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EXTERNAL DETERMINANTS OF INNOVATIVE ACTIVITY IN POLISH SMALL ENTERPRISES

A b s t r a c t: The article presents a part of the results of empirical research on the determinants of innovative activity of Polish small enterprises. The main purpose of this paper was identify the most important exogenous factors determining innovative activity in Polish small businesses in the first years of the post-crisis economic reality. The results of the research show that internal determinants are much more important in the generation and implementation of innovative solution than external conditions. The greatest influence on the innovation activity by Polish small companies are socio-cultural, demographic and sectoral (industry) factors. In turn, the smallest extent of innovative activity of Polish small enterprises is influenced by international conditions.

K e y w o r d s: enterprise innovation, conditions of innovative activity, small businesses.

J E L C l a s s i f i c a t i o n: L26; O31

INTRODUCTION

The issues of organizational innovation today are the most current and often undertaken by modern theorists and management practitioners. Undoubtedly, this is related to the key role of innovation in developing and building a competitive advantage by enterprises. In addition, contemporary companies are constantly facing new challenges in the form of growing international competition, the emergence of new technologies, frequent changes in consumer preferences and the need to constantly improve qualifications and staff skills. These changes cause, on the one hand, that traditional methods of organization and management become useless, and on the other hand, they stimulate entrepreneurs to change attitudes towards innovation, in line with the classic Schumpeter's concept of "creative destruction".

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Innovative activity are much more often conducted by larger business entities – through e.g. the scale of their activity, owned tangible and intangible assets, the greater spectrum of possibilities for cooperation or access to additional sources of financing. Therefore, more attention should be paid to the small and medium sized enterprises (SMEs) sector, which dominates quantitatively in most European economies, as well as plays important socio-economic function, that large companies may cannot handle. According to the publication of the Canadian Statistical Agency, successful SMEs are characterized by such factors as: [Statistics Canada, statcan.gc.ca, 2006]

- awareness, that innovation is the most closely related to their success,
- the feeling, that through innovation they are tend to develop faster or more successful than non-innovative organizations,
- the belief, that through innovation they increase market share and profitability.

Relatively low innovativeness of Polish enterprises¹, as well as the whole economy, against the background of other European Union countries, makes this problem is still an interesting research subject in which attempts are made to investigate the causes of such a state of affairs. Implementing innovative activities requires modern entrepreneurs to take into account a range of external environment conditions and to diagnose the core elements of a company's potential that will affect the performance of the innovation objectives in a variety ways. In view of the above, the main purpose of the article is to identify the most important exogenous factors determining innovative activity in Polish small businesses in the first years of the post-crisis economic reality (i.e. in 2012-2014). The study used a query of the literature of the subject, analysis of the existing data and the results of the empirical research conducted on a representative sample of Polish small enterprises.

1. CONDITIONS OF INNOVATIVE BUSINESS ACTIVITY – THEORETICAL ASPECTS

Although the issue of the conditioning of innovation processes have appeared relatively recently in Polish literature of the subject, the very notions of innovation has evolved over the years and now has many interpretations. Two main trends are clearly defined in innovation: first – *innovation as a process*, sequential actions (identified as innovation activities), and second – *innovation as a result*, the number of new solutions (identified with innovation activity). J. Tidd and J. Bessant are particularly accentuated by the process aspect, in

¹ This is confirmed by the annual results of the European Commission's Report: *Innovation Union Scoreboard and Innobarometer* – e.g. in 2015 the level of innovative activity of Polish SMEs was lower than EU average by 27.8 pp. for small and by 24.7 pp. for medium-sized firms.

which „innovation is the process by which the perceived opportunity becomes a new idea and this is universally practiced” [Tidd, Bessant 2009, p. 16]. In turn, the resulting aspects is emphasized in the define of many authors², who see „innovation as the implementation of new for the company behaviours, strategies, ideas, systems, programs, machines, devices, processes, products, services etc. [Damanpour 1992, p. 376].

