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Innovativeness of Polish enterprises in the development of competitive advantage

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Abstract

In today's fast-paced competitive environment, firms face the need to be increasingly nimble and adaptive. Sustainable competitive advantage no longer arises from positioning or resources. They need to embrace the notion of transient advantage, learning to launch new strategic initiatives again and again, and creating a portfolio of advantages that can be built quickly and abandoned just as rapidly. This has led firms to move to a new paradigm of competitiveness, namely solutions innovation. A constant source of innovation, used to build transient advantage, becomes a new source of competitive advantage. Innovation thus becomes the most important tool for competition. The aim of this article was to analyse the effect of innovation on the competitiveness of firms and to assess the level of innovativeness of Polish entities. The research question was whether Polish firms are competitive enough to successfully compete in today's environment. Based on the data analysis it can be said that Polish firms are not sufficiently innovative, which has a negative effect on their competitiveness. Enterprises spent too little on innovation, and the structure of their expenditure is inappropriate.

Keywords: Innovation; competition; competitive advantage; transient advantage; innovativeness

JEL codes: F26

INTRODUCTION

Contemporary competitive environment undergoes frequent changes and is unpredictable. Intensive global information flow stimulates the development of science and technology, which results in high variability in the tools entrepreneurs use to compete. Due to its character, the Internet reduces to a large extent spatial barriers, bringing markets and competitors closer together, and thus creating one huge global market where everyone can compete with one other regardless of time and place. In consequence, cognitive perspectives of both manufacturers and customers shift, which leads to changes in the marketing strategies employed by companies. It is necessary to modify marketing strategies and tools in order to get adjusted to the hyperreality and online products and services [Sułkowski, 2014, p. 278].

At the same time, the permanence of competitive advantage is losing its significance. All solutions adopted to build competitive advantage are copied, which is made easier by the development of information technologies. Competitive advantage gets eroded. Thus, organisations resign from building permanent competitive advantage as, in fact, it cannot last, and so it cannot provide the basis for maintaining a stable position on the market. The main strategic goal is now growth that creates the company's value [Zenger, 2013, p. 73].

In this new situation, competitiveness of organisations is still one of their most important characteristics because it cannot be belittled by a lack of permanence of competitive advantage. Only conditions for competition change. The significance of innovations, which have become the main sources of competitiveness of organisations, is growing, which is why one of the most important tasks faced by enterprises with regard to effective innovation management is balancing their innovation portfolio and adjusting it to the organisation's competitiveness level, also in terms of technological and market capabilities [Pomykalski, 2001, p. 24]. Innovations become the basic factors behind the organisation's success, while the ability to create and effectively use them in the context of value creation becomes a prerequisite for successful performance [Baruk, 2013, p. 13]. In order to rise to this challenge, the enterprise's strategy should be linked with innovativeness and proper financing. Thus, competitive advantage and value are created [Pomykalski, 2008, p. 310], translating into the organisation's competitiveness.

The aim of this article is to analyse the effect of innovation on the competitiveness of organisations and to assess the level of innovativeness of Polish enterprises. The authors' research question is whether Polish enterprises are competitive enough to successfully compete in the contemporary environment. Sources of information include literature review and secondary research.

The article is contributory in nature. The conclusions drawn by its authors can be used by practitioners (to assess and analyse the effect of Polish enterprises' innovativeness) and by theoreticians (to design their own research).

INNOVATIVENESS AND COMPETITIVE ADVANTAGE

Innovativeness is the organisation's ability to constantly seek, implement and disseminate innovations [Pomykalski, 2001, p. 18]. Innovativeness can also be understood as the enterprise's ability and readiness to develop and assimilate new or improved products, services rendered or technologies applied [Janasz, Kozioł, 2007, p. 57]. Innovativeness is the basic

challenge for enterprise management, which results from the fact that only organisations that introduce new products, processes and changes in an innovative way will have a chance to develop. Innovative organisations are more frequently successful, they have a better understanding of their relationships with the environment, and they are the first to discover configurations that best fit the environment [Dobni, 2006, p. 329].

According to the authors of *Oslo Manual*, an innovative enterprise is an enterprise that during the analysed period (usually three years) introduced at least one technological innovation that was a novelty, at least from the point of view of this enterprise [Podręcznik Oslo, 2005, p. 61]. Innovation does not need to be successful. Thus, in order for a company to be innovative by definition, no significant activities related to innovation are required.

