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The Role of Implementation New Technologies in Medium-Sized Enterprises in Selected Regions

INTRODUCTION

Small, medium-sized and micro enterprises are the largest business segment in every country. Its size is expressed by employment, by the share of GDP and often by the amount of added value created. If we consider small and medium-sized enterprises and micro-business on the basis of the above indicators, than we can talk about the market leaders. The situation changes, when we begin to deal with the internationalization of SMEs. In foreign markets in particular large enterprises dominate. In the case of penetration into foreign market we can dominate estimate the almost 100% exclusion of micro-businesses, although currently enterprises do not need to enter into foreign markets directly – they just need to use information and communication technology to do so. The reason why SMEs and micro enterprises in particular, are often excluded from the international business arena, or their business is significantly limited, is that enterprises which seek presence in foreign markets, need to have large production capacities or specialized services which can be offered to foreign customers. Internationalization of business according to H. Simon, very often begins when a company sells its goods in foreign markets. The highest form of internalization is when the management of the undertaking will receive foreign managers. This form of internalization is undertaken only after several years or decades [Simon, 2010].

There are many other forms of international cooperation between the most liberal (selling goods and services in foreign markets) and the restricted forms of cooperation (capital business link) at the corporate level. *The aim of the paper is to analyze the impact of introducing new technology on export and import in the medium-sized enterprises.* Unusual rapid growth, development and change of

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technology systems of production and changes in management of production push enterprises to adopt those changes. Enterprises, which fail in implementation of these changes or are unable to react to the changes in their environment, would be sooner or later uncompetitive not only on international but also on the domestic market. Because of this it is very important to exploit the potential of changes in technology to improve corporate competitiveness in domestic and foreign markets. The analysis is focused on the area of the Slovak Republic with specialization on Prešov self-governing region (PSR). We assess the degree of impact of new production technology on the export or import activities of medium-sized enterprises; A parallel research in medium-sized enterprises of the PSR and the Krosno–Przemysl sub-region in Poland was carried out in July and August 2013. The analysis is based on obtained results by questionnaire but also the data obtained from statistical databases. Based on the analysis we propose recommendations for medium-sized enterprises in selected regions.

“A characteristic of the regional analysis of PSR and Krosno–Przemysl sub-region in the SubCarpathia region is their position near the border. Both regions are on the East, less developed parts of Poland and Slovakia. They represent the European Union border and the Schengen area on the East of the EU in the same time. Subcarpathia is one of the 16 regions on the NUTS 2 level between 271 NUTS 2 regions in the EU” [Kaszuba, 2014 et al., s. 185]. The Slovak Republic is divided into 8 regions and these 4 create NUTS2 – Western, Middle, and East Slovakia and separate region is Bratislava. PSR is located in the Eastern part of the Slovak Republic, which is in the size and number of inhabitants the biggest of all the Slovakian regions. Together with Košice self-governing region they make up the East region of Slovakia. As regards the economic maturity of PSR, it is the least developed from all Slovak regions measured by every macroeconomic indicator – GDP, employment, value added, labour productivity, wages. The economic situation is still weak because of inferior and unfinished transport infrastructure, highlighted by the distance from the Capital and from Western markets. On the other hand, there are and relatively large and unsaturated markets of Ukraine and Russia closeby.

“In terms of land Subcarpathia is larger than the West Slovakia and the Krosno and Przemysl sub-regions together cover an area of more than one thousand km² larger than the Prešov region. In 2012 the Subcarpathia region had 500 thousand inhabitants more than the East Slovak region. The total number of inhabitants of the Krosno and Przemysl sub-region was 50 thousand higher than in the Prešov region. According to Eurostat data in 2010, there was a slightly higher GDP in Podkarpatie, but in 2012 Purchasing Power Standards (PPS) per capita in Podkarpatie was about 1.800 € less than the East SR. The regional GDP by PPS per capita as a percentage of the EU 27’s average was unfavourable for both regions – In 2010 it was not higher than 50% of average of 27 the European Union countries” [Kaszuba, 2014, s. 185].

