28 Collaborative Innovation – A Role-Model for Higher Education Institutions

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28.1 Abstract

After a brief discussion of open innovation and platform-based companies this paper discusses the changing role of universities in today's knowledge society. It outlines a holistic approach of integrating the three missions, higher education, research and knowledge transfer towards a platform for collaborative innovation and presents St. Pölten University of Applied Sciences' roadmap. It gives an overview of its steps promoting applied research, encouraging interdisciplinary collaboration, facilitating knowledge transfer in a broad sense, pushing innovative learning and teaching methods and supporting innovation and entrepreneurship. Focusing on the universities' main fields of action - encouraging faculty innovation and promoting student innovation and entrepreneurship – the paper refers to examples and discusses intermediate results.

Keywords: open innovation, interdisciplinarity, academic entrepreneurship, innovation education, third mission

28.2 Introduction

It is widley recognised that innovation is a very important key to master difficult, complex and inter-related societal and economic challenges in our fast changing world (European Commission, 2015; U.S. Department of Commerce, 2013; OECD, 2009; Vinnova, 2009). From responsible citizens to governments, from global enterprises to small regional companies and start-ups, a wide range of stakeholders is increasingly interested and dependent on new concepts and methods to push innovative thinking and creative ideas leading to new products or processes. Finding overlaps and using synergies between different needs of various stakeholders has become more and more important for sustainable success. Thus, interdisciplinary skills, creativity and collaboration are widely accepted as important driving forces for innovative ideas, products and processes necessary to keep up with an accelerating global and digital society and to overcome and prevent societal and economic crises. Rapidly growing interest and demand triggered an ongoing evolution of innovation processes, creative environments and collaborative methods. Of course innovation ecosystems have been developed inside companies, traditional networks and communities, but even more important trends and interesting issues like fablabs, maker spaces, coworking spaces, creative labs, crowdfunding, open source and social innovation have come up off the beaten tracks. In recent years a speedy rise of innovation hubs as a new type of organization can be observed. As these hubs incorporate functional elements of research labs, science parks, communities and networks of practice or incubators and accelerators, they appear unique and new in the way they combine tried and true methods with networking and community-based ideas. By embracing fluidity and diversity, focusing on impact, encouraging serendipity, creating a sense of community, intensifying collaborative innovation, dynamising the innovation process and enabling, rather than forcing innovation, hubs allow for new combinations of existing knowledge bases that otherwise would not happen. (Gryszkiewicz & Friederici, 2014)

28.3 Open Innovation and Platform-Based Companies

Without doubt several interdependences between different innovation ecosystems can be observed, as for instance start-ups need capital from investors while global enterprises need new ideas and business models from succesful start-ups. But all too often they only coexist with little interaction and knowledge is still held within defined communities or organisations, with their own language, culture of business and ways of working. Organizations are increasingly recognizing that value from products and processes they once developed only within their own structures can be significantly enhanced if they integrate the innovative capabilities of customers and collaborators, as there is not only limited capacity of companies to perform research and development in their own R&D departments, but the best ideas do not necessarily come from the companies' own employees either. Henry Chesbrough suggested the concept of open innovation as the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation (Chesbrough, 2006). Open innovation can be understood as the antithesis of the traditional vertical integration approach where internal R&D activities lead to internally developed products that are then distributed by the firm. Chesbrough discusses two facets of open innovation: The “outside in” aspect, which includes all ways of integrating ideas, concepts, processes or technologies from outside, either from the customers or the collaborators, from academia or from other institutions into the innovation process of an organization. The other, less commonly recognized aspect is the “inside out” part, where organisations allow ideas, concepts, processes or technologies to go outside to be incorporated into others’ innovation processes.

Closely related with Open Innovation a worldwide shift from product to platform-based companies can be observed. Instead of simply selling a product, organizations such as Google, Uber, eBay or Airbnb establish multi sided platforms to manage relationships with various stakeholders and enable direct interactions between them. (Hagiu & Wright, 2015). As nowadays more and more platform-based companies succeed product-based companies, these transitions have a major impact not only on business models, but on the organization of work and everyday life as well.

28.4 HEI as Plattforms for Collaborative Innovation

Universities may be regarded as product-based providers of higher education and research offering study programmes and degrees to students as well as scientific publications or prototypes, patents and other research outcome to industry and society. However, they have strong potential to develop themselves into platform-based innovation hubs. According to Housers (2014) there are not many platforms besides the university that provide such a vehicle for individuals from different disciplines to interact with each other on such a regular basis.

Higher education institutions commonly not only attract ambitious and smart people, but also assemble various disciplines that deal with societal and economic challenges from various perspectives. Finding overlaps and using synergies between different needs of the various stakeholders, disciplines, societal and economic challenges is key to sustainable success in this context. Higher education institutions’ platforms for collaborative innovation have to include and interact with

- a diverse variety of institutions and organizations, such as global companies as well as regional SMEs and start-ups, NGOs, schools and training centres, science centres and museums, co-working spaces and innovation hubs, accelerators and incubators, science and business parks, research labs and other higher education institutions, regional and federal governments, interest and pressure groups, funding agencies and others

- a diverse variety of ambitious and smart individuals, such as pupils, students and alumni, lecturers, scientists and developers, artists, practioniers and industry experts, business angels and investors, decision makers, responsible citizens
- a diverse variety of various disciplines and industrial sectors
- a diverse variety of business models and processes as well as learning, teaching, research and innovation methods especially emerging from digital technologies

As an obvious precondition towards such platforms, higher education institutions truly have to open the ivory towers of traditional academic disciplines and promote interdisciplinary skills, collaboration and creativity. At MIT Media Lab Joichi Ito (2016) promotes an antidisciplinary approach as a specific field of study with its own particular words, frameworks, and methods as it is about working in spaces that simply do not fit into any existing academic discipline. Ito points out that bringing together design and science can produce a rigorous but flexible approach that allows to explore, understand and contribute to science in an antidisciplinary way.

