

TRIAD: BUSINESSES – UNIVERSITIES – MUNICIPALITY (REGIONS) WITHIN KNOWLEDGE ECONOMY

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1 INTRODUCTION

1.1 Formulation of a problem

The idea of *knowledge economy* is connected with works of P. Drucker which he wrote in late 1960's of 20th century (*The effective Executive, The Age of Discontinuity, Post-Capitalist Society*). In the respective period, Drucker [3] identifies significant macroeconomic changes in market environment. It is the processes connected with the transition from industrial towards post-industrial society and the transition to both society and economy based on pieces of knowledge, which are closely connected to the onset of new information-communication technologies (IKT). According to Drucker, knowledge in the knowledge economy is used to produce knowledge; i.e. to search for the best ways of using disposable information, for new solutions, for evaluation and decision, which new knowledge is necessary, if obtaining these pieces of knowledge is meaningful and what is necessary to do to ensure the efficiency of their usage. In other words, knowledge is used for systematic and deliberate production of new knowledge and innovation. Science, technology, progress with no limits – this is the characteristics of the global knowledge society nowadays, which will be built on knowledge workers, their cooperation and creative communication. Similar approaches can be found in works of other authors as well [e.g. 12, 20, 21, 22, 23, etc.]

In the knowledge economy, human (intellectual) and knowledge capital represent the main sources of development of both society and regions, because it contributes to the creation and spreading of technological progress, increases the efficiency of capital usage which also contributes to increases in productivity. Many empirical studies have already confirmed its positive influence on economic development, as well as its indirect impact upon on standards of living in a society. Changes, which are taking place in the economy in both this and future time periods towards knowledge based activities, increase the demand for human resources, namely their quality/qualifications and creativity. Society, regions and businesses therefore become dependent on the ability to create, develop and use knowledge and skills in their value-creating transformation process. Based on the abovementioned, investing into quality (qualifications) of

human capital seems to be an adequate tool of both business and human resource policies. Therefore, institutions and processes that produce knowledge become very significant. Quality of education and science, qualified human resources have an irreplaceable position in the process of creation and transfer of knowledge, which we perceive as a prerequisite of long-term economic development. Quality education system in the country (region) is the determinant of creation and usage of knowledge and skills for economic development.

Education and economy need to be interactively connected: education should be adjusted to the needs and possibilities of economy (regions) and the same vice versa; the potential and productivity of the economy (regions) are influenced to a great extent by the quality of education and its product – qualified and creative labour force. Education systems in the country (regions) should therefore flexibly react to technological changes in production and contribute to the growth of economy and ensuring its competitiveness in the world. Quality of education is a reflection and manifestation of the abilities of educational environment to create necessary conditions, to offer quality education programs and link education with research and practice. On the other hand, the existence of motivating environment is a necessary prerequisite so that the development of qualification of each individual in the society is a full picture of not only their abilities, but also willingness to react to changes in labour market, learn new skills which are adequate to requirements of knowledge based society. Increasing intellectual capacity of the society and regions is possible by building quality and flexible education system. The main investor in education should be the state and regions.

The development of a society in future shall therefore depend on solving the problem of adequate level of development of business and education systems. This will affect convergence (or divergence) model in future, which determines progress (or regress) of countries and regions. Determining direction and character of both education and business components in regions is very important not only because it will reflect in the competitiveness, but also because of the fact, that region itself will be the main user of services, which are provided by the institutions of tertiary education (TV) and business subjects. On the other hand, it is expected from education, that it will formulate a competitive model of development or businesses and regions. In this context, identification of mutual interaction among education, doing business and regional development becomes very important as a resort for determination of development strategy of the abovementioned components. Reciprocal relationship between regional development and development of its both business and educational dimensions is a precondition of the formulation of development strategy that should result into a concept of new sphere of regional interests of the triad: “businesses-universities-municipality (regions)” as a determinant of innovation culture and so “anchoring” the region into global knowledge economy [24].

2 METHODOLOGY

In the study we are coming from the methodology of quantitative competitiveness, which is expressed in various indicators. Comparing sources and results of knowledge based competitive advantage is expressed by KAM - *Knowledge Assessment Matrix*, by World Bank. The application of abovementioned methodology appears in various outputs of a team Kadeřábková, A. a kol. [10]. We are using the *index of knowledge economy*, which is calculated from the average of normalised values of indicator of knowledge economy pillars and it is obtained from the values: the quality of administration, human resources, innovation system and both information and communication technologies.

