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Implementing the innovation by academies in Poland. Condition and perspectives

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ABSTRACT

Implementation of innovation by various business units is currently a natural phenomenon demonstrating the company's development with means of new products, models or management methods. The 'innovation' word also began own operation in the area of academies. Innovations are inscribed in the academy's development, because in such a place the researches on new products or processes are conducted, because researches are the university's goal. It is nothing new for an academy, but currently the 'innovation' word is outspoken louder in the academies and began to work in various forms. Polish academies currently experience a sort of commercialisation learning process, leading to the researches and implementation of innovations, not only in own area, but generally for the external market. Economy and society should exploit the academic resources in broad extent, not only with means of a qualified personnel, but also with means of the resources in the academy's disposition. The academies are currently becoming a business partner, and scientists become a sort of "businessmen" who sell own products. According to the statistical data, Polish academies occupy last places in worldwide rankings with respect to i.e. the innovations. It is interesting, because scientific employees are highly evaluated in other scientific centres located abroad.

***Keywords*:** universities, innovation, cooperation of science and business

1. INTRODUCTION

The implemented new assessment criterion for Polish academies, namely the innovation criterion, drew attention to the academy's development in such respect. Following M.

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Kleiberg: „Academies have three missions: education, research and innovations. Academy's picture in the world is built with means of the research power and its influence on the economy. Academies that have strong scientific personnel and cooperate well with the business environment are most attracting the students in the world (Brennan, Lyon E, Schomburg, Teichler 1994).

We would like to achieve the same in Poland, in order to make the students follow remarkable scientists and select the academies with strong relations with business". "When the position of Polish academies in worldwide rankings is analysed, only two universities, namely the Jagiellonian and Warsaw University, are included in prestigious rankings. Poland occupied lowest position in the area of fourth hundred, in 2003, and subsequently increased its position in three subsequent rankings (2004, 2005, 2006). Unfortunately, a decrease has been noted by Polish academies on the international scene since 2007, when compared with former years. It is comforting that the position of Polish academies has been stable since 2010 and Poland occupies the position in third hundred, namely 301-400". (University Rankings, 2015, http://www.shanghairanking.com/ARWU2015.html).

2. INNOVATIONS IN ACADEMIES

"The innovation phenomenon is inseparably connected with the concept of change, novelty, reformation or an idea perceived as a novelty. Diverse facts, processes and phenomena of technical, organisational, social or psychological character are recognised as innovations. The innovation term was introduced in the economy sciences by J.A. Schumpeter and it was described as follows:

- introduction of new goods in the production or improving the existing goods;
- introduction of a new or improved manufacturing method;
- opening new market;
- application of new resources or semi-finished products;
- introduction of new manufacturing organisation (Schumpeter 1960: 104)

According to this attempt, the innovation is the aspect of business strategy or the component of investment decision, leading to the production in terms of product development capacities or the improved efficiency (Oslo Manual 2008: 32) According to Oslo Manual, the innovation means implementation of a new and significantly improved product (goods or services), a new or significantly improved process, a new marketing method or a new organisational method in terms of business practices, workplace organisation or relations with external environment (Oslo Manual 2008: 32).

In turn, the innovation is the property of business units or economies, meaning the capacity of creating and implementing innovations, as well as its absorption, it is related with active involvement in the innovation process and pursuing the activities with such goal, it also means involvement in the acquisition of resources and skills necessary for participation in such processes. It is very often measured with amount of created and implemented innovations, as well as with inputs designated by companies for activities in such respect. The innovation is related with owned resources (human, material, capital, information), as well as with the skill of using them, namely the innovation matureness. The innovation matureness is a proper organisational culture level, conditioning the use of entrepreneurship, an innovative

attempt and creativity, as well as other capacities for creating, absorbing and implementing the innovations in various disciplines. Maturity in terms of innovations can be treated as a specific resource for business units, that are the specific compilation of simpler resources with material character (e.g. financial resources, labour conditions) and non-material ones, such as skills, capacities (Matusiak 2011: 118-119).

The academic innovative activity covers the following types of activities:

- research and development activity (R & D);
- purchase of so called intangible technology;
- purchase of tangible technology, precisely machines, devices;
- designing, purchase of other equipment and launching the production;
- personnel training related with the innovative activity;
- marketing for new and modernised goods (Sawhney, Wolcott, Arroniz 2006; Cohen, Levinthal 1990; Oslo Manual 2008).