MEDIUM-SIZED ENTERPRISES IN POLAND AND SLOVAKIA

In our research we focused on medium-sized enterprises, therefore we will deal only with medium-sized enterprises in the following parts of the text, if it is possible based on statistical data. Among this kind of businesses we include only those companies which have from 50 to 249 employees according to the EU [Nová, 2008, s. 16–24].

Slovakia as a small and open economy is more or less dependent on foreign trade. The openness of the SR has been increasing from 1990's and export/import share on GDP is currently evaluated at a value higher than 160, while shares of export and import on GDP are almost the same. According to Slovak SBA Fact Sheet 2013, which is issued by the European Commission, the share of export of SMEs was about 40% of the whole export to EU countries and about 19% of the share of export to non-EU countries. The area of Slovakia and Poland is incomparable. Slovakia is less than 16% the size of Poland. The geographical dimension of Poland as a big country is demonstrated by the openness of the country. The export/import rate on GDP increased since 2008 from 72 to 80 in 2013. Nevertheless, the value of this indicator in Poland is about half lower than that of the SR.

Medium-sized enterprises in the SR formed during research period less than 0.7% of all establishments in Slovakia. Between the years 2008–2013 the number of medium-sized enterprises decreased in the SR from 4,403 to 4,221. While the decline was mainly from 2009 to 2012, only in the last year there was a slight increase of about 30 in the number of medium-sized businesses. On the other hand, the micro-businesses sector developed, i.e. their share of the total number of businesses increased from 48% to 67%. As regarding legal form, the majority of medium-sized enterprises (over 40%), were limited liability companies following the budgetary organisations with higher than 25% share. The least number of medium-sized companies were state-owned or the other legal forms².

The number of medium-sized enterprises in the PSR decreased by 9 in 2013 compared with the year 2008 (3.3% decline), which when compared to the previous year repeated an increase of 22 companies (8.4% increase). The PSR enterprises have less than 10% share on the total number of medium-sized enterprises in the SR. Their share in the analysed period dropped from 10.4% to 9.8%. Prešov self-governing region is made up by 13 districts. Most businesses are located in two of the districts of PSR – Prešov and Poprad. Prešov district has the biggest share of medium-sized enterprises among the total number of businesses in the PSR – for this period it was between 23.7–27.7%. The medium-sized enterprises in Prešov have average 2.6% share on medium-sized enterprises in the SR.

² In the number of enterprises registered by the Statistical Office of the Slovak Republic and the European Commission there is a difference between the data in the databases. While the Statistical Office gives the number of total SMEs in the SR, Eurostat captures only those companies which are included in non-financial businesses.

Between 2008 and 2013 the number of medium-sized enterprises in the Krosno-Przemysl sub-region fell to 50. A more significant change in the number of enterprises occurred in the year 2010, when in this sub-region the number of medium-sized companies rose 380 and to increased to 2,731 enterprises (86% increase). From 2010, the number of medium-sized companies in the sub-region dropped. In 2013 compared to 2008 it was 2%, less but compared to the strongest year, i.e. 2010 it was a decrease of 15%. The number of medium-sized enterprises in the Krosno-Przemysl sub-region is about 50% higher than in the PSR. Medium-sized enterprises in this sub-region comprise a 1.6% share of total medium-sized companies in Poland.

THE MEDIUM-SIZED ENTERPRISES IN THE FOREIGN MARKETS

Competition among enterprises in the foreign markets is much more intense than in the domestic market. A foreign customer needs an entrepreneur to deliver something more than a low price. The customer has the option of selecting from the world's products, therefore they do not only prefer a low price. In addition to the price they are interested in product quality, modern design, fashion and function. One of the factors, which is typical for demanding customers in foreign markets, is added value. The increase in added value is usually accompanied by increasing innovation and technological implementation into business practice.

The proportion of medium-sized enterprises' added value in the SR in the years 2010–2012 was fluctuating. Despite the increase of added value in the medium-sized enterprises, its share on value added decreased by almost 5% in 2012 and compared with average in the EU countries in 2012 it was lower by 4%. The value added produced in medium-sized enterprises in all available years was higher than in small enterprises and only in 2012 year was it less than in micro-businesses.