In international comparisons within the area of the quality of human resources, the share of public expenses spent towards education and the ratio of students are evaluated. The ratio of graduates from natural sciences' and technical courses to all graduates is significant¹.

Complex approach to evaluation of innovation based competitiveness on the state level is represented by the *European Innovation Scoreboard – EIS*. In the summary innovation index (SII) in 2006 is SR on the 27th place, out of 32, with the value of 0.23 (on the first places are Sweden 0.73, Switzerland 0.69, Finland 0.68, Denmark 0.63, Japan 0.61 etc)². On regional level *European regional innovation scoreboard – RIS* – is used. In the Annual competitiveness report by the World Economic Forum two summary indexes are presented – *index of global competitiveness* and *index of business competitiveness*. In the summary index of global competitiveness in the group of factors increasing efficiency the availability of developed human capital is mentioned as a significant factor.

Among the other significant international evaluations is The International Institute for Management Development in Lausanne, which places primary importance on the area of the quality of human resources and research.

As a starting point of analysis of the quality of human resources a standard methodology of EU (Labour Force Survey), ISCO 88 (International Standard Classification of Occupations) was used, namely in the class of achieved education, whereas ISCED 1997 (International Standard Classification of Education) is accepted. For individual comparisons within international framework methodology ILO (International Labour Organization) is used. As for the institutional quality it uses aggregated indicators, which are analysed by the World Bank in the project *Governance Matters* (GM). Expenses for research and

¹ According to the publication of OECD Education at e Glance and conclusions of the project Thematic Review of Tertiary Education, materials of EU ECFIN and European Association of Universities. Available at: <http://www.oecd.org>; <http://www.eua.be>.

² According to: European Commission, 2006. <http://www.eua.be>.

development (R&D) are observed by GERD (*Gross expenditure on research and development*), as a complex input indicator into R&D, which serves in some parts of evaluation of development trends in TV on international level. Its significance is perceived at the background of the GERD in % of GDP, which in the EU statistics belongs to the group of indicators assessing fulfilment of the Lisbon Strategy goals. A vital source of information about the trends in TV and its quality were publications of OECD *Education at a Glance* and conclusions of a project *Thematic Review of Tertiary Education*, materials of *EU ECFIN* and *European association of universities*.

Another very important source of data during the process of writing this article were the materials of EU, Commission of European Council, Slovak Rector Conference, ARRA, Institution for information and prognoses of education (UIPS), Business Alliance of Slovakia, World Bank, regional study of municipalities, official web sites of the government and its ministries, programmes for economic and social development of regions, national materials, namely National strategic reference framework for actual forming period, Strategic documents for the area of universities' development in Slovakia, Annual reports about the state of university education in Slovakia according to the Ministry of Education in Slovakia (MS SR) and Programmes for economic and social development of chosen regions in Slovakia. Home and foreign literature and professional publications [1, 2, 4, 6, 9, 11, 15, 16] as well as various surveys and analyses were used. Data sources were also statistical data from Slovak statistical office and regional statistics, databases of EUROSTAT and OECD [18], surveys of the World Bank, indicators of innovation performance of the database New Cronos published by the EUROSTAT.

2.1 Aim/structure

The aim of this paper is to identify place and position of TV in the economic development of the country (region) within set links at the background of formation of relationships among TV institutions, namely universities with business subjects and institutions of state and public administration. Our basis is bibliography of relevant publications in given area, while the main point of this paper lies in the analysis and identification of changes in both forms and content of competitiveness criteria. This is interlinked with the position of individual subjects of social and regional development (businesses-universities-public administration) at the background of trends leading towards formation of knowledge economy.

2.2 Results

Economic growth starts with talented people. Creativity become a driving force of economic growth and begins to be perceived as a new type of competitive advantage. Although creativity and its link to learning and experience is usually considered a condition for arising and spreading of

innovations, putting emphasis on creativity itself becomes the basis for a brand new direction with the potential of creation of new economic paradigm, so-called *creative economics*.

OECD wants to help individual countries understand how organization, management and ensuring of TV can help them fulfil their aims in the economic and social area, and therefore based on its analytic activities identifies main problem areas, which are at the same time a manual for creating an efficient system of TV. Their role is:

- To limit economic and social aims of TV,
- Determine how individual countries can provide for sustainable economic system of TV and a convenient structure, with efficiently linked elements and with particular mechanisms for ensuring its quality,
- Set how individual countries can mobilise particular sources for TV system,
- Plan, which mechanisms and which policy on national level can ensure an efficient management of the system as a whole.

