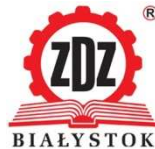


TRAIN4INNO

CONTINUOUS VOCATIONAL TRAINING FOR INNOVATION DEVELOPMENT IN SMEs IN POLAND

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1. INTRODUCTION

Due to dynamic changes caused by technological advancement and globalization, contemporary economy imposes on societies strict requirements concerning constant update of knowledge and modification of attitudes to entrepreneurship, flexibility and creativity. For the economic sphere, it implies undertaking activities for innovativeness. Polish economy is currently in the phase of development oriented at effectiveness; however, the phase of transition to the economy driven by innovativeness is visible. Hence, the features of the contemporary economy and labor market are mobility and adaptiveness shaped, i.e. on the basis of the model of lifelong learning, which is supplemented by life-wide learning¹.

As B. Urbaniak² emphasized, the distance in the level of development of Poland in comparison with different developed countries results mainly from obsolete technology of production, insufficient amount of assets and insufficiently used (compared to different countries) human capital. To allow Poland to catch up with developed countries until 2030, we should pursue to build long-lasting competitive predominance based on the adaptiveness of the economy relating to innovation and investment, creativity and entrepreneurship whose one of the main pillars is continuous learning, especially in the light of prolongation of professional activity to the age of 67. Low level of participation in continuous learning is a significant barrier for development of Poland; hence, educational challenges for Polish society are considerable.

In the contemporary economy, innovativeness plays a greater role in the process of increasing competitiveness, both on the level of a micro enterprise and the whole economy, also in single regions. The adopted *Strategy Europe 2020* puts emphasis on: increasing the level of employment, increasing expenditures for R&D, improvement of education in the society (building the economy based on knowledge), battle with social exclusion and poverty. This strategy attributes a great role to the SME sector (similarly to the previous one).

It must be emphasized that the SME sector plays a key role in Polish economy. In 2012, SMEs constituted 99.8% of all enterprises (ca. 1.79 mln SMEs). Enterprises in Poland generate almost 75% of Polish GDP (73%-71.8% in 2011). In the structure of GDP contribution, SMEs generate 48.5%, in which the smallest ones generate 29.7%. In 2012, the number of people working in enterprises in Poland equaled 8.9 mln, where 6.3 mln worked in SMEs. On average, in 2012 the number of people employed in enterprises in equaled 6.5 mln. Persons employed in micro, small and medium enterprises (more than 3.9 mln) constitute more than a half, i.e. 60.3% of all persons employed in enterprises³.

Although the SME sector plays such an important role in Poland, it is characterized by a really low level of innovativeness which is caused by many internal and external factors. The first group includes mainly factors connected with mental attitudes, manifested by general reluctance of entrepreneurs to make changes in the entities they manage, which is determined by their passive attitude or is a result of the necessity to make investments, which is quite risky (according to entrepreneurs) in the period of crisis and uncertainty of the future. External conditions result from the existence of factors which usually limit conducting innovative activity by SMEs (e.g. hindered access to capital, insufficient level of knowledge about company management, limited scale of demand for new products on the market or unfavourable assumptions of the innovation policy).⁴

This report is based on the assumption that the educational policy (also in relation to continuous learning) may play an important role in improving innovativeness of enterprises (including SMEs) in

¹ Urbaniak B., *Imperatyw kształcenia ustawicznego w gospodarce opartej na wiedzy*, [w:] Znajmiecka-Sikora M., Roszko E., *Podstawy kształcenia ustawicznego od A do Z. Monografia*, Wydawnictwo ego, Łódź 2010, p. 16.

² Ibidem.

³ *Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2012–2013*, Polska Agencja Rozwoju Przedsiębiorczości, Warszawa 2014, p. 13 and following.

⁴ Niedzielski P., Stanisławski R., Stawasz E. (ed.), *Polityka innowacyjna państwa wobec sektora małych i średnich przedsiębiorstw w Polsce – analiza uwarunkowań i ocena realizacji*, Zeszyty Naukowe Nr 654, Ekonomiczne Problemy Usług Nr 70, Szczecin 2011, p. 5.

Poland. Currently, the policy is not favourable for entrepreneurship, innovative attitudes among entrepreneurs and their employees.

The aim of this report is to characterize and assess the system of continuous learning and the innovation policy towards SMEs in Poland that have existed hitherto. Furthermore, the report proposes essential changes in the system of education in the context of improving innovativeness in enterprises, especially small, medium and micro enterprises which play an important role in the structure of Polish economy.

2. CONTINUOUS LEARNING IN POLAND

2.1. System of continuous learning

The term "continuous learning" is often interchangeably used with the following terms: further learning, permanent learning, permanent education, unceasing learning, lifelong education, lifelong learning. All these expressions suggest that this is a process of continuous update, improvement and development of general and professional qualifications of an individual during the person's whole life⁵.

In the Council Resolution as of 27 June 2002, lifelong learning "must cover learning from the pre-school age to that of post-retirement, including the entire spectrum of formal (schools or other facilities of the educational system), non-formal (outside the system of education) and informal (natural) learning. Furthermore, lifelong learning must be understood as all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective. Finally, the principles in this context should be: the individual as the subject of learning, highlighting the importance of an authentic equality of opportunities, and quality in learning"⁶.

In Polish legislation, continuous learning has a narrow definition: "education at schools for adults, as well as acquiring and supplementing general knowledge, skills and professional qualifications outside schools by persons who have completed obligatory education"⁷.

Continuous learning may be realized in the following forms: formal, informal and non-formal (incidental, self-education)⁸.

Formal education is education in the school system - primary schools, junior high schools (*gimnazjum*), basic vocational schools, secondary schools, vocational secondary schools, post-secondary schools, universities and PhD studies. It affects the level of education.

Non-formal education is understood as all organized educational activities that are not school education, i.e. they are not provided by formal educational institutions. It comprises all kinds of additional education and training outside the school system. It does not affect the level of education. It is usually provided in the form of courses, training, instruction (at a workplace or not), seminars, conferences, lectures, private lessons (e.g. foreign languages), as well as "remote" learning (e.g. e-learning).

Informal education (self-education) is independent learning in order to gain knowledge and improve skills. It should occur without a teacher's assistance and outside organized school and out-of-school forms. The methods of self-education include: family, friend and co-worker support, printed materials, software and the Internet, educational programs broadcast on TV or on the radio, visiting museums with a guide, visiting research centers and using information resources available there.

The responsibility for continuous learning in Poland is mainly borne by the Ministry of National Education and the Ministry of Labor and Social Policy, therefore the legal grounds are included in different documents. They include mainly:

1. Act on the system of education as of 7 September 1991 (*Ustawa z dnia 7 września 1991 r. o systemie oświaty - Dz.U. 1991 nr 95 poz. 425*).

⁵ Wiktorowicz J., *Obraz kształcenia ustawicznego w Polsce na tle pozostałych krajów Unii Europejskiej*, [in:] Znajmiecka-Sikora M., Roszko E., *Podstawy kształcenia ustawicznego od A do Z. Monografia*, Wydawnictwo ego, Łódź 2010, p. 44.

⁶ Ibidem.

⁷ Ustawa o systemie oświaty z dnia 7 września 1991 r. art.3 ust.17.

⁸ Urbaniak B., *Bariery udziału polskiego społeczeństwa w kształceniu ustawicznym*, [in:] Kotlorz D., Rączaszek A. (ed.), *Polityka edukacyjna wobec rynku pracy*, Studia Ekonomiczne. Zeszyty Naukowe Wydziałowe, nr 115, Uniwersytet Ekonomiczny w Katowicach, Katowice 2012, p. 181.

2. Act on promotion of employment and institutions of the labor market as of 20 April 2004 (*Ustawa z dnia 20 kwietnia 2004 r. o promocji zatrudnienia i instytucjach rynku pracy - Dz. U. z 2015 r. poz.149*).

They describe issues connected with education, counseling and vocational guidance for the unemployed and persons looking for a job.

Rules and conditions concerning vocational qualifications of adults and general educational development are formulated in some legal acts issued by both ministries, e.g.:

1. Regulations of the Minister of Education and Science as of 11 January 2012 on continuous learning in non-school settings (*Rozporządzenie Ministra Edukacji i Nauki z dnia 11 stycznia 2012 r. w sprawie kształcenia ustawicznego w formach pozaszkolnych*).
2. Regulations of the Minister of National Education as of 7 February 2012 on the core curriculum of educating in professions (*Rozporządzenie Ministra Edukacji Narodowej z dnia 7 lutego 2012 r. w sprawie podstawy programowej kształcenia w zawodach*).
3. Regulations of the Minister of Labor and Social Policy as of 14 May 2014 on detailed conditions of execution, modes and methods of providing labor market services (*Rozporządzenie Ministra Pracy i Polityki Społecznej z dnia 14 maja 2014 r. w sprawie szczegółowych warunków realizacji oraz trybu i sposobu prowadzenia usług rynku pracy*).
4. Regulations of the Minister of Labor and Social Policy as of 14 May 2014 on grants from the National Training Fund (*Rozporządzenie Ministra Pracy i Polityki Społecznej z dnia 14 maja 2014 r. w sprawie przyznania środków z Krajowego Funduszu Szkoleniowego*).
5. Regulations of the Minister of Labor and Social Policy as of 11 April 2014 on occupational preparation of adults. Act as of 27 August 1997 on occupational and social rehabilitation and employment of the disabled (*Rozporządzenie Ministra Pracy i Polityki Społecznej z dnia 11 kwietnia 2014 r. w sprawie przygotowania zawodowego dorosłych. Ustawa z dnia 27 sierpnia 1997 r. o rehabilitacji zawodowej i społecznej oraz zatrudnieniu osób niepełnosprawnych*).
6. Labor Code.

Continuous learning in Poland may be organized in accordance with the rules specified in the provisions on economic activity (so called commercial rules) or the rules resulting from the act on the system of education. Training institutions may conduct their activity on the basis of different rules. The act on the system of education defines both formal school education and non-school education. It presents tasks and obligations of schools and non-school education facilities, both public and private. The act also regulates matters connected with pedagogical supervision, i.e. responsibilities of school governing authorities (institutions of self-government administration, companies/private persons), boards of education and regional examination boards⁹.

The market of educational services of continuous learning is created by, e.g. educational, social and branch associations; foundations; universities; higher education facilities; schools for adults; research-development institutes; centers of lifelong learning; centers of practical training; centers of vocational training and educational companies.

In the Polish system, lifelong learning **in school settings (formal)** may be organized as full-time, extramural and remote in different schools for adults and other facilities (public and private) on the basis of curricula for a given level. It leads to acquiring qualifications and being awarded diplomas specified in relevant provisions by the Ministry of National Education. Continuous learning in school settings carried out by public facilities is gratuitous.

⁹ Wilczyńska B., *System kształcenia ustawicznego w województwie podlaskim*, [in:] Tomanek A. (ed.), *Narzędzia polityki flexicurity. Poradnik dobrych praktyk*, Izba Rzemieślnicza i Przedsiębiorczości w Białymstoku, Białystok 2010, p. 82 and following.

Lifelong learning is organized and carried out by¹⁰:

- schools for adults - education for adults is conducted in all types of schools on ISCED levels 2-4, in compliance with the provisions of the act on the system of education as of 1991. Schools for adults are meant for persons who have not attained the desired level of education in the time and conditions planned for education of children and young persons. Such people have an opportunity to supplement general education and gain new occupational qualifications. Adults may participate in full-time education, remote education and prepare themselves for final exams;
- continuous learning facilities, practical training facilities, supplementary education and vocational education centers whose statutory obligations is to organize and conduct continuous learning (on the basis of core curricula effective in the whole country) both in a full-time form and in the form of preparing for final exams. In Poland there are 136 continuous learning centers, 137 practical training centers and 24 vocational education centers;
- higher education facilities, Polish Academy of Sciences scientific and research units conducting post-graduate studies to allow students to supplement or improve their qualifications and knowledge essential to perform an occupation (e.g. pedagogical, managerial or medical studies, etc.), to gain qualifications in related occupations or complete doctoral studies;
- Association of Polish Crafts - adults may complete education in an occupation at a company if they want to be a journeyman, qualified worker or master.

Having completed a level of education, students of a primary school, junior high school or secondary school receive a diploma certified by the national authorities and a diploma certifying occupational qualifications. Graduates from secondary schools receive a diploma of completing a secondary school. Representatives of handicraft chambers hold exams for journeymen and masters and issue relevant certificates.

A reform of vocational education introduced in September 2012 a new gratuitous form of education - qualification vocational courses instead of vocational schools for adults. On such courses, adults (at least 18 years old) may obtain 251 qualifications irrespective of their previous education (Regulations of the Minister of National Education as of 23 December 2011). Such courses provide education in 162 professions attributed to 7 areas of education. The core curriculum for each occupation has the same structure and consists of the same elements. Completion of a given course enables a person to take an exam in scope of a given qualification. Each course is conducted in accordance with a program which is in compliance with the core curriculum provided by the Ministry. Having completed a qualification course, a person receives confirmation of course completion. Then, the person takes an external exam confirming a qualification in an occupation and receives a diploma confirming the qualification, which is issued by a regional examination board. If a person obtains all qualifications for a given occupation (one, two and sometimes three - K1, K2, K3) and has secondary education, he or she can be awarded the title of a technician.

Qualification vocational courses may be conducted by: public schools providing vocational education for given occupations, non-public schools having the rights of public schools and providing vocational education for given occupations, continuous learning facilities, practical training facilities, supplementary education facilities and vocational education centers, institutions of the labor market specified in Article 6 of the act as of 20 April 2004 on promotion of employment and institutions of the labor market (*Dz. U. z 2008 r. Nr 69, poz. 415*, as amended) which provide education and training, entities conducting activity connected with education on the basis of the act on freedom of business.

Continuous learning **in non-school settings** (informal) may be provided as: training, workshops, conferences, seminars, correspondence courses or e-learning. It is not supervised by any central authorities; thus, it is hard to indicate its general goals or priorities. First of all, it responds to current tendencies, a general policy of continuous learning and needs of the labor market. The enrolment criteria are specified by educational facilities, usually on the basis of course objectives. The costs of informal learning are usually covered by participants. The only two exceptions are courses financed by the European Social Fund and

¹⁰ *Kształcenie i szkolenie zawodowe w Polsce. Charakterystyka ogólna*, CEDEFOP, Luksemburg 2011, p. 37 and following.

courses for the unemployed financed by the Labor Fund. Financial means for informal continuous learning usually come from state funds, Labor Fund, structural funds or the costs are covered by participants or their employers¹¹.

Informal vocational and continuous learning is organized by:

- public educational facilities (centers of continuous learning and practical training), centers of supplementary education and vocational education) organizing short training programs and different occupational courses;
- centers of supplementary education and vocational education run by branch associations;
- higher education facilities, Polish Academy of Sciences research units, research facilities organizing training, seminars, workshops, etc.
- labor market institutions, including voluntary labor corps;
- private training companies;
- enterprises (employers);
- associations, foundations, corporate bodies and natural persons.

The weakness of Polish system of continuous learning is lack of a system of validation and recognition of qualifications/abilities gained during informal learning. Different sectors apply their own solutions. For example, external exams held by regional examination boards enable adults to obtain a diploma of completing junior high school or general secondary school without attending them. However, external exams confirming occupational qualifications are available only for persons who have graduated from specific vocational schools. In the planned reform of vocational education connected with the national qualification framework, occupational exams will have a unified form, irrespective of the fact if education has taken place in school or non-school settings¹².

One of the tools of the labor market which should contribute to dissemination, increasing an access to and improvement of the quality of training services is the Register of Training Services (RTS)¹³. RTS was established in 2004 by virtue of the provisions of the act as of 20 April 2004 on promotion of employment and institutions of the labor market. According to these provisions, each training institution interested in conducting training programs for the unemployed and persons looking for a job financed by state funds is obliged to be registered in RTS. The entry to the register can be obtained upon submission of an entry application at a Voivodeship Labor Office of proper jurisdiction for the registered office of a company. Institutions that do not apply for public funds for training the above mentioned groups are not obliged to be registered. The registration process is gratuitous. An institution receives a document confirming the entry with the date of registration and registration number. The Register is kept in the IT system.

The report prepared by the Ministry of Labor and Social Policy as of 31 December 2013 mentions that there were 12 619 registered training institutions (13 833 together with local offices and branches). The highest percentage of registered institutions was recorded Mazowieckie voivodeship - 16.3% and Wielkopolskie - 10%. Among all registered institutions, 94.5% declared themselves to be non-public and only 5.5% public. Training services are mainly offered by institutions run by natural persons. In 2013, in the total number of registered institutions:

- 54% were institutions run by natural persons as their economic activity;
- 27.7% were associations, foundations, companies and other corporate bodies;
- 9.2% were other organizational forms such as: centers of continuous learning and practical training, centers of supplemental education and vocational education centers, higher education facilities/colleges, secondary schools, research and scientific centers, research-development centers;
- 8.9% represented other organizational forms including workplaces.

