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### Logistics subsystems in international environment with special focus on Central Europe

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## Logistics subsystems in international environment with special focus on Central Europe

**Abstract:** Logistics became an area in which the local organizations needed to achieve a competitive advantage against overseas organizations so that they could offer reliable and responsible servicing on the market. On the other hand, entering foreign markets entailed longer, costlier and more complex operations. Good management of logistics processes, therefore, was the tool for the achievement of global opportunities. In recent years, the importance and role of procurement have changed significantly. Procurement has become an important business function. Efficient business operations are not only important for an individual company but for the entire national economy and the society as a whole, as prosperity depends on the business performance of companies. In the paper, we show the importance of purchase and distribution logistics for international trade. The following paper also analyses logistical obstacles when operating in international markets. We found out, that internationalization still represents an obstacle for many companies with several years of experience, especially in the field of logistics.

**Keywords:** logistics, internationalization, purchasing logistics, distribution

### Introduction

For small economies, such as the Slovenian one is, it is very important to be open and to be involved in international business. With its presence in foreign markets, it contributes to the recognition of the country and strengthens its international position in the exchange. Slovenian companies choose different ways of presentation in foreign markets, among which exports and imports of goods are the most established ones.

In recent years, the importance and role of procurement have changed significantly. Procurement has become an important busi-

ness function. Managers are increasingly recognizing the importance of procurement due to its major contribution to improving profitability by reducing the purchasing costs. Purchases may also be classified among the ancillary activities that contribute to the company's competitive advantage by adding value. Supply, which interacts with other internal business activities (primary-input logistics, production, output logistics, marketing or sales and sales services, and the ancillary activities – the company infrastructure, human resource management and technological development) and the external environment, particularly with suppliers, has an enormous potential to contribute to the competitiveness of enterprises or of individual business units.<sup>1</sup> The basic task of the purchase logistics is the supply of companies with raw materials, construction materials, services, energy, support material, as well as with machinery, equipment, etc. For business effective performance it is not only important to have the appropriate amount of material, but also that the material is of adequate quality, purchased at a reasonable price and that it is available on time.

Distribution deals with the flow of finished products from the manufacturer or the seller to end users so that the product comes into the hands of the consumer in the required quantity and quality at the right time and at the right place, undamaged and at the optimum cost. Distribution logistics comprises the storage of finished products, external transport, the necessary handling operations and the related administrative work. Some authors also refer to distribution logistics as physical distribution, logistics of sales or marketing, which is less appropriate. There is also the concept of marketing logistics, in which the material flow is the same as in distribution logistics, in which the flow of goods is part of the entire material flow from the purchase through the manufacturer to the end user. But when the flow of material is considered as part of the marketing tools with a view to attracting customers, marketing logistics is referred to. Distribution logistics is responsible for the delivery of goods to the buyer in accordance with the provisions of the contract of sale, i.e. in the right quantity and quality, at the right time, at the right

1 M. Sternad and B. Rosi, *International logistics*, Celje: Faculty of logistics, 2011.

place, in an appropriate form, and at a reasonable cost. The temporal perspective may be a single, occasional and continuous delivery of goods. The provider adapts to the timely needs of the customer by the parameters such as delivery time, delivery readiness and the reliability of supply.<sup>2</sup>

In the paper, we want to show the importance of purchase and distribution logistics for international trade. The following paper also analyses logistical obstacles when operating in international markets. In particular, obstacles will be analyzed in the field of purchase logistics, and distribution logistics. Acknowledging and managing logistical obstacles may play an important role in the internationalization of companies.

## 1 Literature review

● In a globalizing economy, regions and firms are competing on an international level. Internationalization contributes to the economic development of nations, in developing national industries, improving productivity and creating employment. Export-oriented entrepreneurship contributes more strongly to macroeconomic growth than entrepreneurial activity in general. Competitiveness in the world markets is getting increasingly tougher, and that is why it is crucial for countries to gain comparative advantages if they want to keep their established market positions in the international environment in the long run.

Logistics became an area in which the local organizations needed to achieve a competitive advantage against overseas organizations so that they could offer reliable and responsible servicing on the market. On the other hand, entering foreign markets entailed longer, costlier and more complex operations. Marti et al.<sup>3</sup> say, that logistics are becoming increasingly important in international trade relations. Good management of logistics processes, therefore, was the tool for the achievement of global opportunities. Logistics is part of connected systems.

