SMALL AND MEDIUM-SIZED ENTERPRISES IN AN UNDERDEVELOPED AND DEVELOPED REGION

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Abstract

The regional policy of the state is currently pursuing the theory of endogenous regional development. This is reflected in the specific attention given to small and medium-sized enterprises. In the paper, we present partial results of small and medium-sized enterprises exploration in regions with different levels of development. Applying the two-step cluster analysis, we identified differences in qualitative characteristics of SMEs in the underdeveloped and developed region. Significant differences were shown in the qualitative characteristics of SMEs with some innovative elements. A smaller percentage of innovative elements in entrepreneurial activities in the underdeveloped region subsequently influences the competitiveness of small and medium-sized enterprises that can create growth and quality jobs. When examining differences in qualitative characteristics of SME's with innovative elements, we find out that there were no significant differences within the medium-sized enterprises. We have seen bigger differences in micro and small enterprises. In the Trnava Region, compared to the Prešov Region, there is a smaller number of micro-enterprises that do not support the training of managers, employees and the use of managerial programs in a higher number of cases.

Key words

Cluster analysis. Small and medium-sized enterprises. Regional development. Innovation elements.

JEL Classification: D22, O18, R12

1. Introduction

Various economic activities in the regions are impacted by differences between regions at the level of their development and in the living standard of the population. The objective of the state is to assess the qualitative characteristics of SME's in the underdeveloped and developed regions of the Slovak Republic at the level of the NUTS 3 territorial statistical units. The significance of SME's for regional development results from the characteristics attributed to them. Some of them are pointed out by Strážovská (2012, p. 148)**:** 1) Currently, SME's are considered to be the most important element of national economies, 2) they have an irreplaceable role in the dynamic development of advanced market economies, 3) they are highly adaptable to market requirements and particularly demand, 4) they have innovative functions, 5) they meet even the most demanding requirements of customers and consumers.

Weaknesses manifest themselves in the business activities of SME's, highlighted by Hribik (2010). The weaknesses include many of the tasks falling within the competencies of head employees, more complicated access to foreign capital, a weaker position in public procurement tenders, the problem with participation in an enterprise with a need for large investments, it is easier for them to become insolvent, cannot afford to employ experts and scientists, lower levels of technological development, limited means of promotion and advertising, and less favourable working conditions. The existence of these weaknesses has an impact on the competitiveness of SME's.

In a survey performed in 2006 by the Observatory of European SME's (2007), in terms of limitations in business activities SME's pointed out problems with customer purchasing power (46%), problems with administrative regulations (36%), the lack of a qualified workforce (35%), a costly workforce (33%), infrastructure problems (23%), limited access to finance (21%), the introduction of new technology (17%), the introduction of new forms of organization (16%).

Regional development and SME's began to address various theories of regional development in the 1970's and early 1980's, when the crisis of the advanced economies of the world began to occur. Empirical research has demonstrated that economic growth and the overcoming of the results of crises have occurred in some regions faster than in some industrial areas (Southern Paris, the Rône-Alps in France, Silicon Valley and Boston in the USA, Murcia and Valencia in Spain, Third Italy, Baden-Württemberg in Germany). The shared characteristic of these regions was the dominance of SME's and a healthy entrepreneurial spirit. From the 1950's to the crisis of Fordism, the basis of the model for regional development was capital stimuli and large state projects in growth centres (public infrastructure, job

creation through investment from other regions). Right in the period of overcoming the crises, referred to in the professional literature, as well as the crisis of Fordism, in which SME's played an important role SME's began to pay increased attention to several authors (Hadjimichalis, 2011).

At present, SME's and innovations are considered to be an important factor of regional development, which we can observe in the specific attention that SME's and issues of innovation the central public administration authorities dedicate themselves to. With the objective of increasing the results of the innovation policy in Slovakia, there were changes in the organizational structure of institutions for the implementation of a regional innovation strategy within innovation strategies for 2014 - 2020. A great emphasis is put on the cooperation of regional actors in the regional innovation system. Hrašková and Chodasová (2012) point to the fact that a large group of SME's, which did not cooperate with anyone, have low labour productivity and negligible innovations. One method of staying on the market is to differentiate itself from others in the long run (Ďurechová, 2010). In 2008, Košturiak a Cháľ (2008) arrived at the conclusion that SME's will be successful in the future and they will be able to adapt to new business paradigms in time.