¹¹ *Kształcenie i szkolenie zawodowe w Polsce. Charakterystyka ogólna*, CEDEFOP, Luksemburg 2011, p. 39 and following.

¹² *Polska Rama Kwalifikacji*, Instytut Badań Edukacyjnych, Warszawa 2013.

¹³ *Rejestr Instytucji Szkoleniowych (RIS). Raport 2013. Instytucje szkoleniowe i ich oferta*, Ministerstwo Pracy i Polityki Społecznej Departament Rynku Pracy, Warszawa 2014.

The analysis conducted by the Department of Labor Market of the Ministry of Labor and Social Policy shows a profile of a "typical" training institution registered in RTS. It is an institution that might be characterized as: non-public, run by a natural person, established in 2006-2012, not having accreditation or quality certificate, not entered in the register kept by a unit of self-government in compliance with the provision of the act on the system of education, preparing adults to an occupation to a small extent, employing lecturers part-time, declaring to have conducted an analysis of training quality, renting rooms and having own and rented workshop rooms and didactic equipment - computers and an access to ICT network, offering gratuitous help to participants and graduates to a small extent and/or offering occupational training for adults based on information about the situation on the labor market and the current demand for qualifications.

In order to ensure high quality of continuous learning in 2003 Poland introduced a system of accrediting facilities and centers offering continuous learning in non-school settings¹⁴. Obtaining accreditation confirms that a facility fulfils certain requirements and adopted criteria of quality.

The following entities can apply for accreditation: public and non-public centers of continuous learning and practical training, centers of supplementary education and vocational education, entities conducting educational activity in accordance with the rules specified in the provisions of the law on economic activity providing that they have started their activity at least one year before the day of requesting a local department of education for accreditation. Accreditation may refer to the whole or a part of education. Before awarding accreditation, special attention should be paid to the didactic personnel and their qualifications, methodology and teaching materials.

2.2. Participation in continuous learning

To assess lifelong learning in Poland in comparison with other countries, the report will use Eurostat data gathered in the Labor Force Survey and the Adult Education Survey which take the level of participation of population in education and training in a year (last 12 months before the survey) into account¹⁵.

Although Poles have high educational aspirations which are demonstrated by widespread participation in formal education (including higher education), participation of adults in education and training significantly decreases after completing this process. In Poland, the percentage of people at the age of 25-64 in education is very low (Table 1).

In 2014, this percentage equaled 4.1%, whereas the average for all twenty-eight EU member states was 10.6%. The EU objective until 2020 is 15% in accordance with the European agenda on adult learning adopted in November 2011 (it concerns people declaring participation in education or training in the last four weeks before the survey).

Very low rates were recorded in Greece (3%), Hungary (3.3%), Croatia (2.5%), Bulgaria (1.7%) and Romania (1.7%). The highest rates of adult continuous learning were reported in Denmark (31.4%), Switzerland (31.2%), Sweden (28.6%), Norway (19.7%). Relatively good rates (between 10% and more than 17%) were recorded in Holland (17.7%), Great Britain (15.9%), Austria (14.2%), Luxembourg (13.8%), Slovenia (12.2%), Estonia (12.3%) and Spain (10.1%).

The Labor Force Survey data shows that educational activity of adult Poles in 2011-2014 decreased and reached the level of the year 2003, so the time before Poland's accession to the European Union, although EU structural funds significantly increased funds for continuous learning.

According to the Adult Education Survey data, Poland is in the group of countries in which less than one fourth of people in the last 12 months participated in formal or non-formal education, whereas the average for all 28 EU member states equals 40.3% (Table 2). In Sweden 72% of adults participated in

¹⁴ Regulations of the Minister of National Education and Sport as of 20 December 2003 on accreditation of facilities and centers providing continuous learning in non-school settings (Dz. U. Nr 227, poz. 2247).

¹⁵ The results of detailed research for Poland is presented in *Kształcenie dorosłych 2011*, Główny Urząd Statystyczny, Warszawa 2013.

education, in Germany and France - 50%, Slovakia - 42%, Hungary - 41%, Czech Republic - 37%. The research reports only two cases of educational activity rates lower than in Poland - Greece (12%) and Romania (8%).

TABLE 1. CONTINUOUS LEARNING OF PERSONS AT THE AGE OF 25-64 IN EU COUNTRIES (FORMAL AND NON-FORMAL EDUCATION, LAST 4 WEEKS) - %

Country	2000	2005	2010	2013	2014
EU (28 countries)	:	9.6	9.1	10.5	10.6
Belgium	6.2	8.3	7.2	6.7	7.2
Bulgaria	:	1.3	1.2	1.7	1.7
Czech Republic	:	5.6	7.5	9.7	9.4
Denmark	19.4	27.4	32.5	31.4	31.4
Germany	5.2	7.7	7.7	7.8	7.9
Estonia	6.6	6	10.9	12.6	12.3
Ireland	:	7.4	6.8	7.3	6.9
Greece	1	1.9	3.1	3	3
Spain	4.5	10.8	11	11.1	10.1
France	2.8	5.9	5	17.7	:
Croatia	:	2.1	2.2	2.9	2.5
Italy	4.8	5.8	6.2	6.2	7.6
Cyprus	3.1	5.9	7.7	6.9	7
Latvia	:	7.8	5.1	6.5	5.9
Lithuania	2.8	6.1	3.9	5.7	5.2
Luxembourg	4.8	8.5	13.4	14.4	13.8
Hungary	2.9	3.9	2.8	3	3.3
Malta	4.5	5.2	6	7.6	7.5
Netherlands	15.5	15.9	16.6	17.4	17.7
Austria	8.3	12.9	13.7	13.9	14.2
Poland	:	4.9	5.2	4.3	4.1
Portugal	3.4	4.1	5.7	9.7	9.7
Romania	0.9	1.6	1.3	2	1.7
Slovenia	:	15.3	16.2	12.4	12.2
Slovakia	:	4.6	2.8	2.9	2.9
Finland	17.5	22.5	23	24.9	25
Sweden	21.6	17.4	24.4	28.1	28.6
United Kingdom	20.5	27.6	19.4	16.1	15.9
Iceland	23.5	25.7	25.2	25.8	26.4
Norway	13.3	17.8	17.8	20.4	19.7
Switzerland	34.7	27	30.6	30.4	31.2

Source: Eurostat, Labor Force Survey.

TABLE 2. PARTICIPATION OF ADULTS (25-64 YEARS OLD) IN CONTINUOUS LEARNING IN POLAND IN COMPARISON WITH OTHER EU MEMBER STATES (%)

Country	Total		Participation in formal education		Participation in non-formal education	
	2007	2011	2007	2011	2007	2011
EU (28 countries)	34.8	40.3	6.6	6.2	31.2	36.8
Belgium	40.5	37.7	12.5	7.4	33.5	33.1
Bulgaria	36.4	26.0	2.7	2.4	35.2	24.4
Czech Republic	37.6	37.1	3.9	3.7	35.4	34.9
Denmark	44.5	58.5	10.1	12.6	37.6	52.7
Germany	45.4	50.2	5.2	3.8	43.1	48.5
Estonia	42.1	49.9	5.0	6.6	40.2	48.0
Ireland	:	24.4	:	6.7	:	18.7
Greece	14.5	11.7	2.3	2.6	12.7	9.6
Spain	30.9	37.7	5.9	7.0	27.2	34.1
France	35.1	50.5	5.1	3.5	32.0	49.1
Croatia	21.2	:	4.5	:	18.4	:
Italy	22.2	35.6	4.4	2.9	20.2	34.3
Cyprus	40.6	42.3	2.9	3.7	39.5	40.9
Latvia	32.7	32.3	5.4	4.3	30.7	30.0
Lithuania	33.9	28.5	6.3	4.0	30.9	25.9
Luxembourg	:	70.1	:	9.9	:	68.0
Hungary	9.0	41.1	2.5	6.5	6.8	37.6
Malta	33.7	35.9	5.2	4.4	31.3	34.2
Netherlands	44.6	59.3	6.8	12.3	42.1	54.8
Austria	41.9	48.2	4.2	5.9	39.8	45.5
Poland	21.8	24.2	5.5	5.4	18.6	21.0
Portugal	26.4	44.4	6.5	10.4	22.5	39.6
Romania	7.4	8.0	3.3	1.4	4.7	6.9
Slovenia	40.6	36.2	8.7	2.3	36.1	34.7
Slovakia	44.0	41.6	6.1	5.8	41.2	38.3
Finland	55.0	55.7	10.2	12.0	51.2	51.3
Sweden	73.4	71.8	12.7	13.5	69.4	67.0
United Kingdom	49.3	35.8	15.1	14.8	40.3	24.3
Norway	54.6	60.0	9.9	7.6	50.6	56.9
Switzerland	49.0	65.5	4.9	9.0	46.9	63.1

Source: *Kształcenie dorosłych 2011*, Główny Urząd Statystyczny, Warszawa 2013, p. 155-157.

Detailed data regarding the scale of participation of people at the age of 25-64 in education in Poland show that in comparison with 2006, in 2011 the rate of participation for this age group in any kind of education increased by 2.4 percentage points, which is evidence of growth in educational activity of Poles. More and more people participate in non-formal education (increase from 18.6% in 2006 to 21% in 2011) and informal (increase from 25.4% to 29%). The rate of participation in formal education did not much change - 5.5% in 2006 and 5.4% in 2011.

It must be pointed out that the percentage of adult Poles participating in formal education (5.4%) is close to the EU average (6.2%). However, participation in non-formal education (courses, training, different activities of similar character) is much worse: in 2011, 21% of adult Poles participated in it, whereas the average for EU-28 was 36.8%. Hence, it is visible that the weakness of Poland is not a low level of

educational activity in general, but mainly a low level of participation in courses and training, which are shorter and more flexible forms of developing competences¹⁶.

An analysis of detailed research findings indicates that participation of adults in education is differentiated by the following features¹⁷:

- 1) place of residence: city, village. In 2011, 49% of city adult inhabitants and 35.9% of village inhabitants undertook/continued any form of education. Persons living in cities more often participate in the above mentioned forms of education. Among persons at the age of 18-69, 14.6% of city inhabitants and 11.8% of village inhabitants participated in formal education. There was a greater difference when courses and training are concerned. In this age group, only one fourth of people in cities and one seventh in villages participated in non-formal education. Also self-education was significantly less often used to supplement education by village inhabitants than by city inhabitants;
- 2) age - the older people, the less participation in improving/changing education. It mainly concerns formal education. Among people at the age of 18-24, 68.1% used this kind of education; among people at the age of 25-29 - 18.2% and 50-69 - less than 1.5%. When non-formal and informal learning are concerned, the rates also diminish proportionally with age. One fourth of people at the age of 18-39 and one twelfth at the age of 50-69 participated in non-formal learning (courses, training). In general, less people take part in self-education than in other forms and this tendency is visible for each age group; however, the older the group, the lower the percentage. Informal education was chosen by 41.5% of people at the age of 18-24 and 20.9% of people at the age of 50-69;
- 3) level of education - most often people with higher education (at the time of the survey) participated in each type of learning during the last 12 months before the survey;
- 4) status on the labor market - working people more often than the unemployed and occupationally passive take part in education. It may result in part from the opportunities to improve education provided by a company, including participation in costs by an employer. On the other hand, they need to constantly supplement their knowledge and adjust it to the employer's requirements. The percentage constituted by working people is the highest in the case of informal and non-formal education.

Approximately six out of ten adults did not participate in any form of education in 2011, even in the form of self-education which does not require any financial costs. Persons who do not participate in any type of education are equally men and women. Some differences are visible when the following features are concerned¹⁸:

- 1) place of residence - the majority of people not participating in any form of education is constituted by city inhabitants (56.3%), whereas village inhabitants constituted 43.7% (these proportions only slightly differ from the proportions of city and village inhabitants in the whole population). If the data is analyzed separately for cities and villages, it is visible that a higher level of non-participation is recorded in villages (64.1%) than in cities (51%);
- 2) age - the older people, the lower participation in further education. In the age group 18-24, less than one fifth reported non-participation in any form of education, whereas in the group 65-69 more than 80% did not take part in any form of education;
- 3) education - the highest rates of non-participation in any form of education are among persons with the lowest level of education. Persons with higher education are more eager to participate in further education;
- 4) status on the labor market - in the age group 25-64 persons occupationally passive participated in further education most rarely, because this passivity usually resulted from different reasons than

¹⁶ Górnjak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014, p. 83 and the following.

¹⁷ *Kształcenie dorosłych 2011*, Główny Urząd Statystyczny, Warszawa 2013.

¹⁸ *Kształcenie dorosłych 2011*, Główny Urząd Statystyczny, Warszawa 2013.

participation in formal education. However, in the group 18-69 the situation is different - most often, unemployed people did not participate in education, because in the group 18-24, high percentage of occupationally passive people was constituted by persons participating in formal education.

In the case of people non-participating in formal and non-formal education in the last 12 months before the survey, because they did not want, the most usual reason was lack of such a need - ca. 63% of the respondents (this result was on a similar level in the group of working, passive and unemployed people). The main reason for people who did not participate in the above mentioned period in formal and non-formal education, even though they wanted to, was high prices of courses/training (ca. 42%). In this group working and unemployed people mentioned too high prices (ca. 40% and 60.5% respectively), whereas passive people mainly mentioned lack of time due to family reasons (ca. 43%).

Persons who did not participate in formal and non-formal education in the last 12 months before the survey and did not want to educate to a greater extent mentioned the most important reason for them - lack for such a need (39.4% - 18-69 years old, 42.5% - 25-64 years old).

Persons who participated in formal and non-formal education in the last 12 months before the survey and would like to educate to a greater extent mentioned the most important reason for them - too high prices of courses/training (38.3% - 18-69 years old, 34.9% - 25-64 years old).

2.3. Involvement of enterprises in continuous vocational training of employees

Enterprises which want to be competitive on the market must develop and educate their staff. Simultaneous training and development of employees is becoming more and more appreciated by modern companies as an activity not only needed for enterprises, but even essential¹⁹.

In order to assess involvement of companies in continuous learning, the findings of *Continuing Vocational Training (CVT)* conducted in April 2011 simultaneously in the majority of European countries will be analyzed. The research aim was to obtain information on involvement of enterprises in development of the existing abilities or finding new abilities by employees. The factors that were taken into account include: type of business activity and the size of an enterprise.

2.3.1. Poland in comparison with other EU countries

The data included in Table 3 demonstrates that Poland is differentiated among other EU countries by the lowest involvement of enterprises in continuous learning of their employees. In 2010, it concerned only 22.5% of all enterprises taking part in the research, whereas the EU average was 66%. It means that the level of involvement of Polish enterprises in staff development is three times lower than the average level for EU-28, four times lower than in Denmark, Austria and Sweden. Poland is also behind Greece and Romania, which have lower educational activity of adults than Poland. Because employers give the strongest impulse for occupational development, the level of engaged enterprises is not only unfavourable, but it is a barrier for this process²⁰.

When we compare the data concerning organization of training in 2005, it is visible that in Poland, unlike in other EU member states, the number of enterprises providing their employees with training decreased (from 35% in 2005 to 22% in 2010), irrespective of their size.

A similar fall in educational activity of enterprises was only reported in Romania (by 16 pp - from 40% in 2005 to 24% in 2010), Great Britain (by 10 pp: from 90% in 2005 to 80% in 2010). It means that Polish enterprises are categorized into the group in which enterprises in this period significantly limited their investment in the staff.

¹⁹ Wilczyńska B., *System kształcenia ustawicznego w województwie podlaskim*, [in:] Tomanek A. (ed.), *Narzędzia polityki flexicurity. Poradnik dobrych praktyk*, Izba Rzemieślnicza i Przedsiębiorczości w Białymstoku, Białystok 2010, p. 94.

²⁰ Górniak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014, p. 91 and the following.

The participation of entities providing continuous vocational education increased along with the size of an enterprise. Among large enterprises, 74.8% of all entities provided training; among medium enterprises - 41.4% and small - 15.9% (whereas in Great Britain - 78%, 69% in Germany, 68% in the Czech Republic, 65% in Slovakia). In general, engagement of Polish companies in staff development is low and activity of small companies in this scope is inconsiderable.

