

Chapter 2

Applying HEInnovate to higher education in Hungary

This chapter presents key review findings and recommendations. The analysis is structured along the HEInnovate framework with its seven dimensions and 37 statements. It covers a holistic approach to supporting entrepreneurship and innovation, including strategy, governance and resources, practices in organising education, research and engagement with business and society, and measuring impact. The analysis is based on a study visit to six institutions and the results of a system-wide HEI Leader survey.

HEinnovate describes the innovative and entrepreneurial HEI as “designed to empower students and staff to demonstrate enterprise, innovation and creativity in teaching, research, and engagement with business and society. Its activities are directed to enhance learning, knowledge production and exchange in a highly complex and changing societal environment; and are dedicated to create public value via processes of open engagement”. How this can be translated into daily practice in HEIs, is described through 37 statements which are organised in seven dimensions.

The following presents key findings from the application of the HEInnovate guiding framework to HEIs in Hungary.

Leadership and governance

Entrepreneurship is a major part of the HEI’s strategy

In Hungary, public policy has played an important role in introducing entrepreneurship and third mission activities into higher education. At the institutional level, an important driver has been the need to generate additional income to compensate for the decreasing institutional funding from the state. This has impacted on the conceptual understanding of entrepreneurship and third mission activities: there appears to be a greater focus on commercialisation activities and less emphasis on entrepreneurship as a competence (mindset) and other forms of knowledge exchange, such as community engagement activities, which may not have direct revenue streams.

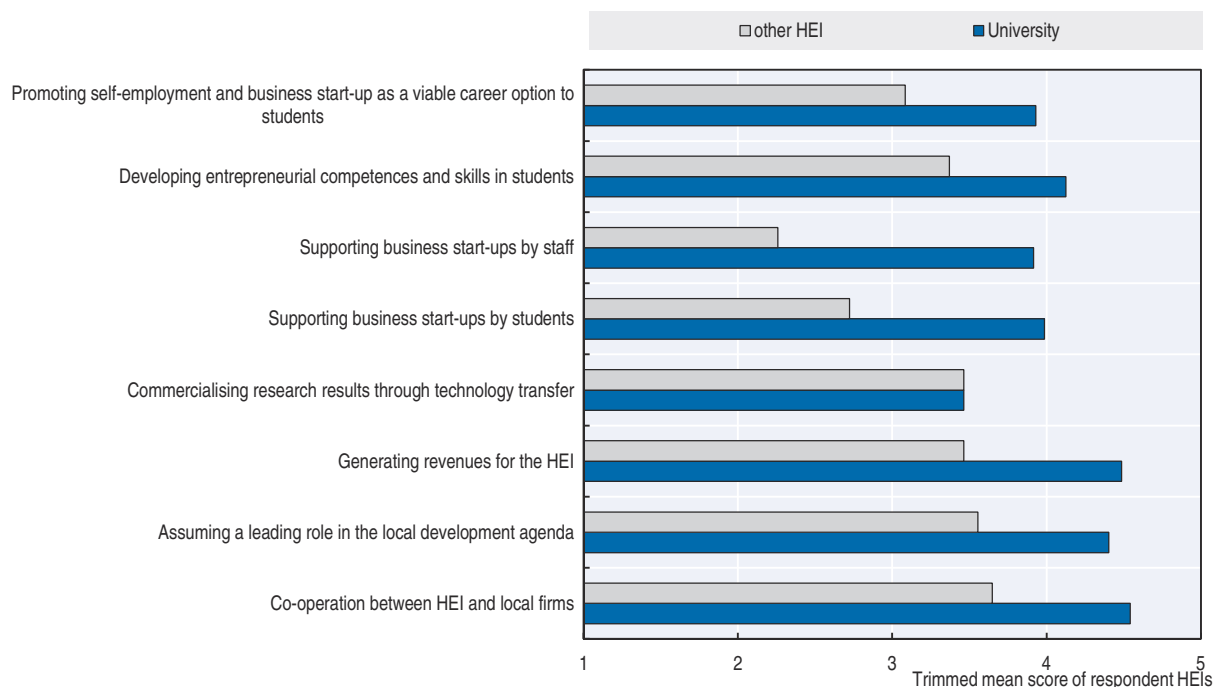
Although the 2014 Higher Education Strategy makes explicit reference to the third mission, it lacks a comprehensive definition of activities and allocation of resources in terms of staff time and funding. It is therefore recommended to develop a specific strategy on the third mission, building from the evidence of existing and planned activities reported in the HEI strategies, which are currently in preparation. In the current situation, government views the development of the third mission as a potential way to enhance and improve the financial profile of HEIs through interaction with industry, business and the international community. The senior management teams in the visited HEIs also shared this view. This bears a major risk for the diversity and sustainability of the higher education system. Without a clear definition and robust anchoring of third mission activities in both the national strategies and performance agreements with the HEIs, the third mission is likely to become reduced to revenue-generating activities and in the long-term a “shift of the university from being grounded within the fiduciary system to being institutionally linked with both the political and economic spheres” (Goldstein, 2010).

At the time of writing this report, all HEIs were reviewing their institutional development strategies up to the year 2020 with the Ministry of Human Capacities. This also includes a further embedding of third mission activities into education and research, and in the institutional performance contracts. Slightly more than half of the HEIs surveyed for this report currently offer entrepreneurship education activities and one-third provides start-up support. The majority of HEIs have agreements with government bodies

for the entrepreneurship education activities they offer (81%), and slightly less for the start-up support measures (70%). Entrepreneurship and innovation also occur as key words in the institutional strategies of the HEIs, however less often than knowledge exchange or internationalisation.¹

Figure 2.1 shows the varying entrepreneurship related objectives of Hungarian HEIs as derived from the HEI Leader Survey implemented as part of this review. “Co-operation between HEI and local firms” was ranked highest by both universities and the other types of higher education institutions. All surveyed HEIs assigned medium to high importance to developing the entrepreneurial competences of students and to the promotion of self-employment and business start-up as a viable career option. Supporting start-up activities was perceived as more important by the universities than the other HEIs. Least relevant for universities was commercialisation of research results through technology transfer, whereas for the other HEIs it was supporting staff in their business start-up intentions. Overall the entrepreneurship related objectives were rated higher by the universities (4.1) than by the other HEIs (3.2).

Figure 2.1. **Entrepreneurship objectives of Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) were asked: “How important are the following objectives for your HEI?”. Respondents indicated the level of importance on a 5-point Likert scale from 1 = “Not important at all to 5 = “Very important”. 5% trimmed means are shown. A total of 27 HEIs responded (15 universities, 4 universities of applied sciences and 8 colleges of education). Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).
Source: OECD (2016), *HEI Leader Survey Hungary*.

Only five of the HEIs have specific performance targets and metrics in place for these strategic objectives. This number is likely to increase as half of the HEIs reported in the survey that discussions are ongoing in their governing boards to introduce performance measures for the entrepreneurship objectives. This will also help the HEIs to link their various strategic objectives with each other, for example, internationalisation and assuming a leading role in the local development agenda.

Introducing performance management of strategic objectives related to entrepreneurship is likely to require further changes to current regulations and procedures in Hungarian HEIs. This is an area of dynamic change as the example of Semmelweis University illustrates. A recent modification to the charter allows the university to undertake new revenue generation activities, such as industry advertisement and film production on campus. This brings new opportunities for industry collaboration, which, however, will need to be supported by an effective implementation plan that connects these activities with education, research and third mission activities. At system level a recent legislative change now allows HEIs to undertake for-profit activities (see Chapter 3).

Communicating the institutional development plan is crucial for effective implementation. Most of the surveyed HEIs (82.1%) reported to communicate the strategy on a regular basis to staff and students. Often, this requires specific efforts to “translate” a document, which may have been drafted mainly for administrative purposes and negotiations of performance agreements with the government, into a document that meets the interests and needs of various strategic stakeholders. Such a process is currently underway in the Eszterházy Károly University of Applied Sciences. The 1000-page institutional development strategy, which served the purpose of guiding the HEI’s transformation into a university of applied sciences, is now being summarised into a much shorter document, which is tailored to the interests of key stakeholders and identifies niche areas of collaboration and intended impacts in terms of the economic, social, environmental and cultural outcomes of a transformed higher education provision in Eger. This is a good example of how to communicate across the HEI and beyond the HEI’s strategy, its underlying vision, and the opportunities for new activities.

There is commitment at a high level to implementing the entrepreneurial agenda

For an effective implementation of the entrepreneurial agenda, a high level of commitment in implementing the strategy is needed, as well as a shared understanding of what the entrepreneurial agenda means for the different actors in the HEI (leadership, academic staff, administrative staff and students), and external partners (e.g. government, businesses, civil society organisations, donors, etc.).

A starting point is to widely share information about the institutional development strategy and to establish a common understanding of what the entrepreneurial agenda entails in terms of objectives, activities, priorities and resources. All HEIs reported in the survey to involve staff in the institutional strategy review and more than half also involve students (55.6%). Approximately one-third reported to involve local firms and their representative bodies; four HEIs involved local and regional governments.

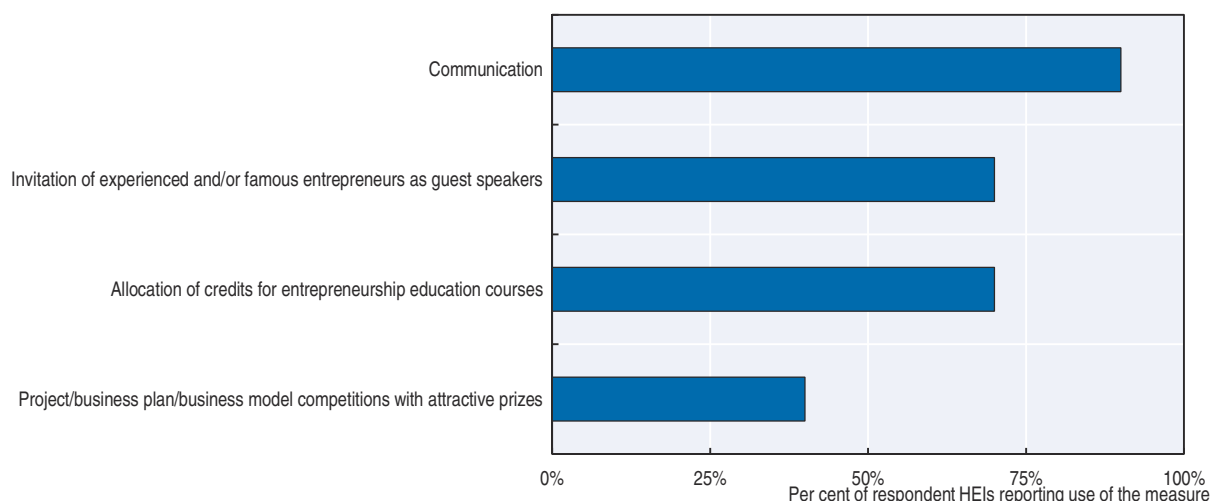
There is a strong focus in the entrepreneurial agenda of HEIs on commercialisation activities and other forms of knowledge exchange which may not have a revenue stream attached (e.g. community engagement activities). Nevertheless, there are plenty of initiatives – often promoted by very motivated individual staff members – that seek to broaden the entrepreneurial agenda. Innovation in teaching, in the form of pedagogies, learning outcome assessment and learning environments, is a crucial element of the entrepreneurial agenda. Technology is changing quickly and more important than knowledge acquisition is to develop the skills needed to apply knowledge in different and unknown contexts.

Activities that promote a positive attitude among students to consider starting up a business as a viable career option are also part of the entrepreneurial agenda. More than half

of the surveyed Hungarian HEIs currently offer entrepreneurship education activities and four HEIs are planning to introduce these activities, whereas one-third offer special support measures for nascent entrepreneurs. 75% of the surveyed HEIs reported to have established positions for entrepreneurship education, whereas only slightly more than 20% reported to have positions related to start-up support. Positions for entrepreneurship education activities were mostly hosted in faculties/departments, whereas start-up support was covered by non-academic staff. One HEI had created a senior-level management post in charge of the entrepreneurial agenda. Technology transfer offices play an important role in this, too. In some cases, the technology transfer office was set up as a separate legal entity.

According to the survey results, on average one-third of students currently participate in entrepreneurship education activities, and the HEIs expect to reach on average half of the student body within the next five years. A possible barrier might be that the information on these activities is not readily available. This was also confirmed by the study visits. 75% of the HEIs currently offering entrepreneurship education, reported to undertake targeted efforts to increase the participation rate. A range of targeted efforts are underway (Figure 2.2). Most common are communication efforts, followed by invitation of entrepreneurs as guest speakers and allocating credits in line with the European Credit Transfer and Accumulation System (ECTS). This is a very effective way of raising the interest of students. Least common was the organisation of business plan competitions with attractive prizes.

