

# KNOWLEDGE AND CREATIVITY TOWARDS THE DEVELOPMENT OF CONTEMPORARY ECONOMY

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## Abstract

The article presents theoretical considerations on the formation of knowledge-based economy, with particular emphasis on human capital in this process. One of the significant development factors in the contemporary economy is knowledge – when it is correctly used and managed, it may become a key to economic success. Knowledge becomes a factor influencing the development of societies, enterprises and whole economies. In majority of developed countries, the economies tend to become knowledge-based economies with such main development determinants as education and development of human capital, increase in expenditure on research and development, high level of innovation, and establishment of information society. At present, it is emphasised that human capital is a crucial factor in long-term social and economic growth as it governs e.g. the possibilities of economy in the scope of generating technological change (*Welfe, 2007, p. 112*).

Therefore, it may have been observed in recent years that the interest in the development of human and intellectual capital is increasing as it directly determines the possibility of establishing knowledge society – creative, innovative, open to changes, able to create permanent social and economic relations. The importance of intellectual capital is emphasized also in creating information society and developing innovations which are the main determinants of today's economies (*Dobija & Rosolińska, 2008, p. 63*). The discussion on human capital no longer focuses on such issues as its significance for economic growth and for further social and economic development of each country. The thesis stating that human capital has a great role in the development has been already confirmed by numerous researchers. Continued considerations include other issues related to the improvement of human capital, new methods of measuring the quality of human capital, quality of life, relation with social capital, and definition of human capital as creative capital.

**Key words:** human capital, knowledge-based economy, creativity, European Social Found, Human Capital Operational Programme.

**Classification JEL:** J24 – Human Capital.

## 1. Introduction

Contemporary economy is defined as one where organizations and people acquire, create, disseminate, and use knowledge more effectively for socio-economic development. (*Dahlman & Andersson, 2000*). Because of the role of knowledge and technology in economic growth, the economy nowadays is called the knowledge-based economy (*The knowledge-based economy, 1996, p. 9*). The knowledge-driven economy concerns educational and skilled labour force, effective innovation system of firms, research centres, universities, consultants, and other organizations, economic incentives and institutional regimes, modern and adequate information infrastructure that facilitates the effective communication, dissemination, and processing of information and knowledge (*Dahlman & Andersson, 2000*).

The existing production factors used in the development process, that is land, work, capital, are gradually replaced with a new factor – knowledge. The significance of one of the basic production resources, that is human capital, has also changed. The role of quantitative dimension of work resources decreased with simultaneous increase in importance of qualifications, skills, creativity, education, and experience which enables the application of scientific and technological progress (*Gaczek, 2007, p. 44*). At present, the demand for knowledge may be compared to the demand for raw materials in the period of capitalist

expansion. According to Bell, knowledge and information are as much important as capital and work in industrial society (Bell, 1983, pp. 22–229).

The knowledge-based economy is determined by many factors and may have various forms of research and scientific centres, universities, laboratories which contribute to innovation, provide creative ideas, knowledge and skills. Its important factor is the ICT infrastructure that allows exchange of knowledge and information globally but the most important factor is human capital. Human capital is the most important resource in economy nowadays because it is a giver and user of knowledge. It contributes to the diffusion and use of knowledge, as well as its creation (Foray, 1995). Recently, the knowledge possessed by people has been more than information codified in files – now it is so-called tacit knowledge (Mempel-Śnieżyk, 2010, pp. 48–56). Only human capital can use codified knowledge and adapt it to changing conditions of economy.

The aim of this paper is to present the theoretical aspect of the knowledge-based economy and the importance of human capital in this process. This paper focuses on human capital as a creator and user of knowledge in changing economy. Examples of actions and activities aimed at strengthening the human capital are also described in the article.

The methods applied in the studies included desk research analysis and comparative analysis. The desk research analysis involves the study of secondary sources such as literature on the subject, studies and reports concerning earlier research, as well as statistical data.

## 2. Theoretical aspect of knowledge-based economy

The literature dealing with the discussed issue defines the knowledge-based economy in different ways (Chojnicki, 2006, p. 18). To give some examples:

- It is a type of economy where knowledge becomes a factor that is more important than outlays and condition of fixed assets and determines the rate of development and level of economic development (Zienkowski, 2003, p. 15);
- It is that part of economy which is determined by technological knowledge and innovation based on this one which may be used in the production of new goods and services. ICT innovations are considered as particularly significant for the development of knowledge-based economy;
- It is created not only by innovative influences but also by the processes of training and educating the economic entities – both preparatory ones and those occurring in the course of business activity. In terms of the knowledge-based economy, the education is a process which consists in acquiring qualifications and skills (not only knowledge) that leads to achieving greater success in the achievement of objectives set by individuals or organisations. From the educational point of view, the knowledge-based economy should be the economy of learning people (Chojnicki, 2003, p. 319);
- It is characterised by organisational and institutional determinants of business activity which effectively influence the absorption of knowledge and innovation as well as economy competitiveness. It also refers to the social sphere, especially the establishment of the so-called social capital, and the pursuit of the scientific policy of a state.

