

UNIVERSITY AS INNOVATIVE ORGANIZATION

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Abstract. The article defines a university as one of the key innovative organizations regarding the societal needs. It identifies the sources of innovations in the university setting and determines a critical role and competences of a chief executive for the innovation potential of an institution from the perspective of an organization management. It also addresses the issue of barriers and institution resistance to innovations, mainly in light of conservative management, and the issue of financing innovations in general.

Key words: innovations, innovative organization, university.

Introduction

Innovations constitute an accompaniment of entrepreneurship. They appear one of the best tools of maintenance and improvement of the country development and competitiveness of organizations in the local as well as global business environment. Their substantial feature is the realization of a new product, technology, or service added value in the market. Creativity is one of factors affecting successful management of innovations. As stated by Lesáková et al. (2008: 16), creativity, the ability to bring on new ideas, inventions, to combine them in a unique way can be termed as innovativeness and an organization supporting innovativeness creates conditions for new procedures and solutions. The aim of the article is to define a university as one of key innovative organizations. In the beginning we introduce the examined issues – briefly define innovations from the macroeconomic (by means of selected indicators) as well as microeconomic point of view. The essential part of the article contains de-

termination of the role of university in the process of increasing the innovation potential not only of an individual, but also of the university itself. The final part of the article is devoted to barriers towards innovations and conservative management.

1. Significance of innovations in the macroeconomic and microeconomic view

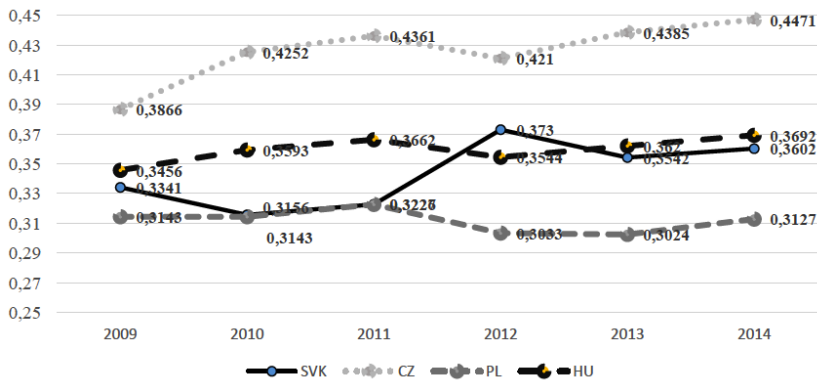
Innovations may be considered a driving force of economic growth and one of the key competitiveness factors not only at the level of businesses but also as for whole nations (Galia, Legros 2004). In this respect, Drucker (1998) points out that innovation is at the heart of entrepreneurial activity, and drives many entrepreneurs to carry out their activity. Innovation, therefore, creates a feedback effect in which entrepreneurs innovate, and their innovations stimulate other entrepreneurs to carry out their activity (De Cleyn, Braet 2012; Zortea-Johnston et al. 2012). As stated by Lesáková (2013: 133), innovation is a meaningful, dynamic, developing process, the result of which is a positive change oriented on the improvement of the transformation process in enterprises and better satisfaction of customer needs. An innovation may be understood as an introduction of new, significantly improved products or processes, a new marketing or organizational method within a business or in external relations (Oslo Manual 2005: 31). Since 2001, the European Commission has monitored innovation performance of countries in the evaluation report “The EIS – European Innovation Scoreboard” and later “The IUS – Innovation Union Scoreboard. The Innovation Scoreboard capturing in total 25 indicators provides an overall picture of innovation performance. Based on the innovation performance, the EU member states fall into to four performance groups: *“innovation leaders”* (Denmark, Finland, Germany, and Sweden), *“innovation followers”* (Belgium, France, the Netherlands, Ireland, Luxembourg, Austria, Slovenia and the UK), *“moderate innovators”* (Cyprus, the Czech Republic, Estonia, Greece, Croatia, Lithuania, Hungary, Malta, Poland, Portugal, Slovakia, Spain and Italy) and *“modest innovators”* (Bulgaria, Latvia and Romania).