Figure 2.2. **Measures to enhance participation in entrepreneurship education**



Notes: Higher education institutions (HEIs) were asked: "What measures does your higher education institution (HEI) implement to increase participation rates in entrepreneurship education activities?". Total number of respondents was 16 HEIs (11 universities, 5 other HEIs). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), *HEI Leader Survey Hungary*.

Most of the surveyed HEIs reported to publish information on entrepreneurship support activities on their institutional website, and on average it takes three "clicks" to get to this information. Social media, in particular Facebook, is also used either by students themselves, or by teaching staff to spread information about entrepreneurship.

Individual staff members play an important role in enhancing the entrepreneurial agenda of the Hungarian HEIs. These people are highly motivated to make a positive impact, and often this comes on top of their daily workload. Several examples were encountered during the

study visits to the five HEIs. The establishment of an institutional support framework is important to sustain these initiatives and leverage from them an HEI-wide impact. A possibility is to create the position of a vice-rector for the entrepreneurial agenda with the aim to nurture synergies between the different aspects of the entrepreneurial agenda, and to tie these further into the HEI's core functions in education and research. Such a position also facilitates collaboration with current and future partners on the entrepreneurial agenda.

A main barrier in the current system is the allocation of staff time, with two-thirds for teaching and one-third for research activities, which does not leave room for third mission activities. Even if third mission activities are embedded into teaching and research, it takes time and effort to establish the basis for relationships that contribute to teaching (e.g. field visits), research (e.g. field data), and result in knowledge application (e.g. new product or service). Allowing staff to use part of their time for relationship building, and the existence of horizontal services that support staff in their efforts and make sure that individual contacts can have a wider institutional impact are suggested areas of action for Hungarian HEIs (see Chapters 3 and 4).

There is a model in place for co-ordinating and integrating entrepreneurial activities across the HEI

A key challenge for the HEI leadership is to secure and co-ordinate the diversity of inputs into the entrepreneurial agenda from across the HEI. The current approach in Hungarian HEIs is based on very committed individual champions. As long as there are only a few activities, duplication and overlap may not be an issue, and perhaps may even be desirable to increase critical mass. Survey findings reveal that a range of different, mostly HEI-internal people are involved in the entrepreneurship courses. In order of the reported number of teaching staff currently involved in these activities, these are: lecturers, that is, temporary hired staff, followed by associate/assistant professors, external stakeholders, PhD students, full professors, and researchers. Most of the HEIs, who reported to currently offer entrepreneurship education activities involve guest speakers in less than one-quarter of the entrepreneurship course activities. Five of the surveyed universities reported to have a permanent contact point or office for entrepreneurship, and a further three were planning to establish one. The activities of this permanent contact point were mostly carried out by full-time employees, often with the support of students.

Different approaches have been tried out by HEIs across Europe to introduce an effective model for co-ordinating and integrating entrepreneurial activities across the HEI. A common model is that the entrepreneurial agenda is anchored within senior management, often in form of a dedicated unit, which is part of the rector's or the vice-rector's office, and tasked to oversee the entrepreneurial agenda. Another approach is to appoint one or more professors, who have entrepreneurship in their title, or a chair in entrepreneurship. Another, increasingly practiced approach is the establishment of an entrepreneurship centre, which promotes easy access and visibility inside and outside the organisation. An effective model for co-ordinating and integrating entrepreneurial activities across the HEI is also important for an exchange of experiences and peer-support, particularly in education activities. Whichever model is employed, it should take into account existing relationships, co-ordinate across departments, faculties and other units, and avoid the duplication of work both inside the higher education institution and within the surrounding entrepreneurial ecosystem.

HEIs in Hungary have opted mostly for the first or the last of these three approaches. Often the technology transfer office assumes a leading role in co-ordinating commercialisation and support for venture creation. Depending on the overall conceptual anchoring of the entrepreneurial agenda in the HEI, this may lead to a greater orientation towards commercialisation of research results and spin-offs. In the visited HEIs, a good start was made with the further development of technology transfer units into innovation centres with a broadened institutional and conceptual remit. It remains to be seen how industry partners will react to the proposed administrative integration of the innovation centres into the chancellor's office, as apparently discussed in some HEIs. Concerns are that this will result in a decrease of administrative flexibility and less autonomy in decision making.

The HEI encourages and supports faculties and units to act entrepreneurially

Generally, it can be assumed that HEIs with fewer barriers or hierarchies will find it easier to implement an entrepreneurial agenda because new units, centres, and support measures can be created more easily. In Hungary, faculties have a high level of autonomy. In some departments, this has created an environment where it is easy to implement change. The involvement of external stakeholders through formal communication channels, such as advisory boards, has also helped (see Chapters 3 and 4).

Some HEIs have established a non-profit organisation for faculties and units to act entrepreneurially. An example is Universitas a public foundation at Széchenyi István University. It started as a company located within the campus in Győr. The University originally held a 20% share, which was recently sold. The rector and the chancellor, as well as city and local industry and business representatives are members of the board of trustees. So far, Universitas has maintained close contacts with all faculties of Széchenyi István University and has supported principal investigators and other research team members in their funding applications. With the integration of two, geographically distant campuses, this will become more challenging. Nevertheless, Universitas has a good potential to raise awareness among researchers and faculty leaders on the relevance of interdisciplinary education and research activities on topics such as e-mobility, which are key strategic areas with increasing demand for skilled labour and innovations.

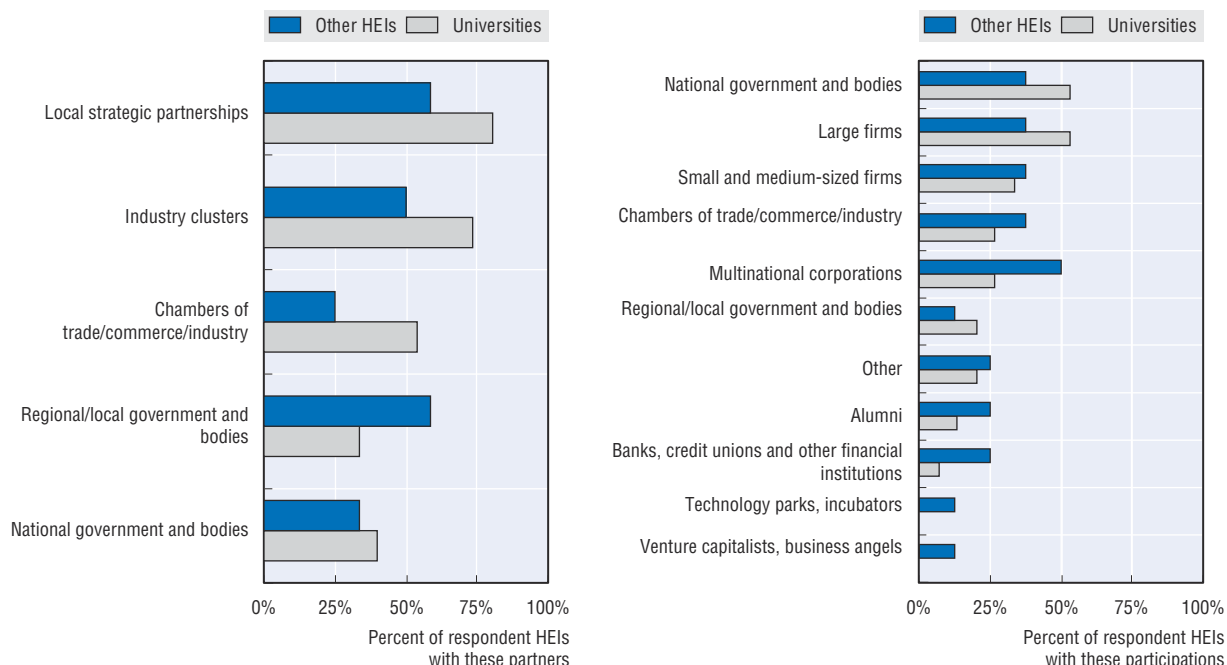
A good example of an initiative that encourages and supports staff and students to act entrepreneurially, and, at the same time, builds critical mass in new strategic areas is Demola Budapest, which was created as an open innovation laboratory within the Budapest University of Technology and Economics and is part of the international Demola Network. Since it started in 2012, multinational corporations, such as Vodafone, Siemens and Canon, and several small and medium-sized enterprises (SMEs) have collaborated with students on real challenges. Student teams work for four months under the supervision of academic and company staff on solutions for business challenges. Emerging business ideas can be purchased by companies within a few months of completion of the course offering a majority share of the price to the students. If the partner company does not want to purchase the final product the ownership falls on the students who invented/produced it.

The HEI is a driving force for entrepreneurship and innovation in regional, social and community development

HEIs in Hungary, particularly outside of Budapest, play several roles in their local environment and one of their key functions is to support and drive economic, social and cultural development. They are often one of the major employers in a locality and by their

existence will impact on the local economy and social wellbeing. The surveyed HEIs maintained close relationships with external stakeholders. Almost all universities and close to 60% of the other HEIs had representatives of external organisations participating in their governing or strategy boards. Most of the HEIs also participated in key organisational structures of their external stakeholders. High rates of involvement can be noted for local strategic partnerships, industry clusters and regional and local government bodies, whereas relationships with local Chambers were less frequent (Figure 2.3).

Figure 2.3. **Strategic partners of Hungarian higher education institutions**



Notes: The chart on the left shows the involvement of external stakeholders in the governing bodies of Hungarian higher education institutions (HEIs). Respondents were asked “Which of the following organisations or individuals are members of the governing board of your HEI?”. The total number of respondents was 21 (14 universities, 7 other HEIs). The chart on the right shows the involvement of HEIs in governing boards or strategic positions of external stakeholders. Respondents were asked “Does your HEI participate in the governing boards of the following organisations and strategic initiatives to define the development directions of the surrounding local economy?”. Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The total number of respondents was 28 (15 universities and 13 other HEIs). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), *HEI Leader Survey Hungary*.

Relationship building is an institutional priority and most HEIs reported to have several means to formally recognise external stakeholders for their strategic contributions to the HEI’s development. These are, in order of current frequency: award of honorary doctorates, professorships, and annual award ceremonies (82.6%), preferential partnerships for student or graduate recruitment (60.9%), naming of prestigious campus facilities (52.2%), and the use of facilities at free or reduced rents (43.5%).

Several examples of a prominent local development role were observed during the study visits to the five HEIs. The University of Debrecen can be considered a pioneer in the establishment and operation of industrial clusters related to its research areas. During the last decade, the University has been involved in five clusters including the pharmaceutical industry, thermal tourism, food industry, sports, informatics, and instrument development; two of these clusters are internationally accredited. The university has acted

timely upon public funding opportunities, which subsidised the creation of these clusters. Currently, contacts between the cluster firms and the university are organised at the rector's level involving key faculties through research collaboration and work placements of students through a cluster management company.

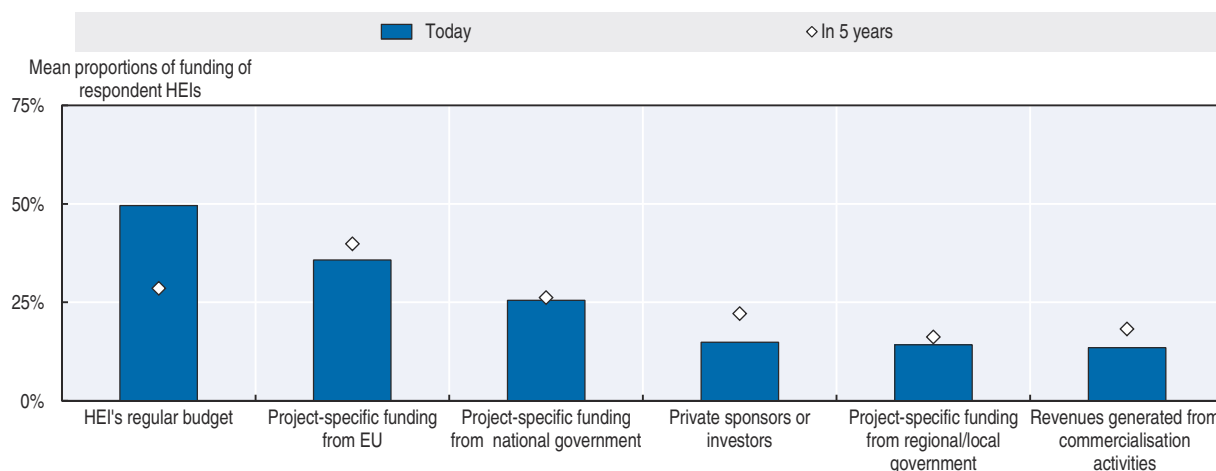
The Eszterházy Károly University of Applied Sciences is another good practice example of how scientific research results can contribute to diversification and quality premiums in local industry. The collaboration with the wine industry in the Tokaj cultivation area brings together a growing number of small-scale farmers, winery owners and the tourism industry with the aim to promote premium quality wines and local tourism. The university had a major role in the drafting of the Eger Regional Development Plan 2020.

