An Analysis of Innovativeness as the Basic Competitiveness Factor of the Sector of Small and Medium-Sized Enterprises in Poland in the Years 2001–2012 against Changes in the Selected Measures of the National Economy

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Abstract

The publication analyzes and tries to assess innovative activity of small and medium-sized enterprises in Poland. The above analysis and assessment was made in the context of the competitiveness of the SME sector in Poland and against selected measures characterizing the national economy within that scope, as well as based on the selected indicators for average values in the European Union. The whole article is divided into four, logically linked parts. Introduction shows dependencies between innovative activity and competitiveness, Part Two discusses innovative activity and competitiveness of SMEs in Poland in the years 2001-2006, Part Three deals with the years 2007-2012, whereas Part Four, forming the Conclusions, indicates challenges that the SME sector enterprises in Poland face in the 21st century.

Keywords: Innovation, competitiveness, small and medium sized enterprises, national economy

1. Introduction

The notion of innovativeness can be grasped both in the narrow and broad meaning, depending on the adopted scope of an analysis: an individual firm, the whole industry, sector or the national economy. In the narrow approach, it is understood as the introduction of novelties, whereas in the broad sense - as a system in which one considers multi-staginess and complexity of the innovative process also referring to feedbacks between the stages of the process of creation and implementation of innovation (Weresa, 2012). Such a view of the definition of innovation refers to so-called chain-linked innovation models created by S. Kline and N. Rosenberg and R. Rothwell and W. Zegveld'sfeedback model.

The dependence between innovativeness and competitiveness on the level of industries, sectors, as well as national economies is determined by a necessity to look at this problem in a multi-dimensional, holistic way, considering the policy implemented within this scope, as well as comparative reference, for example, to the same sector in other countries, or average indicators for the association of countries linked economically and politically, such as, for example, the European Union.

On the theoretical grounds and based on empirical research, the literature on the subject has proven the relation between innovations and competitiveness, and, what is more, their close connection is indicated.

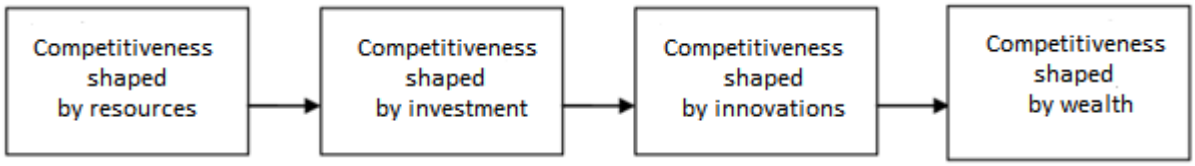
According to M.Porter, achieving a competitive advantage takes place via the implementation of innovations, and advantages are visible with reference to an increase in the productivity of the factors of production (Porter, 1990). M. Porter isolated four main elements determining competitive advantage:

- The conditions of factors of production (including: human resources, scientific base, technology),
- The conditions of demand (sizes and structure of demand stimulating innovative activity),
- related and supporting sectors (fostering the exchange of ideas and the creation of innovations),
- Strategy, structure and competition of enterprises.

It should be emphasized that the indicated elements are linked and coupled to each other, creating a system within which innovative solutions are the substance for the development of economy, industry or sector. In consequence, as a result of competitive development, we can indicate four stages where the following are the basis of competitiveness:

- resources,
- investment,
- innovations, and
- ”wealth”.

Fig.1: Stages of Competitive Development According to M. Porter



Considering the contemporary conditions of the development of businesses, sectors, industries and the whole national economies, we can point out that the characteristic feature of this development is the growing competition, the progressing globalization, and the increasing requirements and expectations of customers/the society. Thus, efficient and effective[1]conducting business activity is connected with a necessity to possess a vision for which the strategy of development and the adequate developmentmanagement system become the realization.

Both in highly developed and in developing countries, the sector of small and medium-sized enterprises performs a significant role in this development, through considerable share in creating GDP, jobs, but also in the innovative activity which in the long-term formulation is a very important factor of development, and not only the economic growth.

The aim of this publication is an analysis and an attempt to assess the innovative activity of small and medium-sized enterprises in Polandin the years 2001 - 2012 in the context of their competitiveness against the selected measures characterizing the national economy within that scope and on the basis of selected indicators for average values in the European Union. The papers adopts the following research hypotheses to be verified:

H1: The low level of innovativeness of enterprises in Poland, including SMEs, is conditioned bythe innovative policy of the state, which is ineffective and characterized by a low measurement of effects, as well as by poorly developed national innovation system.

H2: The low level of SME innovativeness in Poland is of structural character and requires radical changes both from the state and a change in the way entrepreneurs perceive the significance of innovations for the development and an increase in the competitiveness of their firms.

H3: In the years 2007 - 2012, the level of innovativeness of SMEs in Poland, expressed by the percentage of innovative businesses in the national economy, decreased in comparison with the period 2001 - 2006, which is virtually related to the negative influence of the global economic crisis in the years 2007 - 2012 on the functioning and development of SMEs in Poland.

H4: The low level of innovativeness of the SME sector in Poland has direct and indirect impact on the level of its competitiveness.

