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EVALUATION OF INNOVATIVE ACTIVITIES OF SMES IN EMERGING MARKETS: EXAMPLE FROM REPUBLIC OF SERBIA

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Abstract

The objective of this paper is to contribute to clearer understanding of the innovation role and significance and implementation of innovative activities of the SME sector in the Republic of Serbia, as well as to point out the importance of improvement and more intensive innovation development of such companies.The used methodology is the Research which ensures the review, measurement, and monitoring of the issue of small and medium enterprise competition in the transition conditions, i.e. it provides a new, science based model of small and medium enterprise competition in the transition economy. The research also examine the key factors, internal and external, that influence the innovative performance of companies in Serbia. As a result, we successfully collected data about evaluation of innovation in companies and developed unique strategic system for their evaluation.

Key words: SMEs, innovation activities, emerging markets, transition economy

1. INTRODUCTION

Globalisation, as an overwhelming phenomenon, has brought the most intensive competition ever followed by threats of the survival of all (companies and nations) which are not capable of adjusting, reshaping, innovating, and reorganising their operation in a new way. In such conditions of fast and dynamic changes, when the most developed countries of the world may not keep up, the transition countries are in even more unenviable position. Exhausted and burdened with the long-lasting transition resulting in not so good effects, the transition countries should realise that competitiveness may not be based on cheap labour force, natural resources, and low product prices, anymore. Compared with the developed markets, emerging markets (such almost all markets of ex-Yugoslavia) are characterized by reforms of the financial market, frequent internal and external financial shocks (i.e. political risk, economic risk, and financial risk), frequent changes of credit rating, fluctuation of foreign exchange rates, high level of insider trading, etc. [1]. Stimulus to innovate is an *imperative* in innovative economy, where knowledge, as a basic resource, becomes the basis of competitive advantage. Being innovative company means to increase the rate at which new products/services valued by customers are efficiently placed on the market every year [2]. The new economy (knowledge based economy) should enable the countries from emerging market to create the conditions of accelerating development, for which necessary elements should be ensured: more educated labour force, development of new institutions in accordance with developed countries (i.e. EU), and adequate structure which should follow technological development.

In all countries of the world, small and middle companies (SME sector) are a basis of the economic development, competitiveness, and the driver of innovation and entrepreneurial ventures. Because of the importance of the SME sector in creating economic growth, both developed and developing countries are very interested in finding ways to stimulate SMEs in realizing innovations [3]. In less-

developed countries, in the recent past, environment was relatively protected – now they face the global forces of competition; the globalization of the markets requires the adaptation of firms in order to survive [4].

In emerging Serbian market, SMEs must have particular competences to survive in the dynamic and demanding environment. Unfortunately, due to significant restrictions and problems in the external environment, the SME sector in the Republic of Serbia is at unenviable level in terms of competitiveness and innovation. In recent years, strengthening of the market mechanisms through liberalization, stabilization, and the encouragement of private enterprise was carried out in emerging markets of Serbia [5]. A few main problems of the transitional period are identified: few and scarce financial investments in all aspects of competitiveness and innovation activities, legal and political framework non-aligned with the EU requirements, slow changes which lack the support by the institutions relevant for the implementation thereof, lack of public and private partnerships, obsolete technology and equipment, low level of confidence by the SME sector in the activity and results of universities, slow and inadequate implementation of triple-helix model and open innovation models. In addition to these problems, small and medium companies strive to innovate their products/services, processes, and other innovation forms in order not to lose the track of the flows of developed countries. The innovative approach to realistic market requirements is the only way of the development of SME sector. Having regard to this, the objective of this paper is to contribute to clearer understanding of the innovation role and significance and implementation of innovative activities of the SME sector in the Republic of Serbia, as well as to point out the importance of improvement and more intensive innovation development of such companies. The results of the research (one segment) are presented here in. The used methodology is the Research which ensures the review, measurement, and monitoring of the issue of small and medium enterprise competition in the transition conditions, i.e. it provides a new, science based model of small and medium enterprise competition in the transition economy.

The primary objective of this paper is to examine the key factors, internal and external, that influence the innovative performance of companies in Serbia, based on sample for which can be said that is representative. The research is part of the project „Research and development platform for scientific decision support and management of scientific and technological development in Serbia“ which was funded by The Ministry of Educations and Science of the Republic of Serbia. The basic objective of the survey is to collect data about evaluation of innovation in companies and development of strategic system of their evaluation.