Organisational capacity, people and incentives

Entrepreneurial objectives are supported by a wide range of sustainable funding and investment sources

Funding for the entrepreneurial objectives to date has been largely reliant on the HEI's regular budget and EU project-specific funding. Expectations for future funding sources are highest for private sponsors and lowest for institutional funding (Figure 2.4). While a small number of these activities appear to generate their own revenue streams, there is a need for continuous investment from the HEIs so that the infrastructure and activities created, such as technology transfer centres, innovation centres and entrepreneurship programmes, can fulfil their mandates, meet the needs of researchers and students and, meet institutional expectations.

Figure 2.4. **Financing entrepreneurship support in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) that currently offer entrepreneurship support were asked "What is the approximate ratio of the different funding sources your HEI uses to finance the entrepreneurship support activities?", and "Looking ahead for five years what ratio do you expect to come from the following sources for financing these activities?". A total of 17 HEIs responded (12 universities, 5 other HEIs). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%). Source: OECD (2016), *HEI Leader Survey Hungary*.

Generally speaking, a good starting point in broadening the range of sustainable funding and investment sources for the entrepreneurial agenda is the identification of areas and activities that external funding and sponsorship could support. There are some key challenges that HEI leadership needs to be aware of. Project-based funding does not provide a stable and long-term funding frame, not least because of its limited time frame

and the need to regularly apply for new funding. Some of the sources may not generate substantial and steady funding. For example, funding from alumni or wealthy individuals is often directed into specific activities (e.g. chairs, centres, education activities). Consultancy activities may have to be initially offered for free in order to attract customers. Revenues from academic spin-offs may neither be a steady income stream nor generate much income. HEIs will also need to demonstrate to private and local public funders the value of their entrepreneurial activities, e.g. for local and regional development, in order to create long-term commitment of funding sources. It is thus important to:

- Map the variety of funding sources already used by the different faculties to avoid approaching the same funding source several times, but also to facilitate communication with funders.
- Establish control mechanisms, which ensure that the entrepreneurial agenda does not become overly dependent on funders who may simply be interested in pushing their own priorities.
- Invest in training for staff involved in fundraising.

Hungarian HEIs need to increase their current efforts in all these three areas. Most of the surveyed HEIs reported to be active in fundraising. It is mainly the responsibility of top-level management; in less than half of the HEIs this was delegated to academic staff, and only two HEIs offer training for staff involved in fundraising.

The HEI has the capacity and culture to build new relationships and synergies across the institution

All staff and students are central stakeholders of the entrepreneurial agenda and ideally work together to create dialogue and linkages across the organisation and beyond its borders. However, traditional boundaries and silos between administration and faculties, faculties and students and management and non-management can make this challenging and resource intensive. Breaking down boundaries and developing integration is a long-term endeavour, which starts with awareness creation, and is nurtured with incentives and rewards.

Connecting staff is an important step towards changing attitudes and building an entrepreneurial culture across the HEI. A starting point could be the introduction of regular exchange and consultation meetings, involving all staff within faculties/departments, administration and senior management. The overall objective of a continued cross-staff exchange and consultation process is to create an environment which enhances exchange and collaboration, identifies and addresses (disciplinary) barriers, promotes awareness of what an entrepreneurial organisation entails, and, in the long run, leads to the emergence of an entrepreneurial culture in the organisation. Such meetings allow staff to keep up-to-date with current developments and to get to know each other personally. These meetings can also help staff coping with reservations and challenges related to their specific areas and tasks.

In Hungary, the recent change in the allocation of competitive research funding to transdisciplinary research projects can be an important lever in promoting such synergies. From the study visit to the five HEIs it appears that building relationships and synergies across the institution is an area of untapped opportunities. Although there are examples of inter-faculty and interdisciplinary communication, there is a lack of detailed knowledge about what is happening at the overall level in the HEI or in other faculties. A good starting point is the availability of shared facilities across faculties (e.g. innovation centres), as is present in some of the visited HEIs (see Chapter 4).

Another possible area of supportive intervention in establishing cross-faculty synergies are interdisciplinary education activities. Approximately 70% of the surveyed HEIs reported to offer interdisciplinary study programmes at Bachelor and Master levels, less frequent are those for doctorate programmes (51.9%). Further, 85% reported that they offer interdisciplinary education activities, which are open to students from all faculties. Students cannot always earn credits for these activities; only 40% of the interdisciplinary education activities offered at Bachelor level and 48% of the activities at Master level offer credits as per the European Credit Transfer and Accumulation System (ECTS).

The HEI is open to engaging and recruiting individuals with entrepreneurial attitudes, behaviour and experience

Less than half of the HEIs indicated in the HEI Leader Survey that private sector experience is considered in the recruitment of academic and research staff; no difference was noted between universities and other HEIs. A major systemic barrier in Hungarian HEIs is that wage levels in academia are much lower than in the private sector.

Different approaches are being adopted to integrate experiences from the outside world into the education programmes, mostly with regard to invited speakers or business oriented people that get involved in teaching activities. All except for two HEIs reported in the HEI Leader Survey to involve external stakeholders in teaching activities. Almost 60% of the surveyed HEIs reported to have formal evaluation procedures in place for this. The recent introduction of dual education programmes (see Chapter 1) will have likely increased private sector participation in higher education.

The HEI invests in staff development to support its entrepreneurial agenda

Continuous professional development for staff is not widely practiced in Hungarian HEIs. Less than one-third of the surveyed universities and two-thirds of the other HEIs reported to have a formal policy for training and career development in place for all staff. Competency frameworks are most common for professors, and least common for administrative/non-academic staff. A possible explanation is the existence of different job profiles falling under this category. Training was in place for all professors and the majority of administrative staff, but only one-third of lecturers, that is, temporarily hired teaching staff, had access to training.

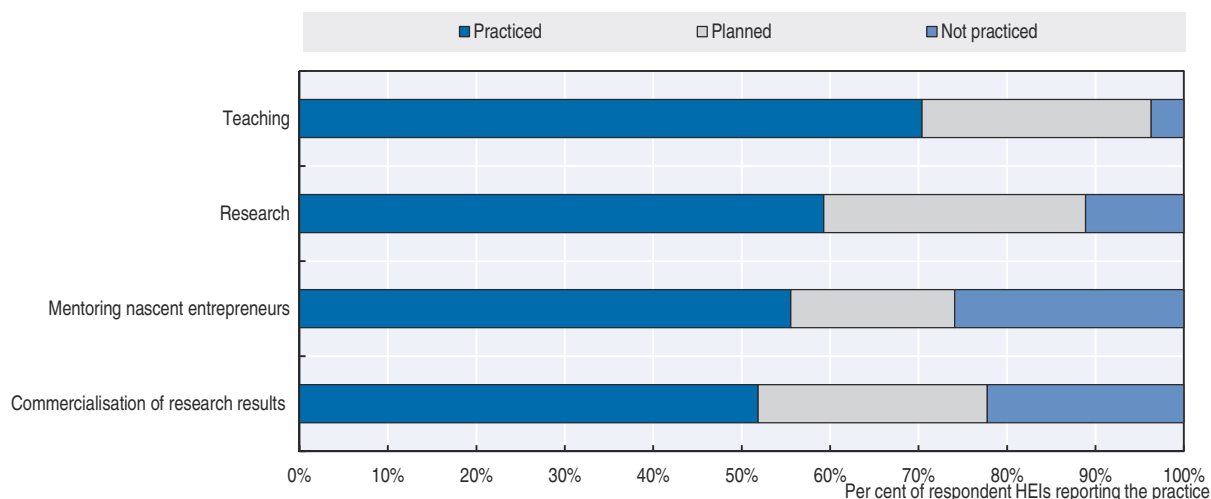
Training for staff involved in entrepreneurship support is largely underdeveloped. Only three HEIs reported to offer further education and training possibilities for staff involved in entrepreneurship education, and only one HEI was offering this for staff members working in the area of venture creation. A promising practice in this field is the recently started initiative by the education department of the Eszterházy Károly University of Applied Sciences to organise training in experiential pedagogies for educators in higher education.

The presence of key professional staff members in entrepreneurship is still quite recent in Hungarian HEIs and often confined to business schools, economics departments and technology transfer offices. Non-academic positions often have short-term contracts and are thus dependent upon the timing of project-funding. Highly qualified professionals, fully dedicated to innovation and entrepreneurship activities should have well-defined and stable careers within the HEI, to further motivate their dedication to these still recent fields of intervention.

Incentives and rewards are given to staff who actively support the entrepreneurial agenda

Academic staff members are primarily recruited, evaluated and promoted on the basis of their research performance and teaching track record, rather than contributions made to the HEI's entrepreneurial agenda and achievements in third mission activities. Survey findings confirm this. Incentives and rewards for excellent performance in teaching and research are more common than for involvement in commercialisation activities or mentoring nascent entrepreneurs, but the latter are growing (Figure 2.5). Incentives for commercialisation operate at the level of faculties/departments. Only one-third of the HEIs reported to have an incentive system for a broader set of knowledge exchange activities; these incentives were mostly directed to individual staff members.

Figure 2.5. **Staff rewards in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) were asked: “Are there formalised processes to identify and reward excellent performance in teaching?”, “Are there formalised processes to identify and reward excellent performance in research?”, “Does your HEI have an incentive system for staff, who actively support the commercialisation of research for example by making research results available, acting as mentors, etc.?”. Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. A total of 28 HEIs responded (15 universities and 13 other HEIs). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), *HEI Leader Survey Hungary*.

One of the challenges faced in Hungary is that the career progression of academic staff depends heavily upon teaching and research outputs, which discourages involvement in the entrepreneurial agenda since this takes away time from teaching and research. A good starting point for the introduction of incentives and rewards for an active contribution to the entrepreneurial agenda is to document teaching, research and third mission activities. The Eszterházy Károly University of Applied Sciences has recently introduced such a system, called OKMR. It records quality assessment results of teaching activities from regular student evaluation, and the aim is to pilot evaluations using prior and post intervention tests to assess teaching styles. It is also planned to document and assess relationship building across faculties (read more on this in Chapter 3).

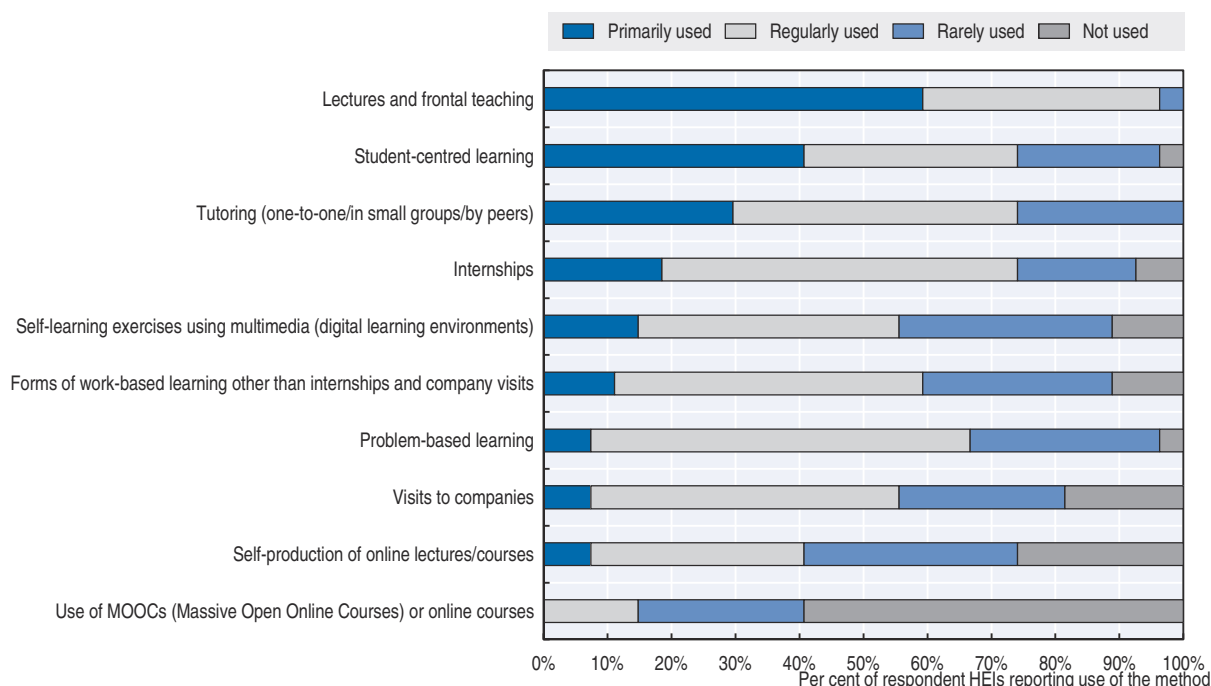
Entrepreneurial teaching and learning

The HEI provides diverse formal learning opportunities to develop entrepreneurial mindsets and skills

Approaches to teaching in higher education are broadening in Hungarian HEIs. Key drivers for this have been the gradual inclusion of entrepreneurship as a key transversal

competence as a learning outcome in higher education, and the introduction of several opportunities for soft skills development both within and outside the formal curriculum. The overall approach to teaching in higher education is, however, still quite traditional, often relying on lecture style teaching. All HEIs that responded to the Leader Survey indicated that lectures are a commonly used teaching method while experiential forms of learning, such as problem solving and work-based learning, are used much less frequently (Figure 2.6). This implies that teaching is oriented more towards transferring knowledge rather than transferable skills that also allow the application of knowledge in unknown contexts; or, as one of the students interviewed during the study visits pointed out “in Hungary it is quite accepted that you learn the job on the job and not in university”.