The added value in medium-sized enterprises in Poland expressed in absolute and relative value was fluctuating over the three years. The share of value added in medium-sized enterprises in Poland decreased in the light of the increase of the added value produced by big businesses. Nevertheless, in all of the years the added value produced in medium-sized enterprises in Poland was higher than the average produced by medium-sized companies in the EU.

Even though added value produced in Polish companies is several times higher than in the SR in absolute and relative value, for the conversion of value added on one medium-sized enterprise, the indicator is changed. The medium-sized enterprise in Slovakia created added value in amount of 2,462,043.5 € in the year 2013, while medium-sized enterprise in Poland created the added value in amount of 1,282,743.72 €. When calculating only this medium-sized enterprises,

which were taken into account by the EU³ is share of created value on one medium-sized company in Poland at amount of 2,344,810.563 € and in the SR is 2,448,979.591 €.

Table 1. Overview of value added in enterprises according to size in the SR and Poland

	2010		2011		2012	
	SR	PL	SR	PL	SR	PL
Micro-business	4 bil. € 16.1%	39 bil. € 21.1%	2 bil. € 10.7%	27 bil. € 16.6%	7 bil. € 22.7%	26 bil. € 15.2%
Small enterprises	5 bil. € 18.8%	21 bil. € 11.5%	4 bil. € 19.2%	21 bil. € 13.0%	5 bil. € 15.3%	23 bil. € 13.2%
<i>Medium-sized enterprises</i>	<i>4 bil. € 17.1%</i>	<i>39 bil. € 21.4%</i>	<i>5 bil. € 22.3%</i>	<i>35 bil. € 21.9%</i>	<i>6 bil. € 17.9%</i>	<i>38 bil. € 22.1%</i>
SMEs	13 bil. € 52.0%	99 bil. € 54%	12 bil. € 55.2%	83 bil. € 51.5%	16 bil. € 55.9%	87 bil. € 50.5%
Large enterprises	12 bil. € 48%	85 bil. € 46.0%	11 bil. € 44.8%	79 bil. € 48.5%	14 bil. € 44.1%	85 bil. € 49.5%
Total	25 bil. € 100%	184 bil. € 100%	23 bil. € 100%	162 bil. € 100%	31 bil. € 100%	172 bil. € 100%

Source: SBA Fact Sheet Poland and the Slovak Republic 2008–2013, own processing.

There were 266 medium-sized enterprises in the Prešov self-governing region in 2013. 115 medium-sized enterprises from each of districts of PSR were randomly selected. After the selection of these companies which replied to the questionnaire, 90 medium-sized enterprises were evaluated. These companies are a representative sample of medium-sized enterprises in PSR, what means that the result obtained in questionnaire research can be applied to all of the medium-sized companies established in the PSR.

Among the analysed samples of medium-sized enterprises operating in the PSR area, 51.1% of companies are exporting their own products. Medium-sized enterprises most often import common material for the need of own production what was marketed by 48.9% of enterprises. At the same time 55.5% of the medium-sized enterprises said that they had introduced a new technology into basic production during last three years. On the basis of these responses we assumed that introduction of technological change carried out in companies is important for those businesses, which trade in foreign markets not only as importers but also as exporters of these products. We started with the assumption that a business, which exports products from PSR needs to have the latest technology already in place. On the basis of the value of the Pearson's coefficient, dependence was confirmed by the medium-sized enterprises which are exporting manufactured prod-

³ The European Commission took into account only the undertakings relating to the business of the economy and thus includes only businesses in the sectors of industry, construction, trade and services.

ucts or exporting products from other firms. These enterprises in the last three years have introduced new technology into production. The value of the coefficient was significantly high (0.94).

The value of the coefficient in range of 0.91–0.97 pertains to those medium-sized enterprises, which did not implement new technology in the years prior to manufacturing while at the same time importing products manufactured by foreign partners, importing raw materials for their own production in the SR but also importing products from other companies for the purpose of resale. The interesting fact is that for these types of production based on imported materials there is a high dependence as in the case where the enterprises are in the process of introducing new technology/ies into their production.