2. Innovativeness and Competitiveness of Small and Medium-Sized Enterprises in Poland against Selected Measures of the National Economy in the Years 2001-2006

Among the basic factors influencing the innovativeness of enterprises in Poland, including the SMEsector firms, and their broadly understood innovative activity, we should point out the existing level of innovativeness of the national economy and its potential, as well as the effectiveness of the implemented innovative policy.

The research and development activity in Poland in the years 2001-2006 was characterized by an overall increase in the expenditure from the level of PLN 4,858.1million in 2001 to PLN 5,892.8 million in 2006 (the growth by 21%), but comparing the value of expenditure on R&D in relation to GDP against other OECD countries, we can assess that they were one of the lowest.

[1] The notion of efficient and effective conducting business activity is understood not only with reference to financial questions and a specific level of the profitability of entities but also the skill to meet the requirements of the market, customers, with particular focus on quality, not only quantity issues.

They were very low per 1 inhabitant, a few to several times lower than generally in the countries of the world ("in 2005 in Poland they were equal to USD74 per inhabitant, whereas in the mentioned countries they substantially exceeded USD 1,000 and were 12-17 times relatively higher") (Domański, 2011).

The structure of financing the expenditure on R&D in Poland is characteristic for less developed countries in which the share of the enterprise sector in the totalexpenditure is relatively lower, and which went down from the level of 45.5% in 1995 to the level of 24.3% in 2001 (Naukaitechnika..., 2004) and slightly increased to 25.1% in 2006 (Domański, 2011). In the current expenditure on R&D activity, an average share in the years 2001-2006 equal to 38.15% was for basic research 37.9% in 2001 and 36.5% in 2006), then development research 36.65% (36.4% in 2001 and 38.8% in 2006), and the smallest share was characteristic for applied research 25.18% (25.7% in 2001 and 24.6% in 2006) (Naukaitechnika...,2009).

Employment in R&D in Poland, constituting one of the measures of developmental and innovative potential, decreased from 78,026 EPC in 2001 to 73,554 EPC in 2006 (a decline by 5.7%) (Naukaitechnika, 2004, 2007)[2]. It is also worth indicating that in the industrial R&D sector (in so-called sectoral, industrial research and development units) in the years 1985-2006 there was 5,6-fold decline of the employment to the level of 16.3 thousand in 2006 (Domański, 2011).

What proves the effects of the R&D and innovative activity of a given country are the indicators concerning the statistics of patents and the indicators concerning co-called technology balance of payments of the country "TBP"[3] (Naukaitechnika, 2007).

In terms of the number of granted domestic patents in Poland, the growth was marked in the years 2001-2006 from 851 in 2001 to 1,122 in 2006 (an increase by 37%). However, it should be noted that a much bigger number of patents was registered in 1980s and 1990s, namely 3,894 in 1985 or 3,242 in 1990, thus, 3.5 times more than in 2006. It proves the declining domestic innovative activeness, or even its regression. The share of R&D sphere units in the number of innovations applied in the Patent Office by Polish residents in 2006 was equal to 40%, by natural persons 30% in comparison with 28% falling to business entities[4], which indicates a relatively low share of business entities within this scope. On the other hand, the number of granted foreign patents in Poland significantly grew from 1,171 in 2001 to 1,564 in 2006 (compared to 405 in 1990 or 573 in 1985).

With reference to the technology balance of payments (TBP), an increase in their payments was observed, from USD1,104.08 million in 2001 to USD 2,984.82 million in 2006, and so was the case with earnings, from USD 246,95 million in 2001 to USD 1,273.07 million in 2006. In spite of higher dynamics of earnings than payments in the balance of payments, the balance was still negative (its value was USD857.13 million in 2001 and USD 1711.75 million in 2006), which indicates an increase in the deficit in the technology balance of payments in Poland in the analyzed years 2001- 2006 (Main Science, 2014)[5].
Therefore, such a state cannot instill optimism.

Due to the presented statistical data and the research into the innovativeness of the Polish economy, we can indicate that it is very low and in the early years of the 21st century it stayed on a similar level. In comparison with other highly developed countries, as well as the new EU members from Central and Eastern Union, Poland was characterized with one of the lowest values of the Summary Innovativeness Index - SII (Staśkiewicz, 2013).

In this context, the worsening of Poland's position in the ranking was also observed with regard to the index of knowledge-based economies among the European Union countries in the years 2001-2006, which, considering the improvement of the position of Hungary and the Czech Republic within that scope, namely the states accessing the EU structures together with Poland in 2004, is a warning signal that proves the occurring delays in the economic development of Poland in comparison with other transformation countries[6].

[2]The data concern people working in FTE(full-time equivalents).
[3]Technology Balance of Payments reflects the international flow of industrial property and know-how. The balance includes: patents (purchase, sale), patent licences, know-how (unpatented), two- and three-dimensional designs, trade marks (including franchising), technical services, financing R&D activity in industry outside the country.On the other hand, the balance excludes: trade, financial, management and legal assistance, advertising, insurance, transport, films, recordings, copyright materials, project works, software. TBP indicators are a measure of international diffusion of technical thought in an intangible form. More on that, see: (PodręcznikFrascati, 2002).
[4] The remaining 2% concerned so-called secret patents.
[5] According to current prices.
[6] In case of Poland, the worsening was marked from the 18th position in 2001 to the 21st position in 2006 (The Czech Republic improved its 15th position in 2001 to the 12th in 2006, whereas Hungary was placed at the 16th position in 2006 in comparison with the 20th position in 2001 (Dworak, 2010).

