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INNOVATIVE ACTIVITY OF POLISH SMALL ENTERPRISES IN 2012-2014

A b s t r a c t: The speed of economic changes in the modern economy is a challenge for many entrepreneur – inter alia to ensure the attractiveness of the offered products and services. Undoubtedly, the factor that contributes to increasing the competitive position and contributes to achieving the company's lasting market advantage is the dimension of its innovative activity. The ability of the company to generate and adapt innovative solutions results in increased efficiency of the implemented projects. This ability is especially important in times of economic turmoil, when owner are often under pressure to adjust their strategies so far to minimize the potential for additional threats and to use the emerging developmental impulses. The article presents a fragment of the results of empirical research in the innovative activity of Polish small enterprises. The main purpose of the study was identify the size and scope of innovative activities undertaken by small business entities.

K e y w o r d s: innovative activity, innovation, Polish small enterprises.

K l a s y f i k a c j a J E L: L 21

INTRODUCTION

In today's economic reality, innovative activity is recognized as one of the key determinants of business expansion, and thus increases the competitive potential of companies in the market. Particular attention, according to the author of publication, should be addressed to the sector of small and medium-sized enterprises (SMEs), predominating in the structure of most European economies and performing important socio-economic roles. Small entities have in

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principle more limited competitive opportunities than large companies – so they need to find new sources of competitive advantage that will provide a strong market position in the future. Nowadays, in the era of knowledge-based economy, it is very important to generate and implement new product, process, organizational or marketing solutions.

The shape of the modern world economy is a result of the widespread consequences of the process of globalization and the existing international links.

On the one hand, bilateral interactions may have a constructive dimension, but on the other hand it may pose a threat to the movement of negative economic phenomena between states [Drews, 2014, p. 111]. This situation took place at the end of the first decade of the 21st century, when the perturbations in the American economy systematically shifted to European and Asian countries, completely changing the existing conditions of business operations.

In view of the above, the question arises: To what extent has the past economic crisis influenced to the innovative activity of Polish small enterprises? The main objective of the article is to diagnose the level and scope of innovative activity carried out by small businesses in the first post-crisis economic reality. For the purpose on the main aim was used to query the literature of the subject, statistics on innovation the SMEs sector published by the Polish Agency for Enterprise Development (PARP) and Eurostat as well as the results of empirical research.

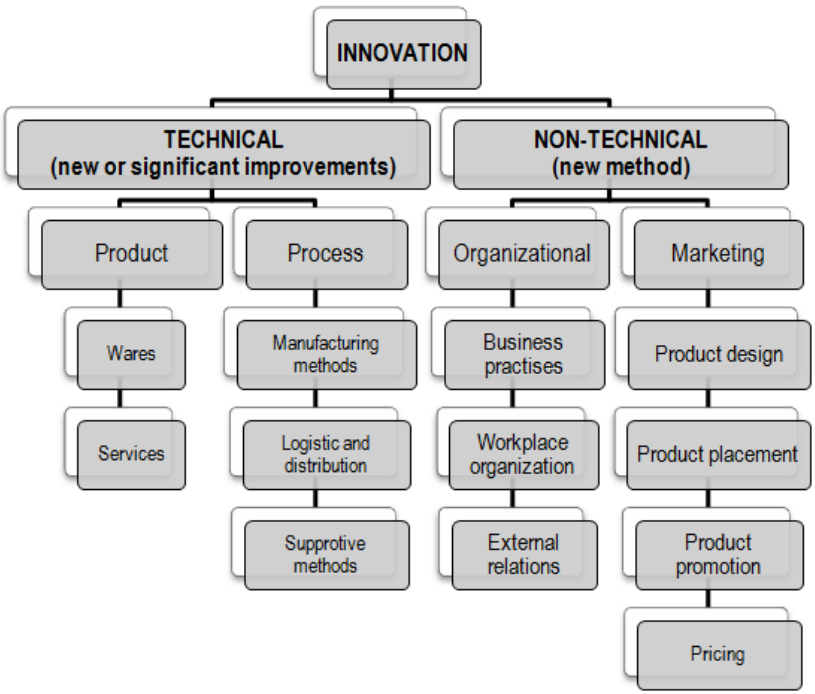
1. ENTERPRISE INNOVATION – THEORETICAL APPROACH