In 2013 100 enterprises from a total of 269 medium-sized enterprises in the Krosno–Przemysl sub-region of the Podkarpatian voivodship were, randomly selected and surveyed,. As in the PSR sub-region, this is a representative sample of medium-sized companies and as such the results can be generalized for all medium-sized enterprises in the whole Krosno–Przemysl sub-region.

51 companies from among the 100 medium-sized firms selected stated that they export the products they produce. This was the highest number of responses to all the potential answers relating to the export topic . With regards to import, many medium-sized enterprises are engaged in the import of raw materials and materials for their own production needs. This response was given by 35 businesses.

Even though it was confirmed that medium-sized enterprises operating in the PSK area and exporting from there, introduced new technology into their business in the past three years, this presumption cannot be applied to the Polish sub-region. The number of responses from this sub-region's enterprises that have indicated that technology was installed into their business in the past three years, makes it clear that it will not be explicitly those businesses that are engaged in export. Most responses to the introduction of new technologies in the last three years indicated that the possibility of introducing new technologies was not used (50 responses) and only 5 out of 100 businesses plan to introduce new technologies into their production. On the basis of a comparison of the replies about exports and the introduction of new technologies, we, via the Pearson's coefficient, found that the highest level of addition (0.93) is for businesses that plan to introduce new technologies into production and at the same time export their own manufactured products. This would mean that, for those medium-sized enterprises operating in the subregion, new technologies are becoming essential due to their efforts to operate in foreign markets. The second-highest value of Pearson's coefficient characterised those businesses that export their own production (at the level of 0.88) or products of other companies (0.85 values) but did not install new technology for production over the the past three years . All of these values are high enough to state that there is interdependence between these two variables,.

The importing firms with the highest dependence expressed by Pearson's coefficient of 0.95 are for those enterprises, which import products of other companies in order to resell and these enterprises have introduced new technologies in the field of basic activities over the past three years.

CONCLUSION

After the year 2000 the individual countries are more interested in small and medium-sized businesses. They gradually find out that for the development and growth of the economy and jobs they are just as important as large companies on the market and they complement each other. Small and medium-sized enterprises play a much smaller role than large enterprises in international markets. The answer to the question why this is so, differs not only among regions that would be similar from an economic perspective, but also among the various parties operating in the market. On the basis of partial studies of medium-sized enterprises in the sub-region Krosno–Przemysl and the PSR region we have come to the following conclusions.

Poland and the Slovak Republic are neighbouring countries, which share a common history and relatively operate as homogeneous economically developed countries. However, if we look closer on the economy we will find many differences between countries. As regards the degree of openness of the economy, the SR is a typical representative of a small and open economy with a high degree of dependence on international trade, which is reflected, in particular, in indicator of the openness of the country. In comparison with the Polish Republic, the openness of the SR is double.

Even though both regions are marginalized, economically less developed and located more on the periphery than in the economic centre of the country, the medium-sized businesses coming from these regions behave differently on foreign markets. Medium-sized enterprises that export from these regions constitute more than 50%. This could indicate that the domestic market for businesses operating in the less developed regions is not enough. **If they want to effectively produce and sell, then part of their production must be offered to foreign market.** Among the medium-sized enterprises, however, there are differences in added value, as well as in the introduction of new technologies into the production. Statistics on the value added to a medium-sized enterprise showed that medium-sized enterprises in Slovakia reported a much higher added value than medium-sized enterprises in the subregion Krosno–Przemysl in Poland. Higher added value may be a result of the introduction of new technologies into production. On the basis of the value of the Pearson's coefficient, there is a significant relationship between the exports of products, which the medium-sized enterprise produces and new technology implemented into production during the last three years in PSR region.

Such a significant addiction, however, does not exist in medium-sized enterprises in the sub-region Krosno–Przemysl in Poland. There are many reasons for the introduction of new technologies into the production in the Slovak Republic.