In spite of the occurring negative trends in innovativeness in Poland, it should be pointed out that in general the percentage of innovative firms in industrial processing in Poland increased from 17.1 % in the years 1998-2000 to 23.1% in the years 2004-2006, as well as in services from 16.0% in the years 1997 - 1999 to 21.2% in the years 2004 – 2006 (Działalnośćinnowacyjna, 2005), by their individual size classes included. The data on that are presented in Table 1.

Table 1: Innovative Firms in the Processing Industry and in Services in Poland by Enterprise Size Classes in the Period 2001-2006 (In % of Enterprises in Total)

Specification		2002-2004 [2001-2003 for the sector of services]	2004-2006
Enterprises in total, including:	a	25.6 (17.1 in the years 1998-2000)	23.1
	b	22.0 (16.0 in the years 1997-1999)	21.2
Small enterprises	a	**17.7**	**14.0**
	b	**18.3**	**16.9**
Medium-sized enterprises	a	**41.3**	**37.6**
	b	**37.1**	**34.8**
Large enterprises	a	67.5	65.5
	b	56.9	53.5

Explanation: a – data for enterprises in the processing industry, b –data for the sector of services.

In the period 2001-2006, the indicators concerning the share of innovative enterprises in Poland among the business entities in total worsened, both in the processing industry and in services.

Considering enterprise size classes, we should observe that in the analyzed years among small enterprises, the share of innovative enterprises in industrial processing decreased from 17.7% in the years 2002 - 2004 to 14.0% in the years 2004 - 2006, whereas in services from 18.3% to 16.9%. Among medium-sized enterprises conducting activity in industrial processing in the analyzed years, the percentage of innovative enterprises also went down from 41.3% to 37.6%, and among service enterprises from 37.1% in the years 2001 - 2003 to 34.8% in the years 2004 - 2006.

The indicated values, however, differ significantly from an average for the EU-27 countries, which must be assessed negatively. The data concerning the selected indicators of the Polish SME innovativeness and average values in the EU are presented in Table 2.

Table 2: Selected Innovativeness Indicators of SMEs in Poland and in the EU in 2006 (in %)

Specification	Poland	EU-27
	2006	
SMEs introducing their own innovations in the total number of SMEs	12.5	21.6
SMEs cooperating in innovations in the total number of SMEs	9.1	9.1
SMEs introducing organizational innovations in the total number of SMEs	19.3	34.0

Explanation: For EU-27 the statistics given concern 2007.

However, in spite of the proven negative changes in innovative activity of enterprises in Poland, it should be emphasized that the value of expenditure on innovative activity in Poland among small enterpriseswent up from the level of PLN 903.5 million in 2000 to PLN 1,283.0 million in 2006 (an increase by 42.0%)[7], whereas in medium-sized enterprises from PLN 2,662.3million in 2000 to PLN 4,189.1million in 2006 (an increase by 57.3%) (Stan sektora..., 2003; Działalnośćinnowacyjna...,2006, 2008).

The dependence between innovativeness and competitiveness of enterprises constitutes an area of numerous theoretical and empirical analyses in the literature of the subject and, as it was shown in E. Wojnicka's research, a positive correlation within this scope is observed in case of the SME sector in Poland (Wojnicka, 2014), which indicates a positive impact of innovative activity, including cooperation among enterprises in the innovative

[7]In 2000 and in 2004 the data concern small enterprises in the industrial processing section, whereas in 2006 they concern small industrial enterprises in total.

process, on the competitiveness of those enterprises. Therefore, a lower level of innovativeness of those firms has an effect of their lower competitiveness.

The findings of the research into the SME competitiveness in 2004, prove, however, that entrepreneurs of the SME sector assessed the competitiveness of their products and services in relation to their EU equivalents better (Konkurencyjnośćsektora MSP 2005, http)[8]. However, entrepreneurs claimed that the fundamental source of their advantage is price, and only then the quality of products and the quality of customer service (Konkurencyjnośćsektora MSP 2005, http). This factor was also indicated by entrepreneursas the most important one in 2006, but only 5% of the studied enterprises pointed out to new technologies as the key factor of competitiveness (Raport o stanie..., 2007)[9]. Innovativeness and the novelty of the offered goods and services were indicated as the last ones in the hierarchy of importance of competitiveness factors. It can prove that entrepreneurs of the SME sector in Poland did not attach great weight to innovative activities for the growth of competitiveness of their enterprises. We can assume that such a situation is virtually influenced by the lack of the proper technological and research and development base which they could use in the economic practice. Thus, the entrepreneurs of the SME sector entities in Poland were in a sense forced in the analyzed years to base their competitiveness on short-term advantages (Raport o stanie..., 2008).

On the basis of the research of other authors and statistical analyses, we can also indicate that between the SME sector firms in Poland and SMEs in the EU-15 countries, both the quantitative and structural, particularly technical and organizational and management difference, unfavourable for the SMEs in Poland, is visible (Majewski, 2005).