The organisation's innovativeness level depends on such factors as [Szulakowski, 2004, p. 16]: the ability to manage innovations, a climate for innovations, and innovative culture. The enterprise size is of no significance to innovation [Shefer, Frenkel, 2005, pp. 25-32]. What matters are the processes related to knowledge management. Practically all factors related to it have a positive effect on the organisation's innovativeness level, with new knowledge acquired by employees being of the greatest significance [Leszczyńska, 2007, pp. 11-13].

From the practical point of view, the significance of innovation is profound. In order to be competitive on the market, an enterprise has to be innovative not only by definition. Due to the character of operations in the contemporary environment, innovation does not offer permanent competitive advantage because all effective and efficient solutions are soon copied by other organisations. Thus, as it was already mentioned in the introduction, organisations depart from striving after lasting competitive advantage towards increasing their value through activities that ensure positive effects over a short period of time. This allows them to gain short-term advantage over their competitors called transient advantage [Gunter McGrath 2013, p. 70].

An organisation adopting the above approach has a portfolio of competitive advantages instead of one permanent advantage. What is characteristic of these advantages is that they are quickly introduced and substituted with new ones as soon as they lose their value. Thanks to this, enterprises can combine flexibility of action with getting ahead of their competitors. When following the above paradigm, it is important for the organisation to know how to create and select appropriate advantages, and how to quickly implement them [Gunter McGrath 2013, p. 70]. A prerequisite for effective implementation of transient advantage is a permanent source of innovation translating into improved offers and operations of the company. Thus, the organisation making use of transient advantage can quickly supplant eroding competitive advantages by new ones, and build a portfolio of competitive advantages that will effectively protect it against its competitors [Gunter McGrath 2013, pp. 64-70]. This requires the following abilities [Reeves, Deimler 2011, p. 137]:

- The ability to quickly recognize changes and to respond to the identified signals;
- The ability to frequently experiment not only with new products but also new business models, strategies and processes;
- The ability to manage complex and interrelated systems of different stakeholders;
- The ability to motivate employees and partners.

This indicates that an enterprise that uses a new paradigm of formulating its competitive strategy does not only have to be innovative by definition, but mostly flexible and, through a number of properly selected effective and efficient innovations, agile in adjusting itself to the market environment. The ability to adjust oneself to the market, to experiment with new products, and to shape the market thanks to smaller and larger changes becomes key from the point of view of the organisation's competitiveness. What is also required, however, is certain stability in terms of organisational culture, leadership, relationships, and even strategy [Gunter McGrath, 2017, p. 57].

It is thus important to measure the organisation's innovative activity not only from the perspective of the definition of an innovative organisation, but also in terms of the number, intensity, and significance of its innovation policies. This is why it seems that a more adequate definition of an innovative enterprise is the one proposed by Jasiński, according to which an innovative enterprise is an organisation oriented towards innovation, i.e. an organisation that [Jasiński, 2006, s. 41]:

- Conducts extensive research and development work;
- Makes relatively large outlays on this activity;
- Regularly implements new scientific and technical solutions;
- Has a large share of innovations in their production and service volume;
- Regularly introduces innovations into the market.

According to these criteria, only some organisations – those where research and development activity is of significance to operation – can be called innovative.

However, even this narrowed-down definition is not fully adequate as there are many possibilities for using numerous innovations without an extensive research and development department. The nature of contemporary competition requires the introduction of many innovations that translate into short-term, transient advantage. Many of them are marketing or organisational innovations for which no R&D department is needed. Relying only on the development of new technologies may be both costly and risky, particularly considering the fact that in many cases building competitive advantage based on innovation and development does not involve direct investments in research and development activity. Instead, technologies from external sources are acquired, which is frequently cheaper than conducting research. Organisations orient themselves towards external development, thus improving their internal profitability [Pomykalski, 2011, p. 124].

In consequence, considering practical aspects including the significance of innovativeness for competition, an organisation can be called innovative when it regularly and consistently uses innovation (in terms of products, organisation, processes, and marketing activities) in its operations, which translates into an improvement of its competitive position. This means that any assessment of an organisation's innovativeness should be multi-faceted.

INNOVATIVENESS OF POLISH ENTERPRISES

The methodology that constitutes the current international standard in terms of statistical studies on innovation in industry and the market service sector is *Olso Manual*. It mostly recommends the subject approach, with innovative activity and

behaviour of an enterprise as a whole serving as the research subject. Potential research areas include [Podręcznik Oslo, 2005, p. 32]:

- Innovative activity scope;
- Expenditure on innovative activity;
- Effects of innovative activity;
- Sources of information for innovation;
- Cooperation on innovation activity;
- Barriers to innovation;
- Sale of innovative products;
- Inventions;
- The use of instruments provided by the national pro-innovation policy.

