

**COMPREHENSIVE STUDY OF THE INTERNATIONAL UNIVERSITY
INNOVATION ECOSYSTEM
UNIVERSITY PARTNERSHIP
STAKEHOLDER ENGAGEMENT**

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Abstract. Higher education institutions play a vital role in the economy with their ability to produce knowledge, transfer technology, and create a qualified human resource base. Innovation is strongly connected to their life due to their special research in a complex ecosystem with many heterogeneous stakeholders from different areas such as industry, government, and social fields. The commitment of the internal and external partners greatly affects the success of the collaboration of the members, the culture of the entire cooperation, and the achievement of the targeted objectives. For this reason, stakeholder management is a key task. As for the implementation, the trust of stakeholders and their strategic goals are significant. This requires careful planning in which the interest, and the mutual benefits should be kept in mind in order to eliminate potential conflicts. The tasks of stakeholder management are diverse. It requires flexibility as each partner needs to be involved and engaged in a different way. The research paper investigates the partnership structure of the universities in the innovation ecosystem. A broad literature review focusing on the role of the university, the stakeholders, and the multifaceted phenomenon of innovation serves as a basis for the study. The research looks at the case of a Hungarian university and its partnerships.

Keywords: Innovation, Innovation ecosystem, Partnership, Stakeholder, University

Introduction

Innovation plays a key role in the “knowledge-based economy” (Ankrah, & Al-Tabbaa, 2015). The word itself comes from the Latin origin “in-novare”, “innovatus”, which represents a complete renewal (Kaya, 2015, p.26), however, it is a multifaceted phenomenon. Innovation is part of the entire economy and human life. One pillar of it is the cooperation between the different members, such as the academic sphere and the industry, which aims range from financial goals to human factors, but knowledge

creation and technology transfer should also be highlighted (Ankrah & Al-Tabbaa, 2015).

The innovation process exists in an ecosystem where a complex set of actors does not linearly interact with one input and output, but collaboratively act (Madelin, 2016, p. 18.). This ecosystem provides a heterogeneous background and different perspectives (Kumari et al., 2019) in order to achieve strategic goals. Collaboration between universities and industries is becoming even more necessary to respond to innovation's challenge (Ćudić et al., 2022). Knowledge and technology contribute to the growth of businesses, regional and national economies, and the need from side of society to be up to date and provide appropriate answers to the problems of the world with innovations, adequate skills, and technological advancements (Kang et al., 2019) is powerful. Collaboration can exist in an open innovation system, the advantages of which include knowledge sharing and creation with external partners by the fusion of the knowledge they already have separately (Albats et al., 2019).

Literature review

Role of the universities

Universities have a special role in the development of the economy and collaboration with different stakeholders (Koszttyán et al., 2020). They can contribute to strengthening the region, contribute to competitiveness, generate new knowledge, and provide expertise and human resource (Kálmán, 2019), but at the same time, their role in modern society has changed a lot. Traditionally, the main task of universities was to educate (Tolstykh et al., 2021) but it was transformed by Industry 4.0. and got augmented with entrepreneurial perspectives (Makai, & Rámháp 2020). In this view, their necessary tasks are to manage a strong collaborative network and to create up-to-date knowledge (Tolstykh et al., 2021) that serves as the basis of the development and innovation processes (Ye, & Wang, 2019).

Universities strongly influence their environment through education programs, technology transfer, research activities, and other services such as consultancy, platform functions for different networks, and incubation. Hence, it is in the interest of higher education institutions to provide market services to maintain their sustainability in a long run (Feketéné Czakó, 2017). In general terms it can be denoted, that universities make a major contribution to the "development of society" (Moscardini, Strachan, & Vlasova, 2020) with their "strong knowledge production capacity" (Birkner et al., 2022), their scientific and business research activities. Higher education institutions are encapsulated as they form cooperation with stakeholders building on their knowledge (Koszttyán et al., 2020). A basic form of the cooperative relationship is the Triple Helix Model proposed by Etzkowitz and Leydesdorff in which three major actors, university, industry, and government, collaboratively act to intensify their innovative capability (Abd Razak, & White, 2015). The model was quickly enhanced with the elements of the society and environment as they actively influence the partnership (Maruccia et al., 2020). Furthermore, the third mission of the universities should be mentioned, that they are taking responsibility for their entire environment (Compagnucci & Spigarelli, 2020).