Figure 2.6. **Teaching methods in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) were asked: “To what extent are the following teaching methods used at your HEI?”. Response options were “not used”, “rarely used”, “regularly used”, “primarily used”. Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. A total of 28 HEIs responded (15 universities and 13 other HEIs). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%). Source: OECD (2016), HEI Leader Survey Hungary.

There are examples of interdisciplinary study programmes that involve different HEIs. One of these is organised by ELTE University and Semmelweis University for Master students in pharmaceutical studies. Students are trained at the two universities. An interesting development has started with the introduction of dual education programmes (Chapter 1). As the example of the Faculty of Food Sciences at Szent István University in Gödöllő shows, these new programmes at Bachelor level have contributed to new opportunities for interdisciplinary collaboration, technical research and product development at Master and PhD levels.

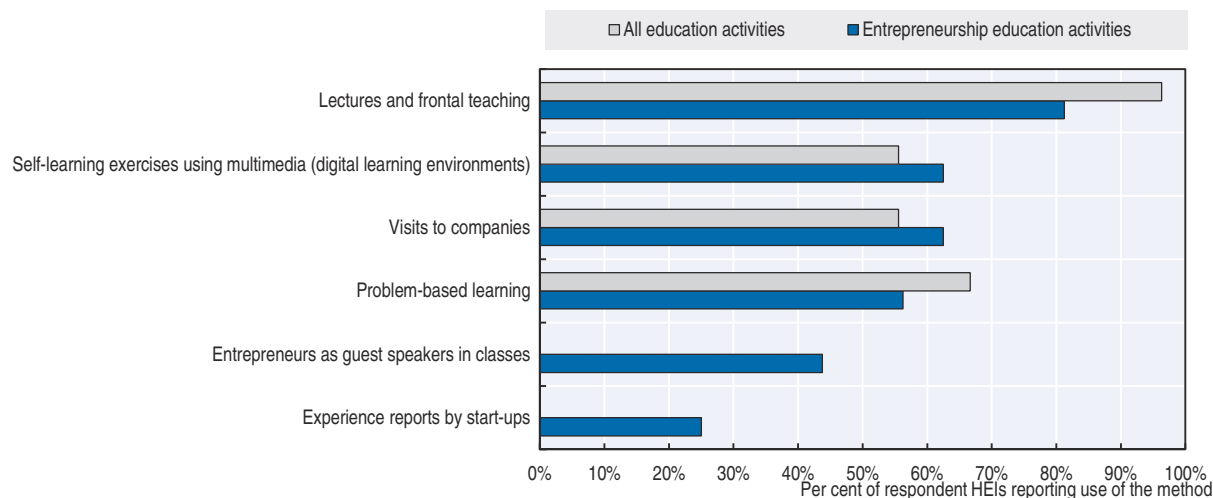
The interviews during the study visits to the five HEIs suggest that there is more room to make courses and study programmes interdisciplinary, so that students get better exposure to different ways of thinking. A starting point for this could be the Talent

Programmes, which exist at all HEIs. Professors suggest students for inclusion on the programmes based on their academic achievements. Students in the Talent Programmes get support in academic writing and research methodology, conference participation and in publishing papers. The latter are counted as credits and can be converted into a scholarship or additional monetary support; also, most doctoral schools will consider programme participation and credits in their application procedures.

Looking more specifically into entrepreneurship education, 15 HEIs (11 universities and 4 other HEIs) reported to currently offer activities that develop entrepreneurship as a transversal competence, which is relevant for all walks of life, and/or lead to a particular set of skills that are needed to start up and grow a business. A further two HEIs reported to discuss in their governing boards the introduction of such education activities. More HEIs offered these activities as part of the study curriculum (86.7%), rather than as an extra-curricular offer (68.8%); and they were mostly targeted at all students instead of specific activities for students in programmes with a focus on business, marketing and economics.

Looking more specifically into entrepreneurship education, lectures and frontal teaching are one of the most common teaching methods. Comparing the teaching approaches in entrepreneurship education activities with those of all education activities, not much difference can be noted for frontal teaching. Visits to companies and digital learning environments seem to be more practiced in entrepreneurship education than in the other education activities, whereas problem-based learning is more common in the latter. Inviting entrepreneurs as guest speakers in classes is regularly organised in less than half of the HEIs. Experience reports by start-ups are regular practice in only half of the entrepreneurship education activities (Figure 2.7).

Figure 2.7. **Teaching methods in entrepreneurship courses in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) were asked: “To what extent are the following teaching methods used at your HEI?”. Response options for both questions were “not used”, “rarely used”, “regularly used”, “primarily used”. Accumulated responses for “regularly used” and “primarily used” are shown. HEIs that reported to currently offer entrepreneurship education activities were asked “To what extent are the following teaching methods used in the entrepreneurship education activities currently offered at your HEI?”. The total number of responses analysed for this question was 15 (11 universities, 4 other HEIs). Response options for both questions were “not used”, “rarely used”, “regularly used”, “primarily used”. Accumulated responses for “regularly used” and “primarily used” are shown. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

The HEI provides diverse informal learning opportunities and experiences to stimulate the development of entrepreneurial mindsets and skills

Extracurricular learning opportunities have become an important complement to formal entrepreneurship courses. The Team Academy in Debrecen is a commendable example. It started at the University of Debrecen's Faculty of Applied Economics and Rural Development in 2010. Students of BSc Programmes in finance and accounting, commerce and marketing, and tourism and catering participated in this training from their fifth semester onwards. The core idea of the training is based on the principle of "learning by doing"; the students create a limited liability company, like in Finland², and work in small groups on several projects. Each team organises its activities as a real-life team company that is owned entirely by the so-called "teampreneurs" (Ványi et al., 2016).

Another example is the "Manager Passport" programme at the Széchenyi István University. It is a small-scale programme to stimulate the development of entrepreneurial mindsets and skills, which can host 15 to 18 students on a 40 hour training course with two teachers, who act as programme leaders. One of them is a psychologist, who has a visiting professor appointment at the University. Currently, the programme is open only to final-year students, who can apply for admission with their CV, a motivation letter and a reference from one of their academic teachers. Most applications come from students in economics and engineering programmes. After successful completion of the training course students get a "passport" and a diploma supplement. Former students have created an alumni association which meets frequently and brings current and former course participants together.

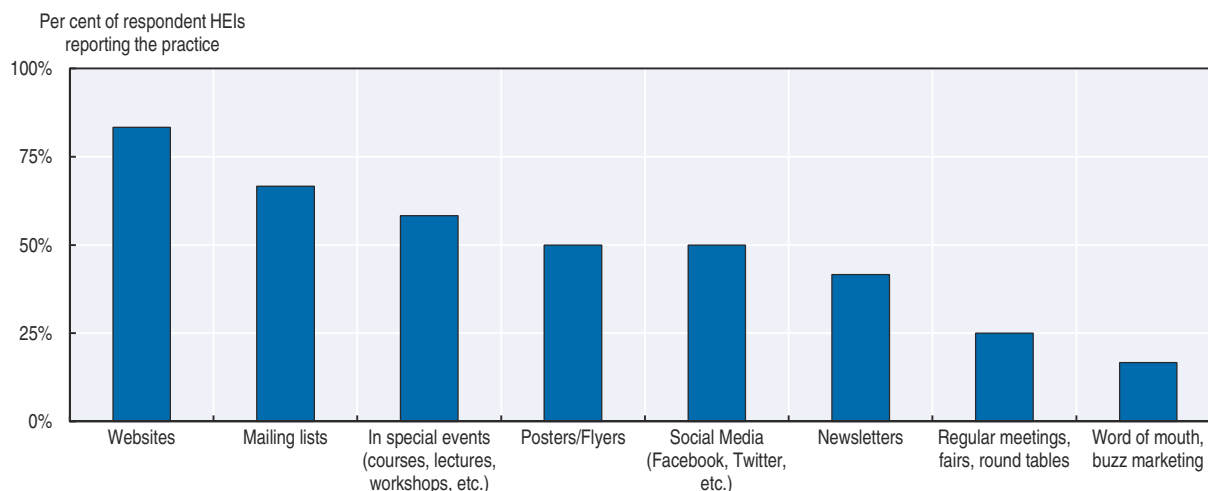
The HEI Leader Survey shows that student demand for informal learning opportunities has increased in more than half of the surveyed HEIs, who currently offer entrepreneurship education activities. Common means to advertise extra-curricular education activities on entrepreneurship are websites, mailing lists and announcements in dedicated events (Figure 2.8). Half of the HEIs disseminate information through social networks, such as Facebook and Twitter, and more than one-third produces newsletters.

The HEI validates entrepreneurial learning outcomes which drives the design and execution of the entrepreneurial curriculum

Formal evaluation of entrepreneurship education activities is not yet widely practiced. Slightly more than half of the surveyed HEIs who reported to offer entrepreneurship education activities, also undertake formal evaluations of these activities. When practiced, this is mostly an obligatory procedure. The focus is on competence development and satisfaction of participants; none of the HEIs were measuring the motivation to start-up a business. Two-thirds were using a standard questionnaire instead of a specifically tailored survey instrument; one HEI reported that entrepreneurship education activities were also evaluated with the help of a focus group. In the case where a questionnaire was used it was mostly at the end of the course (87.5%) and in only two HEIs was a questionnaire completed at multiple time points (Figure 2.8, below).

Hungarian HEIs also participate in the Global University Entrepreneurial Spirit Students' Survey (GUESSS). The latest report, from 2011, was prepared by the Budapest Business School and the University of Miskolc. Between 30-40% of surveyed students across all Hungarian HEIs indicated to consider starting a business or taking over an existing venture as viable career option. There are also examples of HEI-specific surveys of the entrepreneurial intentions of students. An example is the Szent István University campus in Gödöllő, which has undertaken recently a survey of its student body. Results show a high interest in

Figure 2.8. **Advertising extra-curricular entrepreneurship activities in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) that currently offer entrepreneurship education activities were asked: “How do you advertise the entrepreneurship education activities that are organised outside study curricula/programmes or open across faculties?”. A total of 15 higher education institutions (11 universities, 4 other HEIs) responded to the question. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

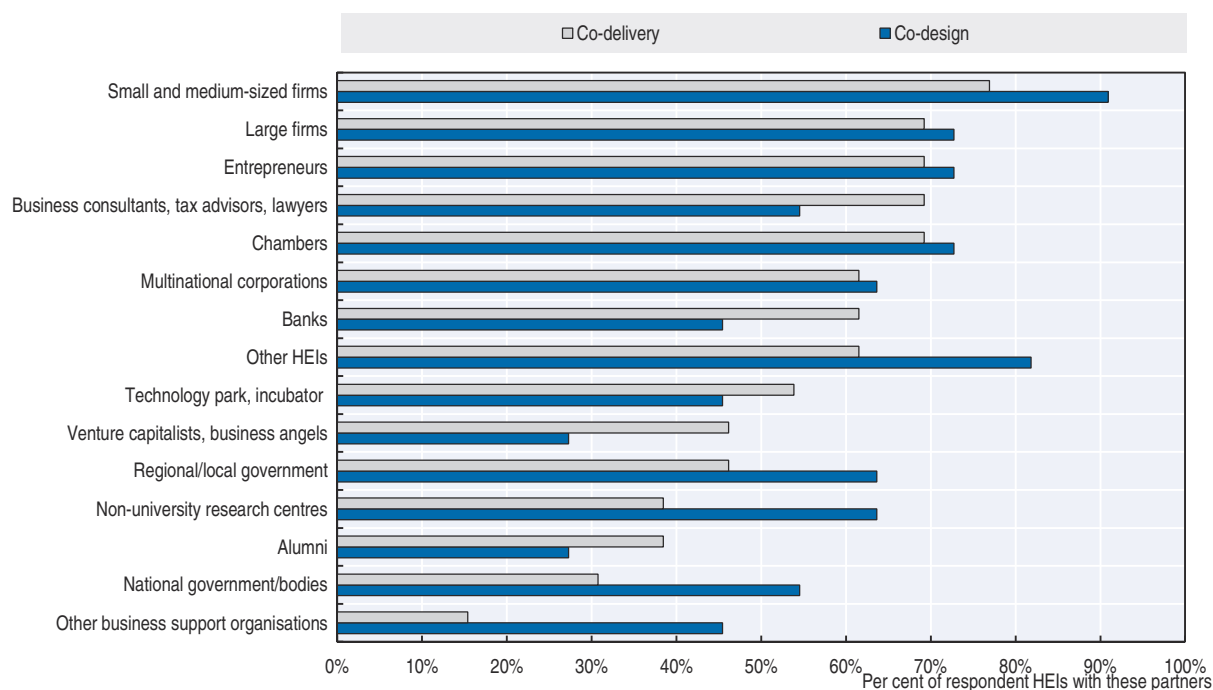
entrepreneurship. This has been taken into consideration by senior management for an eventual replication of the survey on a larger scale to inform an increase of the entrepreneurship support activities in the various campus locations.