2 K. Logožar, *Poslovna logistika* [Business logistics], Ljubljana: Gospodarski vestnik, 2004.

3 S. Marti, R. Puertas and L. Garcia, 'Importance of the logistics performance index in international trade', *Applied Economics*, vol. 46, no. 24, 2014, pp. 1-11.

Each component or element is important for the system – the existence and function of components affect the establishment and function of the entire system, whereby no component is isolated, so each component has a certain task. The effect of each element depends on how it is integrated into a whole, and the effect of the whole system depends on each individual element. The system with its function affects the function of components.<sup>4</sup>

Gani<sup>5</sup> found that the overall logistics performance is positively and statistically significantly correlated with exports and imports. Research is also extended by investigating if logistics specificities mattered for international trade. Marti et al. (2014) found that logistics performance index can influence international trade. For export are the most important infrastructure, timeliness, and customs.

Cho and Lee (2017) also found that logistics and customs efficiency in terms of purchase is meaningful and important. The successful creation of procurement policies requires the knowledge of market conditions, of supply conditions, demand for the material, resulting in cheaper sourcing and the purchasing risk reduction. In addition to quality, price, quantity and other conditions of purchase, in developing the purchasing policies the continuity of supply at the minimum purchasing costs and the suppliers' confidence should also be considered.

In the research study<sup>6</sup> of the purchase market, the examination of suppliers is presented with the most specific task: to determine potential suppliers in the domestic and foreign markets, that meet the price, quality and quantity requirements of the company in the supply of the necessary materials. The selection of the supplier is the most important phase of the purchase process and the crucial task of the purchase function of the business enterprise. Bensassi et al.<sup>7</sup> say that

4 Sternad and Rosi, op. cit.

5 A. Gani, 'The Logistics Performance Effect in International Trade', *The Asian Journal of Shipping and Logistics*, vol. 33, no. 4, 2017, pp. 279-288.

6 M. Sternad, I. Jakomin, U. Koletnik, D. Košar, S. Krivokapič and M. Marijan (eds), 'Analiza logističnih težav podjetij, ki delujejo na tujih trgih' [Analysis of logistics problems of companies operating in foreign markets], Celje, 2010.

7 S. Bensassi, L. Marquez-Ramos, I. Martinez-Zarzoso and C. Suarez-Burguet, 'Relationship between logistics infrastructure and trade: Evidence from Spanish regional exports', *Transport Research part A*, vol. 72, 2015, pp. 47-61.

logistics are crucial for international trade and competitiveness of national products in international markets.

In the international trade, Winsted and Patterson<sup>8</sup> draw attention to the export and import logistics barriers, to the international competition, know-how, and limited resources. The authors particularly focus the export motivation with the globalization of partners as its crucial driver. Authors *ibid.* also warn about legislative restrictions, international competition, knowledge, and resource constraints in terms of infrastructure and superstructure when considering exports of services. Logistics barriers also have a bearing on the type of risk involved and so influence the whole supply chain; therefore, the main objective of this paper is also to identify logistics issues in different logistics subsystems and to define the risks according to these subsystems. Carter et al.<sup>9</sup> aver that logistics barriers are present in all segments of business operations, especially procurement, transport, order cycles, warehousing, inventory and international trade services. They are usually a consequence of internal inefficiency, which can be linked to a failure to identify logistics barriers. The prompt identification of these barriers reduces risk and improves the efficiency of supply chains, which in turn improves the business's competitive position in the market. Yu<sup>10</sup> highlights service quality, logistics costs and supply delays as crucial issues encountered in purchasing, which can be linked to supplier reliability.

## 2. Research methods

2. In this study, statistical data on international trade of export and import from the International Trade Center (n. d.) was used. We compare Slovenia and countries from Central Europe. We also used the values of the international logistics performance index for 2016<sup>11</sup>

8 K.F. Winsted and P. Patterson, 'Internationalization of services: the service exporting decision', *Journal of Services Marketing*, vol. 12, no. 4, 1998, pp. 294-311.

9 J.R. Carter, N. Pearson and L. Peng, 'Logistics berries to international operations: The case of the People's Republic of China', *Journal of Business Logistics*, vol. 18, no. 2, 1997, pp. 129-145.