The importance and irreplaceable task of education by forming an active and creative labour force as the most efficient source of knowledge economy are being realised on all levels of management³ and adequate attention and financial support are given to tackle this problem.

The European Union is realising a joint *Labour Programme for education and professional training 2010* in the forthcoming decade after 2000. This includes EU27 and European Economic Area (EHP)⁴ and the area of increased

³ **OECD** – using conceptual approaches in the process of determining development trends in the direction of creative and initiative activity stimulation and participation in comparative analyses.

EU – fulfilling commitments that are related to the membership of Slovakia in the EU in the area of education, research and development, stimulating activities of educational institutions in their participation in educational programmes of the EU, supporting activities of agencies ensuring their realisation, using structural funds of EU in the area of education, R&D.

European Council – cooperation in the area of education towards democratic citizenships and social coherence, multicultural education, education of minorities, and teaching foreign languages.

UNESCO – supporting realisation of the World Declaration on education for everyone, passed in Jomtien and efforts for adequate help in education in developing countries.

CEEPUS – supporting participation of our universities in this exchange programme for students and teachers with the focus on its complex programmes and creating networks of universities with creation of necessary infrastructure.

Visegrad fund – support and common use of fund means in the area of education and sport.

Bologna declaration – supporting activities, in the framework of whose Slovakia joined convergence processes of university systems in the area of academic and professional mobility.

Bilateral co-operation – commitments to government and resort contracts, especially in the area of providing information about the actual state of school and educational policy in individual contract countries, namely in pedagogic documentation, exchange of professionals, support of language courses of the other contractual side, mobility of students and teachers, deepening of cooperation in bilateral projects and projects of foreign help etc.

⁴ EHP = EU + Norway, Iceland, Liechtenstein

interest is the growth of quality of education, access to education, sharing the best experiences and partnership building. European Commission presented in December 2008 its new initiative of the *New skills for new jobs*, which can help to predict skills required in future. The goal of the before-mentioned initiative is to better expect changes, so that people can better prepare for a job in the knowledge economy. In the set context and in the cooperation scheme, European Commission and member states were identifying *strategic goals for education system* for forthcoming decade:

- Life-long education (in relation to future jobs),
- High quality of education and professional training for creation of higher skills,
- Systems that are more objective and more efficient at the same time fighting inequality and which prepare each child, a young or an adult person for the requirements of future,
- Schools and universities which will lead students to entrepreneurship, creativity and innovations for economic prosperity and also personal fulfilment (Figeľ, 2009).

Table 1 - The quality of tertiary education- evaluation from the perspective of the competitiveness of the economy

	2001	2002	2003	2004	2005	2006
EU-27	5,7	5,8	5,8	5,7	5,4	5,4
Belgium	7,3	7,1	7,6	7,6	7,0	7,2
Czech Republic	5,4	6,0	6,3	5,1	5,7	6,1
Denmark	6,7	6,8	6,8	7,0	6,6	7,1
Estonia	5,9	5,7	5,4	6,1	5,5	6,1
Finland	8,2	8,9	8,7	8,2	8,0	7,7
France	5,3	6,3	6,1	6,0	5,7	5,0
Ireland	8,1	8,0	7,6	7,6	7,5	7,7
Italy	3,9	4,3	4,3	4,1	3,8	4,1
Luxembourg	3,0	3,4	4,5	4,0	3,5	4,4
Hungary	7,0	7,0	6,7	6,1	6,4	5,5
Germany	5,5	4,5	4,6	5,1	5,0	5,9
The Netherlands	6,8	7,0	5,3	6,2	6,6	6,0
Poland	4,4	3,9	4,7	5,3	4,3	4,8
Portugal	4,2	3,9	4,2	4,9	4,0	4,8
Austria	6,3	7,2	7,3	7,0	6,4	7,3
Romania	N	N	N	N	N	2,5
Greece	4,6	3,9	4,3	4,3	4,1	4,1
Slovakia	6,2	6,4	5,9	5,7	5,2	4,0
Slovenia	4,7	5,0	4,5	3,8	3,3	3,8
Spain	5,5	5,1	5,0	4,7	4,2	4,0
Sweden	6,0	6,3	6,0	6,6	6,0	6,5
United Kingdom	5,4	5,4	5,2	5,0	5,2	5,6
EU-15	5,8	5,9	5,8	5,9	5,6	5,8