TABLE 3. PERCENTAGE OF ENTERPRISES PROVIDING CONTINUOUS VOCATIONAL TRAINING FOR THEIR STAFF IN POLAND IN COMPARISON WITH EU (%)

Country	Total		Small enterprises (10-49 employees)		Medium enterprises (50-249 employees)		Large enterprises (250 employees and more)	
	2005	2010	2005	2010	2005	2010	2005	2010
EU (28 countries)	60	66	55	63	78	81	91	93
Belgium	63	78	58	74	86	94	99	99
Bulgaria	29	31	24	27	44	49	61	80
Czech Republic	72	72	66	68	93	90	100	97
Denmark	85	91	83	89	96	98	99	100
Germany	69	73	65	69	81	82	87	96
Estonia	67	68	62	64	85	83	96	97
Ireland	67	:	61	:	86	:	100	:
Greece	21	28	16	24	39	46	70	83
Spain	47	75	43	72	68	90	89	97
France	74	76	69	72	98	95	100	98
Croatia	:	57	:	53	:	73	:	86
Italy	32	56	29	53	58	77	86	91
Cyprus	51	72	45	68	80	88	100	100
Latvia	36	40	31	37	56	54	76	82
Lithuania	46	52	40	48	64	67	88	89
Luxembourg	72	71	68	66	85	86	95	100
Hungary	49	49	42	43	77	74	90	95
Malta	46	54	40	49	65	73	87	90
Netherlands	75	79	71	75	88	89	96	97
Austria	81	87	79	85	91	96	99	99
Poland	35	22	27	16	55	41	80	75
Portugal	44	65	39	61	70	86	91	97
Romania	40	24	36	20	50	36	74	64
Slovenia	73	68	67	64	85	84	97	95
Slovakia	60	69	56	65	74	84	92	90
Finland	77	74	73	70	89	91	94	90
Sweden	78	87	74	85	95	96	100	99
United Kingdom	90	80	89	78	92	93	96	98
Norway	86	97	86	96	88	99	95	100

Source: EUROSTAT [accessed: 20.02.2015].

CVT does not include micro enterprises which are even less active in scope of staff development and which constitute 94.8% of all enterprises in Poland and hire 37.2% of employees. If we included this group

of enterprises in the total involvement of entrepreneurs in staff development in Poland, it would be even lower, which would make employees' chances for professional development even smaller²¹.

Low potential of Poland in scope of conditions for staff development is confirmed by, e.g. CEDEFOP analyses²². On the basis of a comparison of work organization, instruments for staff development and innovation index, five segments of European countries have been differentiated (Table 4).

TABLE 4. POTENTIAL FOR STAFF DEVELOPMENT: SEGMENTATION OF EUROPEAN COUNTRIES

High potential for staff development	Stable potential for staff development	Moderate potential 1 (significant possibilities for development, moderate innovativeness)	Moderate potential 2 (insignificant possibilities for development, moderate innovativeness)	Low potential for staff development
Denmark Germany Sweden	Belgium Luxembourg Holland Austria Finland	Estonia Malta Norway	Czech Republic Ireland Greece Spain France Italy Cyprus Portugal Slovenia Great Britain	Bulgaria Latvia Lithuania Hungary Poland Romania Slovakia

Source: *Learning and Innovation in Enterprises*, CEDEFOP, Luxembourg 2012, p. 45.

The following segments have been differentiated:

- segment of high potential for development: it includes countries that obtained high notes in each dimension described above,
- segment of stable potential for development: it includes countries that obtained high notes, but obtained only fairly good notes in scope of instruments for staff development and innovation,
- segment "moderate potential 1": in the countries belonging to this group, there are good conditions for staff development and a moderate level of innovativeness,
- segment "moderate potential 2": in the countries belonging to this group, there are weak conditions for staff development and a moderate level of innovativeness,
- segment of low potential: it includes countries which obtained low notes in each dimension.

Poland, Bulgaria, Latvia, Lithuania, Hungary, Romania and Slovakia were placed in the segment of low potential for staff development, which means that the method of work organization, the scope of instruments of human capital development, scope of innovativeness do not make good conditions for development of employees' competences²³.

²¹ Górniak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014, p. 91 and the following.

²² *Learning and Innovation in Enterprises*, CEDEFOP, Luxembourg 2012, p. 45.

²³ Górniak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014, p. 92.

2.3.2. Continuous vocational training for employees by voivodeship

The percentage of enterprises providing training in the total number of enterprises oscillated between 17.3% and 28% and was not much different from the average for Poland (22.5%). The highest percentage was recorded in Zachodniopomorskie (28%) and the lowest in Łódzkie (17.3%) (Table 5). The lowest level of training activity is reported by small enterprises, in which only 16% of entities organize such activities. Podlaskie belongs to the regions with very low percentage of companies training their employees - 19.8%. In the sector of small enterprises, only 11.8% educate their employees.

In 2010, 77.5% of enterprises did not provide their employees with any training. When the size of an enterprise is analyzed, it is visible that the smaller an enterprise, the less training. In the group of small enterprises, 84.1% did not provide any training, medium enterprises - 58.6% and large enterprises - 25.2%.

The main reason for lack of training is that the employees' current qualifications and skills meet the requirements of an employer - 81.4% of enterprises which do not provide any training. The next reason was a strategy of employing persons with a required level of qualifications - 69%. These arguments dominated in all enterprises irrespective of the type of conducted business and size. The least important reason was a difficulty in assessing training needs in an enterprise.

TABLE 5. ENTERPRISES PROVIDING AND NOT PROVIDING TRAINING BY VOIVODESHIPS IN POLAND (%)

SPECIFICATION	providing training		not providing training								
	in % of the total of enterprises		in % of enterprises not providing training								
	the existing skills and competences of the persons employed corresponded to the current needs of the enterprise	the preferred strategy of the enterprise was to recruit individuals with the required skills and competences	difficulties in assessing the enterprise's training needs	lack of suitable training offers on the market	high costs of training	higher focus on IVT than CVT	major training effort realised in previous years	high workload and limited available time of persons employed	other reasons		
POLAND	22.5	77.5	81.4	69.0	8.9	10.4	43.5	38.5	15.9	24.4	24.2
Dolnośląskie	20.8	79.2	86.2	74.3	11.9	12.7	49.6	46.6	14.6	19.5	23.4
Kujawsko-pomorskie	20.5	79.5	81.0	72.9	11.4	13.5	48.1	44.1	16.7	28.9	29.4
Lubelskie	19.7	80.3	88.7	76.0	11.6	11.1	45.8	39.4	13.8	24.8	21.8
Lubuskie	26.0	74.0	85.6	62.4	7.7	10.2	39.0	31.2	12.3	20.7	17.3
Łódzkie	17.3	82.7	75.4	67.4	8.3	10.2	54.7	34.4	14.7	25.2	30.8
Małopolskie	23.3	76.7	85.2	60.8	6.9	9.9	33.5	33.8	19.6	20.9	18.4
Mazowieckie	27.4	72.6	84.0	74.7	7.9	9.2	42.7	37.8	15.9	25.6	23.5
Opolskie	20.4	79.6	81.7	70.3	10.8	8.9	41.7	35.4	18.0	18.6	28.3
Podkarpackie	19.7	80.3	78.1	72.6	8.5	11.2	49.8	44.0	15.2	31.4	27.2
Podlaskie	19.8	80.2	67.9	50.0	12.2	12.3	37.3	31.6	15.9	27.9	35.1
Pomorskie	20.9	79.1	78.7	67.7	9.3	10.0	37.9	33.1	17.5	25.8	21.4
Śląskie	22.0	78.0	82.1	67.6	8.7	7.7	42.8	37.9	15.0	22.6	20.7
Świętokrzyskie	21.4	78.6	69.2	65.8	9.1	10.8	43.8	45.0	14.4	32.8	31.7
Warmińsko-mazurskie	17.9	82.1	88.8	66.7	3.9	9.6	36.7	34.5	14.0	21.2	18.9
Wielkopolskie	23.1	76.9	77.9	68.4	10.1	11.4	44.4	42.5	17.6	23.4	27.2
Zachodniopomorskie	28.0	72.0	78.4	68.5	5.5	14.4	43.3	39.9	12.6	27.2	25.5

Source: *Kształcenie zawodowe w przedsiębiorstwach w Polsce w 2010 r.*, GUS, Urząd Statystyczny w Gdańsku, Gdańsk 2012, p. 155 and the following.

TABLE 6. ENTERPRISES PROVIDING AND NOT PROVIDING TRAINING BY VOIVODESHIPS IN THE SME SECTOR IN POLAND (%)

SPECIFICATION	providing training	not providing training									
	in % of the total of enterprises	in % of enterprises not providing training									
		the existing skills and competences of the persons employed corresponded to the current needs of the enterprise	the preferred strategy of the enterprise was to recruit individuals with the required skills and competences	difficulties in assessing the enterprise's training needs	lack of suitable training offers on the market	high costs of training	higher focus on IVT than CVT	major training effort realised in previous years	high workload and limited available time of persons employed	other reasons	
ENTERPRISES EMPLOYING 10-49 PERSONS											
<i>POLAND</i>	15.9	84.1	81.9	68.1	8.8	10.6	43.1	38.0	15.2	24.4	23.8
Dolnośląskie	12.9	87.1	88.0	74.5	12.6	11.7	49.8	46.6	13.6	19.4	22.6
Kujawsko-pomorskie	14.3	85.7	82.8	73.3	12.8	14.5	50.3	45.5	17.0	30.6	27.6
Lubelskie	14.6	85.4	87.9	75.5	12.0	12.2	43.3	38.8	12.8	24.1	20.3
Lubuskie	17.4	82.6	85.7	60.9	8.3	10.7	38.3	30.4	12.4	20.1	17.0
Łódzkie	12.0	88.0	74.8	66.4	8.9	10.4	55.7	34.3	14.1	25.8	31.0
Małopolskie	15.3	84.7	86.5	58.8	6.9	9.6	31.9	32.0	18.8	20.2	17.6
Mazowieckie	18.9	81.1	84.9	74.4	6.7	9.7	41.9	37.8	15.6	26.3	22.9
Opolskie	14.9	85.1	83.2	70.1	11.6	10.1	41.9	36.0	19.8	19.8	27.6
Podkarpackie	15.2	84.8	77.2	71.9	7.8	12.2	48.4	42.0	12.9	29.6	26.8
Podlaskie	11.8	88.2	66.6	49.6	12.5	13.0	35.8	30.4	15.4	27.2	34.9
Pomorskie	15.2	84.8	78.1	67.4	9.3	10.7	38.7	33.0	15.9	28.1	21.6
Śląskie	14.7	85.3	82.8	66.2	8.5	7.2	42.6	37.4	14.3	22.2	20.8
Świętokrzyskie	14.6	85.4	70.7	61.7	9.8	10.4	40.9	43.8	13.4	32.0	30.4
Warmińsko-mazurskie	14.9	85.1	88.7	63.7	2.7	8.3	34.7	33.9	11.4	20.4	19.6
Wielkopolskie	18.5	81.5	77.8	68.0	9.6	11.2	44.4	41.3	17.1	22.5	26.8
Zachodniopomorskie	21.9	78.1	79.9	66.1	5.0	14.7	42.2	40.0	13.3	28.7	25.3
50-249 ENTERPRISES EMPLOYING 50-249 PERSONS											
<i>POLAND</i>	41.4	58.6	78.8	74.2	9.4	9.6	46.1	41.4	20.2	24.2	26.6
Dolnośląskie	45.5	54.5	74.4	72.2	5.5	17.9	47.5	46.4	21.2	19.8	30.2
Kujawsko-pomorskie	38.9	61.1	70.1	68.7	2.7	7.4	35.2	35.4	14.1	19.2	40.0
Lubelskie	32.8	67.2	92.8	78.4	10.2	5.9	57.4	41.7	19.0	27.5	28.3
Lubuskie	55.6	44.4	84.5	73.6	2.3	5.6	44.0	35.9	10.9	24.9	19.8

Łódzkie	34.5	65.5	80.4	73.8	4.2	9.5	47.0	35.2	18.7	21.4	28.1
Małopolskie	47.9	52.1	77.8	73.7	7.0	11.5	43.8	45.2	26.1	25.1	21.9
Mazowieckie	48.0	52.0	79.0	76.3	15.1	5.8	47.6	37.7	17.8	22.1	27.7
Opolskie	36.4	63.6	72.4	70.3	5.1	0.9	40.8	32.2	6.4	10.8	32.9
Podkarpackie	31.8	68.2	85.0	76.0	12.3	5.2	59.8	57.7	31.4	44.9	28.9
Podlaskie	42.1	57.9	74.5	49.1	9.3	8.9	43.0	38.5	18.7	31.7	37.1
Pomorskie	34.5	65.5	80.7	69.8	9.4	7.1	35.7	35.3	26.3	12.1	18.3
Śląskie	40.6	59.4	79.3	76.0	9.6	10.5	44.2	40.5	19.3	25.3	19.6
Świętokrzyskie	40.5	59.5	61.5	86.7	5.5	13.8	59.1	52.6	20.3	38.7	38.5
Warmińsko-mazurskie	28.0	72.0	91.0	86.1	11.2	18.8	49.6	36.3	30.5	26.4	14.8
Wielkopolskie	37.4	62.6	79.3	70.6	13.9	12.7	44.9	50.5	22.0	29.2	29.8
Zachodniopomorskie	50.7	49.3	70.2	83.5	8.6	12.8	49.0	39.1	5.6	18.2	27.1

Source: *Kształcenie zawodowe w przedsiębiorstwach w Polsce w 2010 r.*, GUS, Urząd Statystyczny w Gdańsku, Gdańsk 2012, p. 155 and the following.

In all voivodeship enterprises not providing training declared that the reason for this is that the employees' current qualifications and skills meet the requirements of an employer. In this case, Warmińsko-Mazurskie had the highest percentage of such a response (88.8%, in the country 81.4%). This reason dominated in small enterprises in all voivodeship and in medium enterprises in some voivodeship. In large enterprises, in the vast majority of voivodeship, the main reason for not providing training was a strategy of employing persons with a required level of qualifications (76.9%). In most voivodeship, the most rarely mentioned reason was lack of a proper offer of training on the market - 10.4% of enterprises not providing any training.

When a form of training is concerned, the prevailing one is a course form conducted by 91.1% of all enterprises providing training. This regularity was visible irrespective of the type of business, size of an enterprise and voivodeship. Most enterprises used external courses - 88.6%, whereas internal courses were conducted by 58.6% of all enterprises. Some enterprises conducted both internal and external courses. Predominance of enterprises providing external courses over enterprises conducting internal courses was visible in each size class. 84.9% of small enterprises conducted external courses, medium - 91.9% and large - 96.3%.

Other forms of training occurred in 63.1% of enterprises providing training. In this group, five training forms have been differentiated. The most popular types included: conferences, seminars, workshops, fairs and lectures – 75% of all enterprises providing other types of training. Another popular form was training at a workplace – 58.5%. The least popular form (irrespective of the size of an enterprise, voivodeship) was learning by participation in scientific circles or quality circles – only in 4.2% of enterprises providing different forms of training.

In order to find a connection between enterprise innovativeness and training of employees it must be pointed out that in the analyzed population almost one twelfth introduced in 2010 new or significantly improved products, services/methods of production or providing services. More than a half (55.3%) conducted training, usually in the form of courses – 95.5%. The highest number of changes was introduced in small enterprises – 54.3% of all enterprises, in medium enterprises – 31.9% and in large – 13.8%. However, introduction of any kind of innovation in an enterprise was not connected with an increase in the number of training programs.

It results from the research on enterprises that the most popular way to satisfy the needs of enterprises in scope of new abilities was recruitment of new employees with required qualifications and abilities, whereas continuous vocational training of the current employees was on the third place. Such a strategy was

possible only under the condition of high over-demand of work resources (domination of the so called labor market of employers) in Poland.

2.4. Continuous learning in the strategic and programming documents – proposed paths of changes

The system of continuous learning in Poland that has been functioning hitherto has been criticized, not only in an institutional aspect, but also in an infrastructural and a financial one. In the last ten years in Poland, it was failed to increase the level of engagement of Poles in learning despite relatively high public finances for support of continuous learning (ca. 3-4 billion PLN annually). Only 4% of adult Poles undertake education in a formal way (training, courses, post-graduate studies) and non-formal (on one's own). Persons who participate in different forms of increasing qualifications often learn useless things from the point of view of their occupational development. It results from the fact that public educational institutions educate mainly in low-demand occupations, in the case of which the supply of employees exceeds employers' demand. The market of private educational institutions is not competitive and ineffective in scope of information. The access to EU funds contributed to establishment of numerous new training companies offering courses in scope of soft competences, which are relatively easy and cheap to organize, but difficult for quality assessment. Such training is gratuitous or very cheap for participants (ESF financing), which restrains development of a mature educational market, because first of all, a low level of continuous learning is maintained (nobody demands a lot from free training); secondly, commercial training is pushed out from the market; in fact, they should dominate in a longer perspective²⁴.

Furthermore, there is no internally cohesive and comprehensive system of financing adult education which would meet challenges connected with a low level of participation of Poles in this form of education. Apart from a network of public and free schools for adults and public educational facilities in which education might be partially payable, education might be financed in a dispersed way under public programs for given social groups (Labor Fund, State Fund for Rehabilitation of Disabled Persons), by enterprises to an insignificant extent (mainly the largest ones investing in short forms of education) or by trained employees (investing in longer forms of education resulting in an increase of the education level).