Table 1. The roles of the universities (Source: own edition)

Source	Defined roles
Schiuma & Carlucci, 2018	Their task is to improve the “ <i>local innovation ecosystem</i> ”, and to create a skilled human workforce, experts, and entrepreneurs for the future.
Koszytan, Fehervolgyi, Csizmadia, & Kerekkes, 2020	The duty to support the progress of the economic and social evolution.
Compagnucci & Spigarelli, 2020	Their prior function is transmitting knowledge to the civic sector and institutions and supporting innovation processes, especially social innovation.
Zhou & Tang 2020	Significant role in teaching, research, and third mission activities to assist development and knowledge transfer.
Karpov, 2017	Major importance in assisting humanity’s innovativeness, economic rise, prosperity, and well-being. Technology transfer, commercialization of products or services, introducing them to the market, intellectual property management, and support for start-ups.

The table briefly summarizes the defined roles of the universities described in the literature. Based on the analyzed scientific publications, it is clearly visible, that universities should operate on a wide area of coverage in which knowledge exchange with students, organizations and citizens plays a major role, thereby they also contribute to shaping their environment in social, technological, and economic areas. Furthermore, it is not irrelevant that a shift to the role of entrepreneurial universities should happen, by which they can actively support businesses with up-to-date skills, a properly trained human workforce, and business constancy through incubation.

The importance of partnerships

In the innovation ecosystem development, greater emphasis has been placed on the universities, especially on collaboration with the industry. The academia and the business sphere have different goals, cultures, and possibilities however, they are seeking to find the appropriate way to cooperate, create a “strategic, operational or transactional” collaboration (Marinho et al., 2020), and find mutual benefits that increase their innovation potential and economic benefits (Schiuma & Carlucci, 2018). A significant ingredient of the partnership is the knowledge that supports innovation,

creative thinking, value creation, competitiveness, and development in which trust between the partners is significant (Marinho, Silva, Santos, 2020). The cooperation style between academia and industry can be diverse, constantly changing, and dependent on the stakeholders and the strategic and economic goals (Felix, 2020). Two-sided research cooperations have become popular as universities have highly skilled researchers and the appropriate infrastructure to manage research projects that can be useful for business in the field of R&D (Lutchen, 2018). On the other side, the advantages of cooperation for the higher education institutions can be seen in shared knowhow, skills, expert knowledge, and technology (Marinho, Silva, Santos, 2020) that can create new academic programs, support mobility and provide internship places (Jonbekova, Sparks, Hartley, & Kuchumova, 2020).

There are diverse partnerships that can be categorized by time frame or involvement. It can be long-term collaboration such as research with trained experts and financial support or short-term cooperation with a single class activity (Felix, 2020). Furthermore, partners at various levels can be involved in partnerships. Some of them provide institutional involvement on the other hand in some cases only a person seeks to establish the partnership (Feketéné Czakó, 2017). In sum, cooperation at various levels and between diverse stakeholders can contribute to the increase of human capital, the knowledge creation, can also positively affect the budget, and prestige, and contribute to the intellectual property and operational work (Felix, 2020), however, the success depends on the management of all of the stakeholders. Therefore, a successful partnership must be based on trustworthiness, clearly defined goals, responsibilities, communication, and engagement.

Stakeholder management

In order to deeply understand the nature and role of stakeholder management a short insight should be given into the stakeholder theory created by Freeman (1984) which summarizes the core elements of a network of people and the vested interest of an organization. According to his definition formulation, stakeholders are “any group or individual who can affect or be affected by an organization” (Freeman, 1984, p. 46.; Hörisch et al., 2020), vital for the existence of the business and have an influence on each other within the partnership (Pedrini & Ferri, 2017). The necessary tasks of the management within an organization are to find the balance between the stakeholders’ expectations, to constitute an advantage for them, to create trust between them, and to reduce conflicting situations (Hörisch et al., 2020).