The Scandinavian countries together with Germany belong to countries which have been achieving the highest innovation performance for the long term. Sweden was in the first position in 2014 (with the innovation performance index of 0.7401 while the 2014 EU average was 0.551). This position was mainly achieved due to the higher (as for the proportion to the GDP) and more stable investments in research and development.

The following figure presents the innovation performance index in countries belonging to the Visegrad group – V4 (i.e. Poland, Hungary, the Czech Republic and the Slovak Republic) over the 2009 – 2014 period. In 2014 the all V4 countries fell in the group of moderate innovators based on the innovation performance index and that of Slovakia was 0.3602. Slovakia disposes of the

provable innovation potential the growth of which should be stimulated and supported. There are many small and medium-sized rapidly growing enterprises with the potential to become leaders in a certain area of entrepreneurship in which many new ideas are generated. These, however, may hardly be transferred into new products, patents, competitive advantages or jobs. The Czech Republic with the innovation performance index of 0.4471 in 2014 is in the best position within the V4 countries. Hungary (the innovation performance index of 0.3692) achieved roughly the same innovation performance than Slovakia. The index value of Poland was 0.3127. However, Poland has recently started to build and support the research-development centres in Krakow, Katowice, Rzeszow, Wroclaw where important technological and research centres are established.

Figure 1. Development of the V4 countries innovation performance in 2009-2014



Source: European Commission, 2016.

Another significant indicator affecting the country's innovation performance is the ratio of R&D expenditures to GDP given as a percentage. The 2014 overall EU average was 1.936. According to OECD, the expenditures on education dropped between 2010 and 2012 which is viewed as a delayed effect of the 2008 world economic crisis. This fact did not hold valid in the V4 countries which is illustrated in the following table.

Table 1. Development of R&D expenditures to GDP in V4 countries (%)

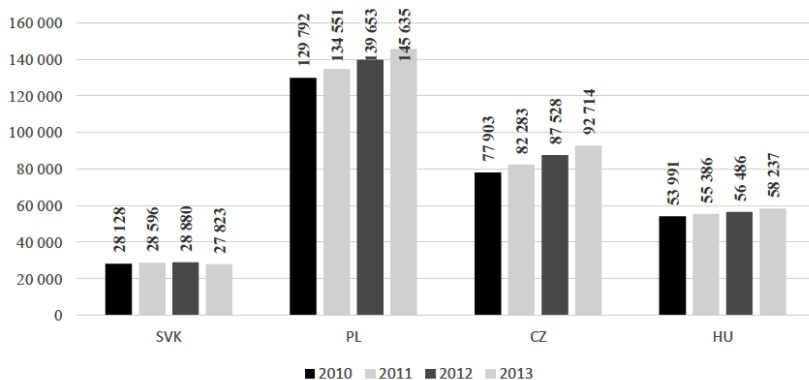
Country	2010	2011	2012	2013	2014
SVK	0,618	0,665	0,808	0,827	0,886
PL	0,721	0,746	0,881	0,871	0,941
CZ	1,34	1,56	1,79	1,91	1,997
HU	1,47	1,196	1,27	1,397	1,371

Source: OECD, 2016.

As the above table shows, the highest proportion was achieved in the Czech Republic. The fact that in all countries (except Hungary in 2011 and Poland in 2013) there has been a growing tendency of the indicator since 2010 can be considered positive. In Slovakia the indicator value was 0.886 % of GDP in 2014 while recorded overall current R&D expenditures were 553,934,000 EUR (Ročenka vedy a techniky v Slovenskej republike 2015).

The R&D realization also requires personal constitution. The following graph displays the development of a number of R&D employees in the V4 countries. In Poland, the Czech Republic and Hungary the number of employees was growing. That of Slovakia fell down in 2013 by 3.66% compared to 2012.