J. Woroniecki claims that “the benefits from innovation, including ICT, for the economic growth are determined by a set of different factors and applied policy in the area of rules of competition and reform of regulation, liberalisation of trade, foreign investment and telecommunications, conditions of operating the Internet and electronic trade, support for newly established innovative enterprises, intensity of relations between science and industry

(services), taxpayers' support for R&D, including basic sciences, development and improvement of personnel," (*Wroniecki, 2001, p. 66*).

In terms of microeconomy, small and medium enterprises are essential for the knowledge economy because the source of their competitive advantage includes 'knowledge-intensive' undertakings. While in terms of macroeconomy, the essence of such economy is fast development of fields connected with information processing and knowledge development (in particular biotechnology, genetics, biochemistry) and high-tech industry sectors. Although there is not any generally accepted definition of knowledge-based economy in the literature, the majority of definitions refers to a set of features characteristic of economy based directly on creating, sharing and using knowledge and information. The aforementioned characteristics include but are not limited to the following (*Kamińska, 2007, pp. 21–24*):

- Significant share of funds assigned to research and development, intellectual services, information and telecommunications products, and services in gross domestic product;
- Developed infrastructure necessary to implement high technologies;
- Ordered legal system together with the effective system of enforcing legal provisions that ensures high level of transaction security (mutual trust of entities operating in the market);
- Effective inclusion of social policy in the market (especially the labour market), which gives the possibility of keeping up with dynamically changing demand for human capital with specific qualifications and thus reducing the margin of social groups which do not have adaptive skills in increasingly more demanding labour market.

The knowledge-based economy is a post-industrial phase of development characterised with the intensification of relations between processes of knowledge creation – knowledge distribution – knowledge use. An attempt to systematize the knowledge economy results in defining the following subsystems: institutions (higher education institutions, research and development units, and scientific and technological parks), technologies (communications, IT, automation, computer control), infrastructure (telecommunications, transport, energy, environmental protection), and stimulators (modern management of economic processes, human capital management), (*Parteka, 2007, p. 85*).

Pursuant to OECD and the World Bank, the knowledge-based economy is such an economy where knowledge is created, shared and used more effectively by enterprises, organisations, individuals and communities, and thus facilitates faster socio-economic development (*Dahlman & Andersson, 2000, p. 11*). The result of joint activities undertaken by OECD and the World Bank is the publication which includes the analysis of the process of transformation into knowledge-based economy with the following elements distinguished within it (*Kukliński, 2001, p. 93*):

- Development of a system creating incentives to use the existing knowledge more effectively, create new knowledge, dismantle obsolete activities and start more effective new business activities;
- Educated and entrepreneurial society which can create and use new knowledge;
- Dynamic information structure which facilitates the processes of information processing and dissemination;
- Effective system of innovations which encompasses companies, science, research centres, universities, consulting companies and other organisations which may base their cooperation on using the global knowledge resources, adapting it to local needs, and using it to create new knowledge and technologies.

Thus, we may state that the basic factor creating the knowledge economy is the society equipped with relevant resources, skills and willingness to think and act in the long term that is the so called human capital (*Derlukiewicz, 2011, p. 38*).

### **3. Human capital in knowledge-based economy: progress and vision**

The importance of human capital shown in scientific works dating to 1950s and 1960s has evolved and changed. The perception of human capital as one of the basic production resources ceased upon transformation into new economy based on knowledge. More than 50 years ago, such researchers as Schultz (*Schultz, 1961*), Becker (*Becker, 1964*), McNulty (*McNulty, 1980*) and Mincer (*Mincer, 1981*) introduced the issue of human capital to the theory of economic growth to enable its evolution. Nowadays, human capital is considered as the basic element of contemporary economy. Qualified and experienced workforce as well as scientific personnel is viewed as knowledge carriers. Knowledge held by human capital may be a decisive factor in creating, disseminating and implementing new ideas. Human capital gradually becomes a factor influencing the long-term rate of return, and the investments in human capital have internal effects such as increase in work output, and external effects in a form of tangible capital productivity growth. Human capital as an economic growth factor is presented in the literature on the subject according to two approaches. Pursuant to the first approach, its accumulation directly contributes to the economic growth, while in the second approach – human capital is considered as an important element in such a growth which additionally influences the creation of innovation and better assimilation of new technologies (*Bagieńska, 2008, p. 230 Kwon D-b., 2009, pp. 1–2*).

From the economic point of view, human capital encompasses intangible assets which may be used in the development process (*Gaczek, 2007, p. 44*). Dawid and Foray pay attention to increasingly more important role of intangible capital for the economic development in the 20<sup>th</sup> century. They emphasise two types of investments in human capital. The first group is directed at production and distribution of knowledge (trainings, education, research and development, information and coordination). The second group encompasses outlays on health aimed at keeping appropriate condition of this capital (*Różga, 2004, p. 33*).

It is assumed that the basis of economic success is knowledge creation and information acquisition and processing. It should be emphasised that knowledge is a basic resource and its contribution is a significant element of majority of products. Therefore, the basis for the knowledge-based economy is not only the fact of having knowledge or information but the ability to process information and use knowledge to create new knowledge and innovation (*see: Derlukiewicz, 2009, pp. 35–60*). On the other hand, interpenetration and processing of information to obtain specific solutions guaranteeing the progress can be ensured by such human capital that is open to knowledge and capable of creative thinking. The features which become increasingly more important in the knowledge-based economy are those characteristics of human capital which enable quick adaptation of technical and organisational solutions, that is education in the scope of high technologies, being skilled in predicting changes, abilities in the scope of strategic management, creativity, openness to new knowledge and information, and other. People are creators of tacit knowledge existing in parallel with codified knowledge (*see: Mempel-Śnieżyk, 2009, p. 83*). They acquire it thanks to their skills, abilities, predispositions, qualifications, experience. It is a kind of secret knowledge held only by a given individual or group of people and its acquisition and improvement are difficult to measure. Markowska (*Markowska, 2007, p. 39*) claims that – pursuant to the materials by OECD concerning knowledge-based economy – it is easier to measure the conditions facilitating the creation of knowledge than the knowledge which is strictly connected with people who hold it.