"Specifying the mission, developing the vision for future and converting it into the well-thought, implementable and realistic strategy plan is a great challenge when managing the autonomic academy. The majority of academies does not have such plans, what results from the fact, that the academy government is not capable of preparing such a plan, or in a worse case, they do not have the need for such a plan. Additionally, totally lacking strategy management on the level of the state, as well as development strategy for higher education, existing until recently, did not support the establishment of strategy plans" (Desmarez, Thys-Clement 1994; Rogers, Everett 2003; Report: Ernst & Young Business Advisory 2009: 22). A document was elaborated in order to facilitate the performance of own missions, that stipulated common goals for academies. According to such document, namely the *Higher education strategy in Poland until 2020*, academies should:

- develop proposals for amendments to law, required for elastic cooperation between the public academies and businessmen; such changes shall cover i.e. regulations for the property law issues, including the research apparatus, intellectual property rights and division of profit coming from the commercialisation of researches, ordering principles for educational services by business units;
- supporting the academy in development of intellectual property protection statutes and commercialisation principles for scientific research results;
- financial, organisational and legal support in establishing the spin-off special purpose vehicles for commercialisation of the academy's scientific research output;
- supporting the operation of the academy's technology transfer centres or scientific parks, with task of versatile administrative and legal support in the commercialisation of scientific researches;
- creating the public-access information resource with competences of research teams and, demanded by innovative companies for unique knowledge and scientific researches;
- conducting the campaign among the businessmen, about possibilities and good cooperation practices with academies (Strategy 2010: 68-69). The introduction of the changes and activities referred above is a great challenge for higher education in Poland, whereas it is essential in establishing the university's competitive position on the European and worldwide market (Kozma 1993).

3. ENTREPRENEURIAL UNIVERSITY

Such declarations cannot be explicitly declarations in governmental documents. They must by transferred into particular activity forms (Teichler 1991; 1995). "Obligations undertaken by higher education ministers and signatories of the Bologna Declaration cover the supportive process establishing the European Higher Education Area with means of mobility of European citizens, the adaptation of education to the European labour market demand, as well as with worldwide attractiveness and competitiveness of European higher education (Gellert 1993; Ernst & Young Business Advisory 2009:15)". One initiative undertaken by the academies, among others, is academic entrepreneurship. "Propagation of entrepreneurship idea in the academic environment and cooperation with the business means the sales or transfer of research results or development activities for the companies, what consequentially leads to transformation of an academy - from a scientific and culture-shaping institutions into companies. On the one hand, academies cope with the problem of a developing cooperation between the science and the business. On the other hand, academies forced for a competition for a student, who is a customer, must decrease the gap between the offered educational products and the recipients' expectations. Such changes occur in the social and economic life and require similar changes from academies, in order to response to the needs of future students. „A third generation university is:

- introducing the commercialisation of researches and technology (as a third activity goal, next to researches and education)
- establishing the international technology transfer centres
- organising highly specialised interdisciplinary teams based on the cooperation of various organisations and institutions (Wissema 2005: 89).

4. HIGHER EDUCATION RESOURCES DEVELOPMENT OF CREATIVE COMPETENCES

The majority of researchers stipulate, that both creative processes and innovations are determined with a complete and developed constellation of internal and external conditions (endogenic or exogenous that may be considered both in the stimulus categories and as significant creative and innovations barriers (North, Friedrich, 2007).

The creativity understood in this way results from the interactions and intellectual competences, creative skills, personal traits, as well as social and cultural environment understood in broad extent (Kivinen, Ahola, Kankaapaa 1995; Drozodowski, Zakrzewska, Puchalska, Morchat, Mroczkowska, 2010:18). It is important to shape the openness attitude for innovations among the employees and students in the academic environment. "Attitude favouring the innovation is understood as follows:

- as an individual trait: openness for new solutions manifested with i.e. the skill of learning, readiness for risks, criticism towards the existing patterns and standards of conduct;
- as an organisational trait: openness for innovations (both absolute and relative), consistent combination of own development strategy with the absorption or development of own innovations, manifested with i.e. creation of favourable atmosphere for innovative thinking (the level of organisational culture) and establishing

the systemic conditions encouraging for innovations (corporate culture level) (Drozodowski, Zakrzewska, Puchalska, Morchat, Mroczkowska, 2010:21)".

According to Sulczyńska: "The innovative activity is strictly related with the intellectual capital term. According to the practice exploited in the literature in the area of knowledge management, such a term is defined with three main forms: human capital, organisational capital and customers capital, also called the recipient's capital" (Szulczyńska 2005: 236). Human capital covers all skills, knowledge and experience of employees and managers in a particular organisation. It is manifested with creativity, openness and innovations of the organisation's participants, as well as in the level of internal motivation and skills of introducing and adaptation to changes (Szulczyńska 2005: 236).

Other forms of intellectual capital are also important for the success of innovative activities. Structural capital (also called the organisational capital) is understood as the infrastructure supporting the human capital, as well as its effective use: management philosophy, organisational culture, management processes, information system, the system of relations and financial relationships (Aubier, Bary, Guidat 2007).