3. Innovativeness and Competitiveness of SMEs in Poland against Selected Measures of the National Economy in the Years 2007-2012

The expenditure on research and development (R&D) in Poland increased from PLN 6.673 billion in 2007 to PLN 14.353 billion in 2012 (an increase by 115%), and the GERD indicator[10] in relation to GDP increased in the analyzed period from 0.57% in 2007 (for the enterprise sector it was 0.17% GDP) to 0.76% in 2011 and to 0.90% in 2012 (for the enterprise sector it was 0.33% GDP in 2012), in comparison with 2.06% in EU-27 in 2012 (Naukaitechnika..., 2014). In spite of some positive trends, manifested in an increase in the expenditure on R&D, we can observe:

- lasting many years, relatively low share of the expenditure on applied research and developmental works in the current expenditure on R&D in comparison with the share of expenditure on the basic research and
- the dominating share of budget financing (in 2012 the expenditure of the government and higher education sector on R&D in relation to GDP were 0.56%, and in the enterprise sector they were 0.33%. The share of government and higher education sector in total in the expenditure on R&D was 54% in 2012 in comparison with 32.3% of the enterprise sector (Rocznikstatystyczny, 2013)[11], which, compared to over 50% share of enterprise sector in EU-27 significantly differs from the structure characteristic for the developed countries (Naukaitechnika, 2014).

The occurring high level of the wear of scientific and research apparatus, equal to 71.5% in 2011 (Rocznikstatystyczny, 2012), with its simultaneous dispersion (Analizawyzwań...,2013), is also a barrier for the development of innovative solutions, as well as for possibilities of the development of scientific research in Poland.

The number of people working in R&D in Poland, constituting one of the measures of the developmental and innovative potential of the national economy increased from 75,309.1 EPC in 2007 to 90,715.5 EPC in 2012 (an increase by 20%) (Naukaitechnika, 2009, 2013). According to the data for 2012, in the EU-27 countries, the structure of employment in the research and development activity measured by full-time equivalents by sectors was as follows: 52.8% was constituted by the enterprise sector, 33.6% by the higher education sector, whereas13.5% by the governmental sector (Naukaitechnika, 2013). Yet, in Poland the structure was different.

[8]In comparison with 2003 research.

[9] The survey conducted by PENTOR Research International, commissioned by the Polish Agency for Enterprise Development in November 2006 on the representative sample of the SME sector enterprises with the population size N=1000.

[10] GERD – Gross Domestic Expenditure on Research and Development.

[11]The data concern internal expenditure without depreciation of fixed assets.In 2012, the share of the sector of private non-commercial institutions in the expenditure on R&D activity in Poland was 0.4%, and the sector abroad was 13.3%.

In 2012, the dominating share belonged to the higher education sector - 42.9%, then the enterprise sector with 25.8% and the governmental sector 21.8% (0.2% for the sector of private non-commercial institutions) (Naukaitechnika, 2013).

The effects of R&D and innovative activity of a given country are proven by the indicators concerning the statistics of patents and values of so-called technology balance of payments of the country (TBP). The number of granted patents went up from 1,575 in 2007 to 1,848 in 2012 (an increase by 17%), whereas the number of foreign patents granted in Poland decreased from 1,959 in 2007 to 1,123 in 2011 and 636 in 2012 (a decline by 68% in the years 2007 - 2012) (Naukaitechnika, 2009, 2013).Within the statistics of domestic patents in Poland in the years 2007-2012 Poland marked the upward trend. However, as it was mentioned before, in comparison with 1980s and the beginning of 1990s, too modest results within that scope are observed and it proves the urgent need for the reconstruction and radical changes both in the innovative policy of the state and on the part of entrepreneurs themselves.

Within the scope of the technology balance of payments (TBP), the growth of payments was marked, from USD 3,994.51million in 2007 to USD 5,933.47 million in 2012, as well as earnings, from USD 1,700.38 million in 2007 to USD 4472.87 million in 2012 (Main Science..., http)[12]. The higher dynamics of earnings than payments was related to a decrease in the deficit in the technology balance of payments from USD 2,294.13 million in 2007 to USD 1,460.6 million in 2012.

In spite of the indicated some positive changes, the economy of Poland in comparison with other European Union countries, including some countries of Central and Eastern Europe which in 2004 accessed the European Union structures is still characterized by a very low level of innovativeness. In the innovativeness ranking for 2012, Poland was classified among the countries with poor/modest results in the sphere of innovativeness with the indicator SII = 0.270, compared to the Union average SII=0.544 (earlier, Poland was classified as a moderate innovator, which proves the worsening of the result) (Innovation Union Scoreboard, 2013). Also the results concerning the overall assessment of the innovative policy in Poland from 2007 (based on the IPREG methodology[13]) show that the economy of Poland is characterized by well developed infrastructure in the field of innovations, however, the general aims, as well as the measurement of the innovative policy effects are considerably more weakly developed (Entrepreneurship and SME..., 2011) and a need to implement changes within that scope is indicated. Therefore, an analysis of the innovative policy implemented in highly developed countries, with regard to the domestic innovative policy, should incline to a more horizontal, extra-sectoral view, where enterprises, particularly small and medium-sized ones, become the main object of influence, among which their innovative activeness/passiveness should be taken into consideration, with the simultaneous isolation of the group of entities of fast growth and considering the stages of their development[14]. In practice, such an approach would mean a better match of specific programmes for SMEs, and creating for them better conditions for the growth of innovativeness.

