The E-commerce Development and its Limitations in Full Operating Cycle Firms in V4 Countries

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Abstract
In recent decades, the countries of Central and Eastern Europe there are significant changes in national economies. Many of them joined the European Union in 2004. Among the EU Member States noteworthy is the largest group of countries of Central and Eastern Europe: Czechia, Poland, Slovakia and Hungary. On 15 February 1991 they have concluded an agreement on the formation of the Visegrad Group. It was aimed at expanding cooperation between these countries and in the initial phase of accession to the European Union and NATO. Analysis of the changes that have taken place in companies using online sales in the countries of the Visegrad Group is the subject of this article.

Keywords: e-commerce, online, internet sale, V4.

JEL codes: D21, D22, D61, M41
1 Introduction

The main purpose of the paper is a scientific discussion about the influence of stock level in enterprises selling online. The research includes companies from the countries of the Visegrad Group, called in brief V4. In the initial stage, these countries were of similar economic conditions (Jašová et al., 2016), (Tkáčová, Siničáková, 2015), (Šoltés, Gavurová, 2014), (Michalski, 2016b), (Reznáková, Karas, 2015), (Raisova et. al., 2014).

Name of the Visegrad Group was formed during the meeting of the presidents of Czechoslovakia and the Polish and Hungarian Prime Minister. This meeting took place at the castle in the Hungarian town of Visegrad. It has been planned exactly in this group, because these countries have not only convergent main foreign policy goals, but also enjoy the possibility of its implementation (Novotná, Luhan, 2012). Visegrad Group established International Visegrad Fund.

These countries from the beginning of political transformation build their competitive potential. Giving priorities for investment in the industrial sector industries that rely on local raw materials, and private industries that are based on the production of the chemical industry and petrochemical, As well as expansion in some industries based on agriculture products and marine resources sector in order to reduce dependence on the raw material sector. V4 countries were concentrated on the possibility of creating some of the devices and the institutions that support export activity physically and morally. They focused on domestic production to cover domestic demand and reduce dependence on imports and restrict the goods and products that the local economy is unable to produce them locally (Ahmidat, 2016), (Michalski, 2016a), (Michalski, 2015c), (Michalski, 2015d), (Merickova et. al., 2015), (Cheben et al., 2015), (Gavurova, Soltes, 2016), (Gavurova, Soltes, 2014), (Brozyna et. al., 2015), (Bem et al., 2015b), (Michalski, 2015b), (Soltes, Gavurova, 2015). They do this in order to meet the competitive forces in quite the single European market and the global markets (Zielińska-Głębocka and Gawlikowska-Hueckel, 2013). Even for rather small economies, such type of cooperation can be of great significance (Pavlicek, Kristoufek, 2015), (Michalski, 2015a), (Bem et al., 2014b), (Bem, Michalski, 2016), (Bartak, Gavurova, 2015), (Szczygieł et. al., 2015).

Visegrad countries were different from the other countries of the former communist bloc. In other countries, internal changes were generally much less advanced, and strive for EU membership much longer or as was the case in Slovenia, the road was much shorter. At present, all countries of the Visegrad Group are the members of the European Union (Gałaś, 2015), (Michalski, 2010), (Bem et al., 2015c), (Bem et al., 2014a).

Electronic commerce (e-commerce, e-commerce) as defined by the Polish Central Statistical Office includes the transactions carried out by the network. They can be based on IP or other computer networks. Goods and services are ordered over those networks, but the payment and the ultimate delivery of the ordered goods can be made in or outside the network. Literature describes the internet and e-commerce as an indispensable element of the development process (Lawrence, 2013).

This is some of the attributes associated with the e-commerce revolution (Brożyna et al., 2015), (Bem et al., 2015a) that has brought about a fundamental change in the conceptualization of commercial transactions: economic cost, convenience, sustainable value creation and product diversity.
Definition of objective and measurable financial criteria of what is considered sustainable value creation for the corporations is a key to understand full operating cycle firm position. Going through annual reports there is possibility to found in the annual reports a measure which the company uses for that exact purpose which is called Value Added. It's supposed to quantify the financial value which is added during a given fiscal year deducted by the capital invested to provide the operational assets. For fiscal year 2015 Daimler stated the value add to be 5675 T€. Using above factors and the data listed in the 2015 annual report there is possibility to calculate and verify the stated value. This value add calculation and the logic behind makes fully sense, especially when looking at it from the key objective of good corporate governance which is creating sustainable value. The formula and calculation that can be seen as a basis to use and compare value adds of the different companies and during the course of using the formula in the best in class approach or/and finetune the formula to allow financially proper comparisons (Bledinger, 2016).

E-commerce is associated production and sale of goods by modern information and communication technologies (Szopiński, 2013). Each transaction conducted over the internet is the result of steps: search, order, payment and delivery. According to Kraska e-commerce is commercial transactions via telecommunication networks, coupled with making payments for goods and services. This takes place without direct contact between the parties (Kraska, 2004).