Such a wide array of measures of innovation seems right as it does not only concentrate on innovative activity connected with the development and implementation of new technologies, but also on the broader aspect of innovations implemented by organisations. For the purpose of this article, due to its limited length, the authors have selected a few of the research areas listed above. Sources of information included cyclical reports published by the Central Statistical Office (*Działalność innowacyjna przedsiębiorstw w Polsce*; *Nauka i technika*) and Eurostat's website. This information makes it possible to generally assess the innovativeness level of Polish enterprises compared with their European partners, and so the effect of innovation on their competitive position.

The discussion on the innovativeness of enterprises should start with an analysis of the state's internal expenditure on scientific research and development work. In 2016, Poland spent less than 1% of its GDP on such activity (Table 1). This is not much, particularly considering the fact that the average expenditure in other EU member states was 2%, which is twice as much. Also the target expenditure on research and development (1.7%) seems unsatisfactory. With the EU average of 3%, this is definitely not enough, because even attaining it would not considerably improve Poland's position in the European Union.

Poland's situation seems a bit better when compared with individual countries. In 2016, out of all countries, Romania spent the least on research and development, Italy occupied the 13th place out of 28 countries, so it was somewhere in the middle, while the EU leader was Sweden. Thus, compared with Romania, we spend twice as much (as a percentage of GDP), by 0.3% less than the average Italy, and the leading Sweden spends more than three times as much as we do.

A positive aspect is the relatively stable growth of expenditure, with the highest value of 1% achieved in 2015. It is worth noting that in Romania and Sweden the highest share was achieved 10 years ago, in 2008. However, considering Poland's situation, the dynamics of this growth seems unsatisfactory. Between 2000 and 2016, the share of budget expenditure on research and development in Poland grew by 0.3 percentage point, which more or less equals the average growth in all EU member states. With this growth rate, Poland does not stand a chance of improving its position over the upcoming years, which will result in a worse competitive position of Polish enterprises compared with their European competitors.

Low expenditure on the state's research and development activity translates into low innovativeness of enterprises (Table 2). In the case of enterprises with a high technological level only one in three was innovative, and every fourth incurred some expendi-

ture on R&D. These numbers are unsatisfactory considering the fact that these companies operate on markets of highly innovative products, where the market position is achieved thanks to the effective introduction of innovations. A company that has been effectively building its competitive advantage for years is Intel. It follows a strategy based on Moore's law, according to which the microprocessor technology will develop exponentially [Intel, http://www.intc.com]. In order to rise to this challenge, the company decided that one of its most important tasks was to constantly invest in the development of their product technology. It spends 10% of its revenue from the sale of its products and 10% of its net income on research and development. These values are twice as high as the average values on the market [McElheny http://www.xconomy.com]. Considering the company's high share in the global market of microprocessors (65.3%) [http://pclab.pl/], the amount of resources spent by Intel on the microprocessor technology is several times higher than in the case of their competitors (in 2015, Intel spent about 12 billion dollars on research and development, while Qualcom, which occupies the second position in terms of expenditure in the microprocessor industry, spent only 3.7 billion [Design&Reuse, http://www.design-reuse.com/]).

Table 1. Share of internal expenditure on research and development as a percentage of GDP

Poland												
Year	2016	2015	2014	2013	2012	2011	2010	2008	2005	2000	1995	Aim
Share of R&D expenditure in GDP (in %)	0.96	1,00	0.94	0.87	0.88	0.75	0.74	0.6	0.57	0.64	0.63	1.7
Share per one citizen in PLN	467	470	420	375	372	303	207	202	146	125	55	
EU												
Share of R&D expenditure in GDP (in %)	2.03	2.04	2.03	2.02	2.01	1.97	1.77	1.84	1.74	1.77		3,00
Romania												
Share of R&D expenditure in GDP (in %)	0.48	0.49	0.38	0.39	0.48	0.5	0.46	0.55	0.41	0.36	0.75	2,00
Sweden												
Share of R&D expenditure in GDP (in %)	3.25	3.27	3.15	3.31	3.28	3.25	3.22	3.5	3.39	3.42	3.13	4,00
Italy												
Share of R&D expenditure in GDP (in %)	1.29	1.34	1.34	1.31	1.27	1.21	1.22	1.16	1.05	1.01	0.94	1.53

Source: drawn up based on statistical data: Nauka i Technika w 2007-15 (2008-16); http://ec.europa.eu/eurostat/.