The HEI co-designs and delivers the curriculum with external stakeholders

External stakeholders are an important source of expertise in entrepreneurial teaching and learning in Hungary. The surveyed HEIs reported the involvement of a broad variety of external stakeholders in the design and delivery of entrepreneurship education activities. It appears that more HEIs collaborate in the actual delivery of entrepreneurship education activities than in the design phase (81.3% versus 68.8%). Most frequent collaboration partners in the design of these activities are SMEs, Chambers, business consultants and lawyers, and large firms. More than half of the HEIs collaborate with technology parks, banks, multinational corporations and other HEIs. SMEs are also the most common partners in the delivery of entrepreneurship education activities, followed by other HEIs. Connections with the financial sector (e.g. banks, venture capitalists and business angels) could be strengthened for the design of education activities (Figure 2.9, below).

Results of entrepreneurship research are integrated into the entrepreneurial education offer

Results of entrepreneurship research are included in entrepreneurship teaching. The HEI Leader Survey indicates that approximately 80% of HEIs use research results in their teaching. The challenge for entrepreneurship professors in Hungary, like in the other central and south eastern European countries participating in the HEInnovate country reviews, is that entrepreneurship is not seen as an academic discipline that is on par with traditional disciplines, such as business administration or organisational sciences. Consequently, entrepreneurship professors do not tend to conduct research in entrepreneurship. One way

Figure 2.9. **Partners of Hungarian higher education institutions for entrepreneurship education**

Notes: Higher education institutions (HEIs) that currently offer entrepreneurship education activities were asked: “With which of the following organisations or individuals does your HEI collaborate regularly in the conceptual development of the entrepreneurship education activities?”, “With which of the following organisations or individuals does your HEI maintain regular collaboration in the delivery of the entrepreneurship education activities?”. A total of 16 HEIs (11 universities, 5 other HEIs) responded to these questions. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016) HEI Leader Survey Hungary.

to strengthen entrepreneurship education is to improve support for Hungarian researchers who wish to specialise in entrepreneurship, for example by facilitating their participation in international entrepreneurship education networks and attendance at international entrepreneurship conferences.

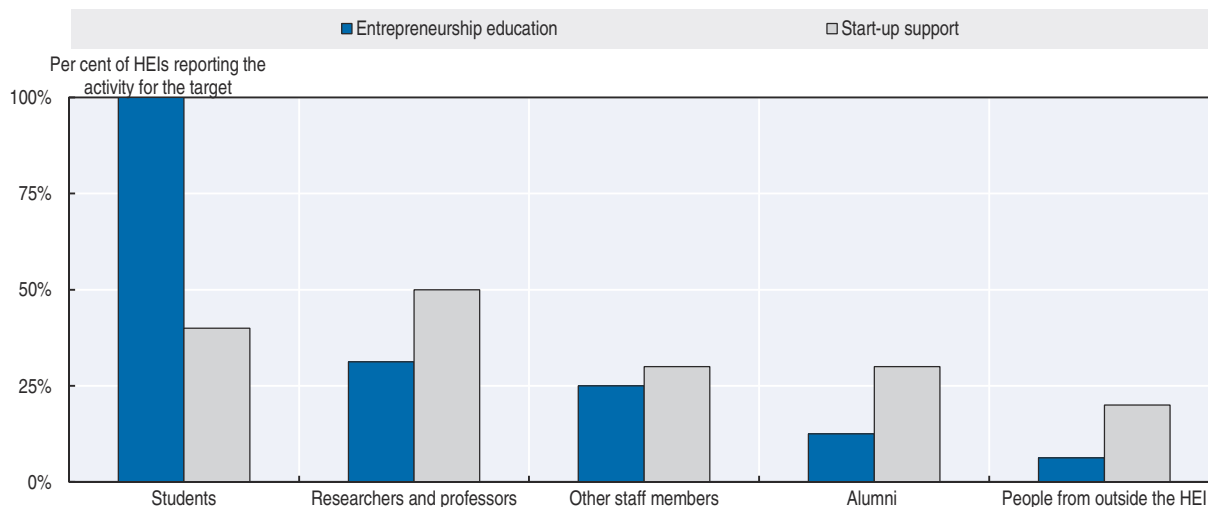
Preparing entrepreneurs

The HEI increases awareness of the value of entrepreneurship and stimulates the entrepreneurial intentions of students, graduates and staff to start up a business or venture

It is a good start that entrepreneurship education activities appear to be growing in Hungarian HEIs. This needs to be gradually matched with activities for students and staff who consider starting a new venture and want to take the next step. Most of the HEIs (76.9%) have adopted or are in the process of adopting rules and regulations concerning the commercialisation of scientific research; half were considering the use of trademarks. One-third of the HEIs were either holding shares in companies or discussing such practice in their governing boards. Channelling new ideas from researchers into new ventures can be difficult, not least because of the process of validating these ideas for support from the HEI's technology transfer office. In the current system, the rector plays a central role in deciding which idea is taken further for commercialisation. This, as well as the use of project idea questionnaires instead of scouting for ideas involving researchers and students, might narrow the range of projects and discourage people from getting involved.

In the case of students, there appears to be a gap between the provision of educational activities and support measures for nascent entrepreneurs, which are offered in less than one-third of the surveyed HEIs (Figure 2.10). Researchers, alumni, other staff, and externals seem to have less access to entrepreneurship education activities than to start-up support. This might be a missed opportunity as such activities, in particular if organised in highly creative contexts, often provide a fertile ground for idea generation and team building.

Figure 2.10. **Target groups for entrepreneurship support in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) that currently offer entrepreneurship education activities were asked: “Which of the following are target groups for the entrepreneurship education activities?” A total of 16 higher education institutions (11 universities, 5 other HEIs) responded to the question. HEIs that currently offer start-up support were asked “Which of the following are target groups for the start-up support measures offered at your HEI?”. A total of 9 HEIs (8 universities and 1 other HEI) responded to this question. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

An example of an initiative that seeks to create such a highly creative context for idea generation and team building is Innovative Generation Debrecen (*Innovatív Generáció, !gen*), a three-month training and mentoring programme for “start-uppers”. Each week has a dedicated topic with common workshops and individual mentoring sessions. The final is a competition with a jury composed of investors, the technology transfer office of Debrecen University and senior leadership. Participants pay a fee which varies depending on whether the aim is to develop a business idea or to join a team.

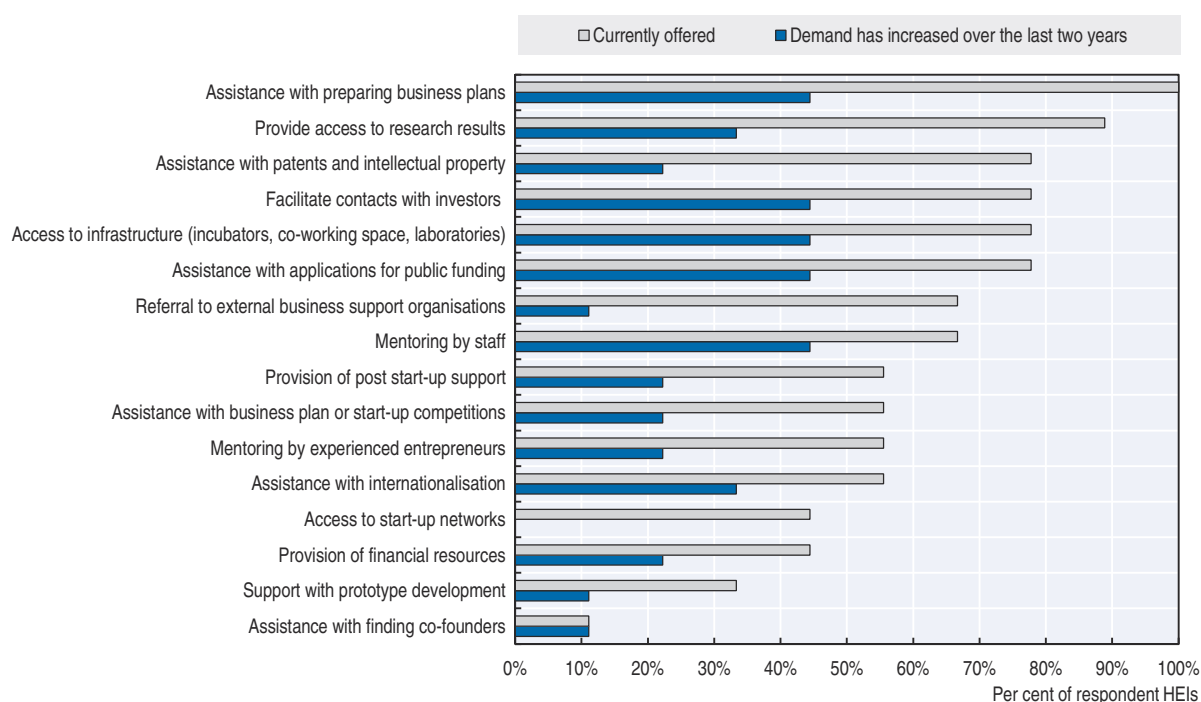
The HEI supports its students, graduates and staff to move from idea generation to business creation

Having an idea is only one – and not always the first – step on the start-up journey. In order to take an idea further, HEIs can provide aspiring entrepreneurs with a range of support services. It is not necessary for an HEI to offer all supports. It can be more efficient to develop partnerships with professional business support organisations and direct students to specialised services. For students, starting up a business during their studies can be highly burdensome. Study syllabi are packed full and it is not easy to argue for additional time to complete a semester assignment because work on the start-up took priority. This will have to be taken into consideration if the overall aim is to support students to move from idea generation to business creation while they are studying. Flexible exits and re-entries should

be created for students to accomplish multiple goals. This would also apply for students who take up a job offer prior to completing their studies – a common issue within some faculties, for example, computer engineering studies.

Researchers and scientists are also likely to be confronted with a difficult choice when they have to decide whether to progress in their research or to act upon an opportunity to commercialise research results. Access to top-quality and timely support, and the possibility to collaborate with students who may be more eager to take the business idea further, can make the decision easier and eventually render both options possible. In the HEI Leader Survey, one-third of the surveyed HEIs reported to offer special support for nascent entrepreneurs, with a wide portfolio of measures (Figure 2.11). All offer assistance with the preparation of business plans. This is followed by providing access to research results, for example by matching a team of students who want to start-up a business with a researcher who would like to commercialise his/her research results. Also commonly practiced are assistance with the handling of intellectual property rights and applications for public funding. Less common are support with prototype development and assistance in finding co-founders.