Analyzes conducted in the field of cognition of the determinants of the innovativeness of enterprises, mainly SMEs, constitute one of the most important directions of research in the field of innovation management of the company. It is extremely important to find the answers to the question: Which factors have a significant impact on the performance of innovative activities? There is no unanimity in the literature on the specific composition of the determinants of enterprise innovation. Generally, on the innovation activities of enterprises can be influenced by external factors, related to the environment in which the entity operates and internal conditions related to the business potential of the entity [Zastempowski 2010, p. 118-119].

The table 1 presents attempts to systematize the external factors of enterprise innovation by three authors, who are relatively common in thematic articles.

The environment of the company and its changes can translate into stimulating or restricting the innovative activity of enterprises. In addition to them, factors that are generated by the organization – from within in, are equally important in the process of creating and implementing innovation. At this point it is tempting to say, that in the age of knowledge-based economies, internal factors more often give impulsion to the development of organizational innovation. Recognition of internal determinants of business innovation involves identifying the resources needed to build a company’s potential, that includes: financial potential, human potential, material potential and knowledge [Poznańska 1998, p. 40-41]. A slightly wider definition of internal conditions as elements of the innovative potential of enterprises is presented by Professor M.J. Stankiewicz. He distinguishes 9 functional and resources spheres of the enterprise, including: research & development activity (R&D), manufacturing, quality management, logistics, marketing, finance, employment, organization and management, general invisible resources [Stankiewicz 2002, p. 118-124].

² see more [Schumpeter 1932, p. 66], [Kuznets 1959, p. 30], [Allen 1966, p. 7], [Harman 1971, p. 151-169], [Freeman 1982, p. 7], [Kotler 1994, p. 322], [Rogers, 2003, p. 12], [Białoń 2006, p. 366], [Janasz, Koziol-Nadolna 2011, p. 167].

Table 1. Differentiated classification of external conditions of the innovative activity

J. Bielski	OECD	M. Pichlak
<p>GLOBAL – are observed on a global scale.</p> <p>These include e.g.: world politics, conflicts, wars, economic climate, economic trends, climate change, demography, migration movements.</p> <p>MARCOECONOMIC – are observed in the scale of the national economy.</p> <p>These include: current economic system, legislation, government policy, state intervention (tax relief, politics price), inflation rate, income of the population and structure of consumption, the environment and its protection.</p> <p>MIRCOECONOMIC – are observed on an industry scale.</p> <p>These include: intra-sector saturation of competition, substitute risks, barriers to entry and exit, market size, growth rate, linkage with suppliers and buyers, legal restriction, environmental restriction, social restriction, price level, profitability, frequency of introduction news solution, human factor.</p>	<p>GENERAL DETERMINANTS – these are institutional and structural factors at national level (e.g. legal, economic, financial or educational), setting out the rules and scope for innovation.</p> <p>THE SCIENTIFIC AND ENGINEERING BASE – this is the knowledge gathered, as well as scientific and technical institutions supporting innovation in the enterprise by e.g. providing technical education and scientific knowledge.</p> <p>TRANSFER FACTORS – these are factors that affect the efficiency of contacts, the flow of information and skills and the absorption of knowledge that is important for innovation in the firm.</p> <p>INNOVATIVE DYNAMO – these are the factors that affect the company or its immediate environment and have a direct impact on its innovation.</p>	<p>ECONOMIC – the economic situation of the country, the level of basic phenomena (inflation, interest, unemployment rate).</p> <p>SOCIAL – education, labor ethics, professional qualifications, labor supply.</p> <p>POLITICAL AND LEGAL – tax system, applicable laws, governmental activities, membership of international organizations.</p> <p>CULTURAL – values and behaviors, organizational culture.</p> <p>TECHNOLOGICAL – patents, inventions, applied technologies.</p> <p>NATURAL (GEOGRAPHIC) – availability of raw materials, the condition of the environmental, the level of infrastructure.</p> <p>CAPITAL – availability of external sources of funding, fund management, level of investment.</p> <p>MARKET (SECTORAL) – competitors' activity, market position, substitution products, supplier and customer activity.</p>

Source: [Bielski 2000, p. 109], [OECD 2008, p. 36-39], [Pichlak 2012, p. 58-62].