Also the intensity of research and development is low. Significantly, over the last few years the situation has not changed much, as a result of which the innovativeness level of Polish enterprises remains relatively low. In order to improve their competitiveness, it is necessary to considerably increase both the intensity of and expenditure on research and development work conducted by Polish enterprises operating in high-tech sectors. Only such an approach will allow them to be competitive. A significant role should be played here by the Polish state, in both institutional and financial terms, so that the deficiencies faced by Polish companies compared with their foreign competitors are overcome. An example of such an approach can be the activity of the Chinese government

aimed at fostering cooperation between enterprises, academic centres and governments in order to develop a competitive automotive industry, one of the global leaders in the production of electric cars [Dijk, Orsato, Kemp, 2013, p. 141].

Table 2. Innovativeness and knowledge intensity in industrial enterprises according to their technological level

Enterprise's technological level	Enterprises								Direct and indirect R&D intensity			
	Innovative				Those that incurred expenditure on internal R&D							
	2015	2013	2011	2009	2015	2013	2011	2009	2015	2013	2011	2009
High (in %)	37.7	38.7	35.1	43,0	24.4	21.7	15.6	21.3	1.57	1.72	1.65	1.08
Rather high (in %)	33.1	32.2	33.1	34.2	15.5	11.7	9.2	11.2	0.55	0.51	0.3	0.73
Rather low (in %)	17.9	17.1	17.8	20.5	5.8	3.2	2.4	3.2	0.15	0.13	0.11	0.07
Low (in %)	12.1	12.4	10.3	12.4	2,0	1.2	0.7	1.1	0.11	0.1	0.1	0.13

Source: drawn up based on statistical data: Nauka i Technika w 2015 (2016); Nauka i Technika w 2013 (2014); Nauka i Technika w 2011 (2012); Nauka i Technika w 2009 (2010).

Not only the amount of expenditure in the economy, but also its structure within the enterprises is unsatisfactory. This mostly concerns industrial enterprises (Table 3).

Direct expenditure on research and development or purchasing technology in the form of documentation and the right to use it is definitely too low. Most resources are spent on tangible assets, which means they are invested in buildings and structures, land, machines, technical devices and equipment, and means of transport. What is worse is the fact that the situation has not changed for many years and there is nothing to indicate that it will. Key success factors of Polish enterprises should be mostly related to their intellectual, cultural, financial and technological capital. However, in the case of technological capital, the significance of the non-material component is growing, which includes unique knowledge gained from investments in research and development, organisational capital and brand [Skawińska, Zalewski, 2016, p. 22]. It is also worth noting the diminishing significance of financial capital, which results from low interest rates and the requirement to have more able and more competent employees. In consequence, human capital becomes the most important resource in an organisation [Mankins, Harris, Harding, 2017, p. 75]. Thus, out of the four capital types listed, intellectual capital should be placed first, and the expenditure structure should change.

The structure of expenditure on innovative activity is better in the case of service enterprises, where expenditure has been clearly moved over the last decade from tangible assets to research and development (Table 4). In 2016, the share of R&D in the whole expenditure on the generally understood innovative activity was 45%. This change is a positive signal for the future as it should lead to the development of knowledge and intellectual capital in these companies, which, considering today's business reality, is more important with regard to competitive advantage than investments in tangible assets.

Another positive phenomenon identified is the growing value of expenditure on research and development in private enterprises. Between 2008 and 2016, it grew fivefold (Table 5). At the same time, this growth was lower in other sectors. In consequence, the private sector achieved the share of expenditure on research and development of 65%, which is similar to the average EU level of 64%. However, this result is disturbed by a

rapid decline in expenditure on R&D in the government sector. In 2016, such expenditure constituted only 10% of the expenditure from 2015.

Table 3. Expenditure on innovative activity in industrial enterprises

Industrial enterprises											
Expenditure in million PLN											
Year	2016	2015	2014	2013	2012	2011	2010	2008	2006	2005	2000
R&D work	5191	4838	4416	3830	3530	2617	3273	1930	1481	1367	1570
Purchasing knowledge from external sources	164	243	220	210	651	258	911	262	337	343	297
Purchasing software	449,5	336	387	332	376	429	452	354	467	281	no data
Investment outlays on tangible assets	26725	22300	16689	14322	14934	15003	16737	20066	13058	11866	9344
Staff training in investment activity	251	62	39	127	40	65	88	202	40	43	135
Marketing concerning new and substantially improved products	405	411	528	370	469	439	440	580	463	289	393
In total	33186	28920	22544	19521	20293	19377	22379	23686	16031	14329	12235
Expenditure structure in %											
R&D work	15,64	16,73	19,59	19,62	17,40	13,51	14,63	8,15	9,24	9,54	12,83
Purchasing knowledge from external sources	0,49	0,84	0,98	1,08	3,21	1,33	4,07	1,11	2,10	2,39	2,43
Purchasing software	1,35	1,16	1,72	1,70	1,85	2,21	2,02	1,49	2,91	1,96	no data
Investment outlays on tangible assets	80,53	77,11	74,03	73,37	73,59	77,43	74,79	84,72	81,45	82,81	76,37
Staff training in investment activity	0,76	0,21	0,17	0,65	0,20	0,34	0,39	0,85	0,25	0,30	1,10
Marketing concerning new and substantially improved products	1,2%	1,42	2,34	1,90	2,31	2,27	1,97	2,45	2,89	2,02	3,21

Source: drawn up based on statistical data: Nauka i Technika w 2015 (2016); Nauka i Technika w 2009 (2010); Nauka i Technika w 2000 (2006); Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017).