Due to the importance of human capital, many countries have tried to measure their human capital. It can be helpful to understand both their current status as well as various ways to improve human capital implemented thereafter in some countries. “Therefore it can be recognized that human capital measurement is an important source in terms of suggesting various policies regarding human resources,” (Kwon D-b. 2009, p. 3).

According to OECD, the index of human capital measures should take into account the following issues (Kwon D-b. 2009, p. 8):

1. Investment in human capital.
  - 1.1. High-level qualification.
  - 1.2. Graduation and enrollment rates.
  - 1.3. Time invested in education.
  - 1.4. Investment in education.
2. Quality adjustment in human capital investments.
  - 2.1. PISA assessments.
  - 2.2. PUIAAC (Program for the international assessment of adult competencies).
3. Results of education.
  - 3.1. Matching of education to occupation.
  - 3.2. Labour market outcomes by age, gender, and educational attainment.
  - 3.3. Rates of return to education.

At present, we can observe the progress in human capital theory and new approaches concerning human capital measurement. In this context, the Human Capital Index and the Human Development Index should be introduced. The Human Capital Index is a new approach for measuring life expectancy, knowledge, and a decent standard of living, that is the level of human capital development in many countries around the world (*see: The Human Capital Report, 2013*). The Human Development Index (original HDI) effective from 2010 focuses on three dimensions of human capital: education, long and healthy life (former 'life expectancy'), and living standard. The HDI approach focuses on issues concerning health as a basic component of human capital, long-term planning to eliminate the wasting of human capital potential resulting in growth and productivity of countries, and aims to take into account the individual life course (*see more: Technical Notes 1, Human Development Report 2013*).

New trends in human capital measurement refer to social capital and creativity. The human capital measurement takes into account social aspect, relations, cooperation, family networks as elements that strengthen contemporary human capital. It emphasises individual acts in the network of relations in contrast with individual isolation.

The second approach is connected with a significant process occurring in contemporary economy – a strong tendency to concentrate human capital. It is emphasised that at present, human capital tends to accumulate in selected world metropolises, and the literature on the subject tries to explain the reasons why only selected metropolises are the centres accumulating not exactly human capital but its derivative – the creative capital (*Florida, 2005, p. 1*). *Inter alia*, it results from entering a new economy that is no longer named by some researchers the knowledge-based economy as “the knowledge economy as we know it is being eclipsed by something new – call it the Creativity Economy. (...) U.S. companies are evolving to the next level of economic activity. What was once central to corporations – price, quality, and analytical work associated with knowledge – is being shipped off to highly trained Chinese and Indians, as well as Hungarians, Czechs, and Russians. Increasingly, the new core competence is creativity – the right-brain stuff that smart companies are now harnessing to generate top-line growth. The game is changing. It isn't just about math and

science anymore. It's about creativity, imagination, and, above all, innovation," (Nussbaum 2005, p. 52, as cited in Kukliński, 2006, p. 287).

So how can we define creativity and can we learn it? Many researches in this field try to find answer to those questions. It is worth noting that creativity is not exclusively an innate gift. Everyone is creative in some way, and also can learn to use his/her creative potential. In our rapidly-changing world, we should therefore strive to foster creative, entrepreneurial and intercultural skills that will help us better respond to new economic and social challenges. Quality cultural and art education has an important role to play in this regard, as it has the potential to reinforce imagination, originality, concentration, interpersonal skills, taste for exploration, critical and nonverbal thinking, etc. among learners (*Green Paper, 2010, pp. 19–20*). It is worth emphasising that different types of courses and workshops aimed at stimulating creativity especially in working/adult people become more and more widespread.

Although it is difficult to explicitly refer to the definition of creativity, it is undoubtedly necessary to mention the idea of creative class introduced by R. Florida in which he claims that economic growth is partially driven by generation of new ideas arising from the combination of the existing knowledge in a new way, which is in line with what has been written hereinabove. Pursuant to the author, the creative class is a group of people whose profession requires them to perform creative work – be creative. This group includes scientists, engineers, writers, actors, fashion designers, poets, graphic designers, architects, as well as performers, editors-in-chief, media people, influential people in popular and elite culture, advising teams, as well as any other opinion-forming circles (*cf. Florida, 2002*). "Moreover, the creative class encompasses professionals from the areas of modern technology, financial and legal services, management, and medicine – people whose work involves solving problems in a creative way and searching for innovative solutions," (*Kopel, 2005, p. 34*).

Friedman (Friedman 2005, p.441) quotes from Albert Einstein's observations that imagination is much more important than knowledge. Yet, it may be viewed as an apparent paradox because "in fact, knowledge and imagination are two integrated elements of complex phenomenon of creativity," (*Kukliński, 2006, p. 287*).