2. METHOD

The complexity of the research subject requires the application of a large number of research methods and techniques: analysis and synthesis method, induction and deduction method, statistical and mathematical method, and/or qualitative and quantitative methods of data processing, as well as the method of survey through questionnaire. The starting point in the implementation of the empirical research was the basic and official questionnaire of the Statistical Office of the Republic of Serbia which was modified and supplemented with particular segments which should have contributed to new information on the innovative capabilities of the SME sector. The statistical processing of the obtained data covered the particular methods of the descriptive and comparative analysis. The following statistical procedures of data processing were applied: descriptive statistics for the description of the sample on tested variables: arithmetic mean, standard deviation, median, modus, minimum and maximum for numerical and ordinal variables, and percentages for categorical variables; Chi-square test, Cochran's Q test. Due to a high number of the tests made on the same sample, somewhat stricter criteria for determining the statistical significance of the test to the standard ones were set. Therefore, the resulting differences in all of the analyses were interpreted as statistically significant if p-value is less than 0.001. In other cases, the resulting differences were not ascribed the statistical significance. The research results were presented in the form of the analytical tables and charts, as well as in the form of specific examples in the practice. The instrument used for this research is a questionnaire which consists of a several parts (general information about business entity, relations with the innovation, types of innovation, financial aspects – investment in the innovative activities and effects of that investments, and part of questionnaire which is upgraded with factors that were evaluated on the basis of influence on the innovative capacity of company), and was filled in direct contact with company director or managers of the development sector.

3. RESEARCH RESULTS

In this survey, 159 companies from Serbia have participated, both manufacturing and service companies, which are organizated mainly as limited liability companies (76.1%). Most of them are small companies (52.2%), medium-sized companies (34%) and large companies (13.2%). In terms of origin of the majority of the capital, the domestic capital dominates with 84.3 %, over foreign capital (11.3%).

Table 1. Markets in which companies performed their activities

Market share	Domestic market, within the region where the company operates	Other regions of the country	Former Yugoslavia Republic	EU countries	Russia	Other countries
Total	94	81	66	43	24	29
Arithmetic mean	57.23	40.49	16.64	19.26	8.04	6.69
Median	60	40.00	11.50	10.00	0.00	2.00
Standard deviation	34.66	29.08	16.55	27.03	15.72	11.58
Minimum	1	0	0	0	0	0
Maximum	100	100	83	99	66	50

Markets in which companies performed their activities (Table 1) in the period when the survey was conducted are: domestic market – within the region where the company operates, domestic market- other regions of the Republic of Serbia, other countries of the former Yugoslavia, EU countries, other countries and Russia, respectively.Therefore, it is mostly emerging markets.

Table 2. The average age of equipment in the Serbian companies

The average age of equipment	Equipment older than 10 years	Between 5 and 10 years	Between 3 and 5 years	Between 1 and 3 years	Up to 1 year
Total	77	108	111	104	71
Arithmetic mean	41.19	37.23	32.86	22.07	14.08
Median	30	30.00	25.00	15.00	10.00
Standard deviation	34.91	28.24	23.47	19.38	18.31
Minimum	0	0	0	0	0
Maximum	100	100	100	95	100

Good market knowledge and technological performance greatly affect the positioning of company, planning and implementation of innovative activities and monitoring the current situation in the area in which the company operates.

In terms of technology evaluation, most companies that participated in the survey responded that they own technology with an average age between 3 and 5 years, and participation of such equipment in the total equipment which company owns and use is about 33 % (Table 2). The lowest number of participants answered they own the equipment which isn't older than a year, and participation of that equipment in the total equipment is about 14 %.

Table 3. Evaluation of investment in activities which undertaken in the previous period

	Number of cases	Minimum (eur)	Maximum (eur)	Arithmetic mean	Standard deviation
Internal *R&D* activities	45	0	480 000	21 194	73 242
Equipment purchase (including software)	76	10	2 468 160	135 892	427 358
Purchase of other forms of knowledge	30	0	80 000	5 061	14 655
Education and training for innovative activities	38	0	128 000	6 566	20 796
Implementation of innovations on the market	26	0	64 000	7 534	14 771
Internal *R&D* activities	56	0	608 000	25 807	88 818
Equipment purchase (including software)	85	0	2 440 000	122 876	347 177
Purchase of other forms of knowledge	35	0	64 000	4 950	12 481
Education and training for innovative activities	48	0	168 000	6 548	24 663
Implementation of innovations on the market	43	0	80 000	7 524	15 717

Financial aspects (investment in company innovation) can't be ignored. It cannot be on the same level as companies in developed countries, but it is very useful to know what is the easiest way to finance some part of their business in emerging markets. The following table gives an overview of the evaluation from respondents about their investment related to the activities carried out in the previous period.

Table 4. Implemented innovative activities of companies

Frequencies		
	Value	
	0	1
Internal *R&D* activities	27	72
Equipment purchase (including software)	22	77
Purchase of other forms of knowledge	71	28
Education and training for innovative activities	45	54
Implementation of innovations on the market	52	47
Statistics		
N	99	
Cochran's Q test	73.140[a]	
Degrees of freedom	4	
Statistical significance	.000	

The largest investments of the companies that responded on the questionnaire are in *equipment purchase, including software*, for *internal research and development activities*, and then *for implementation of innovations on the market, education and training for innovative activities and purchase of other forms of knowledge.*

In the questionnaire segment related to expenditure for innovative activities, participants had to give positive or negative answers on the question if they have realized one of the following activities in previous period (a) internal R&D activities (b) equipment purchase (including software) (c) purchase of other forms of knowledge (d) education and training for innovative activities (e) implementation of innovations on the market (f) if they have not realized any of above, they had option Other.