In the context of the presented conditions of the innovativeness of economy for the development of enterprises in Poland, including the SME sector enterprises, it should be noted that the small and medium-sized enterprise sector is characterized by high heterogeneousness, and individual enterprises or their groups display their own, specific innovative behaviours, from simple imitations to radical innovations, and from relatively isolated innovative activity to a significant, high level of cooperation with other entities (Stawasz, 2011). The findings of the empirical research of the SME sector enterprises indicate the occurrence of two essential groups of enterprises:

- innovatively and technologically active ones, and
- weak, innovatively passive ones,

[12]According to current prices. For 2012, the quoted values are estimated (as of 06.10.2014). In 2011, the value of payments was USD 6,039.12 million, and the value of earnings was USD 4,256.09 million.
[13]IPREG - Innovation Policy Research for Economic Growth.
[14] More on overview, analysis and assessment of the SME sector in Poland in the context of the conditionings and barriers to innovative activity, see: (Kaczmarek,Stelmaszewska-Patyk, Kocińska, 2011).

But small enterprises with low innovativeness and technologically "weak" are the most numerous part of this sector (Stawasz, 2011; Sachpazidu-Wójcicka, http)[15].

Table 3 compares data concerning the share of innovative enterprises among the total enterprises in Poland in the period 2007-2012, considering industrial and service enterprises.

Table 3: Innovative Enterprises in Which Product and/or Process Innovations were Introduced in Poland in the Years 2007-2012by Enterprise Size Classes (in % of Enterprises in Total)

Specification		2007–2009	2009-2011	2010 – 2012
Enterprises in total, including:	a	18.1	16.1	16.5
	b	14.0	11.6	12.4
Small enterprises	a	10.9	8.9	9.6
	b	11.6	9.1	9.5
Medium-sized enterprises	a	30.1	30.1	29.4
	b	20.0	19.6	20.9
Large enterprises	a	59.0	57.8	56.2
	b	45.0	44.0	44.7

Explanation: a – industrial enterprises, b- service enterprises.

The share of innovative enterprises in Poland in the period 2007-2012 decreased:

- in industrial enterprises from 18.1% in the years 2007-2009 to 16.5% in the years 2010-2012, including the small ones - from 10.9% to 9.6%, in and medium-sized from 30.1% to 29.4%
- in service enterprises from 14.0% in the years 2007-2009 to 12.4% in the years 2010-2012, including in the small ones - from 11.6% to 9.5%, and in medium-sized enterprises it basically stayed the same (20.0% in the years 2007-2009 and 20.9% in the years 2010-2012).

Unfavourable changes in the indicators of innovativeness of SMEs in Poland in the comparison of the years 2008 and 2011 were observed in the following areas (Table 4):

- a decrease in the share of SMEs in Poland cooperating in innovations from 9.3% in 2008 to 6.40% in 2011, with an increasing share in EU-27,
- a decrease in the share of SMEsin Poland introducing product or process innovations from 20.4% in 2008 to 17.55% in 2011, compared to the EU average of 34.18% in 2011,
- a decrease in the share of SMEs in Poland introducing marketing or organizational innovations from 29.1% in 2008 to 18.65% in 2011 compared to the EU average of 39.09% in 2011.

The data prove distinct worsening of the presented indicators concerning the innovativeness of SMEs in Poland in those years, with relatively stable maintenance of the value of the indicators for EU-27.

Table 4: Selected Indicators of Innovativeness in Poland and in EU-27 in 2008 and in 2011(in %)

Specification	Poland	EU-27	Poland	EU-27
	2008		2011	
SMEs introducing their own innovations in the total number of SMEs	17.2	30.0	13.76	30.31
SMEs cooperating in innovations in the total number of SMEs	9.3	9.5	6.40	11.16
SMEs introducing product or process innovations in the total number of SMEs	20.4	33.7	17.55	34.18
SMEs introducing marketing or organizational innovations in the total number of SMEs	29.1	40.0	18.65	39.09

A positive aspect in the context of innovative activity of enterprises in Poland is an increase in the value of expenditure on this activity among industrial enterprises from PLN 20,222.9 million in 2007 (including medium-

[15]As K.Sachpazidu-Wójcicka points out, the analysis of the years 2006-2011 on the innovative activity of industrial enterprises in Poland, including small and medium-sized ones, indicates their "critical situation", manifested, among others, in a decrease in the basic indicators within that scope.

sized enterprises - PLN 3,888.1 million[16]) to PLN 21,535.4 million in 2012, that is an increase by 6% (including: PLN1,242.2 million in small enterprises and PLN 5,073.1 million in medium-sized enterprises) (Naukaitechnika, 2009; Działalnośćinnowacyjna, 2013). Also in service enterprises there was an increase in the value of these expenditure from PLN 10,664.8 million in 2008 (including: PLN 870.2 million in small enterprises and PLN 3,301.3 million in medium-sized enterprises) to PLN 15,145.4 million in 2012, that is an increase by 42% (including: PLN 967.2 million in small enterprises, PLN 3,004.3 million in medium-sized enterprises) (Działalnośćinnowacyjna, 2010, Działalnośćinnowacyjna, 2013).