2. METHODOLOGY OF RESEARCH

This part of the paper contains a section of empirical research conducted within the national project “Innovation of small and medium sized enterprises in the age of economic crisis – conditions, trends and models”, which was financed by the National Science Center³.

The research was carried out with the participation of PBS sp. z o.o. in Sopot on a random sample of enterprises belonging to the SME sec-

³ financial resources were granted on the basis of decision no DEC-2013/09/B/HS4/01971.

tor. Representativeness of the sample was based on four criteria: the size of the business, the type of business activity (according to the section of Polish Classification of Activities – PKD), the location of the head office in the voivodeship and the minimum 5 years period of activity of operation of the entity on the market. Direct interviews with respondents using the Computer Assisted Personal Interview method were completed at the turn of the 1st and 2nd quarters of 2015.

The size of the test sample used was established assuming that:

- in 2012 the size of the population surveyed is 176 276 enterprises (i.e. 146 489 small businesses – excluding micro entities, and 29 787 medium-sized enterprises) [Zadura-Lichota, Tarnawa, 2014, p. 135],
- level of confidence $p= 0.95$,
- the fraction size/ percentage of the innovation phenomenon in the population is 20% [Zadura-Lichota, 2010, p.11-18],
- maximum error is 0.05.

With such criteria, eventually in the study was participated 250 business – 204 small business (excluding micro entities), whose characteristics were presented in table 2 and 46 medium-sized enterprises. The author for further analysis on the diagnosis of key external condition of innovative activity chose only small companies, which in the period 2012-2014 were active innovatively. This condition was fulfilled by 164 enterprises from the accepted test sample.

Table 2. Structure of the surveyed small business entities (n=204)

Criterion	Percentage share
Sections by PKD:	
C – Industrial processing	19.6
E – Water supply; sewage and waste management and remediation activities	1.0
F - Architecture	17.2
G – Wholesale and retail trade; repair of motor vehicles , including motorcycles	28.3
H – Transport and storage	2.5
I – Activity related to accommodation and catering service	9.8
J – Information and communication	2.9
K – Financial and insurance activities	2.0
L - Real estate activities	4.4
M – Professional, scientific and technical activity	7.8
N – Administration and support activities	1.5
Q – Health care and social assistance	0.5
R – Activities related to culture, entertainment and recreation	1.0

S – Other service activities	1.5
Location of the company:	
Lower Silesian Voivodeship	6.4
Kuyavian-Pomeranian Voivodeship	4.4
Lublin Voivodeship	4.4
Lubuskie Voivodeship	2.9
<i>Łódź Voivodeship</i>	4.4
Małopolska Voivodeship	9.3
Masovian Voivodeship	18.1
Opole Voivodeship	2.5
Subcarpathian Voivodeship	3.9
Podlaskie Voivodeship	3.4
Pomeranian Voivodeship	5.9
Silesian Voivodeship	11.8
<i>Świętokrzyskie Voivodeship</i>	2.5
Warmian-Masurian Voivodeship	3.9
Wielkopolska Voivodeship	11.3
West Pomeranian Voivodeship	4.9
Conducting innovative activities:	
Yes	80.4
No	19.6

Source: own study based on the research in enterprises.

3. RESEARCH RESULTS

The analysis of influence of conditions on the innovative activity of Polish small businesses for the purpose of this article was carried out for both the macro environment and micro environment (also called sectoral environment). In order to determine the impact of individual exogenous determinants on the innovation activity of Polish small enterprises, the percentage of indications (U), median (M) and dominance (D) were estimated for each of them.

47 external determinants belonging to seven groups of conditions were analyzed in detail. The respondents were asked to identify the strength of the influence of these external factors on their innovation activity according to a five-step scale (0- *no influence*, 1- *definitely negative influence*, 2- *rather negative influence*, 3- *average influence*, 4- *rather positive influence*, 5- *definitely positive influence*). Detailed results are given in table 3 below.