2. Research Methods

The level of development of Slovak regions at the level of the NUTS 3 territorial statistical units is different and one of the important factors is the entrepreneurial activities of SME's. The objective of the state is to identify the differences in the selected qualitative characteristics of SME's in the underdeveloped and developed regions of Slovakia at the level of the NUTS 3 territorial statistical units.

Different methods are used in measuring the level of the development of regions, their choice depending on the availability of data and the content of the survey. In the analyses examining the level of development of the region, the simplest quantitative methods are indirect methods based on scaling techniques and point methods (Michálek, 2012). In selecting an undeveloped and developed representative NUTS 3 region in our survey, we selected criteria often used in national or international analyses (e.g. the EU, OECD) due to their availability. These criteria are GDP per capita, the registered unemployment rate, net household income and the poverty risk level.

We obtained secondary data from the available databases of the Statistical Office of the Slovak Republic. When measuring the level of development of the regions, we used the statistical method of ranking and we chose the Prešov Region as a representative of the underdeveloped regions and the Trnava region as a representative of the developed regions of Slovakia.

To analyse the qualitative characteristics of SME's in the monitored regions, we obtained the data through a questionnaire survey, in which we applied some theoretical knowledge related to the competitiveness of SME's. Assertiveness in the markets is a prerequisite for business development, increased production and profit.

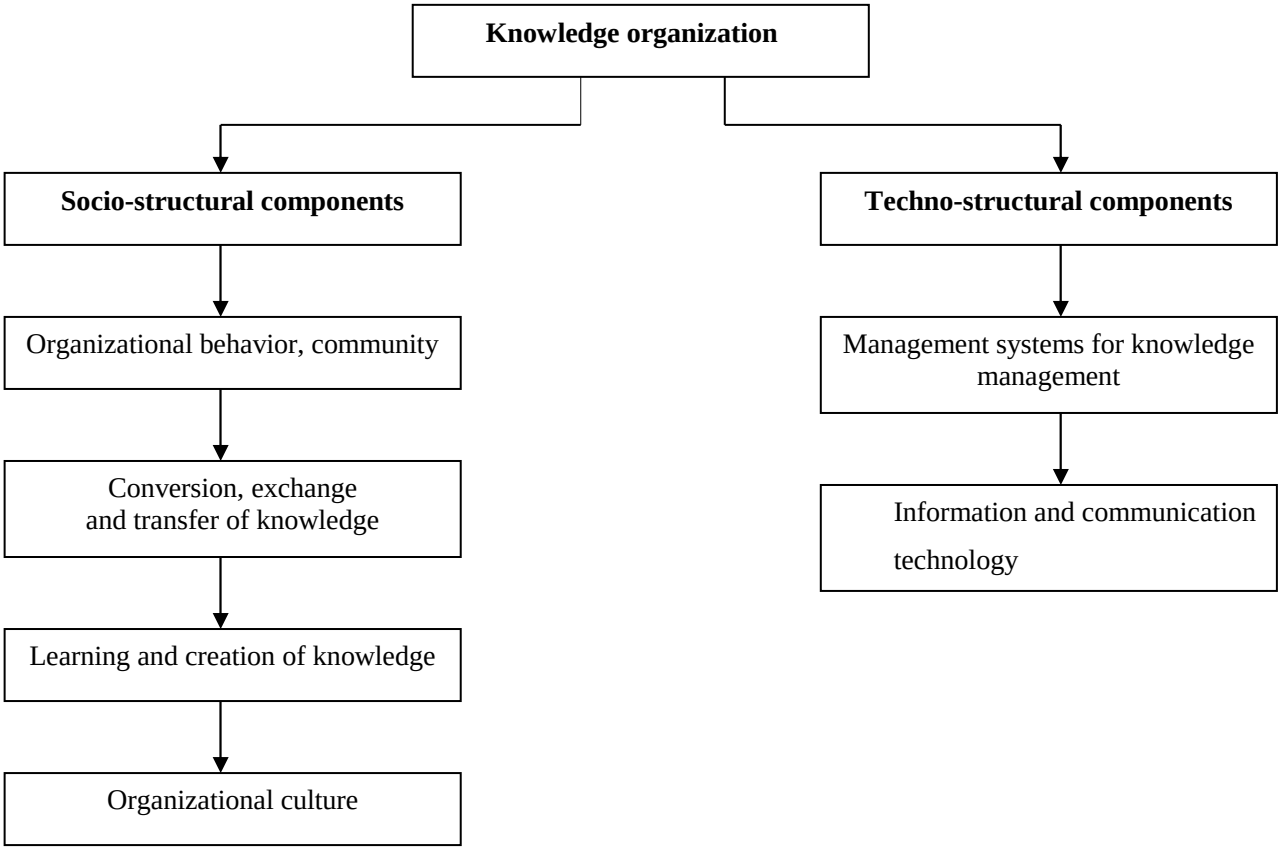
Kislinger (2008) considers a company that demonstrates the capacity to obtain, maintain and increase its share of production on national and international markets, to be a competitive company. That is why we were interested in how much of their business activities do enterprises perform outside the region of their headquarters or in foreign markets. One of the strengths expected from SME's is to satisfy the demanding and individual requirements of customers. The objective of strategic marketing, which is part of strategic management, is to maintain and obtain new customers (Ivanová, 2012), so we have investigated the degree to which SME's are devoted to this area and the method they use. Common methods include polls, questionnaires, a book of desires and complaints. Currently however, the impact of information technology makes it possible to reach a much larger number of customers over the Internet without personal physical contact. Košturiak a Cháľ (2008) consider the customer as an equal partner in the business.