A decline in the share of innovative entities among enterprises of the SME sector also influences their competitiveness. What results from the research of A.Skowronek-Mielczarekinto the competitiveness of SMEs in Poland and considering the years 2005 - 2011, is that positive changes in the level of competitiveness of those entities are not indicated, and the situation in the analyzed period basically stayed on a similar level (Skowronek-Mielczarek, 2013). Similar conclusions referring to the relation between innovativeness and competitiveness of SMEs can be drawn from R. Stanisławski's research conducted among SMEs in Poland in 2010 (Stanisławski, 2012), which indicated that among enterprises introducing innovations, an improvement in their competitiveness was clearly marked as a result of innovation, particularly on the domestic but also on the foreign market (Stanisławski, 2012).However, relatively low percentage of innovative enterprises among SMEs cannot significantly influence positively the competitiveness of that sector.

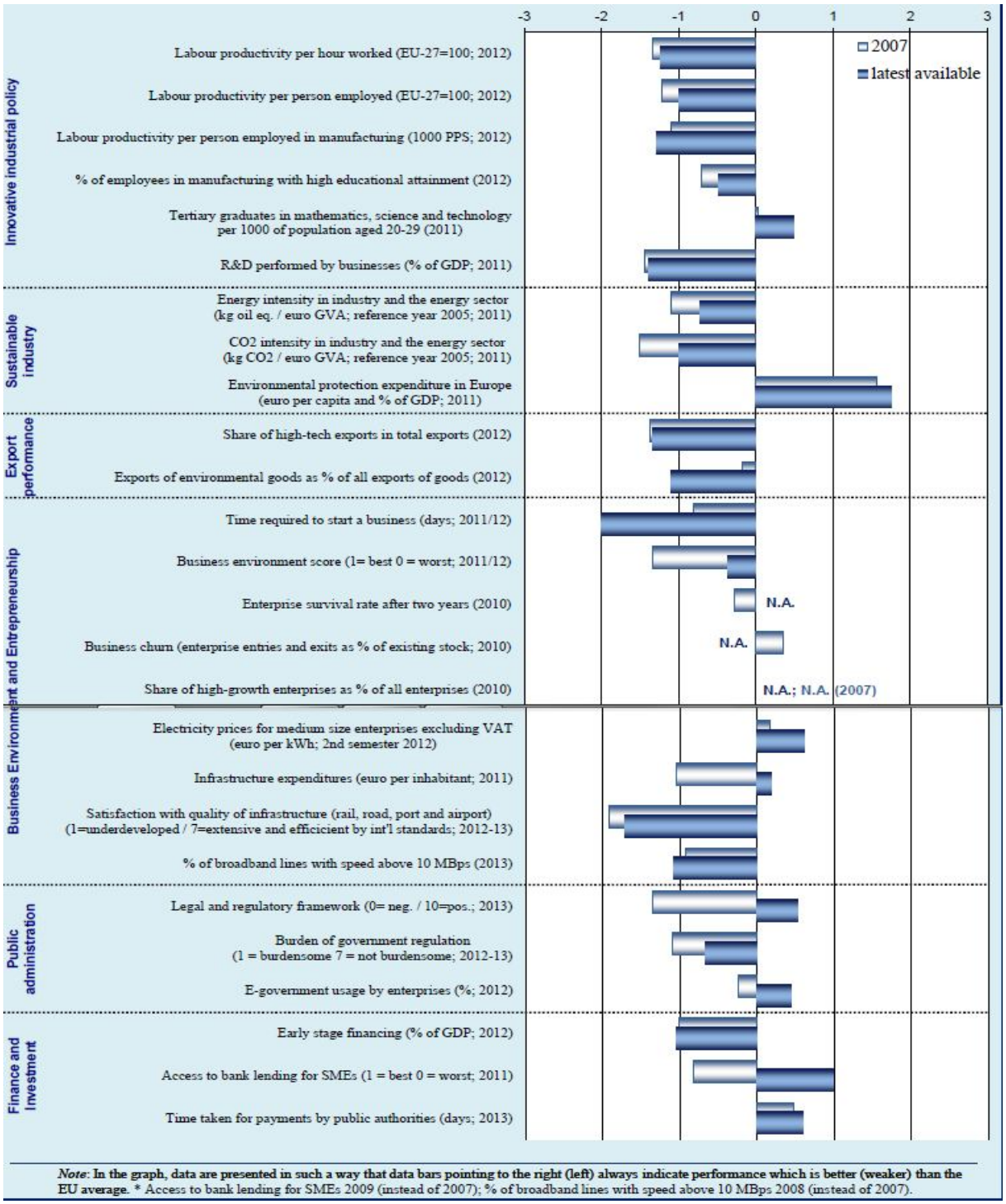
Yet, it should be noted that a positive change in entrepreneurs' attitude to competitiveness of SMEs in Poland, in comparison with the previous research period, namely 2001 - 2006, is that more and more often it is the quality of products, and not their price which is indicated by them as the basic factor of competitiveness (Starczewska-Krzysztoszek, 2013)[17], which is related to a change in perceiving by entrepreneurs the sources of their competitive advantage (Gołaś, 2011). However, in comparison with the average values of indicators of competitiveness for the EU countries, the Polish economy still differsunfavourably from it, which in consequence has an effect on relatively low competitiveness of the SME sector, too (Member State's Competitiveness..., 2012).

