

# **Empirical Research on Innovation Activities in Small and Medium-Sized Enterprises in the Slovak Republic**

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*Abstract: Small and medium enterprises are forced to make innovations, because they are under permanent pressure of competitors at the market. From this point of view the ability to compete in innovations plays very important role as a factor of their competitiveness. Through the last year (2013) we have conducted at our faculty the empirical research in SMS's sector in Slovakia oriented on evaluation of innovation activities in SME in the SR as well as on identifying main barriers to develop innovation activities. The results of the above mentioned research are presented in the article.*

*Keywords: small and medium enterprises, innovations, barriers, presumptions, Slovak Republic.*

## **1 Introduction**

With the development of innovation processes in all types of enterprises, it is evident the growing role of innovations also in small and medium enterprises (SMS). The ability to compete in innovations plays very important role as a factor of their competitiveness. Many examples confirm that SME create a space for innovation, nevertheless managers in SME in Slovakia indicate many barriers to develop innovation activities.

The aim of the article is to present the result of empirical research oriented on evaluation of innovation activities in SME in Slovakia as well as on identifying main barriers and formulating main presumptions to develop innovation activities in SME in Slovakia.

## **2 Innovations in small and medium enterprises in the Slovak Republic – empirical research**

In the year 2013 we carried out (with the team of co-operators of the Economics Faculty of Matej Bel University in Banska Bystrica) empirical research aimed at innovation activities in small and medium-sized enterprises in the Slovak Republic. The research was aimed at three areas: evaluation of innovation activities of SME in Slovakia, identifying the barriers of their development and formulating the presumptions of the development of innovation activity in SME of the SR.

The research was conducted by the questionnaires. The questionnaire consisted of three groups of questions in the harmony with the research goal. It was distributed via electronic mail. Selective sample was created by 527 enterprises, 384 of them were small and 143 medium-sized enterprises.

The sample of selected set was observed on the level of two attributes, that means the size of an enterprise and the region in which the enterprise exists. Representativeness of the sample was verified statistically by means of non-parametric test – chi-square test. The test confirmed a representative sample of selected set. From the overall number of enterprises more than 40% of enterprises worked in industrial branches (engineering, woodworking, electrotechnology, chemistry, and rubber industries). A third of enterprises were active in the sector of market services, 20% were from building industry and 10% acted in information-communication technologies.

The first part of questionnaire survey was aimed at the innovation activities of small and medium-sized enterprises in the SR. We verified the extent of innovation activities in SME, the reasons of their innovation activity, and also which type of innovations were carried out in the last five years.

For the question, if SME practise innovation activities, 174 enterprises responded positively from the overall number of 527 enterprises (33,02 %), 112 of which were small and 62 medium-sized enterprises. Together 353 enterprises (272 small and 81 medium-sized) stated that they do not practise any type of innovation activities, while they try to act in the market without changes in entrepreneurial activity and they trust to their entrepreneurial strategy.

It is a paradox finding out that even in spite of the fact the enterprises consider innovations for inevitable part of their entrepreneurial activity, they do not realize them. We can find a possible explanation in the lack of financial means for their realization and in the decision of enterprises to prefer the relative certainty of present running process of entrepreneurial activity to the risk from investigating into innovations.

<b>Enterprise/Realization of Innovation</b>	<b>Yes</b>	<b>No</b>
Small Enterprises	112	272
Medium-sized Enterprises	62	81

Table 1

Division of Enterprises According to Size Structure and Realization of Innovations

In the following question we tried to find out main reasons for slovak SME to realize innovations. We were interested in what the reasons are considered as the most significant, which mostly motivate them towards the innovation activity. At this question the managers of SME could mark several answers. Most of them stated that the most important reason of their innovation activity is the changing need of customers as well as the possibilities of making the production process effective, exactly the process of providing the services. Up to 65% of respondents (112 of 174) consider these two reasons for the most important ones.

<b>Reasons of innovation activity</b>	<b>Share of overall number of enterprises</b>
Changing needs of customers	64,36 %
Making production process more effective	64,36 %
Strengthening competition	61,49 %
Effort to penetrate new markets	28,16 %
Expansion of entrepreneurial activity	26,43 %
Others	1,03 %

Table 2

Reasons of Innovation Activity of Small and Medium-sized Enterprises

Strengthening competition equally belongs to the significant reasons of innovation activity. More than 60% of respondents consider strengthening competition for an important impuls of their innovation activities. A presumption was confirmed, that the growth of competition presses enterprises to search the ways to the growth of their effectiveness and to changes. It follows from the results that outside stimuli, such as the competitive strength and strength of customers, as well as inside factor of effectivity of production process (or services providing process) influence most significantly the decision-making process of innovation in SME.