Structural capital can promote the searching and implementation of new solutions, namely it conditions the introduction of innovative activities (Hippel 1994; Szulczyńska 2005: 236). Organisational environment for a unit means the overall external conditions for a unit, as well as structural and organisational conditions, that are pursued in the course of activities and actions (binding procedures, activity patterns and organisational practices, declared and manifested organisational patterns and structures, organisational culture) in practice, by organisational environment of an unit, that can be understood as the environment for its activity designated by formal and informal organisational patterns, in which it is integrated (Drozodowski, Zakrzewska, Puchalska, Morchat, Mroczkowska, 2010: 22).

5. COOPERATION

The academic cooperation with other business entities brings many benefits, not only in the economic extent. Young people benefit from the cooperation of science and business, and they more often obtain guarantee for good substantial and practical preparation for a pursued occupation, when profiting from the higher education (Alves, Carneiro, Madureira, Patricio 2007).

Spin-off companies are established in some academies, as well as the potential of modern laboratories constituting the equipment of some Polish scientific centres is used for the innovative ideas commercialisation purposes. Moreover, employers, who are business units, demonstrate demand for particular competences in future employees. Many people tell about graduates without skills, that are expected by employers. Apart from the adaptation of the higher education's offer to the employers needs, graduates inept in terms of competences exist. Some skills searched by employers were not at all, and still are not, the area of interest in a decisive majority of academies (i.e. work in group, communicational skills), whereas other skills, despite introduced as a standard in the course of study, i.e. the knowledge of foreign languages and IT tools, are on the unsatisfactory level in the opinion of educated employers (Brennan, Kogan, Teichler 1995; Biesaga-Słomczewska, Szymocha 2015: 1408).

Demand is a major potencial source of innovation, yet the critical role of demand as a keydriver of innovation has still to be recognised in government policy (Edler, Georghiou 2007). In recent years, we have seen a lot intrest for higher education in Poland.

Companies can also implement the innovations developed in cooperation with other companies or institutions (Matusial 2011: 112). The innovative activity partially depends on diversity and its relationship structure with the sources of innovation, knowledge, technology, code of conduct, as well as human and financial resources. Every such relationship connects the innovative company with other players in the innovative system: national laboratories, higher education, structures responsible for public policy, supervision bodies, competition, customer's suppliers. In the researches on innovation, you can obtain the information about dominance and importance of various relationship types and about the factors influencing on the exploitation of relationships of particular type (Oslo Manual 2008: 22-23). According to such Manual, three external relationship types are discerned:

- open innovation resources generally provide accessible information, they do not require technology or intellectual property rights, or interaction with information resources;
- acquisition of knowledge and technology is the result of the purchased external knowledge and investment goods (i.e. machines, software), as well as services, personalised in new knowledge and technology, where demand for interactions with a source do not exist;
- cooperation in the innovations area requires active participation in the area of innovations with other companies or public research institutions (Oslo Manual 2008: 22-23).

According to E. J. Biesaga-Słomczewska and B. Szymocha: "When treating the academy-business relationship as the strategic relationship, it forces the solutions, such as establishing scientific parks at territory of campus or initiating business activities at territory of academies. Commercialisation processes mean additional income resources, what in case of higher education unsatisfactory financed from the governmental budget may be the key factor determining the existence of academies in Poland". Knowledge flow is a bond for mutual interactions (Mikos 2012:114). Knowledge in disposition of an academy is not enclosed only in the scope of theoretical knowledge, whereas business may share own experience and may be the testing place for inventions or products created by scientists in laboratories. The awareness of mutual benefits, that are obtained by scientists and businessmen from cooperation, is compelling for an overwhelming majority of scientific employees, in the amount of 99%, who declare future searches for businessmen interested in cooperation (Fuente 1995, Report 2006: 21).

6. CONCLUSIONS

Rapid changes occurring in the social and economic life also influence on the operation of higher education. The mission of universities also consists of active participation in local life and adaptation of education to market needs. An university becomes an important entity in the city's and region's development strategies (Kogan, Brennan 1993). The innovations are a sign of development and commitment to better results. Identification of businessmen needs by universities and demand for respectively qualified staff is important.

It is demonstrated in the researches, that soft skills, such as creativity of young graduates, is important for future employers, apart from the knowledge in particular area of professional education. Moreover, it occurs that the practical extent of lessons is most appreciated by students, as the most useful factor in professional occupation (Wroczyńska 2013: 254). "The following conclusions result from the researches conducted by businessmen and scientists:

- the need of an increased businessmen conscience in the area of cooperation chances with scientific centres;
- the need of businessmen education in the area of benefits from cooperation with scientific centres;
- additional activation of scientists;
- creating website platforms for dialogue and exchange of contacts (Edler, Georghiou 2007; Klenow, Rodrigues-Clare, 1997; Report 2006: 21).

An important aspect is the management case in the higher education. Current management in academies does not guarantee the proper exploitation of resources, therefore a quality-based management restructuring process is required, what enables the improvements in quality management (Wawak 2010:11)". Innovations at universities should be manifested with theirs diverse dimensions, both in the academic structure, its mission and in particular enterprise forms (Johnstone 2005).

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