Currently, we often encounter the concept of a knowledge economy. Kokavcová (2011) considers knowledge to be a level of knowledge that leads to wisdom. At the First Level the data (texts, codes, factors) are counted and at the Second Level of information, which provides us the answers to questions like the following: Who? What? When? Where? At the Third Level of knowledge, when based on the previous levels you can already answer the question How? What method? And the last level of wisdom, based on which we can ask questions that require knowledge and thinking in contexts. We can say that this entire hierarchy from data to wisdom is important for the creation of innovation. In our survey, we wanted to know what resources SME's use to acquire new knowledge and information about new opportunities.

Fig. 1 displays the elements of the knowledge organization. Knowledge management becomes the most important type of management of economic practice and theory at the worldwide level (Novotný, 2011).

In the formulation of further questions, we used the elements of a knowledge organization. We identified how many enterprises in the underdeveloped and developed region use management information systems in the management of the enterprise and whether they use information technology to promote business result and sell their production through their own online shop. The use of information technology for these activities enables SME's to operate not only on local but also on the national and international markets. We also formulated the question on the usage of information technology for purchases for the business activity. We dedicated our own support to employee training and support for the training of managers

Fig. 1. Elements of the knowledge organization



Source: Kokavcová, 2011

Another section of the survey was oriented on creating innovations. Kosturiak and Cháľ (2008) pointed to constant changes in the markets and customer requirements, so it is not enough to carry out innovation only in the production area but in the entire business process. We were interested in the frequency of changes in business activities, in what area of business and what percentage of turnover of SME's is invested in innovation activities in the surveyed regions. The cooperation between different actors also contributes to innovative activities, so we have formulated a separate question in this area.

We determined the qualitative characteristics of SME's in the underdeveloped and developed regions by applying the data we have obtained through a questionnaire survey and methods of a two-step cluster analysis. The cluster analysis is a commonly applied method in classifying multidimensional structures into classes or clusters (Meloun, Militký, Hill, 2012) in various focused researches. In our research the SME's were multidimensional subjects and, based on their characteristics, were classified through cluster analysis. In view of the size of the set, a two-step cluster analysis was used. The cluster criteria (characteristics) were stored in a so-called CF-tree and the algorithm itself was implemented in two phases. In the first phase, on the basis of the imbalance of criteria, SME's were clustered into sub-clusters, and in the second phase the sub-clusters were also clustered into the final two clusters on the basis of disparity. A credibility level was used in both steps for measuring the disparity, also suitable for categorical variables. Qualitative characteristics in the underdeveloped and developed regions were

determined according to the percentage differences in the quality characteristics of the SME's between clusters.

3. The Qualitative Characteristics of SME's in the Underdeveloped and Developed Regions

To determine the qualitative characteristics of SME's in the underdeveloped and developed regions, we applied a two-step cluster analysis and obtained the necessary data by conducting a questionnaire survey in the SME set from both regions.