In general, institutional and infrastructural public support of continuous learning turned out to be slightly effective. The Register of Training Institutions which was supposed to improve the accessibility of information about training institutions and their educational offer in fact does not fulfil this function. The accreditation system of training programs has a very small range because of a limited interest of educational institutions. Furthermore, we lack the National Qualification Framework whose objective would be improvement of recognition of abilities acquired during training. Low effectiveness of the current system of supporting continuous learning is to a great extent a consequence of its excessive concentration on educational services providers²⁵.

According to J. Górniak²⁶, to find sources of the problem of low participation of Poles in non-formal and informal education, we should take employers' perspective into account, because work environment and conditions on the labor market are most often a motive force for undertaking educational activity by adults. According to the Labor Force Survey in Poland, the current demand of employers for competences is not stimulating enough to increase the quality of human capital. The majority of employers do not undertake to train their employees as they claim that their competences are enough for their responsibilities. It may be evidence of a low level of development of an enterprise which does not see new developmental needs. Other factors hindering investments in human capital include organization of work dominating in Polish enterprises and lack of innovativeness. On the other hand, employers forget that high competences are a key factor from the point of view of long-lasting competitive predominance.

²⁴ *Polskie flexicurity - propozycje założeń do zmian prawnych*, Polska Konfederacja Pracodawców Prywatnych Lewiatan, Warszawa 2012, p. 45-46.

²⁵ Ibidem.

²⁶ Górniak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014, p. 113 and the following.

Among reasons of low participation of employers in training employees we should focus on imperfection or even lack of institutional solutions supporting micro, small, medium and large enterprises, especially with regard to financing. Thus, training is treated as a cost by numerous employers. This cost especially in the period of economic slowdown should be eliminated²⁷.

In compliance with article 67 and 68 of the act on promotion of employment and institutions of the labor market, there was a possibility of establishing a company's training fund using the owned financial resources. The fund's function was to finance or part-finance costs of continuous learning for employers and employees. The income of the training fund included: employers' payments in compliance with the provisions of a collective labor agreement or the rules of the training fund, not lower than 0.25% of the payroll fund. The payments were included in the costs of business which implies lower taxes which was an incentive for establishing a training fund²⁸.

In reality, not many employers created such funds and the reason was an alleged lack of knowledge about them (mainly among SMEs) and lack of training needs in an enterprise (mainly micro firms with up to ten employees).²⁹

The amendment of the act on promotion of employment and institutions of the labor market that came into effect on 27th of May 2014 introduced a new instrument of developing human resources - National Training Fund (NTF) which finances continuous learning of employees and employers³⁰.

NTF is a part of the Labor Fund allocated for continuous learning of employers and employees undertaken by an employer's consent or on an employer's initiative. The aim of NTF is to prevent a loss of employment by working people who have competences inadequate to the needs of a dynamically changing economy. Increasing investments in the staff potential should improve the companies' and employees' position on the competitive labor market.

An employer endeavoring to obtain financing for the costs of continuous learning must contribute at least 20% and the rest, 80% is covered by the Fund. In the case of micro enterprises, i.e. employers employing up to 10 people, 100% of continuous learning costs is financed. However, the maximum financing by NTF cannot exceed 300% of an employee's average remuneration in a given year per participant. NTF support is granted in compliance with the rules of *de minimis* support.

NTF resources received from district labor offices might be spent by an employer on: identifying an enterprise's needs in scope of continuous learning that will be financed, courses and post-graduate studies by an employer's consent or on an employer's initiative, exams allowing for receiving diplomas confirming acquisition of abilities, qualifications or occupational authorization, doctor or psychologist examination required for undertaking education or work after training completion, accident insurance in connection with undertaken education.

In order to obtain financial means for covering the costs of continuous learning, an employer who wants to invest in it must file an application to a district labor office in the place of the company's registered office or the place of providing services.

In compliance with the provisions of the act mentioned above, in the first period, i.e. 2014-2015, NTF funds will be allocated for supporting continuous learning of persons at the age of 45 and more.

²⁷ Urbaniak B., *Bariery udziału polskiego społeczeństwa w kształceniu ustawicznym*, [in:] Kotlorz D., Rączaszek A. (ed.), *Polityka edukacyjna wobec rynku pracy*, Studia Ekonomiczne. Zeszyty Naukowe Wydziałowe, nr 115, Uniwersytet Ekonomiczny w Katowicach, Katowice 2012, p. 183.

²⁸ In compliance with the act as of 14 March 2014 on the amendment of the act on promotion of employment and institutions of the labor market and some other acts, there is no longer a possibility of establishing company's training funds. The interim provisions allowed for spending the gathered funds until the end of 2015.

²⁹ Ibidem.

³⁰ Act as of 20 April 2004 on promotion of employment and institutions of the labor market (Dz. U. z 2013 r. poz. 674, as amended) – art. 69a and 69b, art. 109 section 2d-2n, art. 22 section 1 and 4 point 3 and 4, art. 4 section 1; Regulations of the Minister of Labor and Social Policy as of 14 May 2014 on a specified method and mode of granting funds from the National Training Fund.

In 2014, the interest in this instrument among employers was marginal, especially due to the age restriction. Numerous district labor offices were not able to allocate funds granted for 2014 and the remaining amount had to be returned to the Ministry of Labor and Social Policy. In district labor offices' opinion, the use of the available funds would have been higher if these funds could have been spent also on different age groups. The restriction to the group 45+ is a great barrier in expending the funds³¹.

Among barriers hindering continuous learning of persons working in Poland, there are unfavorable working conditions as regards, e.g.³²:

- a large scale of time limited employment. In 2013, the highest scale of employment in this form which does not guarantee continuity of work was reported in Poland (28.6%). High percentage was also recorded in Spain (23.2%), Portugal (21.4%) and Holland (20.3%)³³;
- relatively high percentage of persons working on shifts (29.9%, whereas in EU - 17.4%) which has a negative effect on educational initiatives.

Because continuous learning is a priority in EU activities and strategies until 2020, Poland as a member state has undertaken to conduct a deep reform of continuous learning. A far-reaching vision of development of continuous learning on the national level is first of all included in key strategic and programming documents which include:

- Perspective of Lifelong Learning;
- Long-term Development Strategy of Poland. Poland 2030;
- Development Strategy of Poland 2020;
- Development Strategy of Human Capital;
- Development Strategy of Social Capital;
- regional operational programs.

The key document, especially in the implementation context, is *Perspective of Lifelong Learning*³⁴, which describes the policy of LLL (lifewide lifelong learning) in Poland in scope of:

- learning in different contexts (formal, non-formal and informal),
- learning at all stages of life, "from cradle to grave",
- identification, assessment and confirmation of effects of learning.

The aim of LLL is to ensure all people who are educating with the opportunities to improve their competences, acquisition and confirmation of qualifications in accordance with their needs and requirements of the labor market and civil society, to facilitate flow of people between sectors of the economy and EU states and to contribute to promotion of civil and social activity.

Carrying out such a policy with reference to such a wide scope of learning will require partner cooperation of numerous entities, including the government, self-government and occupational self-government, employers, employees, civil organizations and entities offering education and training.

The Perspective is a very important programming document in Poland which ensures cohesion of activities for continuous learning. Specification of the national strategic framework for the policy of lifelong learning is one of the conditions to use European funds in the financial perspective 2014-2020.

The strategic goal of the LLL policy in Poland was set on the basis of general rules of the LLL policy agreed in EU and the specificity of learning by children, youth and adults in Poland. The strategic goal is formulated as follows: "Children and youth who are well-prepared to learn all life and adults who broaden

³¹ Topolska K., *Szkolenia dla pracowników 45+ okazały się niewypałem*, „Dziennik Gazeta Prawna” 2014, 23 października.

³² Urbaniak B., *Bariery udziału polskiego społeczeństwa w kształceniu ustawicznym*, [in:] Kotlorz D., Rączaszek A. (ed.), *Polityka edukacyjna wobec rynku pracy*, Studia Ekonomiczne. Zeszyty Naukowe Wydziałowe, nr 115, Uniwersytet Ekonomiczny w Katowicach, Katowice 2012, p. 185.

³³ Eurostat data.

³⁴ *Perspektywa uczenia się przez całe życie*, Załącznik do uchwały Nr 160/2013 Rady Ministrów z dnia 10 września 2013 r., Warszawa 2013.

and supplement their competences and qualifications adequately to the challenges they face in the professional, social and personal life". The objective shall be achieved by means of the following operational goals:

- Goal 1: Creativity and innovativeness of people which is visible in the majority of programs carried out by institutions of formal education. They will focus on the need of shaping creativity, entrepreneurship and innovativeness;
- Goal 2: Clear and cohesive national qualification system. The system shall be based on well-identified effects of learning. It must ensure the possibility to achieve every level of qualification using different paths of education, training and career;
- Goal 3: Differentiated and accessible offer of forms of early care and education for the effective support of development (and abilities) of small children. It is essential to develop high quality services of early care and education supported by parents;
- Goal 4: Education and training adjusted to the needs of a sustainable economy, changes on the labor market and social needs;
- Goal 5: Work environment and social involvement favorable to continuous learning. They both are a significant, but not used potential of learning. A system of validation of the earlier acquired professional, social and personal experience will be developed as a basis for continuation of lifelong learning.

In compliance with the provisions of *Development Strategy of Human Capital 2020*, especially with *Implementation Document*³⁵, the policy of dissemination must be based on the following rules:

- the most effective form of learning is learning at a workplace and being socially engaged; on the other hand, each citizen should have an access to different forms of learning (especially non-formal learning);
- irrespective of the subject, form and place of learning, learning should occur in such a style to build social competences at the same time; individual growth in competences is important, but simulation and activation is equally important (especially with regard to people professionally inactive), because studying people have contact with different people.

Realization of the LLL policy in Poland will contribute to an increase in the percentage of people at the age of 25-64 who participate in learning or training (in the last 4 weeks before the survey) at least to the level of 10% until 2020 (in 2014 it was on the level of 4.1%).

As a result of multi-directed activities, a national qualification system will be integrated. The system consists of different activities of the state which are connected with formal confirmation of effects of any kind of learning (validation) acquired in different ways during the whole life for the needs of the labor market, civil society and individual development of learning people. The system allows for different ways of acquiring qualifications. The National Qualification System should contribute to increasing the possibilities of recognition and formal documentation of new competences acquired in different ways during the whole life. The key element of this system is the Polish Qualification Framework which is a common reference system for all qualifications.

Development Strategy of Human Capital 2020 will create a universal and an attractive system of lifelong learning using the following tools:

- popularization of learning for adults, especially in the most effective forms (learning at work and the environment of social engagement, short course forms), which will require recognition of learning effects acquired in non-formal and informal education and will allow a prompt reaction to the needs of improving qualifications by employers;
- ensuring adults with an access to the system of higher education by means of a new system of confirming competences acquired outside the system of higher education, e.g. competences acquired in the process of self-education, occupational work, courses or training, as well as confirming qualifications acquired in vocational colleges in the system of education;

³⁵ *Dokument Implementacyjny Strategii Rozwoju Kapitału Ludzkiego 2020. Narzędzia realizacji Strategii Rozwoju Kapitału Ludzkiego 2020*, MPiPS, Warszawa 2014.

- building a national system of qualifications as a part of the European Area of Lifelong Learning, which will allow better comparability of qualifications and will increase the possibilities of confirming effects of learning (knowledge, abilities and social competences) acquired within non-formal and informal education, i.e. irrespective of the place, form and time of learning;
- developing a system of financial support for adult learning, which will finally allow for establishing an internally cohesive and comprehensive system of financing adult learning, which would face challenges connected with a very low rate of its popularity in Poland;
- At the first stage, it is necessary to analyze a few options of supporting adult learning, including supply options: financing an offer of educational and training institutions (as currently) and demand options, e.g. training vouchers - with the rule of joint participation in costs by an employee, an employer and the state/self-government budget.

Undoubtedly, proposed changes in the system of continuous education in Poland will contribute to improvement of innovativeness and competitiveness of enterprises, especially from the SME sector.

3. INNOVATIVENESS

3.1. Policy of innovativeness in relation to the SME sector

According to S. Ciok³⁶, the policy of innovativeness is an aware and purposeful activity of public authorities aiming directly or indirectly at supporting innovativeness and in consequence, competitiveness of the economy. The main goal of the policy of innovativeness is to develop an innovative system (both on the national and regional level) which supports: promotion of innovation improving the competitiveness of the economy and life quality of inhabitants, reorientation of the economy based on work to the economy based on knowledge, tightening cooperation between the elements of the system of innovation (science, technology, education, enterprises, market, central and regional administration, NGOs, etc.).

The policy of innovativeness in Poland is based on a wide array of instruments of a controlling (legal), programming (national and EU support) and institutional (financial and non-financial support) character³⁷.

When controlling instruments are concerned, one of the first legal documents encouraging to undertake innovative activities was the act on supporting innovative activities as of 2005. It concentrated on creating incentives for carrying out R&D activities. The most important assumptions included: the possibility to obtain the status of R&D centers by private companies, which gave preferential tax treatment (for them and their contractors), the possibility to take a technology credit at the National Bank of Economy for purchase or production of a new technology (50% of it could have been written off under certain conditions), the possibility to deduct costs of research activity from the tax base, irrespective of the results achieved and finally to deduct costs from the tax base in the case of purchase of new technologies (from a research institute, university or R&D centers) - even up to 50% of costs (small enterprises). The act was a huge revolution and a huge step forward for innovativeness development. However, it is said that it is too bureaucratic and it imposes inflated conditions³⁸.

Another legal act of considerable importance is the act as of 30 May 2008 on some forms of supporting innovative activities. Its main goal is: growth in competitiveness and innovativeness of the economy by higher expenditures in the private sector and improving the effectiveness of management of public resources for R&D. To achieve this objective, there were three supporting elements: also the possibility of taking a technological credit (with some changes), maintenance of the status of R&D centers and tax relief when purchasing new technologies. In practice, the most popular instrument which is also best assessed is a technological credit. R&D centers and tax reliefs are perceived less positively. It means that entities have less interest in using R&D centers as an instrument of improving own innovativeness, which is a resultant of too high initial conditions when creating such centers and too little tax incentives for participants of service exchange under R&D centers. Low popularity of the last element is a resultant of a low level of innovation diffusion among Polish enterprises and insufficient promotion of this instrument among potentially interested parties³⁹.

Currently, Polish entrepreneurs, especially from the SME sector, have an opportunity to make use of a wide array of support instruments in scope of R&D&I. An analysis of available programs supporting innovativeness in 2007-2013 revealed 60 support instruments directly or indirectly aimed at innovation development. These instruments are differentiated, their characteristic features are: range (regional or

³⁶ Ciok S., *Polityka rządu wobec wspierania działalności innowacyjnej i badawczo-rozwojowej*, [in:] Dobrowolska-Kaniewska H., Korejwo E. (ed.), *Endo- i egzogeniczne determinanty obszarów wzrostu i stagnacji w województwie dolnośląskim w kontekście Dolnośląskiej Strategii Innowacji*, Uniwersytet Wrocławski, Wydział Nauk o Ziemi i Kształtowania Środowiska, Wrocław 2009, p. 120.

³⁷ Stanisławski R., *Instrumenty polityki innowacyjnej skierowane do MSP*, [in:] Niedzielski P., Stanisławski R., Stawasz E. (ed.), *Polityka innowacyjna państwa wobec sektora małych i średnich przedsiębiorstw w Polsce – analiza uwarunkowań i ocena realizacji*, Zeszyty Naukowe Nr 654, Ekonomiczne Problemy Usług Nr 70, Szczecin 2011, p. 78.

³⁸ Ibidem.

³⁹ Ibidem.

national), source of financing (state budget/structural funds/other international programs), target group (entrepreneurs/other entities), form, implementing authority (e.g. Polish Agency for Entrepreneurship Development, Ministry of Economy, National Center for Research and Development, National Bank of Economy, Marshal's Offices, Voivodeship Offices; regional entities established in order to carry out supporting programs, e.g. Podlaskie Intermediary Institution). Among them, there are 25 supporting instruments carried out within regional operational programs, financed from structural funds in the financial perspective 2007-2013. Other 30 instruments are carried out within national operational programs⁴⁰.

The functioning programs include activities supporting R&D&I, human capital and specialized services for enterprises (parks and technological incubators, counseling). The system of granting financial support is dominated by grants received irrespective of the risk connected with the project realization.

Hitherto, the main pillar of the system of financing R&D&I activities from EU funds was the Operational Program Innovative Economy 2007-2013 (OPIE), mainly directed at entrepreneurs. OPIE supported projects of trans-regional character in scope of technological innovations concerning products, processes and innovations of design in the manufacturing and services sector, which directly or indirectly contribute to establishment and development of innovative enterprises.