Further important reason for innovation activity of SME of the SR is the effort to penetrate new markets (28,16 % of enterprises). These reasons come out of the inside of an enterprise, from his willingness to improve its position at the market, and thus to keep the customers, or to gain new ones.

It is obvious that not all SME in Slovakia realize innovations in the same measure. Therefore, we were interested in what type of innovations are carried out by SME. We found out which type of innovations – product, process, organizational or marketing – they introduced in the years 2009 – 2013.

Type of innovation concerning	Number of Enterprises
Product	42
Process	67
Organizational	37
Marketing	28

Table 3  
Types of Innovations in Small and Medium-sized Enterprises

Most of enterprises involved in the research have introduced process innovations for last 5 years. We can mention those enterprises which performed the change and effectiveness of production processes, introduced new production system, improved information and communication technologies, etc. Equally important are also those concerning product innovations. There were found the activities connected with the production of new production line, improvement of existing products, introducing new goods and services into a market, etc. Up to 24,1 % of enterprises said that they introduced product innovation. Less often they introduce non-technological innovations in the sense of organizational and marketing innovations. Up to 22 % of small and medium-sized enterprises performed actually organizational innovation. Among the enterprises with organizational innovations we included those which introduced changes in work organization or the new organizational methods. Only 16,2 % of enterprises have done marketing innovations (new methods of sale, new distribution channels, product promotion, etc.).

The result of our research – the share of enterprises with innovation activities is corresponding with the data given in Statistical Yearbook of the Slovak Republic. The share of enterprises with innovation activities has increased from the year 2003 up to the year 2012 two times (by small enterprises up to 29,3 % and by medium-sized enterprises up to 45,6 %). Though the increase is viewed positive, there are still many barriers to develop innovation activities in small and medium enterprises in Slovakia.

### **3 Barriers to develop innovation activities in small and medium enterprises in the Slovak Republic - the results of questionnaire survey**

The second part of a survey was finding out and analysing the main barriers of innovation activity in small and medium-sized enterprises in the Slovak Republic. This question was discussed not only by SME that realize innovations, but as well those enterprises without innovation activity. Innovative enterprises can provide information on barriers, they really meet when realizing innovation activities. On

the other hand innovatively inactive enterprises will provide the reasons for innovation activities they do not perform.

We divided the barriers of innovation activity in SME into three groups from the viewpoint of their significance and influence upon innovation activities of SME. The division of barriers according to significance was carried out by means of statistical programme of SPSS (Friedman's and Wilcoxon's test).

*Barriers with a significant influence*

On the basis of research results and statistical analysis we included in the barriers with significant influence: high costs on innovation activity, lack of financial means in an enterprise and quality of infrastructure for innovations.

High costs for innovation activities are the main barrier belonging to this group. The research confirmed that realization of innovation activities is connected with high costs. With the significance of 83 %, respondents evaluate them as a main significant barrier. Nevertheless, managers of enterprises should take into consideration that innovation is a prerequisite for obtaining a favourable position in the future.

Type of barrier	Significance of barrier in %
High costs on innovations	83
Lack of financial means for innovations	81
Quality of infrastructure for innovations	72

Table 4  
Importance of Barriers in Percentage

The second barrier within the group of important barriers is the lack of financial sources. The majority of SME in SR considers the problems with the accessibility of financial sources for the most expressive factors limiting the innovation activities of SME. Enterprises introduced negative experience when they were acquiring means from the funds of the European Union, structural funds, or other public financial sources (bureaucratic demand, administration, corruption, ineffective redistribution of means, as well as ignorance of their drawing). The main external source of funding the innovation activities remain the structural funds through the priority axes of the Operational Programme Competitiveness and Economic Growth (Ministry of Economy) and the Operational Programme Research and Development (Ministry of Education). The two Ministries and their agencies (due to strict implementation of the Competence Act) cooperate insufficiently, which leads to fragmentation and implementation deficiencies. The problems with acquiring the financial means force SME to innovate predominantly from their own financial sources.