Data concerning the difference in the basic indicators in the economy of Poland and the indicators of average values for the European Union countries considered in the assessment of competitiveness are compared in Fig. 3.

[16] The data for 2007 consider enterprises with the following number of workers: 50-249, namely medium-sized ones, 250-499, namely large ones, and above 499 people, namely very large ones.

[17]The research carried out in the period 03 April -10 July 2012 r. on a random sample of 1,500 SMEs by CBOS.

Fig.3: Differences between the EU Average and the value for Poland's Economy in a given area of Competitiveness in 2007 and 2011/2012 (Measured by Standard Deviations)



4. Conclusions

The 21st century is a period of dynamic changes in the world economy where intangible assets, such as: knowledge, skills, or creativity are performing a bigger and bigger role. Combined with an adequate quality of the offered products they become the source and the base of a long-term competitive advantage. What takes place is the gradual and clear departure from the typical mass, uniform production to the benefit of an individual approach to customer and the implementation of an individual market offer.

Technical and technological progress constituted and still constitutes an important factor shortening the life cycle of numerous products, with the occurring phenomenon of the simultaneous blurring of borders between a product and a service in the face of so-called fulfillment of customer needs. Within this scope, the significance of the SME sector enterprises becomes visible in economy. They are characterized by the decentralization of management, combined with the flexibility of operations and an arising in connection with it possibility to conform to the requirements of the market and the recipients' needs.

The development of the sector of small and medium-sized enterprises depends on numerous factors, including specific conditions referring to the national economy, the level of its innovativeness and competitiveness in which they operate. The SME sector enterprises in Poland essentially base their competitiveness on short-term advantages related to price, and to a lesser degree to the quality of the offered goods and services, which proves the lack of a strategy of building a competitive position in the further perspective.The analysis and assessment of changes in the innovative activity and competitiveness of the SME sector in Poland in the years 2001 - 2012, made in this paper, have proved a relatively low level of both distinguished determinants of the development of the sector. The assumed research hypotheses have been confirmed, which means a necessity of radical ventures and actions from the state and the SME sector entrepreneurs for the benefit of an improvement in the innovativeness of their enterprises, and thus for the benefit of the SME sector competitiveness.

Thus, among the most significant challenges that the SME sector entities in Poland face in the era of globalization, the development of the modern IT and communication techniques and building knowledge-based economy, there are:

- The necessity of rebuilding the industrial sector in Poland and the increase in meaning of SMS in this sector and their cooperation with other enterprises and research and development units in the field of innovativeness,
- Effective influencing the implemented innovative policy of the state towards that sector by means of the representatives of the Polish SME entrepreneurs' environment,
- A necessity to possess a vision of development, the manifestation of which can be seen in the implemented strategy,
- Conducting and developing innovative activity in enterprises,
- An ability to create, use and manage knowledge,
- An ability to search for market niches,
- Cooperation with other entities and establishing cooperative bonds,
- A necessity to open to extra-local markets,
- Ensuring consistency implying complementarity of the applied instruments of competing by enterprises to achieve a synergy effect, as well as to generate the value added,
- Transformation of the resource advantage into the market advantage,
- Corporate responsibility for the environment and the society.

References

Analiza wyzwań, potrzeb i potencjałów – podejście tematyczne i terytorialne [in:] Diagnoza Programu Operacyjnego Inteligentny Rozwój 2014-2020 [Online] Available: https://www.poig.gov.pl/Documents/Diagnoza_PO_IR_080114.pdf (as of 21.09.2014).

Borowiecki R., Siuta-Tokarska B. (2010).Challenges facing Polish SMEs in the Face of Globalization Processes, Folia OeconomicaStatinensia 9 (17),Szczecin: Szczecin University.

Borowiecki R.,Siuta-Tokarska B. (2012).Challenges and Problems of Knowledge Management in Enterprises in Poland, China-USA Business Review vol.12, nr 2(116), pp.149-162.

Domański, S.R. (2011). O wpływie restrykcyjnej polityki monetarnej na potencjał badawczo-rozwojowy kraju. Przypadek degradacji Polski na przełomie wieków XX i XXI, Biuletyn Informacyjny Krajowej Sekcji Nauki NSZZ Solidarność nr 7-8 (184-185), pp.8-15.

Dworak, E. (2010). Zaawansowanie gospodarki opartej na wiedzy w krajach Unii Europejskiej, Gospodarka Narodowa No. 11-12, pp.78-80.

Działalność innowacyjna przedsiębiorstw w sektorze usług w latach 2001-2003(2005).Warszawa: Central Statistical Office.

Działalność innowacyjna przedsiębiorstw przemysłowych w latach 2002-2004 (2006). Warszawa: Central Statistical Office.

Działalność innowacyjna przedsiębiorstw w latach 2004-2006 (2008). Warszawa: Central Statistical Office.

Działalność innowacyjna przedsiębiorstw w latach 2006-2009 (2010). Warszawa: Central Statistical Office.

Działalność innowacyjna przedsiębiorstw w latach 2010-2012 (2013). Warszawa: Central Statistical Office.

Entrepreneurship and SME-policies across Europe. The cases of Sweden, Flanders, Austria and Poland (2011). Östersund: Swedish Agency For Growth Policy Analysis.

European Innovation Scoreboard 2002 (2002). Luxembourg: European Commission.