The higher education sector has a relatively high (ca 30%) share of expenditure on research and development. In the EU, this share was definitely lower (23%). However, the higher education sector in EU member states has a high level of enterprise. Networks of small and medium enterprises are created around prestigious universities and institutes. There are also a number of activities stimulating enterprise on both central and regional levels. Polish higher education institutions are only at the initial stage of developing a model of academic enterprise, which creates numerous organisational barriers that hinder the development and implementation of innovative solutions [Poznańska, 2014, pp. 167-170]. Thus, despite a lower share of expenditure, the EU higher education achieves better results in the form of specific innovations used by enterprises.

It seems that it would be good to maintain the clearly higher growth of expenditure on the above aim in the private sector and, at the same time, to restore the expenditure level of the government sector from 2015. This would make it possible for individual sectors to achieve shares similar to those of other EU member states. It would also be worth creating

mechanisms for translating to a greater extent the expenditure incurred by the higher education sector into specific solutions and innovations applied by enterprises, including enterprises set up by academics from those higher education institutions.

Table 4. Expenditure on innovative activity in service enterprises

Service enterprises										
	Expenditure in million PLN									
Year	2016	2015	2014	2013	2012	2011	2010	2009	2008	2006
R&D work	4385	3803	2611	2392	5796	1355	1271	802	557	802
Purchasing knowledge from external sources	500	281	194	no data	no data	no data	788	586	174	293
Purchasing software	981	1239	1165	1641	1347	1484	1482	1163	1103	734
Investment outlays on tangible assets	3147	4660	4814	4501	4557	5659	5530	4429	7329	4452
Staff training in investment activity	56	140	50	68	no data	no data	71,5	54	56	64
Marketing concerning new and substantially improved products	659	966	1661	455	940	462	454	482	266	293
In total	9728	11856	10791	9702	14178	10318	9921	7624	9797	7215
	Expenditure structure (in %)									
R&D work	45,08	32,08	24,20	24,65	40,88	13,13	12,81	10,52	5,69	11,12
Purchasing knowledge from external sources	5,14	2,37	1,80	no data	no data	no data	7,94	7,69	1,78	4,06
Purchasing software	10,08	10,45	10,80	16,91	9,50	14,38	14,94	15,25	11,26	10,17
Investment outlays on tangible assets	32,35	39,30	44,61	46,39	32,14	54,85	55,74	58,09	74,81	61,70
Staff training in investment activity	0,58	1,18	0,46	0,70	no data	no data	0,72	0,71	0,57	0,89
Marketing concerning new and substantially improved products	6,77	8,15	15,39	4,69	6,63	4,48	4,58	6,32	2,72	4,06

Source: drawn up based on statistical data: Nauka i Technika w 2015 (2016); Nauka i Technika w 2009 (2010); Nauka i Technika w 2000 (2006); Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017).

Table 5. Internal expenditure on scientific research and development work in operations sectors in 2008-20016

	Expenditure value (billion PLN)									
	2016	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	
Private enterprises	11,78	8,41	7,53	6,29	5,34	3,52	2,77	2,58	2,38	
Government sector	0,45	4,41	3,87	3,87	4,01	4,04	3,74	3,11	2,72	
Higher education	5,63	5,22	4,71	4,22	4,94	4,1	3,87	3,36	2,59	
Private non-commercial enterprises	0,08	0,03	0,05	0,04	0,06	0,03	0,03	0,01	no data	EU 28
In total	17,94	18,07	16,16	14,42	14,35	11,69	10,41	9,06	7,7	2015
Percentage share (in %)										
Private enterprises	65,66	46,5	46,6	43,6	37,2	30,1	26,6	28,5	30,9	64
Government sector	2,51	24,4	23,9	26,8	27,9	34,6	35,9	34,3	35,3	12
Higher education	31,38	28,9	29,1	29,3	34,4	35,1	37,2	37,1	33,6	23,20
Private non-commercial enterprises	0,45	0,2	0,3	0,3	0,4	0,3	0,3	0,1		0,80