Figure 2.11. Offer and demand for start-up support measures



Notes: Higher education institutions (HEIs) that currently offer start-up support were asked: “You’ve stated earlier that your HEI currently offers special support measures for individuals or teams, who are interested in starting-up a business. What special support measures are currently offered?”, “How has the demand for the special support measures developed over the last two years?”. A total of 9 HEIs (8 universities and 1 other HEI) responded to this question. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

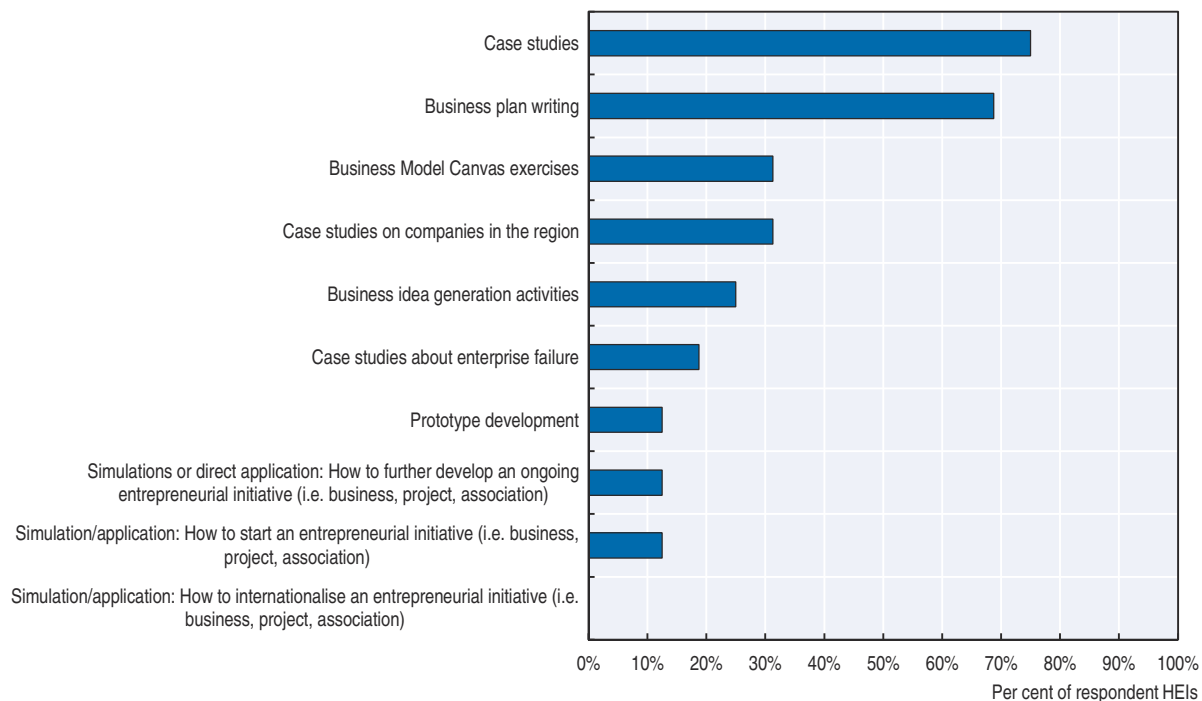
Source: OECD (2016), HEI Leader Survey Hungary.

Except for help with accessing start-up networks, all support services have noted an increase in demand over the last two years. Highest increases were noted for assistance with the preparation of business plans, applications for public funding, access to infrastructure, mentoring by staff, and facilitation of contacts with potential investors.

Training is offered to assist students, graduates and staff in starting, running and growing a business

Start-up training courses, offered as part of the entrepreneurship education activities, can provide relevant knowledge about financing, legal and regulatory issues, and human resource management. Results from the HEI Leader Survey suggest that the entrepreneurship education activities tend to have a focus on business plan writing and case studies, whereas more practical aspects, such as prototype development and simulations of business start-up and early venture development are not regularly covered; how to internationalise an entrepreneurial initiative is not covered at all in the training (Figure 2.12).

Figure 2.12. **Training for venture creation in Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) that currently offer entrepreneurship education activities were asked: “To what extent are the following teaching methods currently used in the entrepreneurship education activities at your HEI?” A total of 9 HEIs (8 universities and 1 other HEI) responded to this question. Accumulated responses for “regularly used” and “primarily used” are shown. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

Involving entrepreneurs, start-ups, venture capitalists and bankers more systematically in the start-up training will improve quality and relevance as students can gain insights and knowledge on what works and why, and what are common challenges and pitfalls. A promising initiative here is the recently started collaboration between Semmelweis University and Health section of the European Institute of Technology (EIT), which gathers several key industry players. The aim is to further embed business creation and development services, as well as broader innovation projects, in the current education and research activities.

Mentoring and other forms of personal development are offered by experienced individuals from academia or industry

Two-thirds of the HEIs that currently provide start-up support offer mentoring by staff, and slightly less offer mentoring by experienced entrepreneurs (Figure 2.11, above). Demand for mentoring has increased over the last two years; apparently more for staff acting as mentors than for experienced entrepreneurs (40%). Nine HEIs (four universities and five other HEIs) reported that acting as mentors for nascent entrepreneurs is part of their key performance indicators; four offer, in addition, a reduction of teaching hours for teaching staff acting as mentors and two offer an increase in salary.

The HEI facilitates access to financing for its entrepreneurs

The HEIs reported to offer a range of measures to facilitate access to finance (Figure 2.11, above). In order of frequency of current practice these are: assistance with applications for public funding (78%), facilitation of contacts with investors, such as banks, venture capitalists and business angels (78%), and provision of financial resources (44%). For all of these support services demand has increased over the last two years.

The HEI offers or facilitates access to business incubation

So far, only a few Hungarian HEIs offer incubation services. Two HEIs reported in the HEI Leader Survey to have already established an incubator and in five HEIs discussions on this were underway in the governing board. Business incubation on campus or in close proximity has been so far largely focused on spin-off activities, that is, on the commercialisation of research results through venture creation. The existing incubators were offering temporal rental either for free or at lower than market rates, access to the HEI's laboratories and research facilities, and IT services. One incubator also accepts non-HEI tenants. Coaching and training, help with internationalisation, and access to financing were not offered. Several policy initiatives are underway to increase the offer of business incubation services (see Chapter 1).

Knowledge exchange

The HEI is committed to collaboration and knowledge exchange with industry, the public sector and society

Hungarian HEIs take a very committed approach to working with the business sector, governments and community organisations. Current activities are likely to increase in the near future as a consequence of a grant scheme recently introduced by the National Innovation Development Office to align the research portfolio of HEIs to regional focus areas.

Results from the HEI Leader Survey indicate that the HEIs undertake a range of knowledge exchange activities. Most common are involvement of external stakeholders in education activities (96%), followed by joint research projects (92%) and collaboration on student internships (74%). Less practiced were lifelong learning activities (48%), different forms of technology and knowledge transfer (44%), and collaboration on secondments (29%), that is, the temporary mobility of staff, and industrial doctorates (7%).

Many of these activities were also observed during the study visits and the technology transfer offices play a central role. More efforts are needed to raise the awareness of existing opportunities for staff and students to get involved in these activities. In particular, international students need to be more involved (see Chapter 4).

Lifelong learning is becoming a key strategic area for many HEIs across Europe. In Hungary, a solid infrastructure has been established in medical and education professions. This is illustrated by two examples: i) the collaboration of General Electrics and Semmelweis University on digital solutions in healthcare, through a dedicated professional development programme for healthcare practitioners, and ii) the teacher training programmes in the Eszterházy Károly University of Applied Sciences.

Community outreach has traditionally been an area of strength for the HEIs in Hungary. An example is the annual national “Researchers Night”. Every year all HEIs across the country organise a range of events for all age groups. Very popular have been interdisciplinary challenges and innovative solutions demonstrated by (young) researchers in an interactive, educating and entertaining way. In 2016, the most activities were organised in Budapest (around 35). Elsewhere, on average three activities were organised in cities with local HEIs. The leader was the city of Miskolc with seven activities.

There is always the risk that knowledge exchange activities remain uncoordinated across the HEI. A good way to overcome this and to make better use of relationships and internal resources is the recently started initiative at Semmelweis University to introduce a common calendar of events, which would, for example, signal to all staff and students that a well-known scientist from abroad is visiting or giving a lecture.

Close to half of the HEIs indicated that they have an incentive system for staff members who actively support the commercialisation of research, and a further 25% were discussing the introduction of such a system in their governing boards. The dominant practice for incentives for commercialisation is that they operate at the level of faculties/departments, whereas incentives for other forms of knowledge exchange are mostly directed to individual staff members.

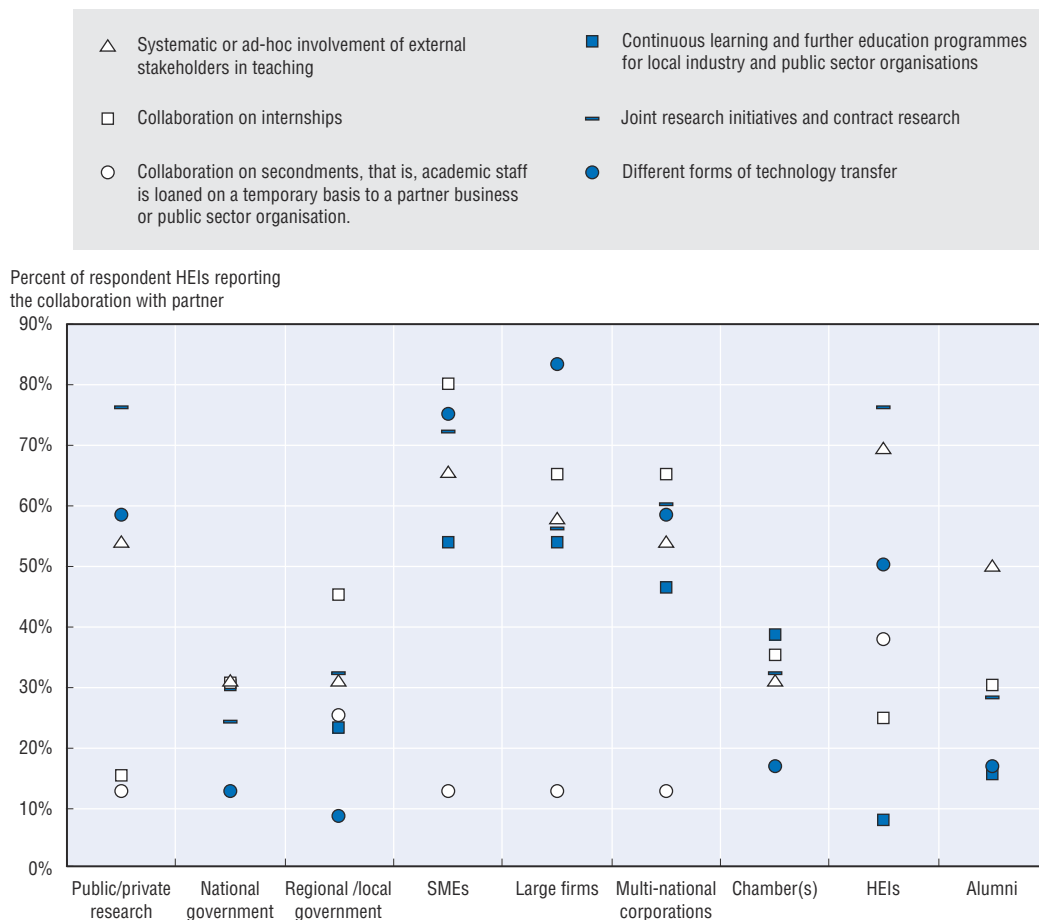
Application for external funding is a core activity of knowledge exchange and collaboration and can take considerable time for researchers. It is therefore important to provide horizontal services, which provide timely information about upcoming grants and collaboration possibilities, and assist researchers in grant applications and administrative procedures. From the study visits and discussions with key stakeholders within the higher education system, it appears that such horizontal support structures are not yet a common feature of Hungarian HEIs.

The HEI demonstrates active involvement in partnerships and relationships with a wide range of stakeholders

All surveyed HEIs collaborate with a wide range of stakeholders and 70% participate in the governing boards of local partnerships that steer and support local economic development (see Figure 2.3, above). The interviewed stakeholders from local governments, industry and businesses expressed an overwhelming desire to deepen their engagement and joint activities with HEIs and they believe HEIs are well-resourced in terms of academic know-how, specialised technologies and equipment which they could utilise. However, they expressed a view that HEIs seem to prefer to remain engaged only in teaching and learning and basic research and remain focused on citation indexes as opposed to wider stakeholder and community needs.