The third important barrier is the quality of infrastructure for innovation. Respondents expressed critical attitude to the existence and activities of institutions supporting innovation activities as well as to the support of the rise and development of innovative SME from the side of the state. Critical is viewed that in Slovak regions the higher territorial units (VÚC) do not have innovation structures, there is no scheme for effective management of the state innovation policy and regional innovation strategies. An institutional framework for a more efficient connection between industry and selected services and results of research and development and practice is missing. The intention to create the regional innovation centres was to ensure implementation of the regional and state innovation policy in regions in order to assure the growth of competitiveness, reduction of regional disparities and growth of regional employment development of innovation tools at the regional level. Slow implementation, lack of coordination and consensus among the relevant ministries appears to be critical. Respondents were very critical to the long-term absence of creating regional innovation centres, which should help to start the cooperation between SME on the one side and universities, research centres, technological parks on the other side, as well as to be helpful in the process of establishing the clusters.

*Barriers with averagely significant influence*

The second group of barriers is created by the barriers with averagely significant influence on innovation activities. On the basis of research results we included to this group lack of qualified employees (human resources), absence of cooperation with other subjects in the field of innovation activities, lack of the information about the market and lack of information about technologies.

Qualified human resources belong to one of the most important factor determining innovation activity. Managers of SME identified the lack of qualified employees as the barrier with average significant influence. In the Innovation Strategy of the Slovak Republic for the years 2014 – 2020 was indicated as the second priority “High-quality human resources”. Of special importance is the measure oriented on innovation education for SME. The objective is to provide education and training to firms and entrepreneurs in the area of innovation activities. The reason for the adoption of this measure is a low level of innovation activities and creativity of businesses with SME falling in the category of low innovative enterprises, in particular. A series of special training courses on innovative activities and special practices and procedures will to be organised under this measure. Educational activities will be carried out in cooperation with cluster organisations, industrial chambers and associations operating in Slovakia, as well as with higher territorial units and municipalities.

<b>Barrier</b>	<b>Significance of barrier in %</b>
Lack of qualified employees	61
Absence of cooperation with other subjects in the field of innovation activities	48
Lack of information about the markets	37
Lack of information about technologies	34

Table 5  
Significance of Barriers – Barrier with Averagely Significant Influence

According to the research the absence of cooperation with other subjects in the field of innovation activities could be included into the group of averagely significant barrier. The cooperation of SME with other subjects in the field of innovation activities brings several synergic effects to the enterprise. The most important of them is common sharing of knowledge and simpler approach to the latest know-how, common sharing of capacities, lower demands for financial sources, etc.

The third barrier belonging to this group is the lack of information about markets. Managing innovations is highly demanding for information support. The enterprises that decide to invest financial means for the analysis of a market significantly limit this barrier and make the whole process of innovation activities easier (Lesáková, D., 2010, pp. 121-122).

The last averagely significant barrier in SME of SR is according to the results of our research the lack of information about the latest technologies. More than a third of respondents considers it for one of the important barriers of the development of innovation activities in SME. The remaining number of respondents is well informed about technologies, they are able to analyse the new trends in technologies, and therefore they do not view a barrier influencing innovation activities of SME in this field.

*Barriers with little significant influence*

The last two identified barriers are characterized by small influence on innovation activities of SME in SR. They include the aversion of employees towards changes and uncertain demand for the results of innovation activities.

The first barrier – the aversion of employees towards changes – does not influence significantly innovation development, according to SME of SR. With the significance of 12 % was included among barriers with little significance influence. The aversion of employees towards innovations can be eliminated by the creation of suitable pro-innovation atmosphere, motivating and supporting creative ideas of employees.

<b>Barrier</b>	<b>Significance of barrier in %</b>
Aversion of employees towards changes	12
Uncertain demand for the results of innovation activities	12

Table 6  
Significance of Barriers – Barriers with Little Significant Influence

Approximately the same level of significance has been reached by the uncertain demand for the results of innovation activities. Many SME are afraid that financial means spent on innovation activities need not bring positive results. However, it is necessary to realize that each entrepreneurial activity is connected with uncertainty and possible failure. Managers of enterprises should take into consideration that innovation is a prerequisite for obtaining a favourable position in the future global economy.

#### **4 Presumptions for the development of innovation activities in small and medium enterprises in the Slovak Republic**

In the following part we conclude briefly the results of our research aimed at the identification of basic presumptions for the development of innovation activities in the SME in Slovakia. We aimed at inside and outside pre-conditions and by means of questions in the third part of the questionnaire we revealed their importance for small and medium-sized enterprises. Through the analysis we summed them up as follows.