Source: drawn up based on statistical data: Nauka i Technika w 2008-15 (2009-16); Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017); http://ec.europa.eu/eurostat/

The unsatisfactory value of expenditure on research and development and the incorrect structure of this expenditure focusing on tangible assets result in a small number of patent applications submitted to the European Patent Office. In 2014, Poland submitted only 16 patents for every million inhabitants. This is a very small number, considering huge disproportion between the number of such patents submitted by Poland and the highly developed EU countries (e.g. Germany – 256, Finland – 340, Sweden – 349). This number is also higher in countries closer to Poland, e.g. in the Czech Republic there are 25 patent applications submitted for each million inhabitants, and 23 in Hungary [*Nauka i Technika w 2015*, p. 148].

A positive phenomenon is the constantly growing number of inventions submitted by and patents granted to Polish enterprises (Table 6). In 2000-2005, most inventions were submitted by foreign entities, but from 2010 one can see considerable growth and domination of Polish entities. This probably results from the steady growth of expenditure on research and development incurred by private companies.

When discussing innovative activity, one should also assess the types of innovations introduced by national enterprises. As shown in Table 7, deficiencies of Polish enterprises include not only a small percentage of enterprises introducing innovations but also a distorted structure of these innovations. In Poland, most of the innovations introduced concern products and processes, while in the EU the share of different innovation types is similar. One should remember that contemporary competition conditions make enterprises introduce transient advantage, which means that they need a constant source of innovations in terms of products, processes, organisation and marketing. It is easier to suggest a new method for distribution, assessment or promotion, than to develop and introduce a new product. An innovative marketing solution can also be a source of competitive advantage.

Table 6. Industrial property protection in Poland in 2001-2007 (national and foreign enterprises)

National entities								
Year	2015	2014	2013	2012	2011	2010	2005	2001
Patent applications	4676	3941	4237	4410	3878	3203	2028	2202
Patents granted	2404	2490	2339	1848	1989	1385	1054	851
Utility models submitted	994	913	986	941	940	879	600	1057
Protection rights granted	562	586	621	514	498	484	829	484
Decorative patterns and industrial designs submitted	1022	1138	1317	1341	1548	1723	1773	1223
Rights in registered industrial designs granted	776	827	1268	1532	1294	1231	1973	561
Trademarks submitted	12613	13139	13532	13246	14252	14080	13864	12434
Protection rights granted	7992	9386	9049	7925	8795	10050	8688	5074
Foreign entities								
Year	2015	2014	2013	2012	2011	2010	2005	2001
Patent applications	139	155	174	247	245	227	4565	4344
Patents granted	168	362	465	636	1123	1619	1468	1171
Utility models submitted	63	48	67	56	63	66	44	38
Protection rights granted	44	34	33	38	26	35	21	22
Decorative patterns and industrial designs submitted	51	45	16	9	12	9	122	464
Rights in registered industrial designs granted	4	27	16	12	8	17	309	68
Trademarks submitted	3563	3244	4003	3528	4044	4016	7448	12601
Protection rights granted	2717	3170	3309	3289	4458	4553	10551	10832

Source: drawn up based on statistical data: Nauka i Technika w 2008-15 (2009-16); Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017).

At the same time, significance of marketing is growing. This results from a departure from activities focusing on the transaction towards maximization of the customer value [Rust, Moorman, Bhalla, 2010, p. 96]. Today, in order to operate successfully, enterprises need to have strong brands and a group of loyal customers so that the introduction of innovations entails a lower risk of failure. Such organisations also know how to properly approach marketing in an organisation. Effective marketing strategies involve an operation model based on the following three elements [Swaan, Driest, Weed, 2014, p. 60]:

- Focus on information and analysis (Think);
- Focus on customer involvement (Feel);
- Focus on the content and the product (Do).

Marketing also needs to have a significant effect on decisions taken in other departments, with some of them even taken by the marketing department employees [Joshi, Gimenez, 2014, pp. 66-70]. Only then is it possible to create value thanks to which the organisation can gain a secure position on the market.

The most spectacular example of a company effectively using marketing in order to build its competitive advantage is Apple. Its ground-breaking product, iPhone, was proved successful and redefined the industry because it effectively combined innovation with the customer value. The product made use of the latest technological solutions and offered an innovative operating system forming a platform that integrated the whole product. This was supplemented with a brand that stands out on the market. In consequence, by offering a new product, Apple in fact guaranteed uniform and pleasant experience connected with using it, and this was the value that became the source of the company's success [Achille, Bellaiche, Lui, https://www.bcgperspectives.com/].