Furthermore, support directed at widely understood growth in innovativeness of the economy was granted by other operational programs:

- Operational Program Human Capital 2007-2014 (OPHC) - investments in occupational advancement of the staff and improvement of the quality of activities supporting development of training-counseling services in enterprises;
- Operational Program Infrastructure and Environment - considerable support for innovative investments of SMEs in, i.e. renewable energy sources;
- Operational Program Development of Eastern Poland (OPDEP) - an additional element of funding from structural funds; it strengthens performance of other programs operating in Eastern Poland in order to evoke the effect of synergy and realization of some activities stimulating economic and social development;
- Regional Operational Programs (ROP) carried out in each voivodeship as a supplement for instruments planned in central operational programs which support innovativeness on the trans-regional level.

3.2. Innovativeness of Polish enterprises

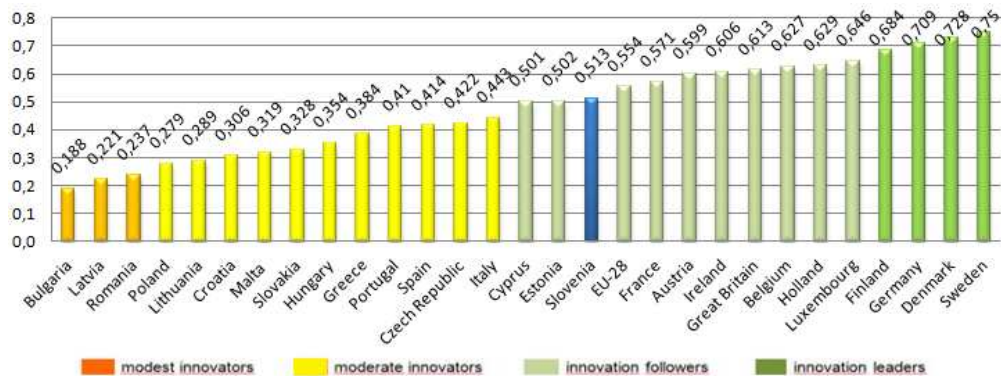
Hitherto, the policy of innovation in Poland, in spite of a complex set of instruments, unfortunately has not contributed to growth in innovative potential of the economy, including enterprises, especially SMEs.

According to the report entitled *Innovation Union Scoreboard 2014*, in comparison with other EU member states, Poland is characterized by a relatively low rate of Summary Innovation Index – SII – Graph 1. In the rank IUS 2014, it was placed as last but four with a synthetic rate of innovativeness on the level 0.279. Poland was assigned to the group of countries called *moderate innovators*. Romania (0.237), Latvia (0.221) and Bulgaria (0.188) were on lower positions. In comparison with the preceding year, Poland improved and was classified as a moderate innovator and it was no longer a weak innovator.

In almost each research, human resources constitute a well-assessed element for Poland, because it points out weaknesses of the innovation system, favorable for insufficient level of involvement in innovative activity of enterprises, including cooperation, especially in the SME sector.

GRAPH 1. INNOVATIVE POTENTIAL OF EU MEMBER STATES IN 2013

⁴⁰ Program rozwoju przedsiębiorstw do 2020 r. Program wykonawczy do Strategii Innowacyjności i Efektywności Gospodarki, Załącznik do Uchwały Rady Ministrów z dnia 8 kwietnia 2014, Warszawa 2014.



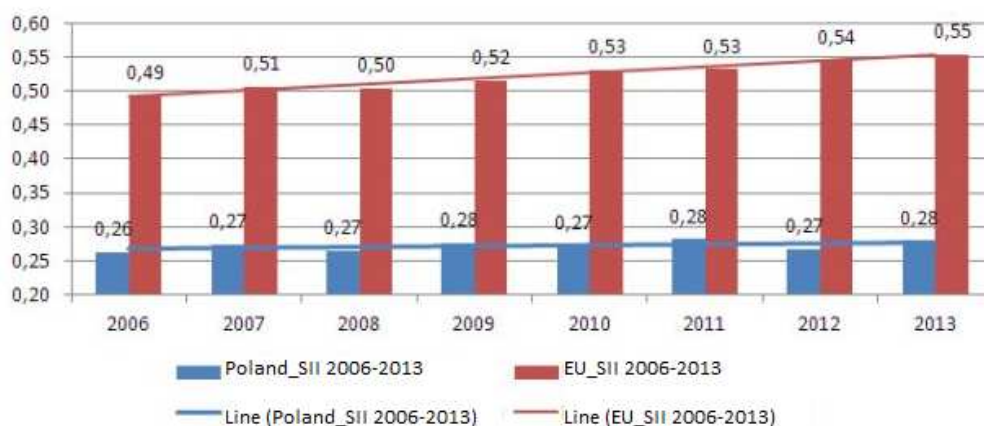
Source: Innovation Union Scoreboard 2014.

The division into innovation leaders, innovation followers, moderate innovators and modest innovators is made on the basis of the following criteria:

- innovation leaders include the countries whose total rate of innovativeness is above 120% of the EU average rate;
- innovation followers include the countries whose total rate of innovativeness is 90-120% of the EU average rate;
- moderate innovators include the countries whose total rate of innovativeness is 50-90% of the EU average rate;
- modest innovators include the countries whose total rate of innovativeness is below 50% of the EU average rate.

The total rate of innovativeness for Poland in 2013 constituted 50.5% of the average EU rate, which was decisive to categorize Poland to the group of moderate innovators (last position) - Graph 1. In the last few years, the rate for Poland constituted: 53% (2008), 53% (2009), 51% (2010), 53% (2011), 49% (2012) of the average EU-28 rate. Total rates for EU member states in 2006-2013 demonstrate a visible increasing trend. Poland seems to be quite stable with a minimal pro-growth trend in comparison with different countries.

GRAPH 2. TOTAL RATE OF INNOVATIVENESS FOR POLAND AND TREND LINE FOR POLAND AND EU IN 2006-2013



Source: Polish Agency for Enterprise Development,
http://www.pi.gov.pl/parp/chapter_86197.asp?soid=8771DBB1291D4965B59BFF6B10573A46.

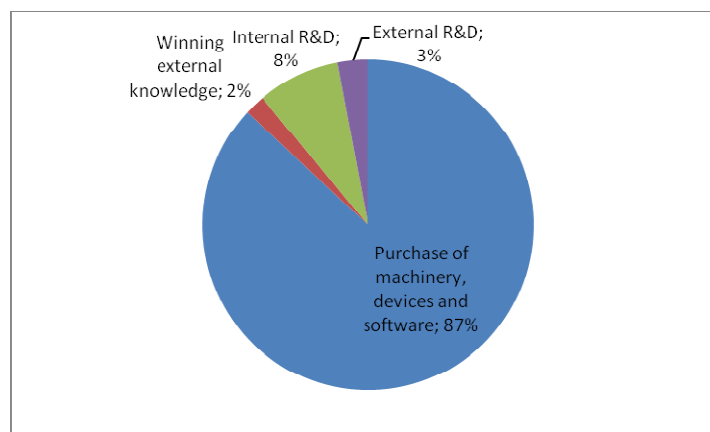
Expenditures for R&D in Poland are also significantly lower than in other countries of Central and Eastern Europe. In 2012, internal expenditures for R&D in Poland constituted 1.27% of all 28 EU member states' expenditures altogether, whereas in 2013 - 1.26%.

In 2012, Poland was on the twentieth position among EU member states as regards the rate of R&D intensity, which was 2.3 lower than the rate for EU. The preliminary data for 2013 indicates that the rate of R&D intensity in Poland is by 1.15 percentage point lower than for EU-28. In 2012, similarly to Poland, the rate did not exceed 1% in Cyprus, Romania, Bulgaria, Latvia, Greece, Croatia, Slovakia, Malta and Lithuania. The rate specified in *Strategy Europe 2020* - 3% was achieved only in Finland, Sweden and Denmark. When we calculate the value of internal expenditures for R&D per capita, in 2012 Poland was on the 24th position with 89€, whereas the average for EU-28 was 532.6€⁴¹.

An analysis of internal expenditures by the type of research conducted indicated that in 2013 the highest value fell to development works – 44.5%, basic research – 35%. The lowest value fell on applied research – 20.5%. Almost 80% expenditures incurred by enterprises were connected with development works, 17.2% – applied research, 4.1% – basic research. In other sectors, the greatest part of internal expenditures was incurred on basic research. In the governmental sector this percentage equaled 46%, whereas in the sector of higher education and the private sector of non-commercial institutions – 70.7% and 51.8%, respectively⁴².

The structure of expenditures on innovation of Polish enterprises differs from the one in the neighboring countries and EU-15 (Graph 3).

GRAPH 3. STRUCTURE OF ENTERPRISE EXPENDITURES ON INNOVATION IN POLAND



Source: *Program rozwoju przedsiębiorstw do 2020 r. Program wykonawczy do Strategii Innowacyjności i Efektywności Gospodarki*, Załącznik do Uchwały Rady Ministrów z dnia 8 kwietnia 2014, Warszawa 2014, p. 17.

Technology absorption usually ousts innovative R&D. Currently, technology absorption by investing in fixed assets constitutes the main part of expenditures incurred on innovation in Polish enterprises (87%). Expenditures connected with R&D, including external and internal R&D and obtaining external knowledge, constitute only 13% of all expenditures on innovation in the private sector. Such a structure proves that Polish companies do not base their activity on their own human capital; thus, it may explain low investments in knowledge – training employees.

It results from detailed research findings⁴³ on innovativeness of Polish companies, including SMEs, that in 2010-2012, the percentage of innovation active enterprises⁴⁴ from the industry and service sector was on

⁴¹ *Nauka i technika w 2013 r.*, GUS, Urząd Statystyczny w Szczecinie, Szczecin 2014, p. 56.

⁴² *Ibidem*, p. 58.

⁴³ *Działalność innowacyjna przedsiębiorstw w latach 2010-2012*, Główny Urząd Statystyczny, Urząd Statystyczny w Szczecinie, Szczecin 2013.

⁴⁴ An innovation active enterprise is an enterprise which in the analyzed period introduced at least one product or process innovation or which in this period carried out at least one innovative project which was discontinued or ceased in the analyzed period (unsuccessfully ended) or which has not been completed in this period (i.e. it is continued).

the level of 16.9% and 12.3%, respectively (Table 7). Innovation activities of companies were the lowest in small companies, in which only one tenth of entities reported such activities.

In comparison with the previous edition of the research in 2009-2011, there was growth in the number of innovation active enterprises from the industry (from 16.9% to 17.7%) and service sector (from 12.3% to 13.9%) in the total number of these entities. In the public sector, there was higher percentage of innovation active enterprises from the industry and service sector (25.4% and 39.6%, respectively).

Taking into account territorial division, the biggest share of innovation active industrial enterprises was recorded in Podlaskie voivodeship (23.8%), whereas the biggest share of innovation active enterprises from the service sector was recorded in Mazowieckie voivodeship (19.5%). The lowest rate was recorded respectively in Pomorskie (12.3%) and Warmińsko-Mazurskie (5.5%).

Effectiveness of innovation activities in enterprises is measured with, e.g. the structure of the sales of new or significantly improved products. In 2012, the share of net revenues from the sales of new or significantly improved products introduced to the market in 2010-2012 in the total sales was 9.2% for industrial enterprises, i.e. by 0.3 pp more than the share of revenues from the sales of these products introduced in 2009-2011 in 2011. The same rate for entities from the service sector in 2012 equaled 3.1%, i.e. by 0.2 pp less than in the previous period.

TABLE 7. INNOVATION ACTIVITIES OF ENTERPRISES IN 2010-2012

Number of employees	Industrial enterprises	Enterprises from the service sector
Innovation active enterprises		
10-49	10.4	10.9
50-249	31.4	22.9
250 and more	59.3	48.4
Total	16.9	12.3
Share of revenues from the sale of new or significantly improved products in total revenues from sales		
10-49	1.9	0.4
50-249	4.7	3.2
250 and more	11.9	5.9
Total	9.2	3.1
Enterprises which cooperated in the field of innovation activities in % of innovation active enterprises		
10-49	22.1	16.7
50-249	35.7	41.1
250 and more	58.5	57.5
Total	33.8	27.3
Enterprises which cooperated within a cluster		
10-49	9.5	13.0
50-249	10.1	19.7
250 and more	21.1	25.6
Total	13.1	18.3

Source: *Działalność innowacyjna przedsiębiorstw w latach 2010-2012*, Główny Urząd Statystyczny, Urząd Statystyczny w Szczecinie, Szczecin 2013, p. 32.

In 2012, enterprises from the industrial and service sector achieved higher revenues from the sales of products or significantly improved products new only for an enterprise, not for the market. In comparison with the previous year, in industrial enterprises there was growth in the share of revenues from the sales of

innovative products new only for an enterprise in the total revenues (by 1.7 pp) and fall in the case of products new for the market (by 1.4 pp). In enterprises from the service sector these rates were maintained on the similar level as in 2011.

Both in the industry and the sector of services, a higher share of the revenues from the sales of innovative products in the total revenues was recorded in the public sector in comparison with the private sector (respectively, 16.8%, i.e. by 3.8 pp more than in 2011; 8.3%, i.e. by 0.6 pp less). A higher value of this rate in the private sector was recorded in the industry - in the case of sales of products which are new for the market on which an enterprise operates; whereas, for enterprises from the service sector a higher rate in the private sector was recorded from the sales of products new only for an enterprise.

In 2012, the highest share of the revenues from the sales of innovative products in the total revenues from sales, in enterprises from both the industrial and service sector, was achieved in entities employing 250 and more people (11.9% and 5.9%, respectively); whereas, the lowest share was recorded in small companies (1.9% and 0.4%, respectively).

The main source of financing innovation activities, irrespective of the size of an enterprise, is own financial resources of enterprises, which may prove a lack of knowledge about alternative forms of financing innovation. In 2012, these resources constituted 73.7% of all expenditures incurred on this in enterprises from the industrial sector (by 0.3 pp less than the previous year) and 69.6% in enterprises from the service sector (by 13.4 pp less).

Cooperation with other entities is an important element of enterprise operation, because it provides a greater access to knowledge and new technologies. It allows for costs reduction and risk reduction for the business; it is favorable for exchange of experiences and knowledge. Cooperation in the field of innovation activities implies active participation in joint projects with other enterprises or non-commercial institutions. This cooperation might be far-reaching and long-term and does not necessarily have to entail direct measurable economic benefits for the participating partners.

In 2010-2012, within innovation activities cooperated 33.8% innovation active enterprises from the industrial sector (32.6% in 2009-2011) and 23.7% of entities from the service sector (28.1% previously). Inclination to cooperation in scope of innovation activities was more visible in enterprises from the public sector, where there were cooperating 44.4% innovation active enterprises from the industrial sector and 59.2% of entities from the service sector (in 2009-2011- 43.3% and 46.4%, respectively). More than a half of enterprises from the industrial and service sector with 250 or more employees cooperated in the field of innovation activities. In the case of the SME sector, this percentage was significantly lower (Table 7).

When it is undertaken to analyze cooperation between enterprises in scope of innovative activities, their inclination to cooperation in scope of cluster initiatives is taken into consideration⁴⁵. In comparison with 2009-2011, the direction of cooperation to cluster initiatives was maintained. In 2010-2012 a greater share of enterprises cooperating within clusters in the total number of entities cooperating in the field of innovation activities was recorded among enterprises from the service sector (18.3%, whereas in 2009-2011 - 15.1%) than the share of industrial enterprises (13.1% to 12.8%). Cooperation within clusters is the most eagerly undertaken in entities employing 250 or more persons. In this size class, in 2010-2012, one fifth of industrial enterprises cooperating in the field of innovation activities belonged to a cluster and one fourth of enterprises from the service sector. SMEs demonstrate double lower activity in cooperation within clusters (Table 7).

⁴⁵ According to M. E. Porter, a cluster is defined as geographic concentration of inter-connected companies, specialized suppliers, service providers, companies operating in related sectors and related institutions (e.g. universities, standards institutions, trade associations and financing institutions) in different domains, which are competing and collaborating. For the purposes of innovativeness research, a cluster initiative is understood as cooperation connections established in a formal way on the basis of a letter of intent, agreement of association or agreement to establish a consortium, etc.

3.3. Innovativeness in strategic and programming documents – proposed directions of changes

The analysis clearly shows how low the level of innovativeness is, as well as the level of innovation activities of Polish companies, especially SMEs. There are different reasons for this, both internal and external.

Detailed research findings of SMEs analyses show that numerous Polish enterprises, especially micro, small and medium entities are preoccupied with simple reproduction of resources or are oriented at slow, limited growth. In this situation, innovations (widely and narrowly understood) constitute a strategy of multiplied risk factors. Imitation of patterns turns out to be more rational (at least in a shorter perspective). Firstly, it does not generate costs and there is no threat of destabilization. Secondly, after all it increases, not decreases competitiveness of an enterprise (again, in a short and medium temporal strategy)⁴⁶.