#### **4. The development of human capital in Poland on the example of the Human Capital Operational Programme**

As mentioned earlier, the development of contemporary economy is strongly supported by human capital. Therefore, each country undertakes the activities aimed at the development and strengthening of its capital. An excellent example of such activities in Poland is the Human Capital Operational Programme (HC OP) which enabled the use of means from the European Social Fund in the years 2007 – 2013, and thus contributed to the improvement of human capital in Poland. The Human Capital Operational Programme is a response to the challenges faced by EU member states and posed by the renewed Lisbon Strategy. Such challenges include making Europe a more attractive place to invest and work, improving knowledge and innovation, and creating bigger number of permanent jobs. Through the implementation of the common priority as well as the detailed objectives, the programme was to contribute to the realisation of the guidelines of the renewed Lisbon strategy at the national level. The detailed objectives which should be particularly emphasised within this programme are as follows: improving the adaptability of workers and enterprises to changes in economy, and promoting education in the society at all education levels combined with improving the quality of education services, and ensuring that they more effectively address the needs of knowledge-based economy (*Human Capital Operational Programme. 2007, p. 5*).

The objective of this programme was to enable full utilisation of human resources potential by increasing employment and enhancing the adaptability of enterprises and their personnel, improving the workforce health, raising the level of education in the society, reducing the areas of social exclusion, and supporting the development of state administrative structures. This programme was implemented to facilitate the socio-economic development of Poland, increase the employment, and enhance the social, economic and territorial cohesion with the countries in the European Union (<http://www.kapitalludzki.gov.pl>).

In order to achieve the set objectives in the years 2007 – 2013, the so-called priorities had been developed which were implemented at the central level (priorities 1 – 5) and at the regional level (priorities 6 – 9).

The priorities implemented at the central level included the following:

- I. Employment and social integration – this priority included three detailed objectives aimed at the best possible full utilisation of the resources of national institutions cooperating with the unemployed and socially excluded persons. Another equally important goal was to counteract the discrimination on the labour market through equal treatment in recruitment process, regardless of the sex.
- II. Development of human resources and adaptation potential of enterprises and improving the health condition of working persons – it supported the transfer between economy and science, development of R&D (research and development), advising services for entrepreneurs and the employed, and care for their health.
- III. High quality of the educational system – it paid attention to improving the performance of the educational system and reconciling the employers' and employees' needs with the labour market.
- IV. Higher education and science – it was focused on improving the qualifications of R&D employees, creating the possibilities of more effective management of higher education institutions to contribute to better development of the contemporary economy through new fields of studies.
- V. Good governance – it improved the operation of public administration and thus contributed to better management of resources.

At the regional level, the financial funds were divided and received by each of sixteen voivodeships to support such priorities as:

- VI. Labour market open for all – it included six detailed objectives which were aimed at adapting the entrepreneurs and the employed to changes in economy, supporting professionally unexperienced persons, mothers, persons aged 45+ and those unemployed for a longer period of time.
- VII. Promotion of social integration – it eliminated psychological, organisational and legal barriers that were encountered by the unemployed and the disabled to make the labour market more accessible for them.
- VIII. Regional human resources for the economy – it improved the positive image of local market, motivated the employees from different sectors to cooperate, and supported their activities.
- IX. Development of education and competences in the regions – it focused on educational entities (mainly in rural areas) that coped with difficulties in the scope of education services. It supported additional education for students in a form of out-of school and extra-curricular activities (*Babiak, 2008, p. 186*).

It should be emphasised that the HC OP included a wide range of issues related to human capital development beginning from unemployment and ending with the improvement

of specialist knowledge and skills by working persons. Moreover, it was targeted at different groups and therefore we may call it an example of comprehensive support for human capital in Poland. The beneficiaries of the assistance provided within the programme included the entities in difficult financial situation, micro-, small or medium entrepreneurs, the unemployed, workers, and the disabled.

The assistance within the HC OP was provided in the following scope:

1. Job subsidies – creation of new jobs, acquisition of new employees, financing of jobs intended for the disabled.
2. Employees' recruitment – especially finding the persons willing to work and being in difficult situation in life.
3. Trainings – reimbursement of resources assigned to this goal.
4. Advisory services – for micro-, small and medium entrepreneurs.
5. *De minimis* aid – it could be used to start business activity, purchase services or get trainings (Szewczak, 2009, p. 399).

More than EUR 11.7 billion was given for the implementation of projects within the HC OP. The national counterpart made up of both private and public expenditure – amounted to EUR 1.7 billion (15% of the total amount) and the European Union provided more than EUR 10 billion (85%). 34% of all funds in the budget of the European Social Fund were assigned to the improvement of human capital (cf. Figure 1). Almost 3.5 billion euros (29.1%) was assigned to finance the priorities implemented at the central level, the regional projects were supported with almost 7.9 billion euros (67%), and the technical assistance was given 455 million euros (3.9%). More than 6.7 million people, that represent 17% of Polish population, took part in the projects financed from the HC OP in Poland.