Thus, a small share of marketing innovations should be treated as a competitive weakness of Polish enterprises that do not make full use of the potential of marketing and creative solutions it offers. Nowadays, one cannot only rely on product and process innovations because it is also necessary to skilfully combine technological solutions with customer value, and this can only be achieved through marketing innovations. Its insufficient number results in a loss of competitiveness.

When analysing Polish enterprises, one should determine the reasons for their low innovativeness compared with their European partners. One of the most frequent reasons for innovation failure indicated was lack of ideas for new solutions. Low demand for innovation was the second most frequently given reason by both industrial and service enterprises. In other EU member states, the most frequent answers were low demand and the fact it was not necessary due to the introduction of previous innovations (Table 8). Lack of ideas may mean that employees lack creativity. Another reason for this may be excessive emphasis placed by enterprises on cutting costs and streamlining processes at the expense of the introduction of new products. In times when new products and new marketing solutions offer competitive advantage, lack of resourcefulness and creativity is a serious weakness of Polish enterprises. Even in Romania, which has lower ratings than Poland, lack of ideas is indicated much less frequently.

Table 7. Types of innovations introduced by enterprises in Poland

Innovative enterprises in Poland according to innovation types (in %)											Innovative enterprises in the EU (in %)
	Industrial enterprises					Service enterprises					
Year	2014-16	2013-15	2012-14	2011-13	2010_12	2014-16	2013-15	2012-14	2011-13	2010_12	2012-14
Enterprises that introduced innovations	18.7	18.9	17.5	17.1	16.5	13.6	10.6	11.4	11.4	12.4	49
New or substantially improved products	12.4	11.8	11.4	11,0	11.2	6.9	4.8	6.8	5.8	7,0	24
New or substantially improved processes	15.2	13,0	12.9	12.8	12.4	10.4	7.4	8.4	8.5	9.1	22
Product manufacturing methods	10.6	9.9	10,0	9.6	9.7	2.8	2.3	3,0	2.7	3,0	
Logistic methods and/or delivery and distribution methods	4.8	3.2	3,0	3.3	3,0	5.2	2.7	3.4	2.4	3.5	
Methods for supporting processes	6.9	5.9	5.6	6.2	5.4	6.3	5.4	6.1	6.2	6.6	
Organisational innovations	9.5	8.1	8.4	8.3	10.3	7.6	8.1	9.7	7.1	10.5	27
New operating methods	6.6	6.1	6.2	5.9	7.3	3.9	4,0	4.8	3.1	4.7	
New methods for distributing tasks and decision-making powers	6.6	5,0	5.7	5.1	6.7	5.4	5.5	7.3	5.3	6.8	
New methods concerning relationships with the environment	3.5	3.1	3.5	3.4	3.8	3,0	3.5	4,0	2.8	5.8	
Marketing innovations	9.2	7.1	7.9	7.5	10.2	7.2	6.6	7,0	7,0	11.1	23
Considerable changes in the design/structure or packaging of products or services	4.9	4.2	4.4	3.9	5.2	2.9	2.2	2,0	3,0	3.8	
New media or techniques for promoting products	4.9	3.8	3.9	3.8	5.2	5,0	4.2	4.7	5.4	6.3	
New methods considering the distribution of products or sales channels	2.9	2.1	2.5	2.4	3.4	3.6	2.6	2.4	3.3	5.3	
New methods for shaping the prices of products and services	3.7	3.2	3.6	3.8	5.2	3.4	3.2	2.9	3.7	5.3	

Source: drawn up based on statistical data: Działalność innowacyjna przedsiębiorstw w latach 2013–2015 (2016); Działalność innowacyjna przedsiębiorstw w latach 2012–2014 (2015); Działalność innowacyjna przedsiębiorstw w latach 2011–2013 (2014); Działalność innowacyjna przedsiębiorstw w latach 2010–2012 (2013); http://ec.europa.eu/eurostat/

The most frequently indicated barriers to innovation included lack of financing from external sources and high innovation cost. These barriers are intensified by difficulties in acquiring public grants. Enterprises from the EU also indicated these three barriers as most significant. Surprisingly, despite the fact that the main reason for failure indicated was lack of ideas for innovations, enterprises relatively rarely saw lack of properly qualified staff as a barrier (Table 6). These answers may suggest that enterprises do not fully realize that lack of ideas is connected with the intellectual capital quality, even though knowledge workers are becoming the main source of competitive advantage as those who play the main part in creating technological innovations [Chyba, 2013, pp. 22-23].