Source: IMD, 2007, available at: www.imd.ch

Note: The highest quality = 10, the lowest quality = 1. Average for EU is non-weighted arithmetic from the available data

The average quality of tertiary education in Slovakia achieved between 2001-2006 5.56 points, which is comparable to France (5.7) and Czech Republic (5.8). However, it is significantly lower than in Austria (6.9), but higher than in Germany (5.1). It is unfavourable, that the evaluation in observed period deteriorates and in 2005 and 2006 Slovakia does not achieve even the average of EU-27.

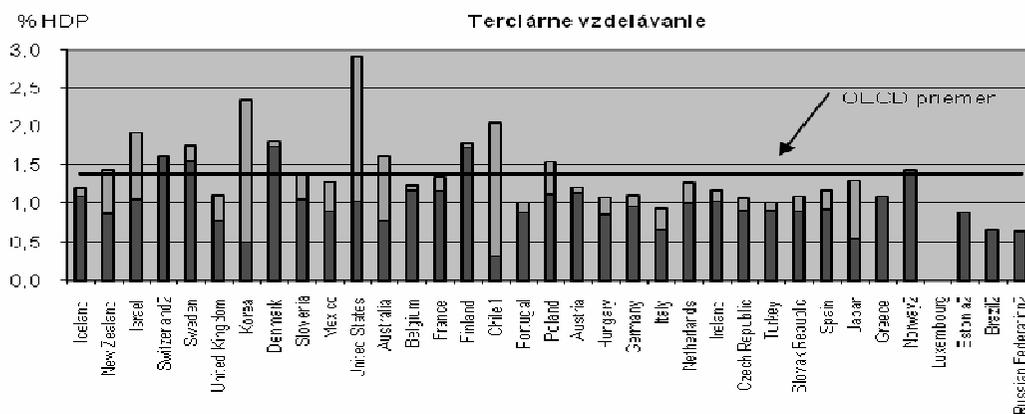
In the area of TV system modernisation for future needs and job places (of states, regions, businesses), European Commission wants to focus on these areas:

- *Curricular reform*: system of three educational stages, learning based on competences, flexible educational procedures, acknowledgement, and mobility.
- *Management reform*: autonomy of universities, strategic partnership, involvement of businesses, and ensuring quality.
- *Financial reform*: diversification of university income sources reflecting more the results of universities, supporting justice, approach and efficiency, involvement of possible tuition fees, grants and tuition loans⁵.

It is therefore necessary for governments, educational institutions and business sector to understand movements in labour market and be able to forecast, which new skills will be demanded for in future. Universities still play a central role in creating knowledge Europe⁶. A reform agenda has been processed for universities. Universities should adjust their curricula to the necessities of current era and provide for a professional training of people for future higher positions, ensure equipping graduates not only with knowledge, but also with know-how and practical skills. For this reason, involvement of business sphere is essential – as a partner, who helps modernise and adjust school and university curricula to the needs of labour market, develop skills, namely entrepreneurship and innovations. Better and more intensive cooperation is thus useful for academia on one hand, and for business sphere on the other. It is mutually beneficial for an exchange and development of knowledge – from both business and academic perspective. Involvement of business sphere by curriculum development will contribute to graduates having knowledge and skills necessary for the successful start in employment and their further adaptation for the needs of labour market [7, 25].

⁵ Main representatives of EU made promise in Hampton Court that all investments into education are necessary to be allocated on a minimal basis of 2% of GDP. Even worse situation has been with investments in research. In the EU, the average is 1.9% of GDP, while in the USA, Japan and Korea it is 3%. The development of investment in science in Slovakia from the EUROSTAT data – in 1998 it was 0.79%, in 2000 it was 0.65% and in 2003 only 0.57% of GDP (<http://europa.eu.int>).

⁶ Europe has a great education potential: 4 000 institutions, more than 17 millions students and about 1.5 millions of employees.



