Determinants of Distribution Logistics in the Construction Industry

Bibiana Bukova*, Eva Brumercikova, and Pavol Kondek

Abstract: Global business is currently still influenced by the economic crisis and the economic development in each country of the EU. The construction sector is among the most affected sectors of the national economies. The production of building materials is a part of the construction industry. Several companies of this sector in the European Union use business logistics effectively. The overall efficiency of the company is influenced by many various external and internal determinants, especially the distribution logistics.

Keywords: determinant, distribution logistics, construction industry

1 Introduction

The basic determinants of distribution logistics may be classified by the demographic, economic, technical and political background. The article deals with selected determinants in distribution logistics companies producing building materials. Based on the analysis and conclusions of the analysis it is possible to determine the effect of specific determinants for the further development of business logistics of these companies and the whole industry [1–4].

It is possible to evaluate the trading of individual countries, in general, based on the basic economic indicators, i.e. based on the amount of GDP, the results of which are measured quarterly; the rate of inflation, measured monthly; unemployment rate and trade balance that are indicated similarly. In addition, the interest rate calculated daily and the government debt to GDP calculated on an annual basis are also basic economic indicators. The up-to-date indicators of our chosen countries are shown in the following Table 1 [7].

2 Determinants of distribution logistics in the construction industry

The construction industry is an important sector of the national economy, despite the economic impact of the decrease of investments in private and public sectors. The construction industry is a significant component of the GDP; while in Slovakia, for example, 8.5% of all employees of the national economy are employed in this sector [5]. In addition, the construction industry is an important part of the investments, since it is the major executor of constructions, i.e. it is a major creator of the gross fixed capital of the whole economy, where for instance in 2014 the gross fixed capital formation in Slovakia reached 42.4% [6].
Several expert analyses show that companies in the construction industry maintain a stable position on the above-mentioned three markets, i.e. they are competitive. This fact contributes to the increase in the number of possible competitive companies, which cause a "price war" in Austria. The economic situation on the market in the Czech Republic promotes export from the country and the import into the country also regarding the current rate of the Czech koruna (Figure 2). Czech koruna depreciates against the Euro, which is a consequence of economic results of the country affected by the results of the EU.

Slovak companies currently cannot compete, for example, with companies producing cement in the Czech Republic, as the current price of the Czech koruna against the euro is more favorable, in particular, for exporters from the Czech Republic than importers into the country (Figure 2). Nevertheless, the Slovak companies managed to conclude contracts with companies that have a good position on the Czech market. The location of these companies is concentrated mainly in the Moravia region and around Brno.

The economic situation in Poland is currently stable in regards to indicators (Table 1) and the Polish Zloty exchange rate (Figure 2). On the other hand, the Polish market is bigger when comparing it with the Czech market, which allows creating stronger competition for companies which export to the country and thus affect the prices of the sector. In addition, there is a risk of payment discipline that threatens mainly manufacturers and suppliers of building materials.

The construction sector in Poland has been stagnating since the prepared large infrastructure projects financed from EU funds have not been implemented. On the other hand, Slovak companies must reduce the volume from some of the customers due to lack of clinker (summer 2015) in production, which affected the sale of cement in order to ensure a minimum supply of clinker stock. The competitors took advantage of this situation and contacted customers of Slovak companies with a new offer and a lower price, around 24 PLN (Polish Zloty) less per tons.

Given the nature of manufactured products, large capital requirements or availability of raw materials as well as technology used, it is unlikely that a new company would appear on the Slovak market in this sector [8].

The determinant macro-environment of companies is generally formed by demographic, economic, natural, technological and political environment of the company [9].

### 2.1 Demographic environment

The demographic environment of companies is given by its location, which shall ensure a direct and quick contact with the domestic but also foreign markets. For illustration the company XY is located in the region of the Ilava district in the northwestern part of Slovakia on the main road Bratislava - Žilina. The company has a direct connection to the feeder road Ladce of the motorway D1 which the company is located three and a half kilometers away from, i.e. the use of the D1 highway and its connections to abroad.

In addition, the company XY has a rail link built in its area, i.e. an industrial spur.

### Table 1: Up-to-date economic indicators of chosen countries.

<table>
<thead>
<tr>
<th></th>
<th>Poland</th>
<th>Czech Republic</th>
<th>Austria</th>
<th>Slovak Republic</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP growth</td>
<td>1.10%</td>
<td>−0.10%</td>
<td>0.30%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>10.30%</td>
<td>6.40%</td>
<td>10.90%</td>
<td>10.39%</td>
</tr>
<tr>
<td>Inflation</td>
<td>−0.70%</td>
<td>0.60%</td>
<td>1.20%</td>
<td>−0.60%</td>
</tr>
<tr>
<td>Interest rate</td>
<td>1.50%</td>
<td>0.05%</td>
<td>0.05%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Trade balance</td>
<td>373 mil. €</td>
<td>610 mil. €</td>
<td>457 mil. €</td>
<td>−16.3 mil. €</td>
</tr>
<tr>
<td>Government debt to GDP</td>
<td>51.40%</td>
<td>41.00%</td>
<td>85.90%</td>
<td>52.30%</td>
</tr>
</tbody>
</table>
Table 2: Results of the analysis of the construction industry.