The surveyed HEIs reported to collaborate with a wide range of organisations in their knowledge exchange activities (Figure 2.13). Large firms and SMEs are key partners for different forms of technology transfer activities, and, together with multinational corporations,

Figure 2.13. **Partners of Hungarian higher education institutions in knowledge exchange activities**



Notes: Higher education institutions (HEIs) were asked: "Knowledge exchange can take on various forms. The focus can be on teaching, research or any form of strategic collaboration. Which of the following are currently practiced at your HEI?"; "Which of the following are currently knowledge exchange partners of your HEI?". A total of 28 HEIs responded (15 universities, 6 universities of applied sciences and 7 colleges of education). Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The HEIs reported to have knowledge exchange relationships with public/private research centres (21, 78%), national government (11, 41%), regional/local government (25, 93%), SMEs (25, 93%), large firms (24, 89%), multinational corporations (26, 96%), Chambers (20, 74%), other HEIs (22, 81%), and alumni (14, 52%). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

are regularly involved in the education activities of HEIs. Temporary mobility of HEI staff currently happens more within the higher education sector and between HEIs and public/private research centres than between HEIs and SMEs, large firms or multinational corporations. Large firms are the partners of the two doctorate programmes with industry. There is room to further develop contacts with local and regional government bodies, particularly as many HEIs seem to have close relationships with local and regional governments (e.g. participation in local strategic partnerships, participation in working groups, etc.).

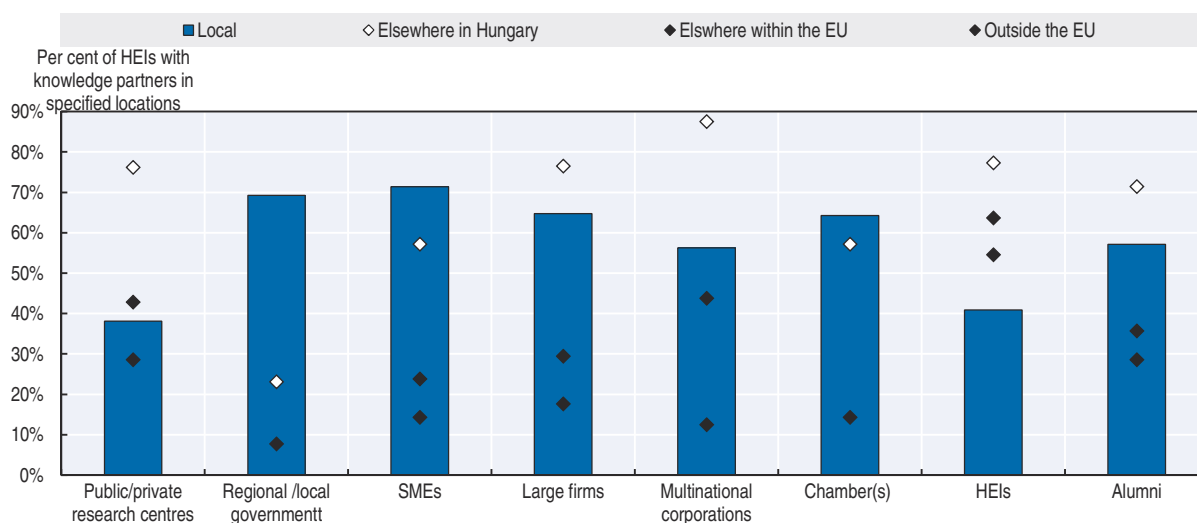
Alumni are not very engaged with their HEIs in Hungary. Alumni relationships are underdeveloped at the institutional level. Only half of the surveyed HEIs reported to have knowledge exchange partnerships with their former students. The study visit showed that in certain faculties personal contacts between academic staff and alumni are strong and

lasting. However, the lack of a more institutionalised engagement with alumni is a missed opportunity to strengthen ties between HEIs and the business community. Alumni can play an important role in the entrepreneurial agenda, for example as trainers and mentors, sponsors and gate keepers for research or education (e.g. traineeships) relationships with firms and public organisations.

All surveyed HEIs reported to have implemented a system of maintaining regular contact with their alumni, which included tracer surveys within the first year after graduation and beyond. Approximately two-third of HEIs obtain information on which of their alumni have started-up a business, but less than half informed alumni about the entrepreneurship promotion activities they offered. Career offices can play an important role in nurturing these contacts, for example through alumni associations, regular newsletters (e.g. the printed alumni magazine at Széchenyi István University), and the organisation of technical and cultural events.

The geographic radius of knowledge exchange partners is large for the surveyed HEIs (Figure 2.14). Contacts with public/private research centres are mainly within Hungary, however more than 40% of the surveyed HEIs reported to also have contacts within the wider EU area. Relationships with other HEIs occur at all levels of geographic distance and they account for more than half of the HEIs' links with partners outside the EU. Collaboration with regional/local governments is focused within close proximity to the HEI and, for close to one-quarter of the respondents, also elsewhere in the country. Relationships with SMEs are mostly local or national, and for one-quarter they are also in the wider EU area. Partners from large firms and multinational corporations are mostly located elsewhere in the country. Contacts with Chambers are either local or national. Relationships with alumni are mainly within Hungary but also have a global scope.

Figure 2.14. **Location of knowledge exchange partners of Hungarian higher education institutions**



Notes: Higher education institutions (HEIs) were asked: "Where are current knowledge exchange partners of your HEI located?". A total of 28 HEIs responded (15 universities, 6 universities of applied sciences and 7 colleges of education). Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The HEIs reported to have knowledge exchange relationships with local partners (19, 70%), elsewhere in the country (24, 89%), elsewhere within the European Union (17, 63%), outside the European Union (15, 56%). The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

The HEI has strong links with incubators, science parks and other external initiatives

Contacts with incubators and science parks are not very developed, but demand from aspiring entrepreneurs for incubation services and co-working spaces is increasing. Only two HEIs reported in the HEI Leader Survey to have an incubator on campus and only one HEI reported to have a representative of a technology park participating in the HEI's governing board. More involvement exists in the entrepreneurship education activities, for which half of the HEIs reported to collaborate with science and technology parks and incubators in the design and/or delivery of activities.

The HEI provides opportunities for staff and students to take part in innovative activities with business and the external environment

Internships are a common practice to offer students the opportunity to participate in innovative activities with business and the external environment. More than two-thirds of the HEIs offer internships for their students; less than 40% have mandatory internships across most of their programmes at Bachelor and Master levels, and internships are not a common part of doctoral study programmes. Supports for students include, in order of current practice: access to information about internship opportunities (100%), continuous support during mobility (89%), and financial support (78%). Less common are mechanisms for participants to share their experiences with other students (67%).

Fewer initiatives exist to support the temporary mobility of HEI staff into industry and public organisations. Current practice was reported by only eight HEIs (31%); five HEIs, all universities, are discussing support measures for temporary staff mobility in their governing boards. The supports offered include, in order of current practice: incentives for staff to share their experiences after mobility (100%), information (90%), funding (89%), and continuous support during mobility (78%).

The HEI integrates research, education and industry (wider community) activities to exploit new knowledge

There are a number of examples of projects where HEIs bring together research, education and the business community (see Chapter 4).

Internationalised institution

The Tempus Public Foundation (TPF) is supporting Hungarian HEIs in their internationalisation activities, for example, in participating in international projects as partner or co-ordinator HEIs. TPF helps HEIs in their international partner search and has developed a guide for international students, teachers and researchers. The Hungarian government has launched a multi-year support programme for the internationalisation of HEIs. The first phase of the programme "Campus Hungary" ran from 2012-15 with the aim to support and facilitate the internationalisation of Hungarian higher education through providing institutional development and scholarships for students, academics and staff. Main outcomes of the project were professional courses provided to higher education staff on international marketing and student recruitment, intercultural workshops, innovative teaching methods, and international webpage development. Initiatives which have achieved significant results in supporting internationalisation through the Campus Hungary programme are continued in a priority project within the financing framework of the Human Resource Development Operational Programme managed by the Tempus Public Foundation, called Campus Mundi. The main goals of the Campus Mundi programme are i) supporting

HEIs in enhancing their international visibility through an increased offer of courses taught in a foreign language, and ii) supporting HEIs in their outreach activities (educational fairs, exhibitions and conferences). Supporting the development of HEIs includes capacity building, network building, conferences, developing networks of international co-ordinators, and peer learning activities. Enhancing the quality of institutional and student services is supported by compiling a guide for mentoring international students, by developing data sources and establishing online customer services. The internationalisation audit process is also continued through the involvement of new institutions and the revision of development for the ones already participating in the process.

Internationalisation is an integral part of the HEI's entrepreneurial agenda

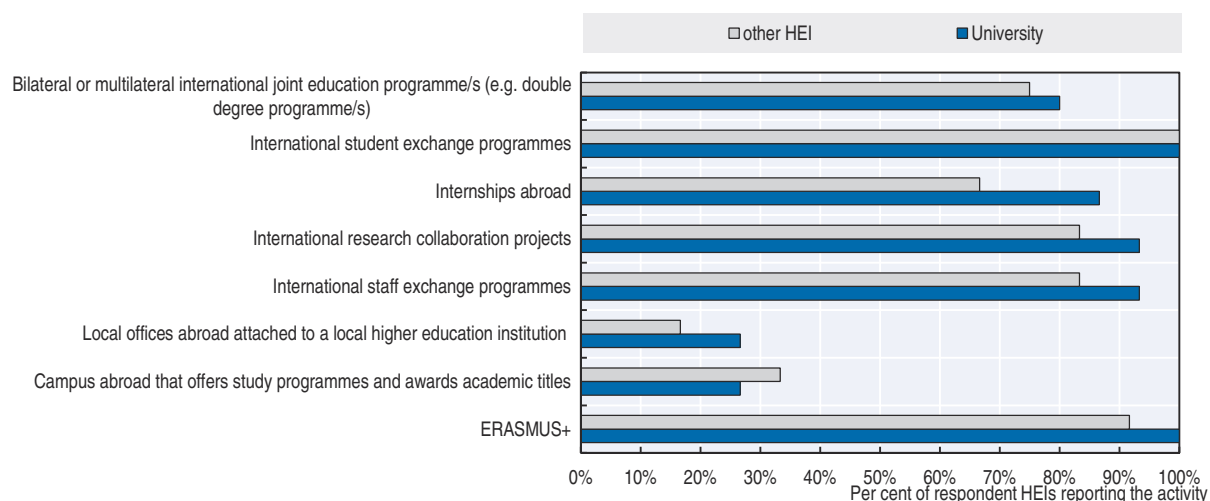
Results from the HEI Leader Survey confirm that internationalisation activities are a priority for Hungarian HEIs, also with regard to knowledge exchange activities. Close to two-thirds of the surveyed HEIs reported to have partners from across the European Union for their knowledge exchange activities, and more than half reported to have global relationships (Figure 2.14, above). Internationalisation is an important issue in Hungarian higher education with a great emphasis on the recruitment of international students. All surveyed HEIs had either sections dedicated to international activities or a mention of international issues throughout their strategy documents; two HEIs reported to have dedicated internationalisation strategies. In contrast, entrepreneurship and knowledge exchange are far less present in the strategies. It will be important to build better synergies between the different strategic objectives, for example better connect the entrepreneurship support activities with the internationalisation activities, or target international students for start-up training (see Chapters 4 and 5).

The HEI explicitly supports the international mobility of its staff and students

Studying in Hungary is attractive for students from abroad. In human and veterinary medicine, long-standing relationships exist with Germany and Austria, which have led to the establishment of recruitment and training structures in these countries. Several Hungarian HEIs offer preparation courses in the country of origin either in collaboration with local HEIs or outsourced to an international student recruitment agency. An interesting trend, which was also noticed for the HEIs visited as part of the HEInnovate Ireland review, is that prospective students from China, one of the largest emerging markets for student recruitment, are nowadays more interested in business and IT studies than in medicine and engineering.

The internationalisation offices in the HEIs support the faculties and departments to establish relationships with companies abroad, often through contacts with the local branches of the multinational corporations in geographic proximity to the HEIs. Debrecen University, for example, has faculty co-ordinators for the Erasmus programme, who help students to get prepared for international mobility and support staff members to identify possible industry partners.

Common internationalisation practices of Hungarian HEIs include collaboration within Erasmus+, which is part of the European Region Action Scheme for the Mobility of University Students, international student exchange programmes and student internships abroad, international research collaboration, and joint international education programmes (e.g. double degree programmes). Some HEIs also have local campuses abroad (Figure 2.15). Universities are slightly more active in these internationalisation activities than other types of HEIs.

Figure 2.15. **Internationalisation activities of Hungarian higher education institutions**

Notes: Higher education institutions (HEIs) were asked to report on their current internationalisation activities. A total of 28 HEIs responded (15 universities, 6 universities of applied sciences and 7 colleges of education). Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

The HEI seeks and attracts international and entrepreneurial staff

In the HEIs outside of Budapest visiting professorships do not appear to be widely used and very few academic staff members are from outside Hungary. Less than one-third of the surveyed HEIs reported to have recruitment policies and practices that seek to attract international staff. An important challenge, which became obvious during the study visits, is that the salaries of academic staff are not internationally competitive. A number of approaches can be taken to increase the presence of international and entrepreneurial academic staff. In the first instance, fellowships can be used to attract young scholars, who might not be attracted primarily by a competitive salary but by a promising research environment, the entrepreneurial culture, the range of knowledge exchange activities, etc.