The basic set consisted of 4,673 domestic private SME's from the Trnava and Prešov Regions with the number of employees from 5 to 249. From these, there were 318 (6.81%) medium-sized enterprises, 1,992 (42.63%) small enterprises and 2,363 (50.57%) micro-enterprises with 5 to 9 employees. Legal entities from the basic set comprised 8% of the sample, represented by 374 enterprises. Of the 374 SME's, 26 enterprises were medium-sized enterprises (6.95%), 160 were small enterprises (42.78%) and 188 were micro-enterprises (50.26%). The representation of SME's in their individual categories is represented in the same number from the Trnava and Prešov Regions.

Tab. 1. Return Rate of Questionnaire

Number of questionnaires/SME's	Micro-enterprises	Small Enterprises	Medium-sized Enterprises	Total SME's
Number of sent questionnaires	683	575	92	1350
Number of returned completed questionnaires	190	160	26	376
Number of incomplete questionnaires	2	0	0	2
Number of questionnaires used in the survey	188	160	26	374 27.7% from 1,350

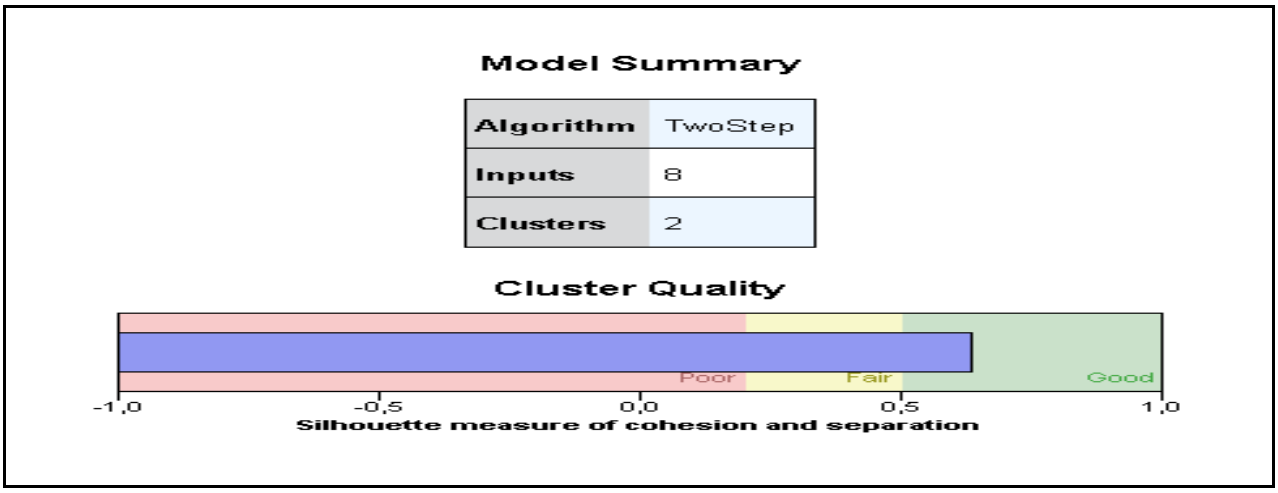
Source: Our own processing

The verification of the representativeness of the set as well as the application of the two-step cluster analysis were performed in the SPSS program. To check the representativeness of the sample, we used the good compliance chi-squared test for good compliance. The statistical test was evaluated at a significance level of 0.05. The chi-squared test for good compliance demonstrated the representativeness of the set ($p = 0.989$).

3.1 Determination of the qualitative characteristics of SME's in the underdeveloped and developed regions

In the two-step cluster analysis based on the most significant 8 variables, a very good clustering capacity was demonstrated in the division of the structures of the set into two clusters. This fact is illustrated in Figure 1.