10 L. Yu, 'Logistics barriers to International Operations: A Case Study of Japanese Firms in China', *International Proceedings of Economic Development and Research*, vol. 4, 2011, pp. 374-378.

11 J.F. Arvis, D. Saslavsky, L. Ojala, B. Shepherd, C. Busch, A. Raj and T. Naula, *Connecting to Compete 2016: Trade Logistics in the Global Economy*, [online] World Bank, 2016, <https://wb-lpi-media>.

for Slovenia and countries from Central Europe. International logistic performance index provides qualitative evaluations of a country in six areas by its trading partners. The six core components are:<sup>12</sup>

- the efficiency of customs and border clearance,
- the quality of trade and transport infrastructure,
- the ease of arranging competitively priced shipments,
- the competence and quality of logistics services,
- the ability to track and trace consignments,
- the frequency with which shipments reach consignees within scheduled or expected delivery times.

In order to identify the logistics barriers encountered and their effects on logistics lead times, a total of 250 randomly chosen Slovenian companies were surveyed from different statistical regions. Of the 250 surveys completed, 160 were appropriate for inclusion in our analysis as they demonstrated that the company surveyed faced logistical issues in their business operations or in one or more of their specific business functions. Overall, the final sample included 35 micro companies, 52 small companies, 44 medium sized companies and 29 large companies.

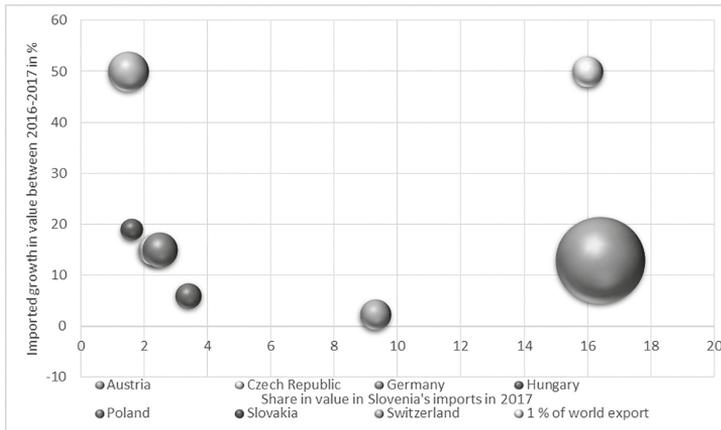
### **3. Results and discussion**

Selecting the supplier is one of the most important and most critical purchase decisions. In this process, the purchasers make use of different resources and information. Slovenia mostly imports from Germany and Austria, while other Central European countries account for a smaller share of Slovenian imports. The figure shows the share of Slovenia's imports from the countries of Central Europe in 2017 and the growth of imports between 2016 and 2017.

s3.amazonaws.com/LPI\_Report\_2016.pdf [2018-05-05].

12 World Bank, 'Logistics performance index', 6 June 2018, <https://lpi.worldbank.org/>.

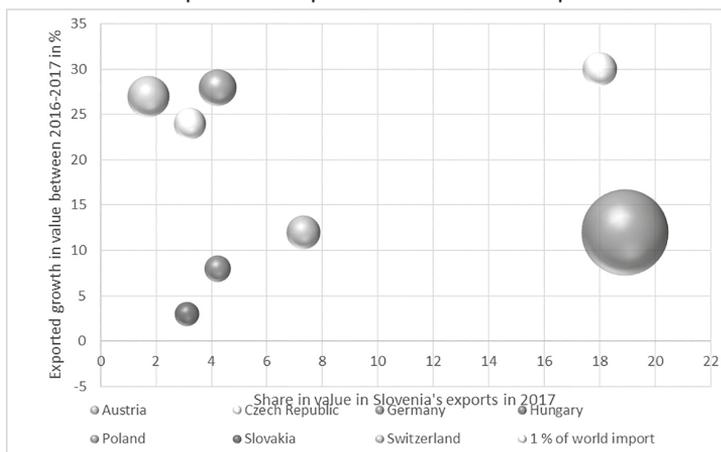
Graph 1: Slovenian import from the countries of Central Europe



Source: Own graph based on the data of the ITC.