The activities resulting from the adaptation of new solutions in the company are an inherent part of the enterprise management process. The precursor of the concept of innovation in world economic literature was J.A. Schumpeter, who identified innovation with the *production of new products or services, new processes, the use of new method, acquisition of a new market or new resource, or the application of new sales or purchase techniques* [Schumpeter, 1960, p. 104]. The Austrian economist's repeated emphasis on the word "new" indicates the close link between innovation and the first application of the solution. Over the years, innovations have come a long way in the formulation and interpretation of literature [see more: Mansfield 1968; Parker 1974; Freeman and Soete 1982; Fagerberg 2004; Tidd and Bessant 2015]. In general, there are two mainstreams of definition describing innovation as:

- a process (a sequence of activities – identified more closely with innovation activities) or
- a result (number of solutions introduced in company – identified with innovation activity).

For the implementation of innovation research at enterprise level, it is recommended to use the definition of innovation, which is also their classification, as set out in the Oslo Manual. According to him, *innovation is the implementation of a new or significantly improved products/process, a new marketing or organizational method in business practice, organization of the workplace or relations with the environment* [OECD, 2008, p. 48]. The specialist of the Organization for Economic Co-operation and Development (OECD) propose a slightly different definition of innovation form Schumpeter, where, apart from something completely new, they also embody significant improvements as a sign of innovation (Diagram 1). The assumptions of the Oslo Manual therefore include a broad understanding of innovation that takes into account not only technical innovations (product and process), but also non-technical innovation (organizational and marketing) [Kraśnicka, Głód, 2014, p. 205].

Diagram 1. Typology of innovation



Source: own study based on Oslo Manual [OECD, 2008, p. 49-55].

2. INNOVATIVE ACTIVITY OF POLISH FIRMS COMPARED TO EUROPEAN UNION COMPANIES

In the world publications over the years, various concept have emerged regarding the relationship between the size of company and its innovation activity [see more: Schumpeter 1950; Mensch 1976; Freeman 1982; Camison-Zarnoza et al. 2004; Ahuja, Lampert, Tandon 2008]. However, both in Poland and in the most European countries the correlation between the size of company and its innovation activity is highly visible.

The European Commission is preparing annual reports detailing the innovativeness of European economies (i.e. *Innovation Union Scoreboard*) and the level of enterprise innovation in the general statement[1] (i.e. *Innobarometer)*. In edition of the Innobarometer survey of 2015 (which covers the years 2012-2014), on average 72% of European companies have introduced at least one innovation. In the case of Polish companies in general, they achieved slightly above the average (75%) and recorded an increase of 7 percentage points compared to the previous survey. The largest number of innovative companies are located in Denmark, Cyprus and Croatia (approximately 80% of business). In turn, the largest increase in the number of innovative companies in the first years of post-crisis economic reality is observed in Lithuania (20 p.p.), in Luxembourg (18 p.p.), in the Czech Republic and Cyprus (16 p.p.) [European Commission, 2015 p. 8].

This paper deals with the issue of innovation of only small companies, so here it is necessary to cite statistic data on innovative activity conducted by the size of entities (see table 1).

In 2015, the innovative activity of Polish small businesses was by 27,8 p.p. lower than the UE average and, more alarming, was at the lowest level across the European Union. Similarly, the level of innovativeness of medium-sized enterprises in Poland was low (the penultimate place in the ranking). A little better, but still below the UE average, were the large Polish companies, almost 64% of which undertook innovative activity. The leaders in all categories were alternately Germany, Luxembourg and Ireland, where the number of innovative companies is more than three times as high for small firms and twice as high for medium-sized companies as in Poland.