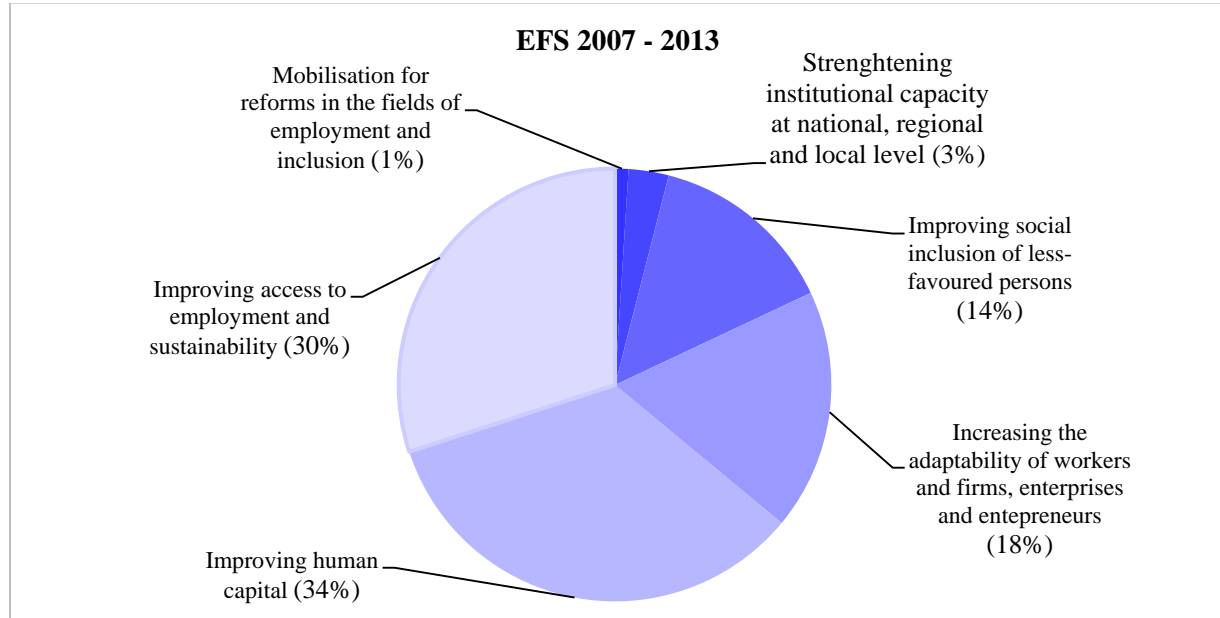


Figure 1: European Social Found Budget 2007 – 2013

(European Social Found: Investing in people 2007 – 2013, Statistical Sheet

<http://ec.europa.eu/esf/main.jsp?pager.offset=65&catId=3&langId=pl&pubLang=en> 25.11.2013)



Table 1: Projects aimed at human capital improvement co-financed within the Human Capital Operational Programme 2007 – 2013

Project title	Implemented activities
<i>Supporting the development of professional qualifications and advisory services for enterprises</i>	Trainings and advisory services for managerial personnel and employees in enterprises; advisory services for micro-, small and medium enterprises; vocational trainings, courses and advising for working adults who want to acquire new skills or improve their qualifications on their own initiative.
<i>Promoting the education for adults within school education forms</i>	School education forms for adults who are interested in acquiring, supplementing or improving general education or professional qualifications on their own initiative.
<i>Improving the adults' competence in the scope of ICT and knowledge of foreign languages</i>	Trainings and courses for adults who are interested in acquiring, supplementing or improving their skills and competence in the areas of ICT skills and knowledge of foreign languages on their own initiative.
<i>Providing advisory services for adults in the scope of diagnosing their needs and choosing the directions and forms of improving their competence and qualifications</i>	Advisory services for adults who are interested in obtaining assistance in the scope of diagnosing their needs and choosing and finding adequate educational and training offer on their own initiative.
<i>Managers' academy</i>	Improving the professional qualifications of employees, the self-employed, and the owners of micro- and small enterprises in the Małopolskie voivodeship.
<i>Design the success of your company – innovative industrial design as a chance for designers from the Małopolskie voivodeship</i>	Trainings in the scope of business issues such as finance, marketing, and sales, legal determinants as well as prototyping and specialist design.
<i>E-controlling academy</i>	Trainings in the scope of financial controlling, financial analysis, age management, and application of modern IT tools to company management.
<i>DiAMEnT – see the possibilities, recognise abilities, energy and talents</i>	An innovative project that aims at developing new ways of working with talented students. The project was focused on English, mathematics, information and communications technologies, entrepreneurship areas.
<i>Mature business incubator</i>	Improving the entrepreneurial skills in people aged 45+. A project providing trainings and advisory services.
<i>Innovation creators</i>	A training project targeted at acquiring practical knowledge in the scope of research and development works, including the principles of commercialisation and protection of intellectual property.
<i>The creative self-employed</i>	A project of informational nature promoting entrepreneurial spirit and self-employment and dissemination of good practices, that is of persons and companies achieving professional successes in the sector of culture and creative industries.
<i>Digital Creativity Laboratory</i>	Development of efficient methods of cooperation targeted at the development of professional competence, the use of modern technologies (interactive boards and e-learning platform) in vocational education, and the improvement of skills in the scope of creative and effective use of modern IT technologies in the process of professional competence education.