External barriers of creativity and innovativeness include mainly the whole system of education in Poland which often dampens creativity and innovativeness. The most unfavorable features of the system of education include⁴⁷:

- promoting conventional thinking;
- external exams organized by the Central Examination Board are based on (too) standardized criteria;
- lack of classes and subjects teaching creative thinking, skills of creative team work, etc.;
- promoting competitive, not collaborative relations at school and university;
- lack of tolerance for mistakes, imposed perfectionism;
- low level of social tolerance, including culture tolerance in numerous schools;
- curricula are based on different system of canonical knowledge, which are closed and not modified.

It must be emphasized (and it is confirmed by the Labor Force Survey) that a low level of innovation activities of enterprises, especially from the SME sector, results in low demand on high competences of employees and as an effect it has a negative influence on educational activity of the population, i.e. inclination to invest in development of competences. It is confirmed by the research that employers are the main motive force propelling training activity. Training and courses are mainly financed from their resources; they are organized in the work time. The majority of training sessions and courses attended by adults is connected with their work. Furthermore, main motives of learning and development are connected with work. Nevertheless, there is also reverse dependence, i.e. lack of investments of employers in high competences is a factor hindering innovativeness and development of enterprises⁴⁸.

It is a fact that in the context of supporting staff by carrying out numerous projects in the financial perspective 2007-2013, financed by ESF, the first step was made to support development of adaptiveness of enterprises and their employees, mainly by showing entrepreneurs the benefits of investments in staff and by reducing financial barriers in this scope⁴⁹. Thus, the next step, under the new financial perspective will be equipping enterprises, especially SMEs in such competences that will allow them to develop and implement innovative solutions in an effective way, as well as to build a system of supporting development of human capital in enterprises, which will enable constant development.

Because innovativeness of enterprises is another important priority in the activities and strategies of the European Union until 2020, Poland has also undertaken to elaborate a new concept of innovation policy. A vision of a modernized attitude towards innovativeness is included mainly in key strategic and programming documents, which include: Strategy of Innovation and Economic Effectiveness "Dynamic Poland 2020" and Program of Enterprise Development until 2020, which is an executing document of *Strategy of Innovativeness*.

⁴⁶ Drozdowski R., Zakrzewska A., Puchalska K., Morchat M., Mroczkowska D., *Wspieranie postaw proinnowacyjnych przez wzmacnianie kreatywności jednostki*, PARP, Warszawa 2010.

⁴⁷ Ibidem.

⁴⁸ Górniak J. (ed.), *Kompetencje Polaków a potrzeby polskiej gospodarki. Raport podsumowujący IV edycję badań BKL z 2013 r.*, PARP, Warszawa 2014.

⁴⁹ Cf. good practices described in Chapter 4.

Strategy of Innovativeness has common objectives, tasks, rates to be achieved with other strategic and programming documents such as: Perspective of Lifelong Learning, Long-term Strategy of Country Development - Poland 2030, Strategy of Country Development 2020, Development Strategy of Human Capital, Development Strategy of Social Capital and regional operational programs.

The main objective of *Strategy of Innovativeness* is "highly competitive economy (innovative and effective) based on knowledge and cooperation". Achievement of this goal is possible by the following specific objectives:

- Objective 1. Adjusting the legislative and financial surroundings to the needs of innovative and effective economy;
- Objective 2. Stimulating innovativeness by increasing the effectiveness of knowledge and work;
- Objective 3. Increasing the effectiveness of the use of natural resources and raw materials;
- Objective 4. Increasing internationalization of Polish economy.

From our point of view, the fifth objective which assumes supporting development of staff for an innovative and effective economy is the most important.

The process of improving the quality of education requires involving numerous entities that influence the system of education, especially employers play an important role according to the *Strategy*. Adjustment of competence courses and training to the needs of the market is possible only when employers (or employees) simply define what kind of knowledge and skills they expect and training companies will undertake to organize such classes (even if they are more expensive and more difficult to organize). Hence, it is essential to build cooperation between educational institutions and training institutions with business.

The influence of employers on the system of education will ensure greater effectiveness, which will result in the higher rate of employability of graduates of all types of educational institutions. Entrepreneurs can shape the system of education by expressing opinions about curricula, active participation in the process of education and being the leaders of entrepreneurship in the region.

Public intervention will be directed at different organization of the learning process which will allow for equipping graduates with key competences, also from the point of view of creating adequate conditions for enterprise development, especially for SMEs. In order to support improvement of qualifications of adults, we should support systems other than the formal one, which nowadays, because of their flexibility and reference to the natural attitude to learning become more effective than the formal system of continuous education.

Qualified and highly adaptive human resources require not only direct support by means of training or counseling, but also activities aiming at better adjustment of staff to the needs of the modern economy, e.g. by projecting the demand of the labor market for specific skills and competences on the basis of the trends existing also on international markets. This attitude is coherent with the document *Perspective of lifelong learning* and will be put into effect by the following activities⁵⁰:

- 1) Involvement of business in the continuous learning system by:
 - promotion of partial responsibility of business for the system of formal and non-formal learning,
 - establishing structures responsible for cooperation with educational and training institutions in enterprises,
 - creating the culture of lifelong learning, especially in SMEs,
 - participation in creating and applying the National Qualification Framework to the purposes of recruitment and training by entrepreneurs,
 - participation of entrepreneurs in institutions confirming the quality of qualifications acquired in the ways different than formal education.
- 2) Building a system of information about the needs of the labor market on the national and regional level - in order to monitor the trends of the labor market and for better adjustment of the labor market and enterprises, the policy of education and employment. The system should easily allow

⁵⁰ *Strategia innowacyjności i efektywności gospodarki „Dynamiczna Polska 2020”*, Ministerstwo Gospodarki, Warszawa 2013.

providers of educational and training services to state which competences are demanded. It would be reflected in the effects of learning and creating a proper offer by educational and training centers.

3) Promotion and development of vocational education and training by:

- increasing the role of employers in defining the standards of qualifications and competence assessment, taking the information from the system of information about the national and regional labor market into account,
- strengthening the component of key competences in vocational education, vocational training of adults and higher education,
- transferring models of learning from leading companies to vocational schools and promoting good models of vocational training implemented by economy leaders,
- allowing teachers of vocational education and training to increase their qualifications in enterprises.

4) Increasing managerial skills of entrepreneurs, especially from the SME sector by:

- increasing the awareness of the managerial staff of the importance of non-financial resources for the competitive position of the enterprise, the importance of education and competences of employees as an element of non-financial resources, importance of in-company training in order to improve employees' qualification, including e-learning;
- dissemination of modern managerial practices in the field of personnel management (modern forms of recruitment, team work, knowledge management, leadership), strategic planning, standardization of process management, professionalization of the manager's function, improvement of the system of managing economic changes;
- providing strategic counseling for companies in order to increase the awareness of the need of long-term planning and dependence between a vision of development and short-term objectives. Lack of strategic attitude influences the conditions of entities' operation in a negative way and extends the areas of uncertainty of activities.

5) Accent on key competences and sectional skills in staff training, including: creativity, innovativeness, entrepreneurship, preparation for project work in a team and individually during education and training, abilities to formulate and solve problems, form and procedures of intellectual property protection, IT skills, mobile technologies, ecological awareness (including the area of climate change) and promotion of using knowledge in scope of environmental technologies, foreign languages and lifelong learning.

4. VOCATIONAL CONTINUOUS LEARNING FOR INNOVATIONS IN SMES – GOOD PRACTICES

This part of the report presents good practices of continuous learning (at the workplace or study place) in the context of improving innovativeness of enterprises in Podlaskie voivodeship, especially SMEs which dominate in the region. The model solutions of cooperation between **science and enterprises** have been elaborated in projects financed by the European Social Fund. Priority VIII *Regional human resources for the economy* of the Operational Program Human Capital 2007-2013, Measure 8.2 *Knowledge transfer*, Sub-measure 8.2.1 *Support for cooperation between science and enterprises* assumes the following forms of support, e.g.:

- apprenticeship and practical training of employees in science entities and researchers from science entities and researchers and didactic workers from universities in enterprises;
- temporary employment of highly qualified personnel in MSMEs;
- support for enterprises by means of trainings and/or counseling for enterprise employees conducted by (or with participation of) scientific employees of scientific institutions and universities directed at implementation of innovative undertakings in enterprises;
- support of cooperation between scientific units and entrepreneurs in scope of innovation and technology transfer including elaboration of concrete implementation effects.

4.1. Project "PLATFORM B+S – innovative model of cooperation between science and business in Podlaskie voivodeship"⁵¹

Project „PLATFORM B+S – innovative model of cooperation between science and business in Podlaskie voivodeship” is carried out by Bialystok Foundation of Professional Training in the period 01.07.2013-30.06.2015 in Podlaskie voivodeship.

The aim is to create effective and long-lasting cooperation between science and business in Podlaskie voivodeship by means of internships and practical training for enterprise employees at research units representing research areas strategic for the region. Especially, it is aimed to increase the effectiveness of cooperation between scientific units from Podlaskie and companies by means of internship and practical training for researchers at companies and entering into lasting cooperation between companies and research institutions by means of internship and practical training for enterprise employees at research institutions.

The target group is constituted by 80 persons (30 women, 50 men), including 24 (14 women, 10 men) research workers employed at higher education facilities in Podlaskie who represent areas of research strategic for the region in compliance with the Regional Strategy of Innovation and the Podlasie Voivodeship Development Strategy, as well as the area of green technologies (Bialystok University of Technology, University of Bialystok) and 56 employees of Podlaskie enterprises who represent the above mentioned domains.

In the project, it was planned to ensure two kinds of support instruments directed at research workers from universities and at enterprise employees:

Research workers:

- participate in practical training “Creation of a cooperation platform between science and business” whose aim is to understand the needs for cooperation and entrepreneurs’ expectations and preparation of researchers to cooperate with entrepreneurs in scope of the subject matter;

⁵¹ "PLATFORM B+S – innovative model of cooperation between science and business in Podlaskie voivodship”, Bialystok Foundation of Professional Training [online: 20.02.2015]. Available on World Wide Web: <http://www.bfkk.pl/przedsiębiorczosc/platforma.html>.

- participate in internship in 8 companies. Each enterprise organizes internship lasting 4 months (60 hours per month) for 3 researchers in three domains – process, organization and marketing innovation in compliance with the program elaborated;
- elaborate strategies of innovation for each company participating in the project. Each strategy consists of three reports concerning process, organization and marketing innovation elaborated by researchers after internship completion.

Employees have an opportunity to participate in:

- internship organized by research institutions. Each company sends two employees who are responsible for organization and marketing innovations for internship lasting 2 months (60 hours per month);
- individual practical training for enterprise employees responsible for process innovation. Having identified the companies' needs in scope of training in the domain of innovations, individual practical training for employees responsible for manufacturing technology is supposed to be purchased;
- implementation of practical training in scope of organization and marketing innovation at a company. After the end of internship at each company, implementation training in scope of organization and marketing innovations will be organized (8 hours each) for four participants – mainly the managerial staff.

4.2. Project “We support practitioners – cooperation between science and business”⁵²

Project “We support practitioners – cooperation between science and business” was carried out by Lomza State University of Applied Sciences in Lomza in partnership with a self-government unit – the City of Lomza in the period 01.01.2013-31.12.2014.

The main objective of the project was to improve cooperation between a university (Lomza State University of Applied Sciences) and enterprises in scope of innovation and technology transfer.

Project support for enterprises concerned key sectors of Podlaskie economy, i.e. food industry and renewable sources.

Under the project, training for 30 researchers and associates of Lomza State University of Applied Sciences from three institutes was organized. The institutes included: Business Administration Institute, Computer Science and Automation Institute and Food Technology Institute. The aim of training was to understand the needs for cooperation between science and business. The training consisted of two parts:

- 1) Basic training on the forms of cooperation science-business and needs in scope of innovation of enterprises. The aim was to prepare researches in scope of the subject matter to cooperate with enterprises, which allowed them to better understand entrepreneurs' expectations towards research units and to identify possible innovative solutions basing on knowledge and research carried out by the participants;
- 2) Supplementary training on communication researcher-businessman in order to encourage researchers to approach the needs of business by means of self-promotional activities.

The effect of both types of training was promotion of research employees (30 people) responsible for recognition and implementation of innovative solutions in enterprises in Podlaskie.

An important part of the project was research on the needs in scope of innovation in ten enterprises from Podlaskie in two areas of innovation:

- organization and marketing,
- technology (ICT, food technology or technology of renewable energies).

⁵² *We support practitioners – cooperation between science and business*, Lomza State University of Applied Sciences in Lomza [online] [online: 18.02.2015]. Available on World Wide Web: <http://www.pwsip.edu.pl/wspieramypraktykow/>.

Furthermore, on the basis of knowledge gained during training and results of the research on the needs concerning innovation, some activities connected with elaboration of innovative solutions by experts-researchers in two areas of innovation: organization, marketing and technology (ICT, food technology or technology of renewable energies). In each case, two innovative solutions for each of ten enterprises were elaborated and presented in the form of reports.

The key element of the project was implementation of elaborated innovations. In order to achieve this, the following activities were organized:

- practical training in groups for 50 employees (managerial staff and key employees) of enterprises. The aim was to support implementation of organization and marketing innovations in enterprises. Training was conducted with participation of researchers from research departments of higher education facilities;
- practical individual training for 10 employees of enterprises. The aim was to support implementation of innovations in scope of ICT, food technology or renewable energy technology. Training was conducted with participation of researchers from research departments of higher education facilities. Each kind of training was ordered individually and adjusted to specific needs for implementation of a given innovation;
- internship for 15 enterprise employees at Business Administration Institute, Computer Science and Automation Institute and Food Technology Institute.

4.3. Project „Knowledge transfer to enterprises”⁵³

Project "Knowledge transfer to enterprises" was carried out by the Foundation for development of Bialystok University of Technology in the period 01.10.2012-30.06.2014 in Podlaskie.

The aim of the project was to increase the transfer of expertise from universities to Podlaskie enterprises by means of gratuitous practical training and internship raising employees' qualifications. The classes were conducted at the Faculty of Mechanical Engineering, Electrical Engineering and Civil and Environmental Engineering of Bialystok University of Technology by its researchers and didactic workers. The project target group was enterprises from the following sectors: machine and building industry or companies providing services in these sectors (subcontracting, design, engineering and procurement, etc.) from Podlaskie and their employees.

In the project, it was planned to carry out sixteen different types of training for engineering and technical enterprises workers representing two key branches in Podlaskie, i.e. machine and building industry. The scope of training included:

- Health and safety at a construction site;
- Software 3D CAD SolidWorks;
- Renewable energy sources;
- Practical course of the software AutoCad;
- Design of systems compensating reactive power in the light of current requirements for the quality of electric energy;
- Operation and examination of the devices of electro-energetic systems and networks of the voltage higher than 1kV;
- Designing electro-energetic systems of average voltage;
- Basics of actuator-based hydraulic systems;
- Programming the driver PLC GeFanuk;
- Programming the driver PLC Siemens;
- Designing NN electrical grids and electrical fittings at construction sites;
- Visualization of industrial processes;

⁵³ *Knowledge transfer to enterprises*, Foundation for development of Bialystok University of Technology [online] [accessed: 24.02.2015]. Available on World Wide Web: <http://www.fundacja.pb.edu.pl/pok14/>.

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- Integrated production processes;
 - Plastic processing;
 - Modern methods of powder coating and production of decorative and protective coating.

The Faculty of Machine Engineering and Electrical Engineering of Białystok University of Technology organized internship for Podlaskie enterprises' employees from the machine and building industry at:

- 1) the Department of Power Electronics and Electric Controllers (Faculty of Electrical Engineering). The internship consisted of theoretical lectures and practical classes presenting research carried out at the Department of Power Electronics and Electric Drives which is especially applicable in the industry: work analysis, design, laboratory tests of converters connected to networks of electrical energy gained from renewable resources, elements of design of systems of microprocessor control of converters; analysis, synthesis and design of control systems of converters applied in renewable electric energy sources; elements of programming controlling processors. The internship was directed at employees of Podlaskie companies who design, produce and apply devices of industrial automatic control and renewable electric energy sources;
- 2) the Department of Power Engineering, Photonics and Lighting Technology (Faculty of Electrical Engineering). The internship consisted of practical classes presenting research carried out at the Department which is especially applicable in the industry: examination of heating of wires caused by electric current, optimization of energy losses in current circuits of low voltage, analysis of value variation of resistance of cable conductors in the temperature function in the light of performance of power supply systems in the event of fire and acceptance and operation tests of devices and electric systems of low voltage. The program was directed at employees of Podlaskie companies who design, produce and operate devices of electric systems;
- 3) the Production Engineering Department (Faculty of Mechanical Engineering). Practical classes included the following topics: 3D design, programming CNC, controlling precision of produced details, 3D printing. The program was directed at employees of Podlaskie companies who design and produce components for machines and devices and prototypes;
- 4) the Automatic Control and Robotics Department (Faculty of Mechanical Engineering). Practical classes included, i.a. design of industrial networks, programming controllers working in networks, programming and operating Festo Activ Factory. The program was directed at employees of Podlaskie companies who design and operate PLC.