Figure 2. Development of a number of R&D employees



Source: Eurostat, 2016 b.

The last monitored indicator is the gross value added. When we evaluate GDP from the production point of view, relative significance of ten activities as for their contribution to the gross value added emerges in the centre. Over the 2003-2013 period the industry share in the EU-28 value added declined by 1.2% to 19.1 % while there was a close edge over the wholesale and retail trade, transportation and accommodation, and catering services (19.0%) the proportion of which also decreased for that period by 0.7 %. The public administration, education and healthcare share increased, on the other hand, by 1.0% to 19.4% in 2013. This shifted these activities from the third to first position according to the value added (if we remain on this specification level). The further largest 2013 share was recorded by activities in the real estate area (11.2%) followed by expert, scientific, technical, administrative and supporting services (10.4%), building industry (5.7%), financial and insurance activities (5.5%) and information and communication (4.5%). Entertainment and other activities (3.6%) and agriculture, forestry and fishing (1.7%) recorded the lowest share.

Realization of innovations results in positive effects not only on a national level but also on the level of businesses. Innovations may help an organization to gain strategic advantages containing an ability to offer something exceptional, hardly-to-manage, gain a considerable market share with a new product or service, compete in prices, quality and assortment, offer something that represents an entirely new concept and change a view on the way of cooperation of particular system slices (Tidd et al. 2007).

A top priority of global management is to manage change, which requires establishing an innovative organization to be responsive to change. An innovative organization is required to implement those core elements such as self-actualization, self-development, social acceptance, shared vision and transformational leadership. Managerial innovation is achieved by incorporating organizational learning within the innovative organization. The alignment of the core elements required for organizational learning with the key factors of an innovative organization enables an environment inspiring individuals' passion and initiative to manage change (Chang et al. 2008: 842).

Within innovation organizations, organizational activities are changed by improving productivity and quality of work life in a sustainable way. The raising productivity and quality of work life is based particularly on a combination of technologies and employees' capabilities, their as well as management's involvement and motivation to bring new products, services and work procedures. The increased innovation capacity of an organization generates a favourable circulation in which innovativeness leads to productivity. Based on that, it is possible to invest earnings in the organization to support innovativeness again (EHSV 2011).

In innovative organizations each employee is required to think about the future of their organization and participate in new ideas generation. Top management naturally attaches a high priority to innovations which reaches an understanding of a change necessity, culture change, creation of new open atmosphere, change of thinking, values, hearing to new voices, acceptance of new ideas resulting from new sources, creation of multidisciplinary teams, understanding of personal change need, respecting opinions of the others, understanding a new role of managers, ability to generate resources – human and financial ones – to ensure generation of new ideas, experiments and opportunities.

The components of an innovative organization include a shared vision, direction and will to innovate, proper structure, key individuals, efficient team work, continuous individual development, broad communication, high level of involvement in innovations, external focus, creative atmosphere and learning organization (Tidd et al. 2007).

An innovation capacity of an organization depends on management's and other employees' motivation and determination to renew their work as well as

a whole organization. That results in the newest models of products and services or organizational processes beneficial for customers. The more developed processes are employed by an organization, the better its ability to implement innovations (EHSV 2011). An effort to realize innovations has definitely to be supported by a general innovative policy and innovation programme which come as a result of the elaboration of functional strategies of the organization.

A change of organizational culture as one of complex managerial tasks is a part of innovations support. One of possible procedures leading to its successful implementation consists of the following nine items: 1. an explicitly determined, understandable and stable innovation strategy of a business; 2. a clear formulation of business employees' expectations; 3. a definition of main parameters and characteristics of future business culture in a broadest possible extent; 4. a description and evaluation of current business culture in key areas fixed to the business strategy; 5. a definition of key areas of business management which are directly associated with business culture; 6. information of employees and an introduction of reasons to change culture; 7. quality education and practical training; 8. control and sanctions; 9. diagnostics of changes in culture. After the project accomplishment, it is necessary to evaluate the change and identify efficiency of the whole process.