Chart 1. Clustering quality in the SME set



Source: Output from the SPSS

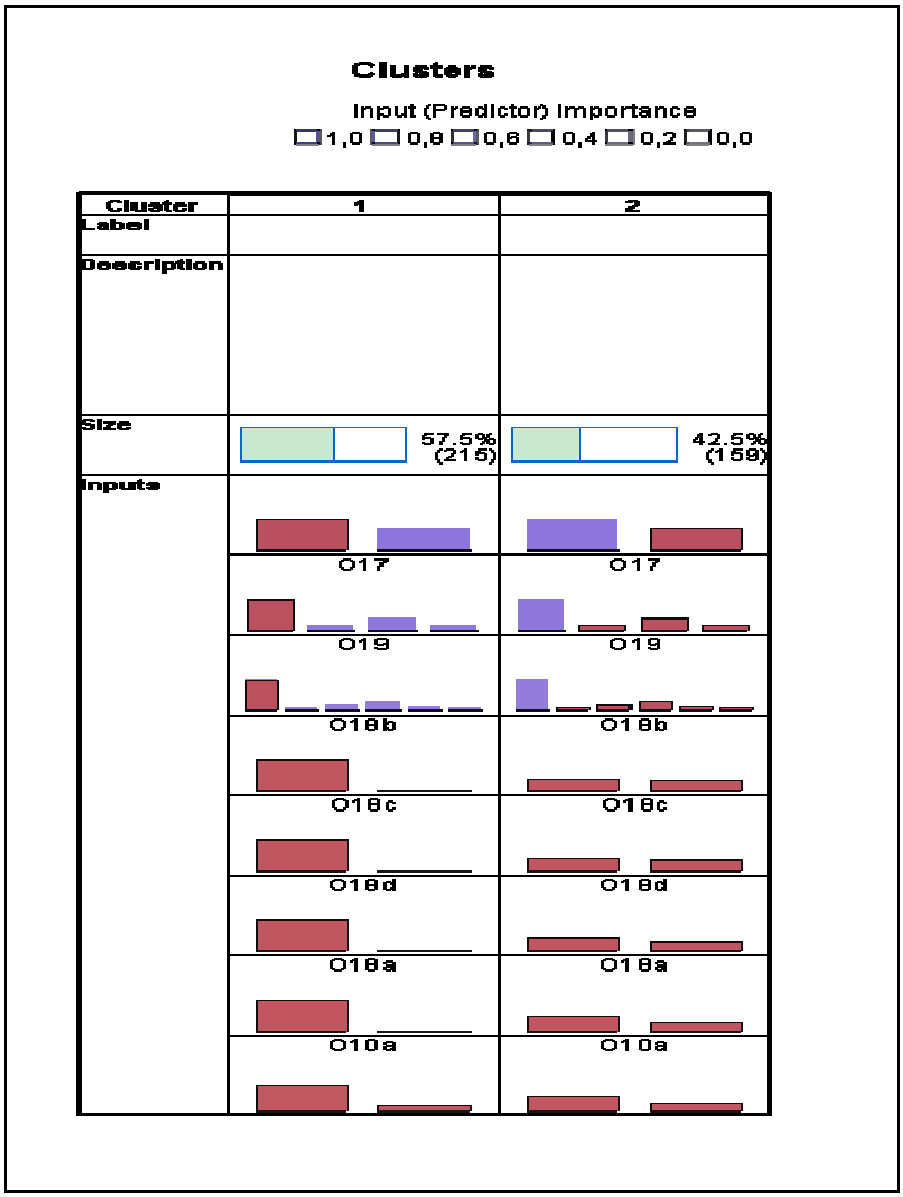
The two-step cluster analysis method permitted the identification of the eight most important variables for classifying SME's into clusters (Figure 2).

8 criteria on the basis of which the clustering process of the SME's took place:

1. The failure to change in any area of business activity over the course of 3 years
2. How many times have you made changes over 3 years in carrying out business activities?
3. What percentage of total turnover over 3 years have you used to implement changes in the business activity?
4. Implemented changes in business activities in the area of process (process technology and methods, logistics, production distribution
5. Implemented changes in organization and business management
6. Implemented changes in the area of marketing activity
7. Implemented changes in the area of production
8. Use of management software in business activities

By analysing the criteria that have been demonstrated to be essential for the clustering process, we find that all these criteria represent qualitative characteristics with innovative elements.

Chart 2. Variables for dividing SME's into two clusters



Source: Output from the SPSS

The cluster criteria (characteristics) were stored in a so-called CF-tree and the algorithm itself was implemented in two phases. In the first phase, on the basis of the imbalance of criteria, SME's were clustered into sub-clusters, and in the second phase the sub-clusters were also clustered into the final two clusters on the basis of disparity. A credibility level was used in both steps for measuring the disparity, also suitable for categorial variables. The number of SME's divided into two clusters is shown in Tab. 2.