European Innovation Scoreboard 2006. Comparative Analysis of Innovation Performance (2006). Luxembourg: European Commission.

European Innovation Scoreboard 2007. Comparative Analysis of Innovation Performance, (2008). Pro Inno Europe paper No.6, Luxembourg: European Commission.

Gołaś, Z. (2011). Czynniki kształtujące wydajność pracy w sektorze MŚP Unii Europejskiej, Journal of Agrobusiness and Rural Development 4(22).

Innovation Union Scoreboard 2013, (2013). Belgium: European Commission, PRO INNO Europe.

Kaczmarek, P., Stelmaszewska-Patyk, I., Kocińska, E., (2011). Public report on the analysis of SMEs and stakeholders' needs, requirements and feedback to overcome barriers for research & innovation activities in Poland, MaPEeR SME 7 Framework Programme, European Commission.

Konkurencyjność sektora MSP 2005, Warszawa: PolishConfederation Lewiatan, [Online] Available:http://konfederacjalewiatan.pl/legislacja/wydawnictwa/_files/publikacje/badania_msp_2005.pdf (21.09.2014).

Main Science and Technology Indicators, OECD, [Online] Available:http://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (as of 21.09.2014).

Majewski, R. (2005) Tendencje rozwojowe sektora małych i średnich przedsiębiorstw w Polsce [in:] S.Pangsy-Kania, G.Szczodrowski(Eds.) Gospodarka Polski w zjednoczonej Europie. Przedsiębiorczość, branże, regiony, Gdańsk: FRUG.

Member States' Competitiveness. Performance and Policies Industrial Performance Scoreboard (2012). European Union.

Nauka, technika, innowacje i społeczeństwo informacyjne w Polsce. Wybrane wyniki badań statystycznych (2014). Warszawa: Central Statistical Office.

Nauka i technika w liczbach 1998-2002 (2004). Warszawa: Ministry of Science and Information Technology.

Nauka i technika w 2006r. (2007). Warszawa: Central Statistical Office.

Nauka i technika w 2007r. (2009), Warszawa: Central Statistical Office.

Nauka i technika w 2012r. (2013). Warszawa: Central Statistical Office.

Podręcznik Frascati 2002. Proponowane procedury standardowe dla badań statystycznych w zakresie działalności badawczo-rozwojowej, (2002). Paris: OECD.

Porter, M. (1990). The Competitive Advantage of Nations, New York: The Free Press.

Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2005-2006, (2007). Warszawa: PolishAgency for Enterprise Development.

Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2006-2007, (2008). Warszawa: PolishAgency for Enterprise Development.

Rocznik Statystyczny Rzeczypospolitej Polskiej (2012). Warszawa: Central Statistical Office.

Rocznik Statystyczny Rzeczypospolitej Polskiej (2013). Warszawa: Central Statistical Office.

Stan sektora MSP w 2000 roku. Trendy rozwojowe w latach 1994-2000, (2003). Warszawa: Polish Agency for Enterprise Development.

Staśkiewicz, J. (2013). Innowacyjność polskiej gospodarki na tle wybranych krajów Unii Europejskiej, Summary of professionalachievements for the PhDthesis, Szczecin: Szczecin University.

Sachpazidu-Wójcicka, K. (2013). Dynamika zmian innowacyjności przedsiębiorstw przemysłowych w Polsce, 9th Congress of PolishEconomists, [Online] Available: http://www.pte.pl/kongres/referaty/Sachpazidu-WojcickaDYNAMIKAZMIANINNOWACYJNOSCIPRZEDSIEBIORSTWPRZEMYSLOWYCHWPOLSCE.pdf (as of 21.09.2014).

Skowronek-Mielczarek, A. (2013). Uwarunkowania rozwoju małych i średnich przedsiębiorstw w Polsce, Warszawa: Oficyna Wydawnicza SGH.

Stanisławski, R. (2012). Innowacyjność jako czynnik podnoszenia konkurencyjności małych i średnich przedsiębiorstw w Polsce w świetle badań własnych [in:] Strategiczne uwarunkowania kształtowania potencjału innowacyjnego przedsiębiorstw, Zeszyty Naukowe nr 716, Ekonomiczne Problemy Usług No. 92, Szczecin: Szczecin University.

Starczewska-Krzysztoszek, M. (2013). MŚP – zdolność do konkurowania na rynku globalnym, Warszawa: Confederation Lewiatan, the Chancellery of the President of the Republic of Poland, (power-point presentation).

Stawasz, E. (2011). Polityka innowacyjna wobec MŚP [in:] P.Niedzielski, R.Stanisławski, E.Stawasz (Eds), Polityka innowacyjna państwa wobec sektora małych i średnich przedsiębiorstw w Polsce – analiza uwarunkowań i ocena realizacji, Zeszyty Naukowe No. 654, Ekonomiczne Problemy Usług No. 70, Szczecin: Szczecin University.

Weresa, M.A. (2012). Systemy innowacyjne a konkurencyjność w świetle wybranych koncepcji teoretycznych,Bulletin Nr 311, Warszawa: Institute of World Economy.

Wojnicka, E. Interakcje w procesie innowacyjnym jako czynnik konkurencyjności przedsiębiorstw, [Online] Available: http://www.ig.wsiz.edu.pl/grona/innowacje.pdf(as of 21.09.2014).