(own work on the basis of: <http://www.pokl.dwup.pl/informacje-dla-mediow/697.html>, <http://www.projektypokl.fundusze.malopolska.pl>, [https://www.efs.gov.pl/dzialaniapromocyjne/Documents/Dobre\\_Praktyki\\_2012\\_INTERNET.pdf](https://www.efs.gov.pl/dzialaniapromocyjne/Documents/Dobre_Praktyki_2012_INTERNET.pdf), [http://inbit.pl/index.php?option=com\\_content&view=article&id=170&Itemid=282](http://inbit.pl/index.php?option=com_content&view=article&id=170&Itemid=282), [http://www.rotwl.pl/dobre\\_praktyki\\_efs\\_2010\\_za\\_projekt.1093.0.0.html](http://www.rotwl.pl/dobre_praktyki_efs_2010_za_projekt.1093.0.0.html), <http://www.scdn.pl/index.php/projekty/projekty-efs/761-projekt-laboratorium-cyfrowej-kreatywnoci>)

The funds being the national counterpart came from the state budget, territorial units or other sources such as the State Fund for Rehabilitation of Disabled Person (PFRON), the Labour Fund, the National Health Fund (NFZ), (*Babiak, 2008, p. 190*).

Thus far, the realisation of the HC OP has resulted in the implementation of numerous projects both at the central and regional level. It is worthwhile to list at least some projects which were aimed at human capital development in Poland (Table 1).

The projects listed in Table 1 are only the examples of selected projects which led to the improvement of human capital quality in Poland. The implementation of all activities undertaken within the HC OP significantly contributed to strengthening the knowledge-based society through the development of human capital by means of improving professional qualifications and adapting the skills to the needs of the labour market. In this context, it is important to prepare the unemployed and job-seekers to use modern information and communications technologies, including the use of the Internet. Furthermore, the improvement of knowledge in the scope of technologies (e.g. biotechnologies, new materials, IT), skills at using information and communications technologies, knowledge of modern forms of management and organisation will cause that the enterprises will be open to new technologies, and their potential and competitiveness will increase.

The EU funds used in the years 2007 – 2013 in Poland resulted in more than 320 thousand new jobs, about 140 thousand children receiving kindergarten education, about 45 thousand kilometres of broadband Internet, more than 5.5 thousand of new e-services (results of European Funds 2007 – 2013). It should be also emphasised that the EU funds are not the only form of human capital strengthening and improvement and promotion of creative thinking.

The summary and assessment of the effects of implementation show that the success was achieved in the scope of vocational education, establishment of demanded fields of studies in education institutions, education, or good governance. The measures undertaken in the scope of supporting human capital will be continued in the next financial perspective for the years 2014 – 2020 in the Programme of Knowledge, Education, Development.

## 5. Conclusions

Knowledge and creativity, which are the essence of human capital, have an important role in the development of contemporary economy. The review of literature as well as reports and studies on human capital shows that this issue is still current and evolving. The researchers in this field suggest different approaches and methods of its measurement. Rapid changes occurring in contemporary economy (globalisation, technological progress) are accompanied with the need of skilful use and development of human capital in such a way that it generates economic benefits. It means that human knowledge together with creativity should be transformed into new products, services, and technological, organisational or marketing solutions. The authorities of each country are aware of it and – apart from the activities aimed at the improvement of their own human capital – they also want to attract foreign human capital by creating “a good offer”, that is preparing cultural and entertainment facilities, increasing the quality of health care system, safety, and technical, social and institutional infrastructure. The outflow of human capital (educated and often experienced, e.g. physicians) from a country may have disastrous effects. Therefore, each country undertakes the activities aimed at keeping its human capital in (e.g. the purchase of flats on preferential terms, support for the SME sector). At present, the concept of life-long learning (Lifelong Learning Programme) becomes increasingly more popular. It promotes learning activities throughout life, which also motivates individuals and companies to act, that is to expand their knowledge, acquire new qualifications or at least to be up to date. The guidelines

of the programme refer to e.g. support for the process of adapting to new social and economic conditions in the perspective of united Europe, promotion of creativity, competitiveness, employability and the growth of entrepreneurial spirit, support for the development of innovations and use of modern communications technologies (*Lifelong Learning Programme 2013*, pp. 5–6).

As mentioned in the article, the investments in human capital in recent years have had different forms such as courses, trainings, workshops, etc. An example of the programme implemented in Poland in the years 2007 – 2013 is the Human Capital Operational Programme which resulted in the implementation of numerous projects aimed at human capital development. It should be also emphasised that in the next programming period, that is in the years 2014 – 2020, the activities and projects aimed at human capital development will be promoted and supported with the EU funds. This time, the continuation of human capital development projects will be backed up with the experience of the financing period that is coming to an end, which gives greater chances for better projects and activities improving the quality of human capital (accurately adapted to the market needs).