Table 5. Success in monitoring technological changes in the environment

Does the enterprise successfully follow technological changes?	Frequency	Percentage	Cumulative percentage
Generally not	6	3.8	3.8
Yes	62	39.0	43.3
To a certain extent	89	56.0	100.0
Total	157	98.7	
Missing answers	2	1.3	
Total	159	100.0	

Most of the respondents confirmed that they realized activities such as equipment purchase and internal *R&D* activities, and most of them did not realize activities such as the purchase of other forms of knowledge.

Further elaboration of perceived differences between frequencies has led to following conclusions: (a) respondents who have realized internal *R&D* activities did not confirm purchase of other forms of knowledge, (b) a large number of respondents who have realized internal *R&D* activities, also made progress on the field of education and training for innovative activities, and implementation of innovations on the market, (c) a large number of respondents confirmed that they had invested in equipment purchase, including software, but they could not confirm investmentsin other forms of knowledge, but equipment purchase encouraged investment in education and training for innovative activities and implementation of innovation on the market.

Companies which fully or to a certain extent follow technological changes together account for 94.9% of the sample. Only 3.8% of participants don't follow it at all.

The results of Chi-square test: C^2 (2, N=157) = 68.5; p =.000.

Table 6. Ability to develop new improved processes

How you develop new processes or improve the current one:	Frequency	Percentage	Cumulative percentage
Independently	88	55.3	64.7
Your organisation, changing and adapting processes that were developed by other subjects or groups	42	26.4	95.6
Other organisations	6	3.8	100.0
Missing answers	23	14.5	
Total	136	85.5	

New or improved processes of companies from the sample were developed independently (55,3% of them). A small number of participants did that by changing and adapting processes that were developed by other subjects and groups (26.4% of them).The results of Chi-square test: C^2 (2, N=136) = 74.53; p =.000.

Table 7. Process innovation

Is the process innovation of your enterprise something that the market competitors are already familiar with?	Frequency	Percentage	Cumulative percentage
Yes	14	8.8	9.9
No	84	52.8	69.5
I don't know	43	27.0	100.0
Missing answers	18	11.3	
Total	141	88.7	

The majority of companies in the sample had process innovation which was new to the market where they had sold their products and/or services (52.8% of them). At least 27% of companies didn't know if they had competitors at the market.
The results of Chi-square test: C^2 (2, N=141) = 52.64; p =.000.

4. CONCLUSION

During the period of the research, the selected companies mostly invested in equipment purchase. We notice also that companies in Serbia during the same period significantly increased their investments into internal R&D activities (more than 20%), education and training (more than 25%) and for implementation of innovations on the market (more than 20%). Thus they create better infrastructure for innovations. Of course, the amount of invested money is too small if we compare it with SMEs from developed countries. One of the most important internal determinants of innovative activity are investments in R&D [6][7].

A low number of companies in the sample and lack of data from other companies operating in the same industry and within emerging markets are stated as potential restrictions in the research. In addition, the questionnaire should be supplemented with the questions which would provide clear answers to the type of the innovation factors to be continuously monitored and how to be related to enterprise strategies. Overcoming these restrictions would ensure the creation of model for measuring and monitoring innovation changes (innovation activities) of companies, and through the relation with enterprise strategy, it could impact the improvement of enterprise innovation capabilities (SME sector).

The main source of the model restriction is the selection of the indicators for innovation measurement. The intention of the research was to reach the optimal selection in terms of the number and type of indicators

to get particular data and, at the same time, to have a simple questionnaire for the collection of data to be applied in SMEs. Another potential restriction may include the fact that the questionnaire was filled in by one person at the managing position at enterprise. It is assumed that the team work and participation of a higher number of adequate respondents from an enterprise could result in more valid data. Also, a higher sample with a higher number of companies from other emerging markets could impact the obtained results. To overcome problems of SME sector and create the form of guidelines for all participants in the emerging market countries, it is neccessary to undertake further analisys like examine the official information which refers to competitiveness and innovation of the SME sector in several different years and states in the category of emerging markets, and make a comparison to the same values of the SME sector of the developed countries.

The objection regarding the managers (owners, founders) of the companies from the sample relates to lack of innovation and investment in research and development, being aware of risk taking when initiating new things, which points out the lack of their proactivity and lack of confidence in new technologies and know-how. It is not the case for the companies belonging to the IT sector in the Republic of Serbia which, thanks to

the Internet revolution, keep up with the changes on the world market.

The purpose of the survey is to estimate the validity of the questionnaire, as well as efforts to analyze the attitude of companies towards the market, the external environment and major innovative activities in such companies operating in emerging markets.

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