Tab. 2: Multiple division of SME's into 2 clusters through a two-step cluster analysis

TSC _1599		Frequency	Percent	Valid Percent	Cumulative Percent
1 Valid	1	103	47.9	47.9	47.9
2		112	52.1	52.1	100
Total		215	100	100	
2 Valid	1	84	52.8	52.8	52.8
	2	75	47.2	47.2	100
Total		159	100	100	

Source: Output from the SPSS program

Cluster 1 consists of 103 small and medium-sized enterprises from the Trnava Region and 112 from the Prešov Region and Cluster 2 consists of 84 SME's from the Trnava Region and 75 SME's from the Prešov Region. When assessing the qualitative characteristics of SME's in the underdeveloped and developed regions, we used the qualitative characteristics of SME's in Cluster 1 and Cluster 2. Differences in the qualitative characteristics of SME's between an undeveloped and a developed region are shown in Tab. 3.

Based on the analysis of the results, we can say that the qualitative characteristics of the SME's in Cluster 1 demonstrate the qualitative characteristics of the SME in the underdevelopment region and Cluster 2 in the developed region.

In terms of industry, the two-step cluster analysis has not demonstrated the importance of the sector for the qualitative characteristics of SME's in the region. In the developed region, there was not a significant presence of SME's in a particular sector compared to the underdeveloped region. The largest difference in percentage was observed in the construction sector, where 8.5% of the larger percentage of SME's was in the undeveloped region. Innovation or export can be implemented by the SME's in each sector. Another issue is the creation of added value in the sectors, wages, expertise in the sector, but these are industry indicators and do not directly impact the qualitative characteristics of SME's and the presence of innovative elements in the characteristics of SME's. Of course, industry in the regions needs to be monitored in terms of the needs of enterprises, the sectoral representation of an economically active population in the regions and in terms of investors. The results of the two-step cluster analysis are instead directed toward the recommendations of economists Martin and Sunley (2007), who in their study highlight the importance of knowledge markets and the need to pay great attention to regional and local markets.

Tab. 3: Percentage differences in the qualitative characteristics of SME's between clusters

Cluster 1 vs. Cluster 2
- 17.4% more SME's with 5-9 employees
- 12% fewer small enterprises
- 5.36% fewer medium-sized enterprises
Assertiveness outside the region of the headquarters
- 4.9% SME's fewer with the implementation of 51-60% of their activity in another region
- 7% of SME's fewer with the implementation of 61-70% of their activity in another region
- 3.2% of SME's more with the implementation of 71% and more of their activity in another region
Export
- 9% of SME's with more than 0% of exports
- 5.4% of SME's fewer with exports of 71% or more of their activity
Obtaining feedback from the customer
- 2.2% of SME's no longer receive feedback from the customer
Source of new knowledge
- 2.1% of SME's no longer obtain new knowledge at all
- 9.4% SME's fewer gain knowledge by cooperating with a foreign partner
Using modern management information systems
- 19.8% SME's fewer use them
Promotion of business activities
- 15.6% SME's fewer advertise over the Internet
- 8.7% SMEs are less engaged in advertising through billboards
Sales through the enterprise's own online shops
- 7% SME's fewer
Purchase through online shops
- 6.3% SME's fewer
Support for employee training
- 2.4% more SME's do not support employee training
- 10% fewer SME's provide regular professional training in the enterprise
- 5.5% fewer SME's support an increase in employee education
- 4% fewer SME's support foreign language training
Support for manager training
- 12.8% fewer SME's
No changes have been implemented in business activities in the last three years

Source: Our own processing

Conclusion

The results of the two-step cluster analysis demonstrate that the qualitative characteristics of SME's in the underdeveloped regions have a smaller percentage of several innovative elements. This fact is also influenced by the implementation of SME innovation in undeveloped regions.

The decisive impact on the implementation of innovation in SME's is enterprise management and the basis for innovation is new knowledge. Due to this reason, it is important to support the training of managers and consequently also employees in SME's.

In the underdeveloped region, there is a smaller percentage of SME's that support the training of managers and employees. In the developed region, there was also shown a wider variety of forms of support for employee training.

Managerial training is also then related to the use of modern management systems in the managing of enterprises, which are mostly used by SME's in the developed region. An important role not only for the creation of innovations but for the promotion of foreign markets is the cooperation with foreign partners, which occurs to a greater extent in the developed regions. All these facts were demonstrated in the low number of implemented changes in the business activity of SME's in the underdeveloped region over the last three years. Moreover, cooperation with other entities: educational and research institutions, public administration and networking, or clusters, can also contribute to increasing the innovative activities of SME's. One of

the decisive roles is played by institutions dedicated to providing public support to small and medium-sized enterprises.

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