According to Altmand and Tripsas (2015) organizations that have historically defined themselves as creative and innovative may have trouble accepting a platform-based context. While the inside-out approach of open innovation is in general more difficult for the industry, higher education institutions tend to have more problems with the outside-in approach where outsiders engage in much of the creative activity. As organizational identity can also influence whether and how organizations become platform-based, Altman and Tripsas (2015) propose that organizations must question elements of their existing identity and actively modify it to become consistent with their new approach. Thus, higher education institutions have to re-think their mission, vision and strategy as well as their performance indicators to succeed in their transition towards a platform-based institution.

28.5 A Roadmap for a small University of Applied Sciences

Founded in 1996, St. Pölten UAS is still a young and - with about 3,000 students - a comparatively small higher education institution in the capital of Lower Austria.

However, up to now St. Pölten UAS has taken several important steps in its development towards a platform for collaborative innovation:

- establishing study programmes in various disciplines
- pushing innovative learning and teaching methods
- promoting applied research
- encouraging interdisciplinary collaboration
- facilitating knowledge transfer
- supporting innovation and entrepreneurship

Since its founding, St. Pölten UAS has developed and established more than 20 bachelor and master degrees in the fields of Media and Economics, Media and Digital Technologies, Computer Science and Security, Rail Technology and Mobility, Health Sciences and Social Sciences.

Accompanying efforts have been put to push didactic concepts with innovative teaching and learning. The university has not only integrated research based methods, project oriented and student-centred education in the curricula but is amongst the Austrian pioneers of innovative teaching and learning methods, such as inverted classroom and game-based learning.

More than ten years ago, the university started to put a strong strategic focus on applied research. These efforts not only led to numerous scientific publications and a wide range of projects funded by federal institutions and the European Union, but also to contract research for several industry partners. Research institutes and groups were established in the departments, offering a framework for individual ideas, concepts and developments. Today the university generates about 10% of its total revenue from applied research, and is amongst the most successful universities of applied sciences in terms of research in Austria.

An interdisciplinary approach with three well-defined main topics – “Media, Information and Communication”, “Society in the Digital Age” and “Integrated Mobility” – not only strengthens the cooperation between the six departments and helps reach a critical mass within the research groups but attracts the attention of co-operation partners as well. Interdisciplinarity, collaboration and innovation play a key role in new study programmes, too.

Strong efforts have been made to attract a wider public’s interest in research. For four times since 2011 an expert jury selected St. Pölten UAS to host Austria's contribution to the European Researchers’ Night. The wide attraction of these European Researchers’ Nights benefited the university's reputation and led to intensive collaborations with various stakeholders (e.g. regional and federal governments, other universities and research institutions, companies and interest groups).
At about the same time the university started to push interaction with industry. Advisory boards for departments and study programmes were established in addition to more informal collaborations.

To support these developments knowledge transfer became the third important pillar in St. Pölten UAS strategy from 2012 on. Rather than regarding the three missions as separate fields of action, the university puts a strong focus on their integration towards a platform for collaborative innovation.
The start of the new bachelor programme in “Smart Engineering” in 2015 marks a very important milestone within the university’ interaction with industry, as it is one of the first cooperative study programmes in Austria, combining theoretical studies at the university with practical projects at collaborating companies. So far more than twenty companies have signed cooperation agreements with this study programme.
Another big step within the university’ research activities as well as its industry interaction was the opening in 2015 of the Josef Ressel Centre for Unified Threat Intelligence on Targeted Attacks (TARGET). This research centre, the first of its kind in the region of Lower Austria, is funded half by the Christian Doppler Society and half by a number of industry partners for at least 5 years (Target, 2016).

In recent years, St. Pölten UAS has started to promote and support innovation and entrepreneurship focusing on two areas:

- encouraging faculty innovation (Raffaseder & Permoser, 2016)
- promoting student innovation and entrepreneurship (Raffaseder & Permoser, 2016; Permoser, 2016)

28.6 Conclusions and recommendations

Since St. Pölten UAS decided to focus on applied research and add knowledge transfer as a third mission to higher education not only a significant rise of various key performance indicators, but also a strong improvement of the university's reputation can be observed every year. Although there is still a long way to go towards the suggested platform for collaborative innovation, several indicators already prove the success of this holistic and open approach to various interactions with divers stakeholders. The concept of a platform seems to be appropriate to include the three missions of higher education and to find the overlaps and synergies between the different needs of collaborators. Up to know the most important learned lessons can be summed up as follows:

- rather enable and support highly motivated individuals instead of trying to force performance through to narrow defined objectives and indicators
- enable and support interdisciplinary collaboration across the boundaries of departments and instituts
- do not take too many steps at once
- facilitate interaction of science with society and promote science communication with a wider public
- establish a diverse set of collaboration and interaction with the industry ranging from informal meetings to strategic long-term partnerships
- once developed, act along the institutions' own vision and strategy instead of reacting to every upcoming trend or new buzz word
- learn from the best institutions not only in higher education, but in industry as well, and have a close eye on ideas and concepts to be developed off the beaten tracks outside or on the brink of common academic ecosystems, study and maybe adopt their structures and concepts, but don't try to copy them

28.7 References

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