### References:

- [1] Babiak, J. (2008). Wzrost innowacyjności polskiej gospodarki dzięki Programowi Operacyjnemu Kapitał Ludzki. Babiak, J. (ed.). *Fundusze europejskie a innowacyjność polskiej gospodarki*. Warszawa: Studio Emka.
- [2] Bagieńska, A. (2008). Kapitał ludzki jako czynnik rozwoju gospodarczego regionu. *Zeszyty Naukowe Nr 501. Ekonomiczne i organizacyjne instrumenty wspierania rozwoju lokalnego i regionalnego. Przedsiębiorczość, instytucje wsparcia i gospodarka finansowa*. Szczecin: Wydawnictwo Uniwersytetu Szczecińskiego.
- [3] Becker, G. S. (1964). *Human Capital*. USA: Columbia University Press.
- [4] Bell, D. (1983). *Technika łączności*, „Przegląd zagranicznej Literatury Progностycznej”, Polska 2000 (seria Komitetu PAN). 02.09.1983.
- [5] Chojnicki, Z. (2003). *Charakter i rola wiedzy naukowej w rozwoju społeczno-gospodarczym*. Kukliński, A. (red.). *Gospodarka oparta na wiedzy. Perspektywy Banku Światowego*. Warszawa: KBN.
- [6] Chojnicki, Z. & Czyż, T. (2006). *Aspekty regionalne gospodarki opartej na wiedzy w Polsce*. Poznań: Bogucki Wydawnictwo Naukowe.
- [7] Dahlman, C. J. & Andersson T. (ed.). (2000). *Korea and the Knowledge-based Economy: Making the Transition*. OECD: World Bank Institute, Paris.
- [8] Derlukiewicz, N. (2009). *Regionalne strategie innowacji jako czynnik wzrostu konkurencyjności regionów w Unii Europejskiej*. Wrocław: Uniwersytet Ekonomiczny we Wrocławiu.
- [9] Derlukiewicz, N. (2011). Wybrane przedsięwzięcia wspierające innowacyjność realizowane w Unii Europejskiej w kontekście budowania gospodarki opartej na wiedzy. Korenik, S. & Łyszczak, M. (eds.). *Kształtowanie się nowej przestrzeni w gospodarce globalnej. Prace Naukowe UE we Wrocławiu, 195*. Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.
- [10] Dobija, D. & Rosolińska, A. (2008). New challenges for financing business in the knowledge-based economy. Runiewicz-Wardyn, M. (ed.). *Knowledge-based economy as factor of competitiveness and economic growth*. Warsaw: Leon Kozminski Academy of Entrepreneurship and Management.
- [11] European Social Found. (2008). *Investing in people 2007 – 2013, Statistical Sheet (01.01.2008)*. (online) Available on: <http://ec.europa.eu/esf/main.jsp?pager.offset=65&catId=3&langId=pl&pubLang=en> 25.11.2013
- [12] Florida, R. (2005). *Cities and the Creative Class*. New York – London.
- [13] Florida, R. (2002). *Rise of the Creative Class. And how it's Transforming Work, Leisure, Community, and Everyday Life*. New York.

- [14] Foray, D. (1995). Accessing and Expanding the Science and Technology Knowledge Base. *STI Review*, 16. Paris: OECD.
- [15] Freeman, C. (1995). The National System of Innovation in Historical Perspective. *Cambridge Journal of Economics*, 19, 5–24.
- [16] Friedman, T. L. (2005). *The world is flat. A brief history of the Twenty First Century*. New York: Farrar, Straus and Giroux.
- [17] Gaczek, W. M. (2007). Kapitał ludzki i kapitał społeczny a innowacyjność gospodarki regionu. Jewtuchowicz, A. (ed.). *Region w gospodarce opartej na wiedzy*. Łódź: UŁ.
- [18] [http://inbit.pl/index.php?option=com\\_content&view=article&id=170&Itemid=282](http://inbit.pl/index.php?option=com_content&view=article&id=170&Itemid=282).
- [19] <http://www.kapitalludzki.gov.pl>.
- [20] [http://www.rotwl.pl/dobre\\_praktyki\\_efs\\_2010\\_za\\_projekt,1093,0,0.html](http://www.rotwl.pl/dobre_praktyki_efs_2010_za_projekt,1093,0,0.html).
- [21] <http://www.scdn.pl/index.php/projekty/projekty-efs/761-projekt-laboratorium-cyfrowej-kreatywnosci>.
- [22] [https://www.efs.gov.pl/dzialaniapromocyjne/Documents/Dobre\\_Praktyki\\_2012\\_INTERNET.pdf](https://www.efs.gov.pl/dzialaniapromocyjne/Documents/Dobre_Praktyki_2012_INTERNET.pdf)
- [23] [https://www.mrr.gov.pl/fundusze/fundusze\\_europejskie/wykorzystanie\\_funduszy/Efekty/Strony/start.aspx](https://www.mrr.gov.pl/fundusze/fundusze_europejskie/wykorzystanie_funduszy/Efekty/Strony/start.aspx) 24.11.2013.
- [24] Kamińska, T., Fryca, J. & Majecka, B. (2007). *Efektywność gospodarki opartej na wiedzy*. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.
- [25] KOPEL, A. (2007). *Klasa kreatywna jako czynnik rozwoju miast*. Sosnowiec: Oficyna Wydawnicza „Humanitas”.
- [26] Kukliński, A. (2001). Gospodarka oparta na wiedzy – trylogia OECD. Kukliński, A. (red.). *Gospodarka oparta na wiedzy. Wyzwanie dla Polski XXI wieku*. Warszawa: KBN.
- [27] Kukliński, A. (2006). *Ku kreatywnej Europie XXI wieku*. Artykuł dyskusyjny w ramach działalności naukowej Katedry Studiów nad Przyszłością Europy, WSB-NLU w Nowym Saczu. 2006. (online) Available on: [http://www.instytut.info/images/stories/ksiazki/01\\_ue\\_sl\\_gow/r19.pdf](http://www.instytut.info/images/stories/ksiazki/01_ue_sl_gow/r19.pdf) 11.05.2012
- [28] Kwon, Dae-Bong. (2009). Human capital and its measurement. *The 3rd OECD World Forum on “Statistics, Knowledge and Policy” Charting Progress, Building, Vision, Improving Life*. Busan, Korea 27-30 October 2009. (online) [cit. 24.11.2013] Available on: <http://www.oecd.org/site/progresskorea/44109779.pdf> 24.11.2013.
- [29] Markowska, M. (2007). Zróżnicowanie europejskiej przestrzeni regionalnej w świetle koncepcji gospodarki opartej na wiedzy. Strahl, D. (ed.). *Gospodarka lokalna i regionalna w teorii i praktyce. Prace Naukowe AE we Wrocławiu nr 1161*. Wrocław: Wydawnictwo AE we Wrocławiu.
- [30] McNulty, P. J. (1980). *The Origins and Development of Labor Economics*, 192–200, Boston: MIT Press.
- [31] Mempel-Śnieżyk, A. (2010). *Lower Silesia region in knowledge-based economy (chosen aspects)*. Korenik, S. & Sasek, M. (eds.). *Spatial economy – contemporary determinants, trends and tendencies* Polish Academy of Sciences. Warsaw.
- [32] Mempel-Śnieżyk, A. (2009). *Terytorialne systemy produkcji jako podstawa rozwoju lokalnego na przykładzie Dolnego Śląska*. Wrocław.
- [33] Mincer, J. (1958). Investment in Human Capital and Personal Income Distribution. *Journal of Political Economy*, 1958.
- [34] Ministerstwo Rozwoju Regionalnego. (2013). *Efekty Funduszy Europejskich 2007 – 2013*. (online) Available on: [https://www.mrr.gov.pl/fundusze/fundusze\\_europejskie/wykorzystanie\\_funduszy/Efekty/Strony/start.aspx](https://www.mrr.gov.pl/fundusze/fundusze_europejskie/wykorzystanie_funduszy/Efekty/Strony/start.aspx).
- [35] Ministerstwo Rozwoju Regionalnego. (2013). *Oceniono wdrażanie projektów systemowych w POKL*. (Online) Available on: <http://www.fundusze-europejskie.pl/dotacje-spoza-ue/0,0,a,4746,oceniono-wdrazanie-projektow-systemowych-w-pokl.html> 24.11.2013
- [36] Ministerstwo Rozwoju Regionalnego. (2007). *Program Operacyjny Kapitał Ludzki. Narodowe Strategiczne Ramy Odniesienia 2007 – 2013*. Warszawa.