The largest share of Slovenian exports in 2017 present Germany, while the other countries of Central Europe represent a smaller share in the structure of Slovenian exports. The figure shows the share in Slovenia's exports to the countries of Central Europe in 2017 and export growth between 2016 and 2017.

Graph 2: Slovenian export to the countries of Central Europe

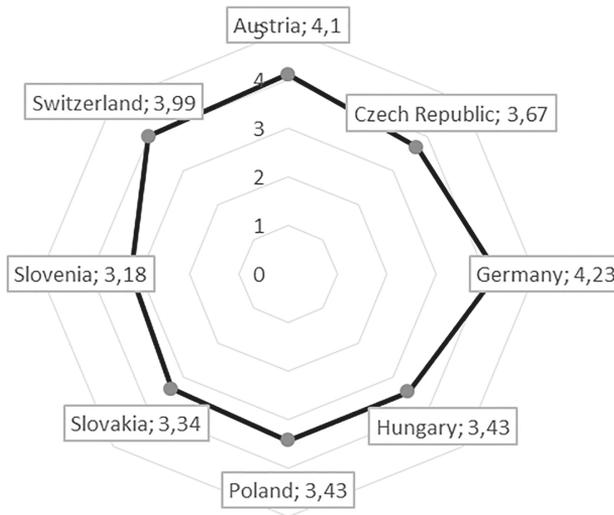


Source: Own graph based on the data of the ITC.

An increased demand for logistics services due to increased international trade has contributed to a higher quality and a more com-

prehensive offer. Slovenian companies are still resorting to traditional markets as those of Europe and Russia. Despite many years of experience in foreign markets, there are still logistical problems that significantly affect the cost structure of companies. Given the difficult business conditions in global markets, companies must take advantage of logistics and logistics services as their competitive advantage. Compared to other Central European countries, Slovenia has the lowest logistics performance index.

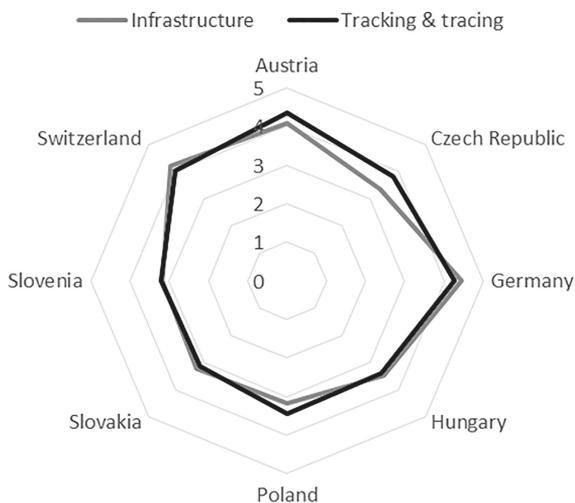
Graph 3: Logistics performance index of Central Europe



Source: Own graph based on the data of the World Bank.

The main objective of any good company is to achieve excellent business results. In recent years, innovation has largely oriented towards the simplification of work procedures. Manufacturing is becoming increasingly dependent on human factors. There are many reasons that businesses have been forced to change development policies. Based on the logistics performance index, Slovenia is lagging behind the countries of Central Europe in the area of infrastructure and tracking & tracing.

Graph 4: Logistics performance index for infrastructure and tracking &amp; tracing



Source: Own graph based on the data of the World Bank.

Initially, innovation was separated for technical-production and economic- organizational issues. However, it is becoming increasingly clear that cooperation of both is essential. In order to be more successful at introducing management technology in companies in Slovenia, we are working on developing an interdisciplinary approach, based on creative innovation collaboration of economists and engineers. The entrepreneur and entrepreneurship are fundamental to the process of technological development because they are introducing the potential innovations in the economic practice. It is also important that managers in companies are willing to invest substantial means in research because companies cannot exist without innovation in the long run. The essence of modern systems is an innovative orientation and an innovation-friendly environment. Companies have various options for conducting businesses in foreign markets.