It is advisable not to neglect factors affecting the success of innovation activities of an organization. They include an advantageous orientation on an innovation portfolio containing a balanced representation of varied innovation conceptions, the rate of response to market requirements, use of own strengths, technical performance, top management support, application of the innovation process management system. The factors of failure mostly comprise disobedience to market conditions, a low level of innovation projects execution and insufficient differentiation.

2. The role of university in increasing the innovation potential

Universities undoubtedly have the huge potential to become leaders in the area of R&D, education and learning. Likewise, they may become a significant driving force in supporting involvement and cooperation of subjects within a certain locality and creation of a certain community. The university is certainly a place where it is possible to express one's ideas and opinions freely, a creative, innovative along with critical approach to problem-solving is promoted, new knowledge is generated, conventional paradigms fade and are replaced by new ones.

We think that an educational system of each country is one of the most important indicators of development and its standard and quality constitute one of key requirements of country's welfare and sustainable growth. In this context, sustainability may be also understood as a process or strategy leading

to sustainable future. Sustainability yet refers not only to ecology and environment, but rather to the ability of an organization or a system to be maintained at a certain level or rate of performance and that can continue or be continued for an indefinite period. Sustainability, therefore, suggests an activity or, more properly, a set of interrelated activities that is viable for an extended period of time, because it can accommodate itself, and adapt to the vagaries of its physical, social, economic and intellectual environment. It nowadays encompasses a holistic approach in which issues of social, financial, health-related and educational sustainability underpin the fundamental notion of environmental sustainability (Barnard, Van der Merwe 2016). As Moore (2005) also points out, sustainability must become a fundamental priority. She notes that the sustainable development policy of the university outlines the need for sustainable development of campus buildings and operations and education related to sustainability. The principle and concept of sustainable growth involves a large number of perspectives, innovative approaches, initiatives and strategies which should be incorporated at top management levels.

An educational level of population is one of factors determining competitiveness of any country, it enables to develop their excellence, predicts many of their competitive advantages (but also disadvantages) compared to other countries. Nowadays, in the era of the knowledge society, education has become a fundamental source of development and economic growth. We can also argue that in the entrepreneurial sector as well as in other spheres including institutions providing university education or performing scientific research a principle holds valid that innovations are a key to survival and sustainable development. Barnard and Van der Merwe (2016) place emphasis on agility and flexibility to enable pro-active strategies in reaction to constantly changing circumstances. Leaning on modern definitions of sustainability the above authors derive the following set of necessary and sufficient conditions for sustainable development in the university environment:

- the cultivation, through the teaching and learning process through an institutional ethos actively generated by all, of an entrepreneurial and innovative spirit among staff and students. Such a spirit, tangible within a university, enables improvement of the conditions of life through the generation of knowledge which, in turn, creates an improved understanding of the human condition and is also convertible into products and services that develop/improve the prevailing quality of life;
- a standard of teaching and learning and curriculum content that enables its graduates to use the skills, knowledge and competencies gained to the demonstrable advantage of civil society and their own fulfilment;

- earnest and ongoing endeavour to ensure that the internal resources (human, financial and infrastructural) of the institution is gainfully utilized, conserved, replicable and renewable, and that the resources external to the institution for its effective functioning are gainfully utilised, conserved, replicable and renewable.

The above conditions represent values for the university to establish foundations of its functioning and direction. Such value orientation of the university can then, in our opinion, help all involved individuals and subjects reflect on declared values which underline formulated objectives and use these values as an initial postulate of their decision making, and define priorities and that all based on conclusive connections between values and objectives.