Table 3. External conditions of innovative activity in Polish small enterprises

Type of factor	U (% of indications) n=164						M	D
	0	1	2	3	4	5		
ECONOMICAL DETERMINANTS:								
Crisis and economic slow-down in Europe	16	12	21	25	20	6	3	3
Slowdown of Poland's economic development	9	7	24	28	20	11	3	3
Inflation level	14	6	20	35	16	8	3	3
Level of interest rates	15	7	20	35	20	4	3	2
The level of unemployment	14	7	28	20	20	11	3	3
Exchange rate stability	19	6	20	30	20	5	3	3
Internationalization of the Polish economy	20	5	23	30	18	4	3	3
European Funds	23	5	21	29	18	4	3	3
POLITICAL AND LEGAL DETERMINANTS:								
Stability of tax regulations	14	9	23	23	27	5	3	4
The amount of tax relief	12	8	18	30	23	9	3	3
Stability of the law and clarity of its rules	13	4	24	31	23	5	3	3
Financial support for SMEs development	15	4	22	24	27	8	3	4
Institutional support to SMEs development	15	7	18	25	28	6	3	4
Innovation policy of the country (NIS, RIS)	18	7	21	29	20	5	3	3
Antitrust policy	17	6	20	34	18	5	3	3
SOCIO-CULTURAL AND DEMOGRAPHICAL DETERMINANTS:								
Labor mobility	17	3	9	33	30	9	3	3
Level of education of the population	10	6	10	40	23	10	3	3
Work ethic	12	4	10	41	24	9	3	3
Lifestyle	14	4	18	34	23	7	3	3
Migration of the population	17	5	13	34	25	7	3	3
Beliefs, values, norms of behavior	18	4	13	41	20	4	3	3
INTERNATIONAL DETERMINANTS:								
Unstable political and economic situation in CEE	31	10	17	18	17	7	2	0

Eastern markets and their availability	34	5	19	22	12	8	2	0
European Union membership	26	3	18	26	18	10	3	0,3
Globalization processes	27	4	16	36	13	4	3	3
Competition in international markets	31	5	20	24	15	5	2	0
TECHNICAL DETERMINANTS:								
The pace of technological and technical development	23	5	6	32	28	5	3	3
The speed of technology transfer	23	3	11	34	19	10	3	3
Protection of patents and utility models	26	6	11	30	18	9	3	3
The pace of the emergence of new inventions	26	6	10	29	23	5	3	3
Government R&D policy	27	5	13	29	18	6	3	3
GEOGRAPHICAL DETERMINANTS:								
State of the environment	30	5	7	34	15	9	3	3
Availability of natural raw materials	30	3	8	29	24	6	3	0
Infrastructure status	18	5	12	35	22	7	3	3
Geographic location of the enterprise	20	4	11	38	21	6	3	3
SECTORAL (INDUSTRY) DETERMINANTS:								
Support for SMEs	13	9	7	28	38	5	3	4
Innovative activity of national competitors	13	2	14	34	27	9	3	3
Innovative activity of foreign competitors	29	4	12	31	18	7	3	3
Price competition in the sector	9	5	16	34	25	11	3	3
Qualitative competition in the sector	9	4	15	37	23	12	3	3
Innovative activity of domestic suppliers	14	5	15	34	24	9	3	3
Innovative activity of foreign suppliers	27	5	10	29	23	5	3	3
Barriers to entry into the sector	14	6	13	33	24	9	3	3
Substitute products	21	5	10	34	23	7	3	3

Innovative expectation from customers	14	2	9	35	30	10	3	3
Innovative expectation from institutional clients	16	2	10	39	27	5	3	3
Availability of bank loans	15	2	13	36	27	8	3	3
Availability of other sources	22	2	12	35	24	4	3	3

Source: own study based on the research in enterprises.

The data presented in table 3 show the average influence of individual external conditions on innovative activity of Polish small enterprises – for more than 80% of factors $D=3$ and for over 95% of factors $M=3$. Using the measure of dominance, we can see, the four most important external conditions of innovation ($D=4$), according to the majority of respondents. These are: stability of tax regulation, and financial and organizational support for SMEs development. Also, in this research, we can see a factors, which in majority opinion do not have any influence ($D=0$) on innovation activity in Polish small enterprises – i.e. unstable political and economic situation CEE, Eastern markets and their availability, competition in international markets.