[1] without dividing on the size of the business – summary in total.

Table 1. Percentage of companies in European countries carrying out innovative activities according to size of business (in %)

SMALL ENTERPRISES	MEDIUM-SIZED FIRMS	BIG COMPANIES
Luxembourg – 63,4	Ireland – 74,5	Luxembourg – 92,8
Germany – 63,3	Germany – 74,3	Germany – 92,2
Ireland – 54,0	Italy – 71,4	Portugal – 87,2
Italy – 53,4	Austria – 70,9	Slovenia – 87,0
Sweden – 52,8	Luxembourg – 69,2	Malta – 86,7
Portugal – 51,3	Malta – 69,2	Ireland – 84,5
Belgium – 50,9	Belgium – 68,8	Italy – 84,5
Greece – 50,7	Portugal – 66,8	Austria – 84,0
France – 49,1	France – 66,2	Belgium – 83,5
Austria – 48,7	Netherlands – 65,7	Sweden – 81,9
United Kingdom – 48,7	Sweden – 65,6	France – 81,0
Finland – 48,1	Finland – 65,0	Denmark – 79,4
Denmark – 47,5	Estonia – 64,3	Czech Republic – 78,7
Netherlands – 47,4	Slovenia – 62,0	Estonia – 78,3
Malta – 45,5	Greece – 60,7	Spain – 78,2
EU (average) – 45,2	EU (average) – 60,5	Finland – 77,7
Estonia – 42,6	Cyprus – 59,5	Croatia – 77,2
Slovenia – 40,5	Czech Republic – 57,6	EU (average) – 76,4
Cyprus – 39,1	Denmark – 57,5	Greece – 75,6
Czech Republic – 38,2	United Kingdom – 56,7	Lithuania – 72,8
Croatia – 33,1	Spain – 55,7	Netherlands – 68,5
Slovakia – 29,8	Croatia – 51,5	Hungary – 67,2
Spain – 29,0	Lithuania – 45,1	Latvia – 64,8
Hungary – 28,4	Latvia – 43,3	Poland – 63,9
Lithuania – 28,3	Hungary – 42,8	Cyprus – 62,2
Latvia – 26,5	Bulgaria – 40,4	Slovakia – 62,1
Bulgaria – 22,7	Slovakia – 40,0	Bulgaria – 59,0
Romania – 18,3	Poland – 35,8	United Kingdom – 56,2
Poland – 17,4	Romania – 26,6	Romania – 40,1

Source: own study based on Eurostat Statistic Database.

3. 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 Center[2].

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 sector. Representativeness of the sample was based on four criteria: the size

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

of the business, the type of business activity[3], the location of the head office in the voivodeship and the minimum period[4] of operation of the entity on the market. Direct interviews with respondents using the Computer Assisted Personal Interview method[5] 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 innovative activity of enterprises chose only small companies, which in the first years of post-crisis economic reality (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 , excluding 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

[3] according to the section of Polish Classification of Activities (PKD).
[4] minimum 5 years period of activity.
[5] CAPI this is a research method, which consists in conducting an interview using mobile devices, where respondents' answers are recorded.

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
Łódź Voivodeship	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
Świętokrzyskie Voivodeship	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.

Almost all of the surveyed entities are independent companies and they don't hold any shares in foreign companies. For nearly 75% of the surveyed Polish small companies active in innovation, the largest market due to the total sales revenue achieved in 2012-2014 was the local and regional market. In turn, every fifth enterprise largest income from sales generated on domestic markets and just for 4% companies the dominant market was the markets of European Union and the world markets. Existing sales markets in analyzed time interval were rated as relatively stable and developmental. In the first years of post-crisis economic reality, the competitive position of most small businesses was determined by the owners as average. For the remaining respondents, a comparable percentage of entrepreneurs (almost 15%) indicated their presence in the top three and difficulty in competing in its largest market. Significantly, all of the surveyed small

businesses, including their innovation activities, are able with greater or lesser obstacles, to compete on the overwhelming market or even occupy leadership positions.