In geographically large countries medium-sized enterprises are able to compete in foreign markets also on the basis of low prices (the production in large quantities makes it possible to benefit from economies of scale, which will be reflected in a low price). Whereas the low price can be achieved not only through savings from economies of scale, but also via the low cost (in the case of the Slovak Republic it was the cost of labour), when they lose the advantage of cheap labour, companies begin looking for other options to reduce costs like the growth of productivity or the rising quality of offered products. **New technologies make it possible to produce at a lower cost and increasing productivity.** It follows from this that, in spite of the fact that new technologies are implemented in production, the main competitive tool for getting into foreign markets is still low prices and not the quality of offered produce.

The second reason why businesses need to implement new technologies into production is that there is much more and much stronger competition in foreign markets, as such it is often not enough to just offer a low cost products. This trend is manifested in introduction of new technologies in the sub-region Krosno–Przemysl, where, on the basis of the value of the Pearsn’s coefficient, research shows a significant relationship between the companies that export and those that assume that in the coming years they will introduce new technology into production. For small and open economies, not only the price is important but also the quality offered to the foreign markets. The reverse situation is in medium-sized enterprises, which import to the country. High dependency occurred in medium-sized enterprises of the Przemysl–Krosno sub-region if they import products, sell them since the companies have introduced new technologies into production. In terms of high dependence among the medium-sized enterprises of PSR it is connected with those, which imported into the SR, but they have not introduced new technologies or are planning to introduce them.

If, therefore, we will come back to the goal of the paper, then **the medium-sized enterprises in both analysed regions have introduced new technology in the production only if they strictly needed it for their business.** At the same time, there are differences between the medium-sized enterprises in the sub-region Krosno–Przemysl and Prešov administrative region. This conclusion is important for the local government when applying the principles of economic policy in each of the regions. Despite the fact that medium-sized enterprises in both areas behave differently in relation to implementation of new technology, the role of local authorities should be, in particular, to promote the introduction of new technologies into the production activities of these businesses. It is equally important to help and support the export activities of medium-sized enterprises of the marginalized regions.

At the same time any assistance from the local government or state government should be focused mainly on the creation of favourable conditions for entrepreneurship, innovation, and export and not on incentives offered to the selected enterprises. The question remains whether medium-sized enterprises in the Prešov self-governing region, as well as in the Krosno–Przemysl sub-region, know where they are heading. The tendency of the world economy leads towards increasing use of the results of innovation and new technology in the production processes. However, are businesses – not only in the regions but in the Slovak Republic and Poland – ready to use purchased licenses and patents in production, or even to create them?

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Summary

The segment – Small and medium sized enterprises, plays the biggest role in every economy. The situation is different when considering the penetration of SMEs in international markets. The worst state of affairs is in developing and implementing the latest technologies into business practice. The article deals with the influence of new technology on SMEs operation and penetration of medium-sized enterprises in international markets. The conclusion provides recommendations on how to increase the competitiveness of medium-sized businesses in international markets.

Keywords: medium-sized entrepreneurship, international markets, presov region, region of Podkarpatie in Poland, technology

Rola wdrażania nowych technologii w średniej wielkości przedsiębiorstwach w wybranych regionach

Streszczenie

Największą rolę w każdej gospodarce odgrywa segment małych i średnich przedsiębiorstw. Sytuacja ulega zmianie, gdy mówimy o rozpowszechnieniu MŚP na rynkach międzynarodowych. Najslabiej jest w opracowywaniu i wdrażaniu najnowszych technologii do praktyki gospodarczej.

Artykuł dotyczy wpływu nowej technologii na działalność małych i średnich przedsiębiorstw, jak i rozpowszechnieniu średnich przedsiębiorstw na rynkach międzynarodowych. W podsumowaniu zamieszczono zalecenia, jak zwiększyć konkurencyjność średnich przedsiębiorstw na rynkach międzynarodowych.

Słowa kluczowe: przedsiębiorczość średniej wielkości przedsiębiorstw, rynki międzynarodowe, region Presov, Podkarpacie, technologia

JEL: F19, O31, R10