In this context, it is often perceived that globalization serves as both a catalyst of accelerated development as well as an agent of chaotic disruption resulting in socio-economic and political dislocations. In light of this, a key idea may be that heterogeneity could be understood as a mind-set and a practice where complexity and diversity are leveraged strategically in a manner that promotes organizational sustainability (Carayannis et al. 2015). We suppose that the pursuit of sustainability and competitiveness of the university in the current turbulent environment accompanied by continuous changes and at the time when in the knowledge society in which the university functions it will increasingly naturally lead to the formation of the environment supporting creation of innovations and their commercialization. Based on Carayannis et al. (2015) and agreeing with Barnard and Van der Merwe (2016) we may define organizational sustainability (also in respect to understanding the university as an innovative organization) as the sum of the following features:

- an appropriately resourced and clearly defined institutional identity for the university, located in its core academic functions, that is not only financially and environmentally sustainable, but also sustainable within the broader body politic; the culture of sustainability fosters an environment conducive to innovation and entrepreneurship; the technology focus should have a clear sustainability culture embedded within it for it to not become subsumed within or subservient to the traditional formative, “academic”, role of the university;
- a system of governance and an organizational design that promotes and protects the academic and other institutional values on the basis of which the university functions and against which it is measured by its stakeholders;
- a transformation agenda that establishes the social and economic conditions necessary for full equality of opportunity for staff and students.

3. Institutional resistance and barriers of innovations in the university setting

As stated above, the positive management's attitude towards innovations at all management levels and the organization's flexibility rate in wider meaning belong to key conditions of the organization's innovation potential. The management's dynamic reaction to operational and strategical changes or the rate of resistance in a historically conventional way of management and thinking significantly influence effectiveness of the innovation process.

Generally, we can classify innovation barriers to internal and external ones. Internal – subjective barriers affect a certain subject in such an extent in which a single organization intensively eliminates their influence by its targeted innovation policy. External barriers, largely having an objective character, affect all subjects in an approximately same way, however, they can be partially eliminated by targeted strategic management which individually enables to achieve a different level of their influence in practice.

In the public universities setting the following external innovation barriers may be considered most crucial:

- the legislative definition of margin of manoeuvre in several key areas of the innovation potential development, together with limited force and competencies;
- determined rules of financing, in the wider context particularly government policy in the area of the volume of universities financing, prevailingly regarding the share of sources intended for science financing which is strongly correlated with the university's innovation potential;
- the solution of structural unemployment in the context of targeted public resources spending on the university study aimed at synchronization of the labour market needs with the offer of universities regarding “produced” graduates;
- the rate of pyramidal perception of the country's innovation potential in relation to the educational system; the efficient use of the innovation potential is not achieved till at the university level but only providing that significance of quality of the educational system as a whole in which primary education performs its crucial task is considered cardinal;
- the absence of the long-term stable and effective strategy in education at the Ministry of Education level.

Internal barriers of the university innovation potential development (from the point of view of public universities) can include:

- the low rate of flexibility and reaction to external needs by management at all management levels;

- the insufficient ability to raise sources of finance from non-public funds,
- the high rate of resistance of employees' thinking in relation to innovations, both towards management and in general;
- universities should represent a country's "goldfish bowl" as for learning organizations and the grade of institutional innovation potential; unfortunately, contrary is often the case;
- appreciation of innovations significance for long-term efficient operation of the university and the natural interest of each employee to contribute to the increase of the institution's innovation potential.

Conclusions

Tertiary organizations including universities should function as knowledge and innovative organizations with the aim to generate and share knowledge bringing on the support of sustainability and development. However, it is inevitable for universities and their successful operation to be managed in an innovative way as only flexible management with a naturally positive relation to innovations is able to reflect on a current fundamental success principle saying that innovations are a key to survival of the university, its sustainability and successful future direction and competitiveness in the challenging environment. Since, as we have already mentioned, education has become one of main sources of economic growth, the successful and innovative university will then provide quality education, prepare graduates able to meet actual practical needs and thus contribute to competitiveness of the whole society.

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