- [37] Nussbaum, B. (2005). Get creative – How to Build Innovative Companies? *Business Week*, August 2005.
- [38] Parteka, T. (2007). Polskie regiony w realizacji Strategii Lizbońskiej. Szlachta, J. & Woźniak, J. (red.). *Rozwój regionalny Polski w warunkach reformy europejskiej polityki spójności w latach 2007 – 2013. Biuletyn KPZK, Zeszyt 231*. Warszawa: KPZK PAN.
- [39] Program. (2013). „Uczenie się przez całe życie”, *Zaproszenie do składania wniosków 2011 – 2013. Priorytety strategiczne 2013*. (online) Available on: [http://ec.europa.eu/education/llp/doc/call13/prior\\_pl.pdf](http://ec.europa.eu/education/llp/doc/call13/prior_pl.pdf).
- [40] Różga, R. (2004). Gospodarka oparta na wiedzy a rozwój regionalny na przykładzie regionu środkowego Meksyku. *Studia Regionalne i Lokalne*, 1(15).
- [41] Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, March 1961.
- [42] Szewczak, M. (2009). Udzielanie pomocy publicznej w ramach Programu Operacyjnego Kapitał Ludzki oraz w ramach regionalnych programów operacyjnych. Bajko, Z., Józwik, B. & Szewczak, M. (eds.). *Fundusze UE w Polsce na lata 2007 – 2013*. Lublin: KUL.
- [43] Technical Notes. (2013). *Technical Notes 1 Human Development Report 2013, The Rise of the South Human progress in a Diverse World*.
- [44] Welfe, W. (2007). *Gospodarka oparta na wiedzy*. Warszawa: PWE.
- [45] World Economic Forum. (2013). *The Human Capital Report*. Geneva, Switzerland.
- [46] Wroniecki, J. (2001). Nowa gospodarka: miraż czy rzeczywistość? Doktryna praktyka. Kukliński, A. (ed.). *Gospodarka oparta na wiedzy. Wyzwanie dla Polski XXI wieku*. Warszawa: KBN.
- [47] Zielona Księga. (2010). *Zielona Księga w sprawie uwalniania potencjału przedsiębiorstw z branży kultury i branży twórczej*. Dokument Komisji Europejskiej KOM (2010) 183. Bruksel. 19–20. (online) Available on: <http://www.europa.eu>.
- [48] Zienkowski, L. (2003). Gospodarka „oparta na wiedzy” – mit czy rzeczywistość? Zienkowski, L. (red.). *Wiedza a wzrost gospodarczy*. Warszawa. Wydawnictwo Naukowe Scholar.

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