<table>
<thead>
<tr>
<th>Results</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of orders</td>
<td>especially from the public sector</td>
</tr>
<tr>
<td>Significant price decrease</td>
<td>in most cases even below the cost of production</td>
</tr>
<tr>
<td>Payment discipline</td>
<td>in some cases up to 150 days</td>
</tr>
<tr>
<td>Immoral practices</td>
<td>orders accepted by so-called “businessmen” who accept any low price knowing that they will not pay all subcontractors</td>
</tr>
<tr>
<td>Restructuring</td>
<td>frequent solutions of economically unstable companies, whereby the solution of the situation is to the disadvantage of the creditor</td>
</tr>
</tbody>
</table>

2.2 Economic environment

The economic environment is formed by factors affecting the purchasing power of customers and the structure of their expenses. The total purchasing power is dependent on the actual revenue, price, wage, credit, inflation and unemployment rate. The overall economic situation in the construction industry is constantly monitored and subsequently it is published quarterly by CEEC Research [10]. More than 100 companies from the sector participate in the results and analysis of the Slovak market. The results of the analysis of the current Q4/2015 are shown in Table 2.

The results describe the situation since 2009. The solution could be the continuation of the transport infrastructure in Slovakia, but it is postponed, respectively the launch is being postponed, as the financing of the construction is being expected. The other side of the continuation of the infrastructure is the announced tenders, where prices are in many cases too low, on the level of the production costs, which is the result of the overall unfavorable economic situation in the sector, i.e. a lack of construction opportunities and a hard fight of the competition [10].

Slovak companies are export-oriented with respect to the surplus of cement production in Slovakia. On average, companies exported about 55% of its products. Since 2009, important companies in Austria have become customers. (Figure 3).

2.3 Natural environment

The natural environment is mainly formed by natural resources that are available for a long term, because Slovak companies own quarries, where there are supplies with the estimated time of quarrying for nearly 200 years. In addition, the currently topical issue is the environmental policy of companies, for this reason, construction companies have introduced the production of new products, for example cement, which reduces the risk of allergic reactions and eczema, as well as highly toxic and harmful carcinogenic effects of Cr6 (hexavalent chromium) on human health. This product has been awarded the designation "Environmentally Friendly Product" [11].

2.4 Technological environment

The technological environment in construction companies may be designated as corresponding to the current trends in the region and globally. Applied technologies enable the companies to produce larger quantities of products at a high quality level, which is a source of positive influence on the performance and strategy of companies [12].

2.5 Political environment

The political environment is formed by the legislation, which now can be characterized as continuously changing, which limits and influences the activities of companies and even individuals. On one hand, there is the customer protection, such as the Movement for the protection of consumers and the environment, on the other hand, there is an effort to develop the competitiveness of a num-
number of companies and individuals, but the final effect is corruption and strengthening the power of control authorities, which has been a minor help to the business in Slovakia [13].

Based on the results of the quarterly analysis of CEEC Research, the interviewed companies evaluated the legislation of the Slovak republic, respectively its quality and administrative burden. The results are shown in the following Table 3.

The overall situation in the construction industry is unpromising; the main limitations with the greatest impact on economic results in this sector are low prices of the completed contracts, bureaucracy from the state and strong competition [14].

## 3 Conclusion

Construction companies use in their practice a number of methods and procedures that contribute to the evaluation of the efficiency of quality and distribution logistics. Most construction companies use as the basis financial results available in the financial statements, which using appropriate methods are compared, i.e. the actual condition and the planned one, whereby in regards to the results obtained, necessary measures are carried out to achieve the desired state.

In practice, companies are trying to establish and apply a system of monitoring of specified performance parameters, for example, through a system of logistics indicators or suitably chosen methods of evaluation [15, 16].

A key factor for evaluating a company performance is to compile a set of indicators in order to understand the process performance and the ability to identify areas for improvement. In addition to financial and non-financial criteria, the evaluation of phases of the management process - planning, organizing, controlling is necessary. Typical parameters for evaluating the performance are qualitative or quantitative indicators or financial and non-financial indicators, as well as traditional indicators such as costs, time, quality, flexibility, environment and ethics. When choosing appropriate indicators it is therefore necessary to consider not only the specific conditions of operational activities, but also the requirements of the company for information [17, 18].

When compiling the indicators in practice it is based on the need to meet the needs of the company in which the performance is evaluated. In general, there is no right way to choose the indicators to suit every company because every construction company has its own objectives, culture, management style, communication roads, and more.

Acknowledgement: This paper was supported by the VEGA Agency, Grant No. 1/0701/14 “The impact of the railway freight transport market liberalization on the social transport costs”.

## References

[16] Brumercik F., Krzywonos L., Integrated transportation system simulation, Logi, 2013, 2, 5-10
[18] Kondek P., Gaborova V., Possibilities of goods transportation to the Russian Federation after implementation of economic sanctions between the EU and the Russian Federation, Logi, 2015, 1, 72-84