Thus, it seems that the state's efforts should focus on providing enterprises with greater funding, which would to some extent eliminate barriers resulting from insufficient access to capital. At the same time, it is important to create mechanisms making it

possible to improve the quality of the intellectual capital. This will translate into a greater awareness of enterprise managers and a better access to employees having proper qualifications, including both managers who realize the significance of innovations and specialists who know how to create them.

Table 8. Enterprises that assessed the significance of reasons for not introducing innovations as „high"

	Industrial enterprises in Poland		Service enterprises in Poland		Enterprises in the EU - high significance of the factor, excluding Belgium, Denmark, Germany, Ireland, Spain, Slovenia, Finland, Sweden and UK	Enterprises in Sweden	Enterprises in Italy	Enterprises in Romania
	2016-14	2014-12	2016-14	2014-12	2014-12	2014-12	2014-12	2014-12
Low demand for innovation on the market	6,0%	6.6%	5.3%	7.3%	15,0%	12,0%	27,0%	9.2%
No need to introduce innovation on account of earlier innovations	6.4%	5.8%	5.3%	7.3%	9.8%	8.5%	17,0%	5.8%
No need to introduce innovation on account of limited competition on the market	5,0%	4.2%	3.4%	4.2%	4,0%	no data	6.3%	3,0%
Lack of ideas for innovation	7.8%	7.6%	10.2%	9.1%	7,0%	no data	6,0%	5.2%

Source: drawn up based on statistical data: Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017); Działalność innowacyjna przedsiębiorstw w latach 2012–2014 (2015); http://ec.europa.eu/eurostat/

Table 9. Enterprises that assessed the significance of barriers to innovation as "high"

	Enterprises not active in terms of innovation				Enterprises active in terms of innovation	
	Industrial enterprises in Poland		Service enterprises in Poland		Industrial enterprises	Service enterprises
	2016-14	2014-12	2016-14	2014-12	2016-14	2016-14
Lack of possibility to finance innovation from the enterprise's external sources	10.1%	28.4%	3.4%	20.4%	26.2%	20.2%
Lack of possibility to finance innovation from external sources	7.6%	18.4%	3,0%	15.4%	15.5%	10.7%
Too high innovation cost	11.4%		4,0%		33.1%	32,0%
Lack of properly qualified staff in the enterprise	5.4%	11.7%	1.6%	7.5%	11.7%	13.5%
Lack of partners for cooperation	4.1%	12.3%	1.3%	7.4%	8.3%	9.5%
Difficulties in acquiring public grants or subsidies for innovation	8.1%	18.4%	2.7%	15.2%	24.9%	19.2%
Uncertain market demand for the enterprise's ideas for innovations	6.21%	17.3%	2.3%	11.8%	17.5%	19.9%
Too strong competition on the market	6.4%	18.5%	2.7%	13.7%	16.3%	19.5%
Regulations creating new liabilities	7,0%	no data	2.1%	no data		
Regulations creating uncertainty	7.8%	no data	2.1%	no data		
Regulations leading to incohesion in the whole European Union	5.5%	no data	2.1%	no data		

Source: drawn up based on statistical data: Działalność innowacyjna przedsiębiorstw w latach 2014–2016 (2017); Działalność innowacyjna przedsiębiorstw w latach 2012–2014 (2015)

CONCLUSIONS

The article compares statistical data on the innovativeness of Polish enterprises available in the form of reports on the website of the Central Statistical Office. The information gathered has been compared with similar data on European enterprises available on the Eurostat's website. Based on the data analysis and comparison it can be said that Polish enterprises are not sufficiently innovative, which has a negative effect on their competitiveness.

Compared with other EU member states, Poland's expenditure on research and development is insufficient. Enterprises also spent too little on innovation, and the structure of their expenditure to a large extent focuses on tangible assets. A positive phenomenon identified among private enterprises is the growing value of expenditure on research and development. In the future, this might translate into a greater number of innovations and their more effective use in building competitive advantage. A problem identified during the research is the structure of innovation types, with too little emphasis placed on marketing innovations.

Lack of ideas for innovations is among the most important reasons for innovation failure indicated. This probably results from poor innovative awareness of the enterprise's employees and the rather low human capital quality. One of the barriers identified is insufficient internal and external funding for research and development.

In order to improve innovativeness, one should increase expenditure on research and development on the central level. A network of institutions and organisations effectively supporting the innovativeness of Polish enterprises should be created. These organisations could provide both financial and intellectual capital, thus eliminating barriers to innovation. Another recommendation is that activities improving the human capital quality should be undertaken.

The article is contributory in nature. The information gathered can be used for further research aimed at determining the reasons for the negative phenomena listed above. It also seems important to study the intellectual capital of Polish enterprises in order to acquire knowledge necessary to improve it in the future.

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