4. RESEARCH RESULTS

The first responders were asked to identify the number of new and significantly improved product and process innovations implemented between 2012 and 2014. Small businesses in the period under review were more inclined to refine existing products and processes than to adapt completely new solutions. The detailed results of specific types of technical innovation are set out in table 3. In all categories of technical innovations implemented in Polish small enterprises, significant improvement items dominated the items related to new products, services or methods. Taking into account the structure of the volume of applied technical solutions, companies that generate a single number of innovations are predominant. In total, in 2012-2014 Polish small companies implemented:

- 1 720 product innovations (more specifically: 1025 new or significantly improved wares and 695 new or significantly improved services) and
- 1589 process innovations (more specifically: 638 manufacturing processes, 489 processes in the field of logistics and distribution, 462 processes in the field of supporting methods).

The numerical advantage of introduced product over process innovation can be partly related to the business profile of the surveyed small companies. However, taking into account the nature of the introduced changes in 2012-2014, process innovations were more likely to be significant and even radical for enterprise development than most neutral product changes.

Table 3. Technical innovations implemented in small enterprises in 2012-2014

Type of innovation	**Percentage of indications (%)**			
Product innovation:	**1-2 products**	**3-6 products**	**over 6 products**	**not used**
A) New wares	18,3	15,2	9,8	56,7
B) Significantly improved wares	28,0	15,9	9,1	47,0
	1 service	**2-3 services**	**over 3 services**	**not used**
C) New services	17,1	17,1	9,8	56,0

D) Significantly improved services	22,0	20,0	11,0	47,0
Process innovation:	**1 method**	**2-4 methods**	**5 and more methods**	**not used**
A) From the scope of manufacturing methods				
- New methods	15,2	14,6	9,2	61,0
- Significantly improved methods	15,2	15,2	8,6	61,0
	1 method	**2 and more methods**		**not used**
B) In the field of logistics and distributions				
- New methods	18,3	17,7		64,0
- Significantly improved methods	28,7	19,5		51,8
C) With supportive methods				
- New methods	22,6	14,0		63,4
- Significantly improved methods	30,5	17,1		52,4

Source: own study based on the research in enterprises.

The figures show similar values for small European companies, where the average ratio of implemented technical innovations to not-used this kind of innovation in companies is 48:52[Zadura-Lichota, 2015, p. 17].

In the next part of the survey questionnaire, small business owners were asked to give a clear indication (YES/NO) whether they used specific examples of non-technical innovations in 2012-2014. Sixteen types of organizational innovations and seventeen types of marketing innovations were analyzed in detail. Diagrams 3 and 4 contain averaged aggregate results for the main categories of non-technical innovations introduced in Polish small businesses in the first years of post-crisis economic reality.

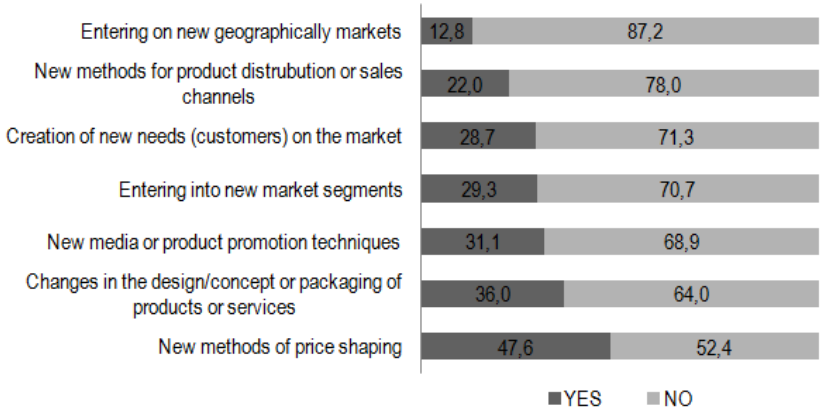
In the case of organizational innovation (Diagram 3), only one in three Polish small enterprises used new methods of division of tasks and decision-making powers of employees – mainly new teamwork systems, new training systems and new employee liability systems. On the other hand, every fourth small company decided to implement new methods in terms of the company's operating principles. Generally, they were related to thorough process transformation, continuous improvement, quality management system and customer relationship management system. And only one in ten Polish small business operators applied new organizational methods in relations with the environment, through inter alia the conclusion of a company or outsourcing the production of individual details or subcontracting.