A fruitful collaboration is the result of accurate preparation from the side of the management (Marinho et al., 2020) therefore stakeholder management is a key task for success (Nguyen et al., 2018). There is a need to understand the stakeholders, their perspectives, strategic visions, and their own languages. In this cooperation, the stakeholders’ goals and motivations should be considered and constantly monitored because a major aim is to constitute a long-lasting and strong connection between the partners (Pedrini & Ferri, 2017). A necessary part of success is the choice of the appropriate partner with satisfactory skills and strength, comprehensive, well-defined goals, clear rules, mutual agreements, the role of the leader on both sides, the way of communication and trust that should be established among the partners (Marinho et al., 2020). Trust has a complex meaning and is dynamic. It arises from the individuals’ “mind and soul, “ influencing the perception of humans and the entire world (Blaskova et al.,

2015). People presume that trustworthiness is a “virtue” (Özer & Zheng, 2017), however, a deterioration of trust can be seen in society (Ipsos, 2021). Trusting in someone is hazardous and fragile (Özer, & Zheng, 2017), but collaborations cannot exist without a certain extent of trust.

Table 2. Components of the successful academia-industry partnership (Source: own edition)

Source	Success factors
Siebert, 2020	<i>Trust that is built up from the mixture of credibility, reliability, intimacy, and self-orientation</i>
Marinho, Silva, & Santos, 2020	<i>Balance between stakeholders, conceptual convergence, shared management, agreement on objectives, in case of universities successful knowledge transfer, trust, mutual confidence, engagement of the individuals</i>
Felix, 2020	<i>Clear purpose, process, roles and structure</i>
Ankrah, & AL-Tabbaa, 2015	<i>External ties, interactions between the partners</i>

A stakeholder can be a single person, a private or a public group, an organization, an institution, but there is the fact of “power relation” which indicate the strength and direction of the relationship of the organization with the stakeholder. This relationship exists with the aim of creating mutual benefit. For example, an influential stakeholder has a strong potential bound and the organization greatly relies upon this type of stakeholder group (Avci et al., 2015, Seres et al., 2019). Power relations can be different in the case of all stakeholders, but these can indicate how much the stakeholder affects the life of the institution and how much attention should be paid to the relationship with them. Digging deeper into the stakeholder evaluation, many categories can be seen based on the affiliation of the stakeholders’ interests. According to their stake, primary and secondary stakeholders can be distinguished. In the first case, the institution’s life cannot go on, and cannot exist without this group. They are members who are responsible for the operations, and regulations, they can be the employees, suppliers, and customers. Secondary stakeholders also have an impact on the firm, but do not take part directly in the activities of the business such as media or unions (Benn et al., 2016). In another classification stakeholders can be internal ones, who are actively involved in the life of the organization such as employers, directors or they can be external stakeholders. According to another categorization, actual and potential or compatible or incompatible stakeholders can be differentiated (Crane & Ruebottom, 2011). In stakeholder management, the analysis of stakeholders is one of the business’s very first duties to be able to successfully cooperate with them.

Higher education institutions also need to determine their stakeholders due to the importance of their activities in social and economic terms. Their success or failure is firmly influenced by their partners. The stakeholders of a university are strongly connected to the life of the higher education institution. Based on it, stakeholders can be involved in education, research, administration, and operative management tasks (Seres et al., 2019). According to researchers, well-determined categories of the university's stakeholders are being defined. Based on the work of Burrows (1991) legislative bodies, like the state, operational, administrative, executive management, staff, graduates, relatives of the students, "suppliers, rivals, donors, friends, alumni, local communities, government and non-governmental regulators, financial intermediaries, and joint venture partners" (Burrows 1991, In.: (Avci et al., 2015) are all stakeholders of higher education institutions, that should be taken into consideration, managed closely and involved into the processes of the university.