Legend: Terciárne vzdelávanie – Tertiary education, OECD priemer – OECD average, HDP - GDP

Explanations: lower part of column graph – public expenses; upper part – private expenses on educational institutions

Note: 2/only public expenses

Graph 1 - Expenses for educational institutions in the area of TV % GDP in the countries of OECD (2004)

Source: processed according to: OECD. TableB2.4 See Annex 3 form noex available at: <http://www.oecd.org>

2.3 Triad: businesses – universities – municipality (regions)

2.3.1 The third role of universities

In relation to the joint role of universities and the quality of university environment, time brings new challenges. The vision of competitive, highly diversified university system has crystallised into three basic functions of universities:

a) in the area of education, the system develops and fully uses the potential of individuals, prepares young people for the entry to the labour market and in the long-run provides for their employability, provides education of active citizens striving for building a democratic society, supports graduates on their way for further education and life-long learning and further develops knowledge in wider array of courses,

b) in the area of R&D, universities create appropriate conditions for the development of R&D on the top level, spread the results of R&D or they apply them in practice as a significant source of innovations,

c) universities co-operate with business sector (businesses, employers, and other clients), they contribute to establishing innovation and technological partnerships and influence within the regional development, where they are active.

At the OECD level as well, the position of TV institutions is being highlighted from the perspective of their role in regions. These employ a

significant number of people, educate students and are the places of basic and applied research, which in turn helps to support business environment on the competitiveness level in a sustainable way. Therefore, member states of OECD are trying to mobilise/orientate tertiary education this way, too. In 2004, OECD started to compare systematically, how this effort helps to mobilise social, cultural and economic potential for the regional growth and to identify the ways, how these institutions for higher education can contribute to building regions in knowledge society.

2.3.2 New partnership for university modernisation: dialogue universities - businesses

Changes in the position of universities from the perspective of their co-operation with business sphere and subjects of regional management have found their expression in the Announcement of the Commission to the European Parliament, Council, European Economic and Social Council and the Regional Council under the new name of *New partnership for the modernisation of universities: EU forum for the dialogue between universities and businesses* [13].

Universities are in the centre of European Knowledge Triangle with their triple role of provider of the highest level of education, sophisticated research and discovering innovations. They have the potential to act as a driving force of the European ambition to become a leader in knowledge economy and society on the world level. This fact has been known in the EU policy since the summit in Hampton Court in October 2005; should their potential be used, however, the need of change is obvious. In the Commission announcement, Realisation of the universities' modernisation programme: education, research and innovations from May 2006, nine areas of activity have been detected. The programme has been the subject of an extensive political exchange since, whereas the Council of Ministers has been regularly checking achieved progress. The Commission further suggested modernisation of universities as one of the main topics in the new framework for political cooperation in the area of education and professional training within Lisbon Strategy.

The key element in the framework of the programme set in 2006 was that the universities should create structured partnerships with businesses, so that they could become important actors in the economy, being able to react better and faster to the demands of the market and build partnerships that use scientific-technological knowledge. In the announcement it was suggested that businesses should help universities to re-create study programmes, managing structures and to contribute financially. On this basis the Commission established a forum "universities-businesses" as a European platform for the dialogue between the two environments.

2.3.3 The concept of entrepreneurial university

In the concept of the entrepreneurial university (PU), geographical proximity of individual actors in regional development is used [5]. The position of universities as creative centres of regions comes to the forefront – the ability to keep creative talent, and at the same time absorptive ability to use these talents from the side of given locality – this is the chain, which ensures the regional attractiveness with subsequent beneficial economic effects and significant non-economic stimuli that jointly influence the quality of human lives.

The basis of the understanding of the PU essence is the application of the knowledge in education process. According to M. Zeleny [24], knowledge is not information. Getting knowledge is not only gathering information. Knowledge is an action, it is information, knowing used in transformation process creating added value. The richest are those countries that are focusing towards using knowledge and skills in business, not only for equipment, work or natural resources. In the entrepreneurial university, students look for knowledge – i.e. information used in real action – workshop, project, business. Resources, money, machines, information – this all becomes useless without usable knowledge. The prerequisite for knowledge is their usability and usage. Useless and unused knowledge stays being a piece of information, unless they are transformed to an action. Many countries are rich in information (symbolic description of actions), but poor in knowledge (using them in productive actions and acts as such).