Diagram 2. Organizational innovations implemented in small firms in 2012-2014 (in %)

Source: own study based on the research in enterprises.

The second group of non-technical innovations are marketing innovations, the types of which were implemented more often than the specific types of organizational innovation. Almost 50% of Polish small businesses, due to market fluctuations, have used new pricing methods for their products and services – mainly through discounting and applying price adjustment methods depending on demand. Small business also saw the need to adapt their packaging design (36& of indications) and changes in media and presentations techniques (31% of indications) of the products being offered to the prevailing fashion and lifestyle of target customer groups. Moreover, in almost every third company, the post-crisis period was a good time to enter new market segments or intensify activities to create a new needs (customer) in the market. By far the least companies used new distribution methods and sales channels (licenses, franchises, online) and attempted to enter new geographically markets (only 21out of 164 companies).

Diagram 3. Marketing innovation implemented in small firms in 2012-2014 (in %)



Source: own study based on the research in enterprises.

CONCLUSIONS

The issue of innovative activity of Polish enterprises is a subject that is in sphere of interest of representatives of science and business as well as politics and other institution, because it affects not only the competitive position of the enterprises themselves, but also the position of the regions and national economies on the international arena. The analysis of number and scope of innovative activities, due to the pace of changes in the environment and within the organization, is still a current research area. Presented theoretical-empirical considerations, allow to formulate several conclusions.

Firstly, unfortunately, still a low percentage of Polish small enterprises are actively innovating. Average for UE countries is 45,2% - in Poland small innovative firms constitute only 17,4% of all companies.

Secondly, companies that want to increase their attractiveness must take into account a number of internal and external determinants. This is very important because the level of enterprise innovation represents one of the key sources of gaining and strengthening competitive advantage in today's economy.

Thirdly, Polish small companies in the analyzed time interval showed a greater tendency to modernize existing products and processes than to adapt completely new solutions.

Fourthly, in the first years of post-crisis economic reality, the most commonly introduced type of non-technical innovation by Polish small business was new pricing methods.

Fifthly, the vast majority of implemented innovative solutions (regardless of the type innovation) had a positive impact on the competitiveness of Polish small enterprises.

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Zarys treści: Szybkość zmian koniunkturalnych występująca we współczesnej gospodarce stanowi wyzwanie dla wielu przedsiębiorców – między innymi w zakresie zapewnienia atrakcyjności oferowanych produktów i usług. Bezsprzecznie, czynnikiem, który wpływa na zwiększenie pozycji konkurencyjnej oraz przyczynia się do osiągnięcia trwałej przewagi rynkowej przedsiębiorstwa jest wymiar prowadzonej działalności innowacyjnej. Umiejętność firmy do generowania i wdrażania nowatorskich rozwiązań skutkuje zwiększeniem sprawności realizowanych przedsięwzięć. Owa zdolność jest szczególnie ważna w czasie zawirowań gospodarczych, kiedy to właściciele działając często pod presją, powinni dostosować realizowane dotychczas strategie, tak by ograniczyć możliwość pojawienia się dodatkowych zagrożeń oraz wykorzystać pojawiające się impulsy prorozwojowe. W artykule przedstawiono fragment wyników badań empirycznych dotyczących aktywności innowacyjnej polskich małych przedsiębiorstw. Celem głównym badania była identyfikacja rozmiaru i zakresu podejmowanych działań innowacyjnych przez małe podmioty gospodarcze.

Słowa kluczowe: aktywność innowacyjna, innowacje, polskie małe przedsiębiorstwa.