The question, which basic presumptions have to be fulfilled so that the enterprises could realize the innovation activities, was answered that there are 6 basic presumptions.

As the first one they said was the *high-quality human resources*. Quality management, as well as employees able to think creatively and implement innovations in their activities, represent one of the most important presumptions of the development of innovation activity of an enterprise. Management must be able to lead and direct the thoughts and ideas in the enterprise, to search and use talents, be aware of the fact that the enterprise will be successful due to being distinguished by the human resources (Lesáková, L., 2010, p. 24). From the viewpoint of employees pro-active approach is expected, as well as the ability to learn and implement knowledge in the innovation activity. Remuneration of employees for their innovation ideas is a significant motivator and presumption



for the increased effort of employees when searching for new, innovative solutions.

The second presumption that was stated by the respondents is the *sufficient financial sources*. The enterprises declared the need to simplify the approach to financial sources, liquidation of huge administrative demand and bureaucracy connected with acquiring financial means from the European funds (structural funds) or from other public sources. For the future it will be necessary to mobilise all financial sources in the area of innovation support in order to ensure that innovation activities performed by business entities receive the same level of funding as those in advanced EU countries. In connection with efforts towards the most effective use of allocated financial resources, an indirect state aid need to be provided to profit-generating projects implemented by SMEs, i.e. financial engineering instruments such as guarantee funds, credit funds, venture capital funds and municipal development funds. There is an enormous interest of responsible institutions in coordination with the Ministry of Finance of the Slovak Republic to apply the upgraded model of usage of innovative financial tools in order to support innovation activities in SME.

As the third presumption for the development of innovation activity was stated the *cooperation and participation of SME in networks and clusters*. Innovation process of higher level calls for improvement of interaction between small and medium enterprises, research institutions and universities and for creation of various effective networks and partnerships. Building partnership is a way how to be involved into innovation activities. In the Innovation strategy of the SR for the years 2014-2020 was indicated as one of the main measure the support to innovative industrial cluster organisations. The purpose is to improve competitiveness through support to selected activities of industrial cluster organisations, with a view to promoting joint industrial activities in selected areas. It could help in supporting cluster activities which contribute to increasing the competitiveness of the innovative cluster organisation's member companies.

According to our survey results, the fourth presumption is the suitable environment. It is necessary to create an *innovative environment* in the SR that eliminates weaknesses in the area of research and innovation (R&I) and develops mostly opportunities which create the conditions for fundamental enhancement of innovative environment. A critical element is above all the autonomous functioning of sectors of education, R&I and business practice, which results into different understanding of R&I. Of special importance is the creation of linkages between MNCs' R&I and domestic businesses R&I framework (including the SME), and increasing interest of businesses and industrial clusters in rebuilding of industrial R&I structures (entities). Successful implementation of innovation strategy requires a structural change of current competencies in the management

of research and innovation in the SR and a principle manoeuvre in cultural change of innovative environment.

Some managers agreed on the fact that without *well created vision and clearly formulated aims* the innovation activity in SME is limited. The pre-condition for clearly formulated aims is the vision corresponding to the possibilities of an enterprise and responding to the situation on the market.

The important pre-condition identified on the basis of responses is the *willingness of enterprises to innovate*. This is inevitable, even if it is connected with certain risk. At present many innovative SME are successful and perspective, and vice-versa many enterprises without innovative activity are getting into financial problems. The willingness to innovate should be accompanied by such an environment that will support the rise of innovation activities (Lesáková, Ľ., 2013, p. 103). Due to this fact innovation activities will be introduced faster and at the same time several barriers that could retard the rise of innovation activities will be limited.

## Conclusions

Small and medium enterprises realize the importance of innovation in their entrepreneurial activity and the necessity to overcome all the barriers to develop innovation activity. They are forced to make innovations, because they are under permanent pressure of competitors at the market. From this point of view the ability to compete in innovations plays very important role as a factor of their competitiveness.

Present period is usually marked as that of innovation imperative. In today's entrepreneurial practice innovations must be natural part of any entrepreneurship. The innovations become central outcome and basis of creating new entrepreneurial opportunities. Respecting the today current principle "innovate, or you die" we can say that the improvement of competing position of an enterprise and sustaining its long-term and dynamic development are the main motion power of changes.

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