One of the first entrepreneurial universities in Slovakia is the Entrepreneurial University in Zilina, which will start to be prepared in autumn 2009 and its guaranty is IPA Slovakia Zilina⁷. The aim is to prepare two groups of participants in a complex study for businessmen and managers of small and medium businesses from Slovakia and Czech Republic. It should be elite college with

⁷ **Fraunhofer IPA Slovakia** is an association of natural persons as well as legal entities that was established in 2000 as a result of long-term cooperation of Slovak consultants, architects, and researchers Fraunhofer IPA Stuttgart. At present, members of the association Fraunhofer IPA Slovakia are Univ. Prof.Dr.-Ing. Wilfried Sihn, Univ.-Prof. Dr.-Ing. Prof.e.h.Dr.-Ing. E.h. Dr.h.c. mult. Engelbert Westkämper, Prof.Dr.-Ing. Kurt Matyas, Prof. Ing. Ján Košturiak, PhD., Doc. Ing. Róbert Debnár, Fraunhofer Gesellschaft and University of Zilina.

Fraunhofer IPA Slovakia belongs to the leading firms in consultancy, architecture, research and education for the industry in Central Europe, professional services are based on a long-term building of know-how in Germany and Slovakia, on knowledge of local environment and long-term experience of the employees of Fraunhofer IPA Slovakia from industrial sphere. Team of internal employees of Fraunhofer IPA Slovakia is complemented by external specialists from important firms, as well as a group of internationally known experts from Europe, USA and Japan (according to www.ipaslovakia.sk).

international academic team (businesspeople, professors from foreign universities, financial professionals, consultants and coaches) who are practice-oriented. It is aimed at people who want their firms to be better than their competitors, to use modern processes, to be innovative and productive at the same time. The main pillars of PU are:

- 1) **School** (lectures, consultations, projects, training, coaching).
- 2) **Practice** realisation and testing of learnt information in either school or own firms)
- 3) **Research and development** (new methods, approaches, procedures, ideas).
- 4) **Innovation centre** (change of ideas and innovation projects into business).

Concept of PU according to M. Zelený [24] substitutes MBA programme, which is considered old-fashioned and unsuitable for global era. MBA programme was created after WWII as a reaction to narrow-scoped, technical-apprentice-like concept of managerial education of previous era. Programme was modelled according to functioning specialisations of science, especially economics, physics, chemistry and mathematics. MBA programme was successful and brought scientific approaches to managerial education. However, it did not lead management towards profession. The aim of PU is to promote management and business to the level of profession.

In the global era it seems more and more urgent, that professional practice of management and business should in its essence be a profession, as are either law or medicine. Management is not a science, such as economics, and it also is not an arts or craft, such as music or carpentry. Management is a profession. Schools of business and management should therefore educate professionals, not craftsmen or scientists, nor artists. Business faculties should be comparable with faculties of law or medicine.

What characterizes profession? Profession is based on 4 pillars [24]:

- 1) Accepted and acknowledged complex of verified pieces of knowledge(not information)
- 2) Certification and guarantee of minimal quality of work
- 3) Public-service work orientated at the needs of clients
- 4) Verifiable and implementable code of ethical behaviour.

The criterion of professional (e.g. doctor, lawyer) is conducting an acceptable practice, using verified knowledge with the guarantee of the quality of results, service to clients and keeping professional rules of business ethics. Profession integrates knowledge and practice in a wise and ethical approach to services for public and orientation for the needs of a client.

The PU is based on practical knowledge, wisdom and ethics. Educational axis of the PU is based on “4E” and is expressed by following sequence:

Efficiency → Effectiveness → Explicability → Ethics

2.3.4 The component of education in the concept of PU

The basic aim of PU education is production of people able to create new things (people who are creative, innovative and discovering), and not only repeat contributions of previous generations. Another contribution of PU education is production of critical thinking that can verify everything and does not accept everything which is offered. Educated people are supposed to differentiate between fact and opinion, between evidence and dogma. Danger of modern era lies in slogans, collective opinions and mass ideological movements. The task is to find and educate students who are active, learn fast to think independently, differentiate and create their own opinion, can recognise original and verifiable ideas, do not accept the very first idea that is offered to them or that comes to their mind. PU is to teach that it is important not only to accept, repeat and reproduce knowledge, but to produce and use them in practice.

PU is a concept yielding from global formation of knowledge society, where knowledge and both their creation and usage are the basis for competitiveness, innovativeness and economic-social development of a region.