Stakeholder engagement

Engaging the stakeholders is a relevant part of a collaborative process which requires the precise definition of the group of partners, and identification of their needs in order to maximize them, however, it also involves many other fields that should be taken into account, such as CSR, ethics, leadership, environment, and organizational culture (Kujala et al., 2022). As for universities, defining their stakeholders is a necessary task in order to achieve strategic goals in the long run (Avci et al., 2015). Networking has a major role that is an interaction with the aim of constructing an advantageous relationship in order to gain competitiveness, new customers, knowledge, ideas, skills, business possibilities, or carrier opportunities. Networking can help to retain old partners, but it can support gaining new ones. Its necessary part is the stakeholder analysis which has well-defined steps. In stakeholder analysis, the first rule is to map all affected people, then categorize them into internal and external ones. It is also an important part of the analysis to define the impact and size of the effect on the stakeholders, whether positive or negative, because it can influence the project's success. The advantages of well-defined stakeholder analysis include shared resources, information, and know-how. Successful stakeholder management can contribute to favorably coordinating the partners and to mapping conflicting interests (Bahadorestani et al., 2019). To engage the stakeholders in the long run, communication, involvement in the business's life, and continuous information with the defined stakeholders are essential to building up a strong relationship based on trust. Stakeholder engagement can use incentives, as well as other strategic tools. Models such as the spiral (Boje et al., 2017) with an ever-expanding scope, a matrix with a diversified project scope, or agility with quick reflections should be selected and adapted to the goals. Stakeholder engagement is a long and complex process that requires regular tasks to be carried out in order to keep contact, however, the outcome of a well-defined stakeholder mapping can result in engagement on an advanced level, improved performance, well-being and effectiveness of the institution (Kujala et al., 2022).

Methodology and objectives of the research

The main objective of the research is to provide an overview of the university innovation ecosystem and the role of the partnership with a focus on the stakeholders and their engagement. The research paper examines the elements of the innovation ecosystem

and emphasizes the duty of the university-industry collaborative partnership with a broad literature overview and introduces the concept of stakeholder management. The study's research question explores and collects the elements that determine the successful partnership between universities and industry, by analyzing previous studies. In addition, the example of a Hungarian university will be presented in the field of stakeholder management. The aim is to identify who matters in the life of a university and how these stakeholders can affect or can be affected. The research paper presents the initial phase - mostly based on secondary data - of a complex research that is aiming to investigate the academia-industry partnership, and compiles recommendations for the universities as to how to make a successful collaboration with national and international partners in the innovation ecosystem.

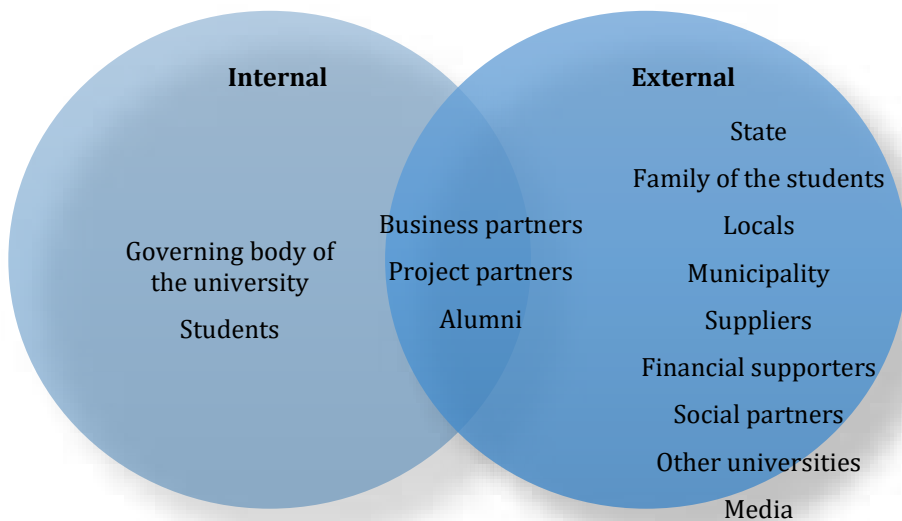
Introduction to the stakeholders of the University of Pannonia

The University of Pannonia is located in Veszprém county and operates with five faculties in four settlements: in Veszprém, Kőszeg, Zalaegerszeg, and Nagykanizsa. The stakeholders play a significant role in the life of the university as it is written in the institutional development plan, founding document, and quality assurance framework of the institution in order to be able to achieve the strategic goals that include high-quality education programmes, research and contribution to the R&D. Taking into account the institution and its environment, many internal and external partners can be mentioned. The Hungarian state ensures a legal framework with regulations, indicators, and standards for the operation programs as an external stakeholder. Based on the organogram of the institution, there is a governing body at the top of the university, followed by internal stakeholders such as the board of trustees, senate, rector, chancellor, and unions. The doctoral council, the Hungarian Academy of Sciences (MTA), and advisory boards such as the AACSB advisors, consultants, and the National Research, Development, and Innovation Office (NKFIH) perform a major partnership with a special stake in the life of the university.