The highest scores in the group of determinants were obtained by socio-cultural and demographical conditions and by sectoral (industry) conditions, whose average respondents are respectively 2,74 and 2,71. On the other hand, international determinants in the smallest extent affect the activity of companies innovation. Such structure of responses is related, according to the author of this article, to the specifics of the Polish SMEs, which usually operates on the local market and is characterized by limited capabilities to participate in global trade.

Small business owners, in order to be able to rationally manage innovation effectively adapt innovative solutions, should focus their attention on those exogenous conditions, that have the greatest impact on the functioning of their enterprises. Detailed evaluation of the obtained results allows to diagnose and arrangement according to the respondents' assessment key conditions stimulating and restricting the innovative activity of Polish small enterprises.

Table 4. External factors stimulating and restricting the innovative activity of Polish small enterprises in 2012-2014

STIMULATING DETERMINANTS	RESTRICTING DETERMINANTS
<ul style="list-style-type: none"> - Qualitative competition in the sector - Innovative expectation from customers <ul style="list-style-type: none"> - Price competition in the sector - Work ethic - Support for SMEs - Innovative activity of national competitors - Availability of bank loans 	<ul style="list-style-type: none"> - Eastern markets and their availability - Unstable political and economic situation in Central and Eastern Europe - Competition in international markets - Globalization processes

Source: own study based on the research in enterprises.

Most of the external factors positively influencing the innovation activity of Polish small businesses are generated by the sectoral environment. This means that the qualitative, quantitative or organizational changes taking place in the industry are an incentive to modernize applied processes or to adapt completely new solutions. On the other hand, external factors, which strongly influence the innovation of enterprises are dominated by those of an international character. Such a structure of responses is due to the increasing globalization and its effects, as well as to the ever closer links between states and the threat of the business fluctuations and crises between them.

CONSLUSIONS

The level of organizational innovation is undoubtedly the results of many complex factors determining the scope and direction of innovative business. Analysis of the determinants of conducting innovative activity, due to the pace and nature of changes occurring in present market conditions is still a current area for research. Theoretical considerations, supplemented by empirical research presented in this paper, allow us to formulate several conclusions:

- in Poland there is only a low percentage of small companies operating in the area of innovation activity (17,4% compared to 45,2% EU average),

- external conditions in the low or medium level influenced to the generation and implementation of innovations in Polish small enterprises in 2012-2014 (respondents ranged from 2,1 to 2,74 in the 5-point scale),

- the greatest impact on innovation activity by Polish small companies has determinants of socio-cultural and demographical groups (i.e. the level of education of the population, labor ethic, labor mobility) and sectoral groups (i.e. qualitative competition in the sector, innovative expectations from customer, price competition in the sector),

- the least influence on innovation activity by Polish small enterprises has international determinants (e.g. development of Eastern markets, economic situation in CEE countries, consequences of the globalization process).

The author is aware that the reflections presented in this paper, based exclusively on quantitative analyzes, do not exhaust the fully discussed issues. They may, however provide the basis for further qualitative research, including inter alia the premise and barriers determining the process of starting and then conducting innovative activity in Polish companies of all sizes.

LITERATURE

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Zarys treści: W artykule przedstawiono fragment wyników badań empirycznych dotyczący uwarunkowań prowadzenia działalności innowacyjnej przez polskie małe przedsiębiorstwa. Celem głównym badania była identyfikacja najważniejszych zewnętrznych czynników determinujących innowacyjność polskich małych podmiotów w pierwszych latach pokryzysowej rzeczywistości gospodarczej. Wyniki przeprowadzonych badań wskazują, że zdecydowanie większe znaczenie w procesie generowania i wdrażania innowacyjnych rozwiązań mają uwarunkowania wewnętrzne, niż zewnętrzne. Największy wpływ na prowadzenie działalności innowacyjnej przez polskie małe firmy mają uwarunkowania socjokulturowe, demograficzne oraz sektorowe (branżowe). Z kolei w najmniejszym stopniu na działalność innowacyjną polskich małych przedsiębiorstw oddziałują uwarunkowania międzynarodowe.

Słowa kluczowe: innowacyjność przedsiębiorstw, uwarunkowania działalności innowacyjnej, małe przedsiębiorstwa.