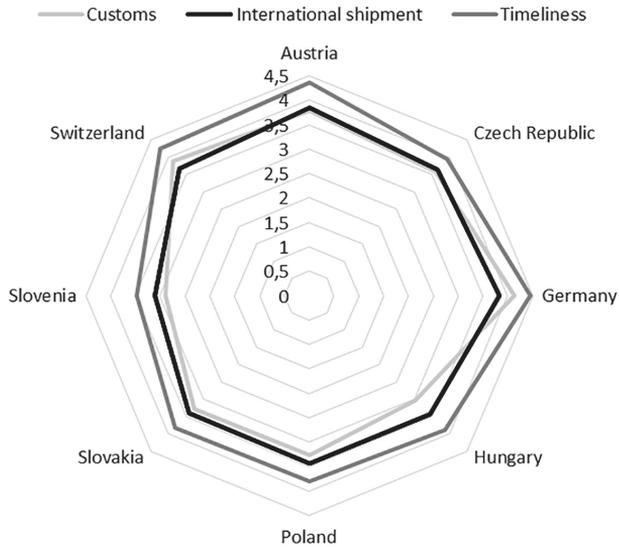
Opportunities for their performances are viewed from two aspects, namely:

- Control options
- Commitments in a foreign country.

Business efficiency also depends on the effectiveness of logistics in each country. Slovenia, as a particularly exporting country, has to

improve the field of international shipments, timeliness and customs procedures. Among Central European countries, Slovenia is lagging behind in the logistics area, which has a significant impact on international distribution.

Graph 5: Logistics performance index for customs, international shipment, and timeliness



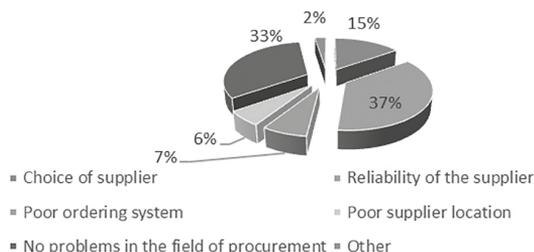
Source: Own graph based on the data of the World Bank.

Despite the fact that most companies have been operating in foreign markets for a longer period of time (more than five years), they still have a lot of logistical problems, in particular with regard to transport, purchasing, and distribution logistics. In order to improve and strengthen the international position of Slovenian companies in the future, companies need to invest much more in the development of logistics processes and logistics subsystems in their companies.

More than half of the surveyed companies in Slovenia have reported facing the biggest problems with the reliability of suppliers abroad. As proven in the analysis of other companies of different sizes, also large companies are facing problems with the selection of suppliers and their poor location, in addition to the problems with their relia-

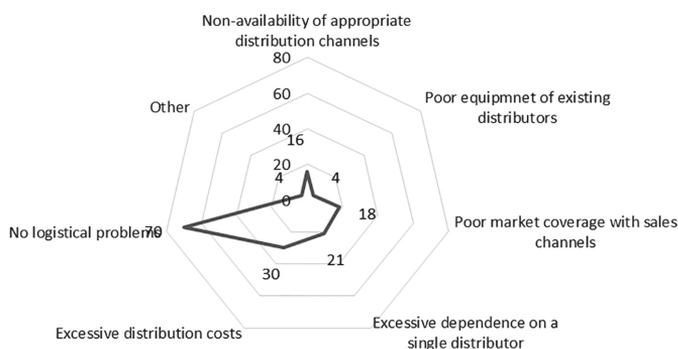
bility. However, almost a quarter of enterprises reported no purchasing problems.<sup>13</sup>

Graph 6: Purchase logistics problems in an international environment



The reasons for the poor sales of certain products may include technological advancement, launching new services, changes in trade flows, the outflow of cargo to a competitive carrier, etc.. At the distribution of goods abroad large enterprises are facing mainly the problems of the distribution costs, over-dependence of distributors, and the unavailability of appropriate distribution channels. They are faced with the problem of poor market coverage by the sales channels to a slightly fewer degree, and the fewest companies reported problems with poor equipment of distributors.

Graph 7: Distribution problems



\* Blue color – the number of companies

13 Sternad et al., dz. cyt.

Companies must establish the outdated and unprofitable services, and develop an appropriate strategy for the removal of any such services.<sup>14</sup>

The decisions at this level may include:

- Continuation of the production if it is still possible,
- Divestment and co-investment in attractive market niches,
- Removal of obsolete services.