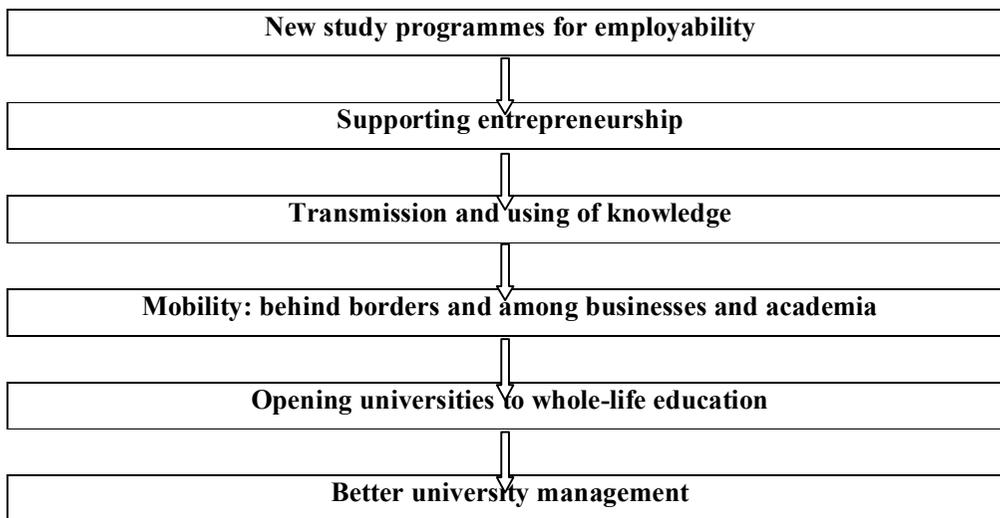
The concept of PU (Entrepreneurial University) expresses its dual aim:

- 1) University of business people and for businesspeople
- 2) University, that is a businessperson itself, does business and is a business institution.

3 CONCLUSION

- 1) OECD defines knowledge economy as an economy, where creation, distribution and using knowledge are the main factors of growth, creation of riches and employment in all the areas.
- 2) According to [14], the idea/concept of knowledge economy evokes three levels of institutional research. First level – economy, institutionally represented by businesses, whose knowledge are used in form of technologies and innovation, in form of primary inputs (component of doing business) to ensure societal and regional development. Second level – represented by knowledge that is created and distributed by educational institutions (component of education) and third level – space where both components synergistically interact – state, regions (regional component).
- 3) To organisational link between institutions of TV and business sphere belong e.g. contact centres, centres for transfer of technologies, strategic alliances of societies and universities, networks of academic, private and governmental research centres, business incubators etc.

Forms of dialogue “Universities - Businesses“



Source: own processing according to *KOM (2009) in final version*. Brussels, 2.4.2009

Figure 1 - Dialogue: universities - businesses

4) Real fulfilment of the third role of universities according to experience from other countries requires:

- Radical changes in managerial approach on all levels of strategic management on individual universities, regions and on national level, too – concurrently with the categorisation of TV institutions,
- Realisation of analysis of possibilities and risks in individual regions, adequate timing of steps and political decisions,
- Processing of legislative changes in the area of purposeful allocation of subsidies for research from the perspective of relation to the application sphere, limiting of management structures and competences for TV institutions in a way, that an efficient institutionalisation and management of commercial relations is possible; revision of the law of public financing of research, that would enable access to the results of research and commercial co-operation,
- Create new workplaces, or re-structuralise current institutional arrangement, including workplaces on the level of regional structures that would lead to professional transfer of knowledge and technologies,
- Elaborate motivational system in firms from the perspective of investments in research and development in co-operation with public sector,
- Change the attitude towards the problem from the academic side in the direction of commercial utilisations on research results. It is about the disposal of commercial skills, managerial approaches, especially in the area of project management, as well as in the area of communication and

organisation skills. Those competences should be present at those graduates of TV, who take particular managerial competencies namely on the side of application sphere.

- 5) Universities pay great attention to ensuring the quality of both educational and scientific-technological process and to high professionalism during university management. Term “entrepreneurial university” starts to be formed in the sense of professional university directed according to market principles on the basis of applying required managerial procedures. In this area, even success of the activities in the area of transfer of both knowledge and technologies is anticipated [25].
- 6) From the system point of view, closer attention will need to be paid to in future: abilities of universities to react to changes in labour market and to qualification prerequisites by employers, to the area of imbalance in competences and responsibilities of the administrative boards, management and academic senates of universities, to conditions in the area of co-operation between universities and application sphere and other actors in the society, to better link of education and research at universities to strategic needs at the area of the society as a whole as well as in its regional context.

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