5. NEW ATTITUDE IN EDUCATION TOWARDS INNOVATION OF SMES – EXAMPLE OF PODLASKIE VOIVODESHIP

5.1. Podlaskie voivodeship⁵⁴ - characteristics

Podlaskie voivodeship was established in 1999 as a result of the administration reform in Poland. The characteristic feature of the region is location in the border part in the north-eastern part of Poland. The result of such a location is overlapping of different elements and conditions - historical, environmental, social, cultural and economic. Podlaskie accounts for 6.5% of the country territory. It is populated by 3.2% of residents of Poland. The territory of the region is sparsely populated. In 2012, 59 people populated 1 km², whereas 123 is the average for the country.

In the category of the level of economic development Podlaskie is among the weakest developed EU regions (255th place out of 271 regions). In Poland, it is also classified as one of the weakest voivodeships. In 1999, GDP per capita in comparison with the average one in the country equaled 72.7%. After 10 years, the distance to the average in the country increased. In 2011, GDP per capita was 71.8% (14th place in the country)⁵⁵.

Podlasie is a typical agricultural region with predominance of the processing industry. The voivodeship is characterized by weak diversification of the industry and strong dependence on the dominant branch. The key branches of the region include: food industry (production of food items and drinks); tobacco industry; production of items made of wood, cork, straw and wicker; manufacture of products made of rubber and plastic; manufacture of metal products (including derivative departments). Three main branches generate ca. 60% of marketed production and hire almost a half of employees. When the number of entities operating in the voivodeship is concerned, the dominating sectors are: commerce, building industry and industrial processing⁵⁶.

When we focus on the sector division of industry in Podlaskie, the most significant part is constituted by the food industry (ca. 48% of marketed production). When the dominance of particular branches in the economic development of Podlasie is concerned, it is visible that the leader of marketed production is manufacturers of food items (54.8% share in sales). Enterprises of this sector are characterized by a relatively high dynamics of marketed production. Together with the sector of manufacturing products made of wood, cork, straw and wicker (8.7%), manufacture of products made of rubber and plastic (6.8%) and production of machines and devices (5.2%), these groups generated 75.5% of the value of marketed production of Podlaskie industry. According to the Main Statistical Office's data, these branches employ ca. 56.5% of employees in this industry⁵⁷.

Podlaskie belongs to the regions which for a few years have faced the decreasing trend in the number of population. In 2000-2013, the population of Podlaskie diminished from 1,221,128 to 1,194,965, i.e. by 26,163 people (by 2.1%). It must be pointed out that in this period in Poland the population increased by 0.6% (from 38,254,000 to 38,502,000). According to the demographic forecast up to 2050 by the Main Statistical Office, the decreasing trend in Podlaskie will be maintained. In 2050, the number of people will be about 982,300,000, so it will be reduced by 17.8% in comparison with 2013 and by almost one fifth in comparison with 2000. The scale of the decrease in the number of people in 2013-2050 in Podlaskie will be on a much higher level than on average in the country (decrease by 11.8 percentage points⁵⁸).

⁵⁴ Voivodship - a unit of administration division in Poland.

⁵⁵ Sadowska-Snarska C., *Problemy polityki społecznej i rynku pracy w dokumentach strategicznych województwa podlaskiego*, „Polityka Społeczna” 2014, nr 10.

⁵⁶ Jurczuk A., *Innowacyjność podlaskich przedsiębiorstw – wybrane aspekty*, „Economics and Management” 2012, vol. 4.

⁵⁷ Ibidem.

⁵⁸ Sadowska-Snarska C., *Zatrudnienie przyjazne rodzinie jako narzędzie adaptacyjności firm i pracowników w wymiarze regionalnym i lokalnym*, Białostocka Fundacja Kształcenia Kadr, Białystok 2014.

The decrease in the number of people in Podlaskie in 2000-2013 was a result of the negative rate of natural increase, i.e. there were more deaths than births in almost all years. The level of births is decreasing systematically. Whereas in 2000-2013, 11-13 thousand of children were born annually, after 2020 the number of births will decrease to 8.9k in 2025, 8k in 2030 and 6.4k in 2050. The Total Fertility Rate⁵⁹ in Podlaskie, alike Poland, does not reach the level ensuring simple generation replacement. In 2000, it was on the level of 1.4, whereas in 2005 it decreased to 1.2 (in 2013 - 1.18). In the forecasted period until 2050, it is expected that TFR value will be 1.3-1.4.

Apart from a negative rate of natural increase, there is also a negative net permanent migration rate, both internal and abroad. In 2000-2013, visibly more people moved out permanently from Podlasie to different regions in Poland, in comparison with the number of people who came to Podlasie. A similar situation will take place in the forecasted period up to 2035. Furthermore, a net abroad migration rate is also negative. In 2000-2013, almost each year the number of people going abroad outnumbered immigrants coming to Podlasie. The demographic forecast is also not favorable. It is predicted that a negative rate will maintain until 2027; however, the scale of immigration to Podlasie, as in all Poland, will be slightly higher than emigration.

The decline in population, greater in the region than in Poland, is faced by the group of people at the pre-productive age. The number of children and youth is systematically decreasing which results in reduction of participation of this economic group in the total number of people in Podlaskie (from 26% in 2000 to 17.9% in 2013 and 13.2% in 2050). This dynamic decrease in the number of children and youth is an effect of a decrease in the number of births. On the other hand, in the case of population at the post-productive age, the tendency is reverse in relation to people at the pre-productive age. The number of people at the post-productive age shows an increasing tendency. In 2000, the population of the elderly was on the level of 193.8k and up to 2013 there were 24.1k people more. In accordance with demographic predictions, this population will be more and more numerous and will reach 310k in 2050 which is 160% of the number in 2000. The growth in the number of people at the post-productive age is caused by prolongation of life and the process of getting old by persons born in 1948-1955- the first baby boom after war⁶⁰. As an effect, the number of people at the post-productive age in comparison with the general number of people in Podlaskie increased from 16% in 2000 to 18.2% in 2013. In 2050, this percentage will be visibly higher - 31.6% which is evidence of a dynamically increasing problem of demographic ageing.

A key issue is a change of the number of people at the productive age who are potential working staff. The number of people at the productive age in 2000-2013 increased from 702k to 763k, by 8%. In the following years, in accordance with demographic predictions, this population will be slowly decreasing. In 2050, it will be on the level of 542.8k, so by 159.2k less (by 22.7%) in relation to 2000 and by 220.2k less in relation to 2013. Its share in the number of all residents of Podlaskie will decrease from 63.8% in 2013 to 55.3% in 2050, by 8.5 pp. It means that enterprises will face a barrier of lack of employees.

It must be emphasized that even now employers in Podlaskie have difficulties in finding persons suitable for a given job. The Human Capital Balance research indicates⁶¹ that in 2013 among employers looking for new employees, 84% complained about problems in finding them (by 6.6 pp more than on the national scale). The greatest problem with finding employees in Podlaskie was faced by employers from the building industry and transport - 99%, by 14.4 pp more than in Poland. Difficulties in recruitment also concerned the branches - specialized services, industry and mining - recruitment problems were reported by 85% and 84% employees, respectively. In Podlaskie, difficulties in finding proper employees are faced more often than on the national scale. It may result from a hindered access to persons with skills and qualifications demanded by employers, deficiency of professions which are demanded on the local labor market. Irrespective of the company's size, employers from each category (micro, small, large) had difficulties in finding qualified workers and employees working in services and sales. In large enterprises employing more than 50 people, it was the most difficult to find persons for specialized jobs - 36% of

⁵⁹Total Fertility Rate – an average number of children that would be born to a woman in her child-bearing years (15-49 years old). TFR with the value of 2,10 ÷ 2,15 guarantees generation replacement.

⁶⁰ Ibidem.

⁶¹ Kasparek K., Magierowski M., Turek D., *Rynek pracy w województwie podlaskim w świetle danych z badań Bilans Kapitału Ludzkiego 2013*, PARP, Uniwersytet Jagielloński w Krakowie, Białystok 2014.

employers in Podlaskie reported problems with recruitment. Both in Podlaskie and in Poland, the majority of employers who had difficulties in finding employees suitable for work declared that the main cause was the inability of candidates to meet their expectations. It was mentioned by 82% of Podlaskie employers (by 2.2 pp less than on the national scale).

Employers have problems with finding adequate employees despite the fact that the work potential in the region is used only to a small extent, which is confirmed by low rates of professional activity (in 2014-55.8%, including 64.4% of men and 47.8% of women), employment rate (50% including 42.8% for women and 57.7% of men), unemployment rate (10.5%, 54k of the unemployed) and the population of professionally inactive persons (408k, including 284k of women)⁶².

According to the data of the National Census of 2011, the greatest percentage of people in Podlaskie have education on the level of post-secondary school, vocational secondary school and general secondary education (30.1%). On the second place, there is education on the level of junior high school (*gimnazjum*), basic and lower (26.7%). 16% of people have higher education. Podlaskie is the voivodeship with the lowest percentage of people having vocational education in all Poland. According to the Human Capital Balance of 2014⁶³, 46% of respondents participated in courses or training (on average in Poland - 19%). In the case of working population, this percentage is even higher - 46% (in Poland - 25%). The situation of the unemployed is much worse - 21% (11% in Poland) participated in courses or training in the last 12 months.

This demonstrates that Podlaskie, alike all Poland, copes with lack of adjustment of the needs of the labor market and professional skills which results from insufficient quality and adequacy of the educational offer. Thus, it is an important step to popularize participation in continuous learning by: developing a model of adult learning based on practical learning; developing an offer, promotion and encouragement of participation in education of professionally inactive people, supporting vocational training.

Lifelong learning of employees and employers is pivotal from the point of view of improving innovativeness of Podlaskie enterprises and the whole region. It results from the analysis of the rates indicating the level of innovative development that Podlaskie voivodeship belongs to the least developed regions in Poland in this sphere. The expenditures for R&D in relation to GDP in Podlaskie are visibly different than in Poland (Table 9).

TABLE 9. EXPENDITURES FOR R&D (% OF GDP) IN 2006-2012

Specification	2006	2007	2008	2009	2010	2012
R&D expenditures (% of GDP)						
Podlaskie	0.25	0.20	0.26	0.21	0.32	0.57
Poland	0.56	0.57	0.60	0.68	0.74	0.89
R&D expenditures per capita						
Podlaskie	51	46.5	62.7	55.6	86.2	115.8
Poland	154.6	175.1	202.2	237.7	270.4	372.5

Source: Main Statistical Office data.

Expenditures for R&D in relation to GDP are almost twice lower than on average in Poland, whereas the same expenditures per capita in Podlaskie are three times lower than the average for Poland.

⁶² Sadowska-Snarska C., *Zatrudnienie przyjazne rodzinie jako narzędzie adaptacyjności firm i pracowników w wymiarze regionalnym i lokalnym*, Białostocka Fundacja Kształcenia Kadr, Białystok 2014.

⁶³ Kasparek K., Magierowski M., Turek D., *Rynek pracy w województwie podlaskim w świetle danych z badań Bilans Kapitału Ludzkiego 2013*, PARP, Uniwersytet Jagielloński w Krakowie, Białystok 2014.

One of the main rates used to assess innovativeness is the value of expenditures incurred on innovative activities⁶⁴. The resources spent by enterprises for R&D are differentiated by the type of innovative activity and financing sources.

In 2013 expenditures on innovation in Podlaskie industrial enterprises conducting innovative activity per capita equaled 1.7 mln PLN, whereas in Poland - 3.5 mln PLN, in Dolny Slask voivodeship - 6.2 mln PLN, in Mazowieckie - 4.2 mln PLN and in service providing enterprises - 0.4 mln PLN (3.4 mln PLN in Poland and 8.7 mln PLN in Mazowieckie).

Among fundamental reasons of a low level of expenditures on R&D (in the country and in the region), there is an insufficient connection of science and business and little interest of entrepreneurs to carry out R&D activities, which consequently leads to dependence of financing R&D upon budget financial means (ca. 60%). Such a model of financing R&D differs significantly from the model described in the Lisbon Strategy in which 2/3 of expenditures shall be financed from private sources and only 1/3 from public sources⁶⁵.

S. Golinowska and E. Kocot who have conducted in-depth analyses of spatial variability of development in Poland claim that the region of Podlaskie belongs to regions "with low economic growth, but some factors of development (and in the future economic growth) are emerging"⁶⁶.

It means that Podlaskie has a possibility to diminish the developmental distance in comparison with other regions of Poland and EU. Nevertheless, the situation requires conducting regional policy based on programming activities and focusing it on solving main problems of development in the economic and social dimension.

5.2. Lifelong learning in the context of innovativeness – in strategic and programming documents

The most important regional strategic and programming documents which determine directions of education in the context of improving innovativeness of Podlaskie enterprises, especially SMEs include:

- Podlaskie Voivodeship Development Strategy 2020;
- Regional Operational Program of Podlaskie Voivodeship 2014-2020;
- Development program for smart specializations and entrepreneurship in Podlaskie 2015–2020+.

A concept for a long-term policy of development of Podlaskie voivodeship is described in *Podlaskie Voivodeship Development Strategy 2020 (PVDS)* updated in 2013. It takes into consideration a new paradigm of the regional policy in which, e.g. support means be strengthening and making use of endogenic potential.

PVDS is a document strictly connected with numerous documents and which is strategic on the European scale (e.g. Strategy Europe 2020) and on the national scale (e.g. Long-term Strategy of Regional Development 2030, National Strategy of Regional Development 2020, Medium-term Strategy of Country Development 2020, Plan of Area Development of the Country 2030).

The strategy presents a very ambitious (on this stage it is hard to estimate if it is realistic) vision of development: *Podlaskie voivodeship: green, open, accessible and entrepreneurial*" which aims to visualize the target conditions, which the region should attain by completing the tasks specified in the document up to 2030.

⁶⁴ Expenditures for innovative activities are measured as expenditures incurred by an enterprise in a year on innovative activities conducted in the last three years.

⁶⁵ *Raport monitoringowy z realizacji Podlaskiej Strategii Zatrudnienia do 2015 roku w latach 2010-2012*, WUP w Białymstoku, Białystok 2014.

⁶⁶ Golinowska S., Kocot E., *Spójność społeczna. Stan i perspektywy rozwoju społecznego w przekrojach regionalnych*, Wydawnictwo Naukowe Scholar, Warszawa 2013.

Such formulated development visions will be achieved by strictly connected strategic goals that should be carried out in three spheres and ensure: (1) growth of competitive economy, (2) developing domestic and international socio-economic links in the region, (3) improving the quality of life (Scheme 1).

SCHEME 1. STRATEGIC AND OPERATIONAL OBJECTIVES IN PODLASKIE VOIVODESHIP DEVELOPMENT STRATEGY

Strategic objective 1. Competitive economy	Strategic objective 2. Domestic and international links	Strategic objective 3. Quality of life
<ul style="list-style-type: none"> •Development of entrepreneurship. •Increase in innovativeness of Podlaskie business. •Development of competences for work and support for professional activity of the region's citizens •Social capital as a catalyst for development processes. •Effective use of natural resources. •Modern network infrastructure. 	<ul style="list-style-type: none"> •Activeness of Podlaskie businesses on the supracross-border market. •Improvement of the voivodship's investment attractiveness. •Development of partner cross-border cooperation. •Development of partner interregional cooperation. •Increasing the region's internal and external transport accessibility. 	<ul style="list-style-type: none"> •Reducing the negative effects of demographic problems. •Improvement of social cohesion. •Improvement in the health of the community and public safety. •Protection of the environment and rational management of its resources.

Source: *Strategia Rozwoju Województwa Podlaskiego do roku 2020* (2013), Urząd Marszałkowski Województwa Podlaskiego, Białystok, p. 36-49.

Although, these three strategic aims create a system of mutually connected and determining elements, the first goal is prioritized, because as it is about economy competitiveness, it creates work places, leads to employment growth, income and prosperity growth. Furthermore, having a job and making income is a key issue leading to high quality of life.

Having analyzed the operational objectives, it is visible that PVDS pays great attention to innovativeness, as well as to education, including lifelong learning.