During the past years steadily increasing the number of internet users has created a possibility to get to know the advantages and benefits offered by electronic commerce (Kim, Chung and Lee, 2011).

2 Methodology and Data

The test procedure is based on the method of multiple case studies. The research will be companies implementing online sales in countries belong to the Visegrad Group. The project will be mainly used methods of descriptive statistics and financial analysis. Empirical data are derived from the financial statements of companies operating in V4 countries. Selected research units will differ from each other in terms of market offer and the number of employees.

An in-depth financial analysis reports will focus in particular on measuring the effectiveness of activities. In addition, literature studies and analysis of extensive statistical data will allow for the emergence of strategic factors affecting the competitiveness of enterprises operating in the field of internet commerce. This will allow to assess the impact of factors specific to the investigated company on the relationship between the use of modern forms of sales and competitive advantage.

The study began by calculating the index Stock rotation in days. It indicates how many days the company renews its stocks to realize sales. The formula to calculate the index can be presented as follows:

\[
\text{Stock rotation in days} = \left(\frac{(S_1 + S_0) \div 2 \times 365}{S_A}\right)
\]

where: \(S_1\) – stock in current year; \(S_0\) – stock in previous year; \(S_A\) – sale in current year.
3 Results and Discussion

Modern concepts of inventory management are focused on maximum reduction of differences between the intensity of use of the stock and the rate of supply, in order to obtain the continuity of material flows with minimal inventories. The most important goal for the organization becomes an increase in the worth of the business successfully applying competitive means. Modern organizations are forced to seek alternative means for resolving business problems.

Companies can no longer afford to lose their money in e-business initiatives without developing and using suitable means to support the appropriate level of inventories. Stock rotation in days for each of the countries of the V4 is presented in Table 1.

Table 1 Stock rotation in days

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Czechia</td>
<td>33,14</td>
<td>53,71</td>
<td>62,07%</td>
<td>102,36</td>
<td>90,58%</td>
<td>42,33</td>
<td>-58,65%</td>
<td>45,74</td>
<td>8,06%</td>
</tr>
<tr>
<td>Hungary</td>
<td>157,57</td>
<td>91,37</td>
<td>-42,01%</td>
<td>69,84</td>
<td>-23,56%</td>
<td>492,94</td>
<td>605,81%</td>
<td>98,56</td>
<td>-80,01%</td>
</tr>
<tr>
<td>Poland</td>
<td>188,54</td>
<td>108,35</td>
<td>-42,53%</td>
<td>1175,40</td>
<td>984,82%</td>
<td>34,95</td>
<td>-97,03%</td>
<td>137,39</td>
<td>293,10%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1964,28</td>
<td>1476,39</td>
<td>-24,84%</td>
<td>120,34</td>
<td>-91,85%</td>
<td>481,19</td>
<td>299,86%</td>
<td>505,45</td>
<td>5,04%</td>
</tr>
</tbody>
</table>

Source: own study based on data from e-commerce firms reported in Database Amadeus product of Bureau van Dijk, [date: 2016 MAY 10]

Stock rotation in days in Czechia rise between year 2009 and 2011. In 2012 it fell from 102,36 to 42,33. In last examined year in Czechia stock rotation increase by 8,06%.

In Hungary we can see decrease in every year, beside 2012. In this year stock rotation reach the value of 492,94 days. In Poland the value rise sharply in 2011 by 984,82%. Slovakia reach a peak in 2009 year with value 1964,28 days.
Figure 1 Stock in e-commerce companies in V4 countries

Source: own study based on data from e-commerce firms reported in Database Amadeus product of Bureau van Dijk, [date: 2016 MAY 10]

Country with the biggest value of stocks is Poland. Average value of inventories in Poland is 1600 thousand euro. Other countries have the value of stock between 600 and 1200 thousand euro.

The next stage of the study was examined the volume of stocks in comparison to each country. There was conducted Student t-test to examine whether these values differ from each other statistically. The results for Czechia compared to each country are presented in a separate table.
### Table 2 T-student test for e-commerce companies in Czechia and Hungary

<table>
<thead>
<tr>
<th></th>
<th>Average CZ</th>
<th>Average HU</th>
<th>T</th>
<th>df</th>
<th>p</th>
<th>St. Dev. CZ</th>
<th>St. Dev. HU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock rotation 2013</td>
<td>45,7424</td>
<td>98,558</td>
<td>-0,92214</td>
<td>1734</td>
<td>0,356586</td>
<td>81,300</td>
<td>935,02</td>
</tr>
<tr>
<td>Stock rotation 2012</td>
<td>42,3349</td>
<td>492,935</td>
<td>-0,48051</td>
<td>1588</td>
<td>0,630933</td>
<td>62,997</td>
<td>15347,92</td>
</tr>
<tr>
<td>Stock rotation 2011</td>
<td>102,3585</td>
<td>69,843</td>
<td>0,89406</td>
<td>1463</td>
<td>0,371438</td>
<td>1059,061</td>
<td>320,04</td>
</tr>
<tr>
<td>Stock rotation 2010</td>
<td>53,7084</td>
<td>91,371</td>
<td>-0,80092</td>
<td>1440</td>
<td>0,423310</td>
<td>280,452</td>
<td>724,86</td>
</tr>
<tr>
<td>Stock rotation 2009</td>
<td>33,1434</td>
<td>157,569</td>
<td>-0,70135</td>
<td>1112</td>
<td>0,483234</td>
<td>39,665</td>
<td>2582,17</td>
</tr>
</tbody>
</table>

