics performance on exports, imports and foreign direct investment. *World Review of Intermodal Transportation Research*, 9(1), pp. 27-46.
20. Martí, L., Puertas, R., & García, L. (2014). The importance of the Logistics Performance Index in international trade. *Applied Economics*, 46(24), pp. 2982–2992.
21. Matwiejczuk, R. (2012). The influence of logistics potentials on business management. *LogForum*, 8(3).
22. Meidutė-Kavaliauskienė, I., Aranskis, A., & Litvinenko, M. (2014). Consumer satisfaction with the quality of logistics services. *Procedia-Social and Behavioral Sciences*, 110, pp. 330-340.
23. Rezaei, J., van Roekel, W. S., & Tavasszy, L. (2018). Measuring the relative importance of the logistics performance index indicators using Best Worst Method. *Transport Policy*, 68, pp. 158-169.
24. Takele, T. B., & Buvik, A. S. (2019). The role of national trade logistics in the export trade of African countries. *Journal of Transport and Supply Chain Management*, 13, pp. 1–11.
25. Vuković, B., Milutinović, S., Mirović, V., & Milićević, N. (2020). The profitability analysis of the logistics industry companies in the balkan countries. *Promet-Traffic&Transportation*, 32(4), pp. 497-511.
26. Wong, W. P., & Tang, C. F. (2018). The major determinants of logistic performance in a global perspective: evidence from panel data analysis. *International Journal of Logistics Research and Applications*, 21(4), pp. 431-443.
27. World Bank (2019). *Trading across Borders*. Retrieved from: <https://archive.doingbusiness.org/en/data/exploretopics/trading-across-borders>
28. World Bank. *Logistics Performance Index*. Retrieved from: <https://lpi.worldbank.org/about>

29. World Economic Forum (WEF). (2019). *Global Competitiveness Report 2019*, New York: Oxford University Press.

30. Zaninović, P. A., Zaninović, V., & Skender, H. P. (2020). The effects of logistics performance on international trade: EU15 vs CEMS. *Economic Research-Ekonomska Istraživanja*, pp. 1-17.



Slobodan Aćimović

gained his university education at the Faculty of Economics, Belgrade: undergraduate studies (1993), master studies (1997), PhD thesis (2001). He is employed at the Faculty of Economics, Belgrade University, as a full professor, where he gives lectures for the following subjects at the undergraduate, graduate and PhD study level: Transport economics, Marketing logistics, Supply chain management, International logistics, Transport policy and development, Distribution management, Management of supply and logistics. He is an active member of global and national business-scientific associations: 1) CSCMP 2) GBATA, 3) ERENET 4) SeMA 5)NDES. (Co)author of a great number of university books, scientific papers and articles in relevant domestic/foreign journals and conferences. Especially active in carrying out strategic and operative consulting activities in domestic and regional companies. Special activities in the role of coordinator/team member in a wide range of business economics and management projects in the following fields: establishment of adequate level of company offer (customer service), policy of supplies management, as a logistics-marketing strategy, different kinds of market research, analysis and improvement of company business strategy, improvement of macro and micro organization, workplace systematization, due diligence, investment project analysis, business plan creation etc.



Veljko M. Mijušković

gained his University education at the Faculty of Economics, Belgrade University: BSc (2009), MSc (2010), PhD (2017). He is employed at the Faculty of Economics, Belgrade University, as an assistant professor, where he gives lectures for the following subjects at the undergraduate, graduate and PhD study level: Transport economics, Marketing logistics, International logistics, Transport policy and development, Management of supply and logistics. He is the author of two monographs, one textbook for secondary school, two university textbooks and more than 80 scientific papers and articles in renowned domestic and foreign journals and/or conferences. He is an active consultant in the field of business economics and a lecturer and translator for English and Spanish, for which he holds the highest international certificates (level C2). An active member of CEEPUS/ERASMUS + teacher mobility programs as of the school year 2017/18. Up to now, has been a guest lecturer in Croatia (Faculty of Economics and business, University of Zagreb; Faculty of tourism and hospitality management, University of Rijeka); Poland (State University of Applied sciences in Plock, Faculty of Economics); Germany (Berlin School of Economics and Law, Faculty of Economics; Faculty of Economics, Joint State University Baden Württemberg, Heilbronn); Slovakia (University of Economics in Bratislava, Faculty of Business Management); Bosnia & Herzegovina (University of Sarajevo, Faculty of Economics); Albania (University of Tirana, Faculty of Economics). He is a member of the following professional organizations: 1) Socio-economic forum of the European movement in Serbia 2) SeMA – Serbian marketing association, 3) Scientific society of economists, 4) Entrepreneurship research and education network of Central European universities (ERENET).



Filip Ž. Bugarčić

received his university education at the Faculty of Economics, University of Kragujevac: BSc (2016) and MSc (2017). Currently, he is a Ph.D. student and research assistant at the Faculty of Economics, University of Kragujevac, where he teaches the following courses at undergraduate levels: International Economy, International Trade, and Economic Development. His main areas of scientific interest are international trade, logistics, and industrial development. During his doctoral studies, for scientific improvement, he spent one semester as a visiting researcher at Vilnius Gediminas Technical University in Vilnius (Lithuania). He authored 10 scientific articles in renowned domestic and foreign journals and conferences, including journals on the SSCI list. He has business experience as an internal auditor in Kronospan companies, where he was responsible for audits and internal controls in different areas in several countries. He is a member of the Serbian Logistics Association and the Society of Economists of Kragujevac.