Students of the faculties such as the Faculty of Business and Economics, of Engineering, of Information Technology, etc., including postgraduate students and PhD. students are internal stakeholders interested in getting a prestigious degree, high-quality education, and recognition in the employment market. As an external stakeholder, the students' relatives should also be determined whose aim is to see their relatives succeed. External stakeholders include those who have already graduated, left the university, and are active in the labor market or start a course in another institution. They are the alumni group who have a huge influence on the brand of the higher education institution and can positively or negatively affect its reputation. An external partner is the City of Veszprém, with the locals and the governing municipality as well as the business partners, such as industry partners offering placements, strategically connected large, small, and medium-sized enterprises, non-governmental organizations, members of the regional innovation platform such as MOL Group, Herend Porcelain Manufactory, Continental, hotel chains from the region, tourist offices, restaurants with the aim to get appropriate, highly skilled workforce with foreign language knowledge, etc.. That is why the need of the market is essential to be heard and embedded into the curriculum of the students. International partners like other universities and business partners should also be mentioned as external ones, and the suppliers, such as the cleaning, catering companies, or dormitories. There are financial supporters, project partners at national and international levels, and competitors such as other universities with the same teaching and research scope. There are civic partners such as the church, and public

education institutions based on the third mission activities of the university, whose aim is to get proper dissemination, like in the form of summer schools for teenagers or retired people. The media has a strong influence as an external partner, that can affect the brand image or perception. Last but not least a significant internal stakeholder group should be mentioned, the human resource base of the institution with the lecturers, researchers, professors, administrative and operative employees who can highly affect the operation of the university and their aim is to have a reliable, long-term workplace.

Figure 1. Summary of the stakeholders (Source: own edition)



Results and discussion

Innovation is a push factor toward the development of the economy. For this reason, universities are a significant part of the innovation ecosystem with special roles from traditional teaching, and research activities to the third mission. Their societal impact on knowledge creation and transfer influences the development of their local and global environment by creating new scientific products or services. In order to utilize this potential, long-term fruitful partnerships are necessary. The collaboration of academia and businesses has a long tradition and benefits can be felt on both sides, however, the establishment of a successful collaboration requires thorough planning, continuous control, and evaluation based on the strategic goals, the motivations, and the direction of the partnership. In collaboration, the stakeholders should be understood, informed, and actively involved in order to establish trust that serves as a basis for the interaction. Therefore, stakeholder management is a complex and vital task for institutions. Universities should cope with this and map all their partners with their special interests whether they have strong power relations or only minimal. They have a compound stakeholder base ranging from the national and institutional ruling government, administrative bodies, students, and their parents to other universities. These stakeholders affect the university's success, influence the brand, and the perception, and contribute to the efficiency and effectiveness of the institution. The stakeholders' engagement is in the institution's interest, but continuous communication, information

flow, involvement, and mutual goal determination are necessary to achieve engagement networking.

Conclusions

The paper investigates the partnership between universities and businesses in the innovation ecosystem based on a broad literature review on the current topic of higher education. The changed role of the universities brought, that they have a vital third social mission and should carefully create their own partnerships with the industry. Necessary task of them, to define their goals, and relationships and carry out their activities with this in mind. There are different types of collaborations and relationships between the partners. The spiral relationship makes the bottom-to-top growing involvement possible and creates a spillover effect. The matrix presents relationships with different stakeholders from different areas, in which well-defined actors can characterize the universities such as the lecturers, researchers, the different project teams, roles of the departments or faculties. Finally, the agility model can be mentioned in the constantly changing and dynamic world, which enables speedy communication, conflict management, and formal and informal communication. The question for further research is, which model can be most appropriate for the university structure in order to actively involve the stakeholders and create long-term fruitful collaboration.

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