The Regional Operational Program for Podlaskie Voivodeship 2014-2020 is an important financial tool allowing to complete PVDS goals. It was adopted by the voivodeship parliament in April 2014 and then accepted by the European Commission in February 2015. Its main goal is growth of competitive economy created on the basis of regional specializations⁶⁷

From the point of view of problems described in this report, three out of ten Programme Priority Axes should be analyzed:

1) Priority Axis I: strengthening the potential and competitiveness of the regional economy which may contribute to strengthening the potential and competitiveness of the region. Activities undertaken under this Axis will be directed at the development of smart specializations in the region. It will be achieved by developing new competitive superiority based on innovations and the economy based on knowledge. One of the specific goals is strengthening the science sector for the benefit of regional smart specializations and strengthening the importance of R&D activities in enterprises;

⁶⁷ *Regionalny Program Operacyjny Województwa Podlaskiego 2014-2020*, Urząd Marszałkowski Województwa Podlaskiego, Białystok 2014, p. 5 and following.

2) Priority Axis II: entrepreneurship and professional activity. It contains activities connected with adjustment of employees, enterprises and employers, especially SMEs, to changes, e.g. by raising qualifications, competences and abilities of working people and adjusting them to the needs of economy in the region;

3) Priority Axis III: competences and qualifications whose aim is, e.g. to popularize and improve the quality of lifelong learning and to adjust it to the needs of the labor market, as well as growth in the quality and effectiveness of vocational training. The key issue is to make even the access to continuous learning - formal, informal and non-formal for all age groups, to broaden knowledge, improving abilities and competences of the labor force and to promote flexible education paths also by means of vocational counseling and confirmation of acquired competences.

From the implementation point of view concerning activities improving innovativeness of enterprises, including changes in the educational system, including lifelong learning, the key document is the documents entitled *Program of development of smart specializations and entrepreneurship in Podlaskie voivodeship 2015-2020+*.

The program is based on two important assumptions, i.e.:

- First of all, Podlaskie voivodeship, in order to overcome barriers of its peripheral character, suppression and low level of innovativeness and entrepreneurship, must approach innovativeness in a completely new way. Pragmatism and practical activities become priorities in relation to innovations based on theoretical knowledge. The model of innovation based on the needs of enterprises and consumers which is characterized by fast reaction to the needs of the market becomes dominant. Innovative entrepreneurship becomes deemed as the most valuable attribute of the regional economy. The aim of the program is to complete Podlaskie Voivodeship Development Strategy in scope of innovativeness and entrepreneurship;
- Secondly, the region of Podlaskie will not increase innovativeness in a longer perspective without increasing the level of entrepreneurship. Entrepreneurship cannot be built in a different way than education. Hence, *the Program* mentions support of education in development in scope of innovative entrepreneurship during all stages of education. The success will be achieved when unified programs of education are elaborated and when the subject "innovative entrepreneurship" is introduced as a regional differentiation mark. It should be financed without the time limit by all levels of the self-government which establish schools.

It must be emphasized that such an attitude is in compliance with a more and more popular statement that the innovation policy should take a strong connection of innovations with entrepreneurship and entrepreneurs into account.

It is connected with, i.e. transitions from the managed economy to the entrepreneurial economy. Large enterprises dominate in the first model, in which the innovation policy was concentrated on supporting innovative needs in this part of economy, e.g. by stimulating R&D in the public and market sector, whereas entrepreneurial economy puts emphasis on entrepreneurial behavior. The priorities of the innovative policy are innovations, entrepreneurship and SMEs. New knowledge is an entrepreneur's tool, an opportunity for entrepreneurial activities and one of its main results are innovations. It is an entrepreneur who is the fundamental actor of the innovation process, a catalyst of innovation, an agent of knowledge and innovation transfer in economy⁶⁸.

Regional smart specializations of Podlaskie voivodeship have been identified by analyzing values both of leading companies and small but dynamic entities. Business relations and reporting participation in such relations instead of direct belonging to a given sector will be significant for realizing the policy of supporting regional smart specializations. The Program points out one "core of specialization" - "Innovations in the areas, in which the voivodeship has an outstanding potential". Podlaskie has numerous advantages which allow to build competitive superiority in scope of innovations in the hitherto well developed sectors of the economy, such as: food industry, agricultural and forestry machines, manufacture

⁶⁸ Stawasz E., *Polityka innowacyjna wobec MSP*, [in:] Niedzielski P., Stanisławski R., Stawasz E. (ed.), *Polityka innowacyjna państwa wobec sektora małych i średnich przedsiębiorstw w Polsce – analiza uwarunkowań i ocena realizacji*, Zeszyty Naukowe Nr 654, Ekonomiczne Problemy Usług Nr 70, Szczecin 2011, p. 46.

of mechanical devices. It also concerns the widely understood medical sector, also in the context of the ageing society and eco-innovations (including renewable energy sources). Other economic activities which demonstrate high dynamics of growth supplement the core. They are promising enough to name them "rising specializations", i.e. "innovations in the sectors with high growth potential" in the region.

The main goal expressed in the *Program* is: to popularize innovative activities and to increase in the number of enterprises in the region. The Program will be carried out by means of three specific goals:

- Objective 1. Competitiveness by means of innovations;
- Objective 2. Entrepreneurship due to innovations;
- Objective 3. Human capital for innovations.

Each specific goal responds to problems and challenges faced by Podlaskie voivodeship, both in the context of internal conditions and EU policies. In each specific goal of the Program, it is planned to undertake different kinds of intervention, depending on effects that are expected after the Program's completion. The success measures of the Program will be:

- increase of total expenditures on R&D in comparison with GDP;
- increase of the percentage of expenditures incurred by enterprises in comparison with expenditures incurred on R&D in general;
- increase in the number of enterprises falling on 10k people.

From the point of view of these considerations, the third goal seems to be especially important as it relates to shaping of human capital for innovativeness.

Smart specializations mean specified activities of entrepreneurs, researchers and scientists who participate in the regional society. Both groups make use of regional human capital (employees) on the one hand and on the other hand, they influence its quality (process of education, training, etc.). If we think about regional smart specializations, they must contribute to the highest quality of human capital on all levels and stages of education as the region loses its population potential and the society is ageing. This goal will be achieved by intervention in the following spheres⁶⁹:

- 1) supporting schools and educational units in creating entrepreneurial and innovative attitudes. Education in scope of ecology, ICT, eco-innovations and different spheres of smart specializations, as well as encouraging the youth to become interested in specializations will be really important;
- 2) supporting development of an educational offer for the whole voivodeship (faculties, specialized courses, post-graduate studies) for entrepreneurs working in the areas of smart specializations and their employees. Such activities should encourage cooperation of schools, universities, educational institutions and business in order to build long-lasting bonds and to develop and adjust potential and system of functioning of the school and lifelong learning sector to the needs of enterprises;
- 3) increasing the quality of human capital by conducting courses, training and practical training ordered by entrepreneurs. Ensuring the highest standards of training is especially pivotal (ordered in the region and outside the region).

Achieving the strategic objective comprises different activities undertaken by main actors of the regional innovation system based on consolidation of efforts made for the benefit of innovativeness and entrepreneurship development in the region, as well as effective cooperation in the form of quadruple helix - Table 8.

⁶⁹ *Program rozwoju inteligentnych specjalizacji i przedsiębiorczości w województwie podlaskim na lata 2015–2020+*, Geoprofit, Białystok 2015, p. 27-28.

TABLE 8. TYPES OF INTERVENTION IN THE CONTEXT OF ACTIVITIES OF QUADRUPLE HELIX (POLICY MIX)

Intervention type	Category of partners	Main expectations of an activity
A. Supporting schools and educational units in creating entrepreneurial and innovativeness attitudes	Knowledge institutions	<ul style="list-style-type: none"> – Adaptation of types of educational activity to innovativeness and entrepreneurship – Cooperation with entrepreneurs and administration in order to activate systems of education in scope of innovative entrepreneurship
	Entrepreneurs	<ul style="list-style-type: none"> – Reporting needs and joint investment in development of an educational offer
	Administration	<ul style="list-style-type: none"> – Financial and information support for the benefit of creating an educational offer in scope of entrepreneurship and innovative entrepreneurship by regional authorities – Organizing and financing educational classes in scope of entrepreneurship and innovative entrepreneurship by local self-governments in accordance with a unified regional system of education in innovativeness on all levels of education - it requires close cooperation and coordination on the level of the region; – Promoting of teaching entrepreneurship
	NGOs	<ul style="list-style-type: none"> – Promoting innovative and adaptive attitudes – Cooperation with entrepreneurs, self-governments and education for the benefit of entrepreneurship and innovation
B. Supporting development of an educational offer for the whole voivodeship (faculties, specialized courses) for entrepreneurs working in the areas of smart specializations	Knowledge institutions	<ul style="list-style-type: none"> – Adapting kinds of undertaken educational activities to the needs of smart specializations
	Entrepreneurs	<ul style="list-style-type: none"> – Creating and supporting types of education to the needs of smart specializations with educational units
	Administration	<ul style="list-style-type: none"> – Promotion and financial support of developing types of education adapted to the needs of smart specializations
	NGOs	<ul style="list-style-type: none"> – Supporting the dialogue business-science in scope of types of education; – Creating a supplementary offer
C. Increasing the quality of human capital by conducting courses, training and practical training ordered by entrepreneurs	Knowledge institutions	<ul style="list-style-type: none"> – Adjusting the offer of courses, training and practical training to the needs of entrepreneurs
	Entrepreneurs	<ul style="list-style-type: none"> – Creating permanent bonds of cooperation with educational units; – Overcoming the costs barrier of R&D by joint ordering of courses, training and practical training
	Administration	<ul style="list-style-type: none"> – Financial and information support for adjusting the offer of courses, training and practical training to the needs of entrepreneurs – Financial and information support for purchase of courses, training and practical training by enterprises
	NGOs	<ul style="list-style-type: none"> – Being an intermediary and supporting enterprises in joint orders of courses, training and practical training – Creating a supplementary offer

Source: *Program rozwoju inteligentnych specjalizacji i przedsiębiorczości w województwie podlaskim na lata 2015–2020+*, Geoprofit, Białystok 2015, p. 27-28.

The expected effects of this objective are:

- increasing the activity of schools and universities in building relations with entrepreneurs - especially those from the area of smart specializations;
- increasing the quality of human capital in the sphere of innovativeness;
- increasing the importance of Podlaskie voivodeship on the Polish map "Science for economy".

The Program includes numerous instruments to achieve the specified objectives which include the issue of educating employees. The most important of them are:

- "Subsidies for development of research resources and innovations" - as support in the form of non-returnable subsidies for employing personnel, for training or purchase of apparatus and equipment to create R&D resources. They will be made accessible for entrepreneurs from the region. The subsidies perform the following functions: increasing R&D personnel potential and its networking; increase in the competitiveness of Podlaskie R&D offer for enterprises. The beneficiaries include: universities, research and scientific institutes, enterprises with the status of a research-development center having a registered office or performing its main business activity in Podlaskie or enterprises not having a registered office in Podlaskie, but performing its main business activity in Podlaskie;
- "Podlaskie voucher for innovations" - support in the form of non-returnable subsidies for R&D activities performed by newly established micro and small enterprises which include: finding and/or implementing a new product, a model project; new manufacturing technology, significant improvement

of a product or manufacturing technology, finding and/or implementing a new or significantly improved process of offering services, organizational or marketing innovations. The support may also be used to purchase R&D services and apparatus, employing R&D personnel, R&D training connected with the above mentioned R&D activities which is essential for a project. The support may also be used for the following studies connected with a new product, model project; new manufacturing technology, significant improvement of a product or manufacturing technology, finding and/or implementing a new or significantly improved process of offering services, organizational or marketing innovations: assessment of R&D potential of an enterprise, plan of development of an enterprise, predictions about the market, strategy of introducing the above mentioned new or significantly improved solutions. The service providers may be research units or enterprises having the status of a research-development center or foreign research and scientific units.

6. CONCLUSIONS

On the basis of the analysis, the following conclusions can be drawn:

1. In Poland, as well as in Podlaskie, institutions of continuous learning function on the basis of different legal provisions (lack of one document, legal autonomy of institutions), which results in the existence of at least three kinds of institutions, often with contradictory interests: educational institutions, institutions of the labor market, widely understood training institutions. Also employers participate in the system of lifelong learning. They shape appropriate “educational atmosphere” in a company and organize internal training sessions regularly. Hence, there is a lack of a coordinated system of continuous education in Poland.
2. Furthermore, there is no internally cohesive and comprehensive system of financing adult education. Apart from a network of public and gratuitous schools for adults and public educational facilities which sometimes charge for education, education is financed in a dispersed way under public programs for given social groups (e.g. Labor Fund, State Fund of Rehabilitation of Handicapped People), by enterprises to a limited extent (mainly the largest ones investing mainly in short forms of education) and by trained persons (investing in longer forms of education resulting in an increase in the level of education).
3. Hitherto, public institutional and infrastructural support for continuous learning has been only little effective. The Register of Training Institutions which was supposed to improve the access to information on training institutions and their educational offer did not perform its function. The system of accrediting training programs has a very little range because of limited interest of educational institutions. Furthermore, there is lack of the National Qualification Framework whose objective should be to improve recognition of skills acquired during training. Low effectiveness of the current system of supporting lifelong learning is to a great extent a resultant of its excessive focus on providers of educational services.
4. Imperfection of the system of lifelong education existing hitherto is accompanied with low interest of Polish society in this subject in life after completion of school education. The percentage of learning people at the age of 25-64 in 2014 was on the level of 4.1%, whereas the average for all twenty-eight EU member states was 10.6%. The EU's aim until 2020 is 15% in compliance with the European agenda of adult education adopted in November 2011 (it concerns persons declaring participation in education and training in the last 4 weeks before the survey).
5. In Poland, we observe exceptionally low engagement of enterprises, especially from the SME sector, in continuous training of employees. In 2010 it concerned only 22.5% of all enterprises analyzed in the survey, whereas the EU average was 66%. The main reasons for this situation are: unfavorable work conditions and lack of institutional solutions encouraging micro, small and medium enterprises to train their employees. The barriers of lifelong learning in Poland, among working persons, mainly include: uncertainty of employment continuation resulting from the popularity of contracts for a fixed term and shift-work. It is confirmed by a higher level (on average) of these rates in Polish society than the average in EU. Furthermore, current demand of employers on competences is not stimulating enough to increase the quality of human capital. A significant number of employers do not undertake to train their employees, because they claim that employees' competences are sufficient for performing their duties. It may be evidence of a low level of development of these companies which do not see new needs of development. Employers forget that high competences are a key factor from the point of view of building competitive predominance.
6. The analysis clearly shows that the level of innovativeness is low, as well as the level of innovative activities of Polish enterprises, especially SMEs. There are numerous reasons for this, both internal and external. Most often, it is said that it is a whole system of education in Poland that does not contribute to any improvements of the level of innovativeness in enterprises.

7. A low level of innovation activities of enterprises, especially from the SME sector, results in low demand on high competences of employees and as an effect it has a negative influence on educational activity of the population, i.e. inclination to invest in development of competences. It is confirmed by research that employers are the main motive force propelling training activity. Training and courses are mainly financed from their resources; they are organized in the work time. The majority of training sessions and courses attended by adults is connected with their work. Furthermore, main motives of learning and development are connected with work. Nevertheless, there is also reverse dependence, i.e. lack of investments of employers in high competences is a factor hindering innovativeness and development of enterprises.

8. Undoubtedly, there is a need for changes in the system of continuous learning in the context of improving the level of innovativeness of SMEs. First of all, it is essential to involve numerous entities that influence the system of education, especially employers play an important role. Adjustment of competence courses and training to the needs of the market is possible only when employers (or employees) simply define what kind of knowledge and skills they expect and training companies will undertake to organize such classes (even if they are more expensive and more difficult to organize). Hence, it is essential to build cooperation between educational institutions, including universities and training institutions with business. In order to support improvement of qualifications of adults, we should support systems other than the formal one, which nowadays because of their flexibility and reference to the natural attitude to learning become more effective than the formal system of continuous education.

9. Podlaskie belongs to the regions with a low level of development, which is caused by, e.g. a low level of innovativeness in SMEs (dominating in the economy). The region, similarly to all Poland, is challenged with the problem of maladjustment of the employers' needs and occupational skills of employees/candidates for work, which is caused by the insufficient quality and adequacy of the educational offer. Another important step is to popularize participation of the population in continuous learning by means of: a model of learning for adults based on practical learning; developing an educational offer, promotion and incentives for persons professionally inactive, supporting occupational training.

10. Podlaskie has undertaken to implement solutions aiming at improvement of innovativeness of enterprises taking changes in the system of education (also continuous education) into consideration on the basis of *Program of development of smart specializations and entrepreneurship in Podlaskie voivodeship 2015-2020+*. Innovative entrepreneurship has been deemed as the most valuable attribute of the regional economy. It is also planned to support development of education in scope of innovative entrepreneurship at all stages of education, especially in the aspect of strengthening so called smart specializations. Achievement of this goal will require various activities of the main actors of the regional system of innovativeness. It will be based on consolidation of efforts for the benefit of development of innovativeness and entrepreneurship in the region, as well as effective cooperation in the form of quadruple helix (institutions of knowledge, entrepreneurs, administration and NGOs).

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