Source: own study based on data from e-commerce firms reported in Database Amadeus product of Bureau van Dijk. [date: 2016 MAY 10]

In any of the tested years p-value is lower than 0,05. In enterprises selling online in Czechia we cannot find the relationship between enterprises selling online in Hungary.

### Table 3 T-student test for e-commerce companies in Czechia and Poland

<table>
<thead>
<tr>
<th></th>
<th>Average CZ</th>
<th>Average PL</th>
<th>T</th>
<th>df</th>
<th>p</th>
<th>St. Dev. CZ</th>
<th>St. Dev. PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock rotation 2013</td>
<td>45,7424</td>
<td>137,394</td>
<td>0,80575</td>
<td>656</td>
<td>0,420680</td>
<td>81,300</td>
<td>1856,98</td>
</tr>
<tr>
<td>Stock rotation 2012</td>
<td>42,3349</td>
<td>34,951</td>
<td>1,34157</td>
<td>639</td>
<td>0,180212</td>
<td>62,997</td>
<td>72,58</td>
</tr>
<tr>
<td>Stock rotation 2011</td>
<td>102,3585</td>
<td>1175,404</td>
<td>0,83106</td>
<td>607</td>
<td>0,406265</td>
<td>1059,061</td>
<td>20795,09</td>
</tr>
<tr>
<td>Stock rotation 2010</td>
<td>53,7084</td>
<td>108,350</td>
<td>0,58354</td>
<td>559</td>
<td>0,559766</td>
<td>280,452</td>
<td>1444,44</td>
</tr>
</tbody>
</table>
The same as in Hungary case in any of the tested years p-value is lower than 0.05. We cannot find the relationship between enterprises selling online in Hungary and enterprises selling online in Czechia.

Table 4 T-student test for e-commerce companies in Czechia and Slovakia

<table>
<thead>
<tr>
<th></th>
<th>Average CZ</th>
<th>Average SK</th>
<th>T</th>
<th>df</th>
<th>P</th>
<th>St. Dev. CZ</th>
<th>St. Dev. SK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock rotation 2013</td>
<td>45,742</td>
<td>505,447</td>
<td>-</td>
<td>1,34546</td>
<td>490</td>
<td>0,179099</td>
<td>81,300</td>
</tr>
<tr>
<td>Stock rotation 2012</td>
<td>42,3349</td>
<td>481,188</td>
<td>1,67603</td>
<td>488</td>
<td>0,094372</td>
<td>62,997</td>
<td>4286,87</td>
</tr>
<tr>
<td>Stock rotation 2011</td>
<td>102,3585</td>
<td>120,340</td>
<td>0,21700</td>
<td>476</td>
<td>0,828298</td>
<td>1059,061</td>
<td>668,79</td>
</tr>
<tr>
<td>Stock rotation 2010</td>
<td>53,7084</td>
<td>1476,392</td>
<td>1,15879</td>
<td>451</td>
<td>0,247154</td>
<td>280,452</td>
<td>19218,37</td>
</tr>
<tr>
<td>Stock rotation 2009</td>
<td>33,1434</td>
<td>1964,275</td>
<td>1,15562</td>
<td>372</td>
<td>0,248577</td>
<td>39,665</td>
<td>24341,28</td>
</tr>
</tbody>
</table>

Source: own study based on data from e-commerce firms reported in Database Amadeus product of Bureau van Dijk, [date: 2016 MAY 10]

The last table shows that there is no relationship between stock rotation in e-commerce companies in Czechia and Slovakia. P-value is higher than 0.05 and
4 Conclusions

Problems in the development of e-commerce may be due to the characteristics typical of the post-socialist backwardness constraints. The economic reforms associated with the transition to a market economy resulted in rising unemployment and general impoverishment of the population. The European Union currently consists of many countries, and some of them are countries of the former Eastern bloc. Europe's center of gravity shifts. The process of enlargement of the European Union not only drives the changes in the new countries, but also leads to a change of the whole of Europe.

Acknowledgments

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References

Ahmidat, A., (2016), Oil impact on production rates in the Libyan economy (analytical study during the period 1995-2008), unpublished material.


Bledinger, G., (2016) Best in class approach and finetune the formula to allow financially proper comparisons, unpublished material.