Exit obstacles for companies when leaving a particular market are greater than the exit obstacles for other operating systems. When a transport company removes particular transportation services, in the public transportation companies (public road and railway), which eliminate the unprofitable and uneconomical transport services, in particular in the passenger transport, this is usually associated with the transport policy of the country and wider societal interests.

## Conclusion

The economic system is in constant motion and development, therefore, each of its factors should be dealt with simultaneously in time and space. Even the logistics system and its appropriateness are assessed in a given moment of its dynamics, and its development is compared over time. The company has the strategy of economic development in the scope of the social development strategy, whose primary goal is to maximize social welfare. In terms of the logistics system, this goal is the optimal fulfilling the needs of the users of logistics services allowing for their free choice of providers of logistics services in market economies and by fulfilling these needs with the most rational selection from the social point of view.

The importance of logistics is evident from the studies that were made in the industrialized world, according to which the time of bonding capital in direct production amounts to only 5%, and to maximum 10% of total time in the process of reproduction, whereas the rest of time is divided into the waiting period, handling and transportation and other logistics processes, respectively. Adaptation to global changes is a condition of survival, and the exploitation of these changes to

14 Sternad and Rosi, *op. cit.*

one's advantage but a prerequisite for success. Efficient business operations are not only important for an individual company but for the entire national economy and the society as a whole, as prosperity depends on the business performance of companies. We found out, that Internationalization still represents an obstacle for many companies with several years of experience, especially in the field of logistics.

## References

- Arvis, J.F., Saslavsky, D., Ojala, L., Shepherd, B., Busch, C., Raj, A. and Naula, T., *Connecting to Compete 2016: Trade Logistics in the Global Economy*, [online] World Bank, 2016, [https://wb-lpi-media.s3.amazonaws.com/LPI\\_Report\\_2016.pdf](https://wb-lpi-media.s3.amazonaws.com/LPI_Report_2016.pdf) [2018-05-05].
- Bensassi, S., Marquez-Ramos, L., Martinez-Zarzoso, I. and Suarez-Burguet, C., 'Relationship between logistics infrastructure and trade: Evidence from Spanish regional exports', *Transport Research part A*, vol. 72, 2015, pp. 47-61.
- Carter, J.R., Pearson, N. and Peng, L., 'Logistics berries to international operations: The case of the People's Republic of China', *Journal of Business Logistics*, vol. 18, no. 2, 1997, pp. 129-145.
- Cho, H. and Lee, J., 'Searching for Logistics and Regulatory Determinants Affecting Overseas Direct Purchase: An Empirical Cross-National Study', *The Asian Journal of Shipping and Logistics*, vol. 33, no. 1, 2017, pp. 11-18.
- Gani, A., 'The Logistics Performance Effect in International Trade', *The Asian Journal of Shipping and Logistics*, vol. 33, no. 4, 2017, pp. 279-288.
- ITC – International Trade Center, 'Trade statistics', 6 June 2018, <http://www.intracen.org/itc/market-info-tools/trade-statistics/>.
- Logožar, K., *Poslovna logistika* [Business logistics], Ljubljana: Gospodarski vestnik, 2004.
- Marti, S., Puertas, R. and Garcia, L., 'Importance of the logistics performance index in international trade', *Applied Economics*, vol. 46, no. 24, 2014, pp. 1-11.
- Potočnik, V., *Nabavno poslovanje s primeri iz prakse* [Procurement business with examples from practice], Ljubljana, 2002.
- Sternad M., Jakomin I., Koletnik U., Košar D., Krivokapič S. and Marijan M. (eds), 'Analiza logističnih težav podjetij, ki delujejo na tujih trgih' [Analysis of logistics problems of companies operating in foreign markets], Celje, 2010.
- Sternad, M. and Rosi B., *International logistics*, Celje: Faculty of logistics, 2011.
- Winsted, K.F. and Patterson, P., 'Internationalization of services: the service exporting decision', *Journal of Services Marketing*, vol. 12, no. 4, 1998, pp. 294-311.

World Bank, 'Logistics performance index', 6 June 2018, <https://lpi.worldbank.org/>.

Yu, L., 'Logistics barriers to International Operations: A Case Study of Japanese Firms in China', *International Proceedings of Economic Development and Research*, vol. 4, 2011, pp. 374-378.