International perspectives are reflected in the HEI's approach to teaching

There are initiatives to enhance internationalisation of teaching activities. The ELTE University, for example, organises a monthly “English Breakfast” for English speaking staff. In the Eszterházy Károly University of Applied Sciences staff members are encouraged to go abroad for a teaching experience, and are supported to write an essay, which will be published on the Internet to motivate others and share with students what they have learned.

However, a key finding from the study visits is that there are only a few truly international education activities, which are attended by both Hungarian and international students. Many HEIs offer different courses for Hungarian and international students. At the same time, there is a lack of training to prepare educators for teaching in a foreign language and in a multicultural environment. This has been addressed at the Széchenyi István University with a specific training course offered for teaching staff in light of the planned introduction of new study programmes that are primarily aimed at an international audience.

Hungary has long been a preferred destination in central eastern Europe for students from the United States. The Aquincum Institute of Technology (AIT) has turned this into a

successful education model. AIT provides a unique English language study abroad experience for North American undergraduates majoring in computer science, software engineering, and related disciplines in Budapest. AIT is a private higher education provider, which collaborates closely with the Budapest University of Technology and Economics (BME). Instruction in small classes also includes BME students, for whom tuition is waived. For them, personal relations with the North American students may prove to be invaluable assets for their future careers. AIT's curriculum uniquely blends IT education with its home, Graphisoft Park's professional orientation in business studies. This is complemented by courses highlighting the richness of Hungarian culture (language, literature, film, music and architecture) tailored for the needs of international students.

Many of the entrepreneurship education activities have an international perspective, even if the focus might be more on theory and knowledge than on application. More than half of the HEIs reported that a focus on the international business environment is part of entrepreneurship education. However, two-thirds of the HEIs indicated that simulations or direct applications of how to internationalise an entrepreneurial initiative, that is, a project or a new venture, were present in the courses, but only rarely practiced.

The international dimension is reflected in the HEI's approach to research

Hungarian HEIs and their academic staff are generally very active in international research projects. This occurs most often through joint research projects with HEIs from other countries and, in some cases, also with multinational corporations. One of the mechanisms used to increase international research is through European Union Structural Funds and through Horizon 2020 Funds. So far, the international research collaboration is centred on basic research, an area in which Hungary is performing well in the central eastern European region. A challenge, which became obvious from the interviews during the study visits, is that application for funding of international travel can be difficult. To overcome this, HEIs could establish their own strategic travel fund to support staff travel if project funding prohibits this.

Measuring impact

The HEI regularly assesses the impact of its entrepreneurial agenda

Overall, HEIs do not systematically assess the impact of their entrepreneurial agenda. However, some new development in this direction can be expected as almost half of the surveyed HEIs reported that they are discussing the introduction of performance indicators for the entrepreneurship objectives (see Figure 2.1, above), and the knowledge exchange activities. There are some efforts to track and measure entrepreneurial activities within various units of the HEIs. For example, senior management is often interested in tracking the number of partnerships with industry and international co-operations. All the HEIs visited had detailed descriptive information on these activities but none attempted to assess their impact.

Career offices typically track the labour market outcomes of graduates. An example is the so-called Neptun tracking system established at Szent István University, which contacts students one year, three years and five years after graduation and performs a longitudinal analysis of labour market outcomes. Szent István University is one of 33 HEIs in Hungary which participate in the national survey of labour market outcomes of higher education.

The HEI regularly assesses how its personnel and resources support its entrepreneurial agenda

At present, Hungarian HEIs do not appear to put much effort into assessing how their personnel and financial resources are used to support the entrepreneurial agenda. The challenge for HEIs in undertaking more rigorous assessments of how their human resources are deployed is that contributions to the entrepreneurial agenda and third mission activities are not considered by the processes that determine the career paths of academic staff. A promising example of an HEI attempting to assess whether its human and financial resources are used in the most effective and efficient manner to support its entrepreneurial agenda is the OKRA performance management system, recently introduced in the Eszterházy Károly University of Applied Sciences in Eger (see Chapter 3).

The HEI regularly assesses entrepreneurial teaching and learning across the institution

The HEI Leader Survey indicates that more than half of respondents undertake formal evaluations of the entrepreneurship education activities; in most of the cases this is an obligatory procedure. The focus is on competence development and satisfaction of participants; none of the HEIs measure the motivation to start-up a business. Two-thirds were using a standard questionnaire instead of a specifically tailored survey instrument; one HEI reported that entrepreneurship education activities were also evaluated with the help of a focus group. Where a questionnaire was used, it was in most cases administered at the end of the course (88%) and only in two HEIs was multiple administration practiced.

Some examples of informal assessments were observed during the study visits, where professors teaching entrepreneurship undertake a survey of their students to assess their attitudes, knowledge and motivations in entrepreneurship. Such evaluations are often used for the research activities of the professor and are also used to adjust the course content. These activities rely, however, on the initiative of the individual teachers and are not systematically undertaken across all entrepreneurship courses.

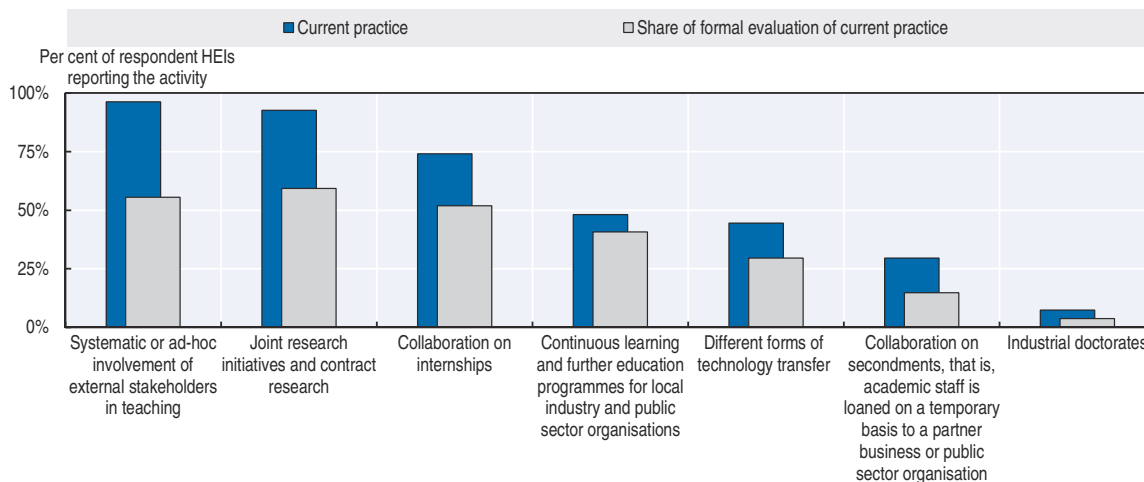
The HEI regularly assesses the impact of start-up support

During the study visits it was observed at all HEIs that a basic but comprehensive set of metrics is collected on start-up support services for researchers and academic staff. This includes, for example, the number of patents filed in Hungary and internationally and the value of spin-offs. However, there were no examples of HEIs using this information to assess the impact of the investments in these support services. Survey results indicate that far less effort is put into the assessment of start-up support compared to entrepreneurship education activities. Here, more frequent practice can be expected, as more than 40% of the HEIs reported that they are discussing the commencement of formal evaluations of start-up support measures in their governing boards.

The HEI regularly assesses knowledge exchange and collaboration

Formal evaluation of knowledge exchange activities is not yet widely practiced in Hungarian HEIs. Most of the surveyed HEIs reported to have formal evaluation practices in place for their lifelong learning activities for local industry and public sector organisations; most of the pilot initiatives on industrial doctorates are also evaluated by the HEIs. All other knowledge exchange activities seem to have evaluation gaps, particularly the systematic involvement of externals in teaching and joint research initiatives, which is practiced by almost all surveyed HEIs but formally evaluated in only half of them. A significant gap can also be noted for the joint research initiatives of the HEIs (Figure 2.16).

Figure 2.16. **Evaluation practice of knowledge exchange activities in Hungarian higher education**



Notes: Higher education institutions (HEIs) were asked: “Knowledge exchange can take on various forms. The focus can be on teaching, research or any form of strategic collaboration. Which of the following are currently practiced at your HEI?”. For each of the reported knowledge exchange practices the HEIs were asked “Is there a formal evaluation practice of these knowledge exchange activities?”. Percentage shares of formal evaluation of a specific knowledge exchange practice are shown. A total of 28 HEIs responded (15 universities, 6 universities of applied sciences and 7 colleges of education). Data is shown for universities and other types of HEIs, which include the universities of applied sciences and the colleges of education. The overall survey response rate was 53%. The survey response rates per HEI type are the following: universities (54%), other HEIs (52%).

Source: OECD (2016), HEI Leader Survey Hungary.

Lifelong learning programmes are the most commonly evaluated activities, whereas collaboration on secondment and industrial doctorates are the least evaluated. These are, however, also relatively new practices. The study visits confirmed these results. All the visited HEIs had detailed metrics on the number of collaborative research projects, the number of patents, the value of spin-offs, the number of staff and students involved in exchanges and more. There is room, however, for the HEIs to go beyond collecting metrics by undertaking more sophisticated impact evaluations to understand the value of these activities to the HEI, including understanding which activities are the most valuable.

The HEI regularly assesses the institution’s international activities in relation to its entrepreneurial agenda

The HEIs visited all track their international activities with considerable detail. Each of the HEIs is able to report the number of collaborative research projects with private sector businesses and with other HEIs, both in Hungary and abroad. Further, they also track the number of staff and student exchanges (e.g. Erasmus+), including both in- and out-flows. However, there is room to undertake more sophisticated impact assessments to understand where further investments would have the greatest effect.

Recommendations for public policy action

Develop a common definition of the third mission in higher education institutions

Involve all higher education stakeholders in this and facilitate the establishment of consultative and collaborative fora at the local/regional level to enhance impact. Agreeing performance compacts with each HEI could be considered as part of the Ministry of Human Capacities’ review of the progress made by the HEIs in the implementation of their recently submitted strategic plans.

Introduce viable funding mechanisms for the third mission in higher education institutions

Showing commitment in terms of financial investment is a key first step to establish third mission activities, which are linked to the other key missions of the HEI. It is essential that the third mission is referenced in existing financial models both at the national and institutional levels.

Stimulate collaboration between higher education institutions in strategic areas

In some industries (e.g. pharmaceuticals and biotech) the market is dominated by large multinational players and Hungary is likely to occupy only a small part of their global network. A collaboration of HEIs around strategic areas with shared-use agreements for costly research equipment, for example national research centres with the participation of different HEIs and public research organisations, can help to build competitive strengths in global/regional niche areas. A national-level initiative to facilitate collaboration between HEIs and multinational corporations can also strengthen these strategic areas.

Strengthen the support infrastructure for venture creation in and around higher education institutions

The aim should be to establish basic support for new venture creation within HEIs, which is fully embedded within the wider ecosystem. Finding an approach that matches given resources with the needs of nascent entrepreneurs should be the starting point. Not all HEIs will be capable or willing to establish their own support infrastructure. Collaboration with other HEIs should be supported to close eventual gaps, for example, through a shared-service organisation for start-up support and technology transfer. Current regulations for creating spin-offs should be simplified and HEIs should not take equities from student start-ups.

Facilitate the establishment of consultative and collaborative fora at the local/regional level to enhance impact of entrepreneurship, innovation and the third mission

It is essential that the third mission is referenced in existing financial models both at the national and institutional levels. Stakeholder participation in the development, implementation and review of third mission strategies is essential for their successful implementation and appropriate stakeholder fora should to be established at regional and national levels. Ideally, at the regional level, HEIs should play a key role in steering the work of the fora.

Build a common information and data framework for the impact of entrepreneurship, innovation and the third mission

Hungary already has a rich data collection infrastructure. Gathering the different data sources into one common system may require the expansion or establishment of new government based units or agencies within appropriate ministries who are tasked with identifying, monitoring and analysing relevant data and information which can be used to provide updates and reports for different stakeholders.

Recommendations for higher education institutions***Develop a common understanding of the third mission and the entrepreneurial agenda specific to the HEI's profile and expectations***

This includes a participatory process involving staff, students and key external stakeholders to identify what the entrepreneurial agenda implies for the HEI, a prioritisation

of third mission activities, and mechanisms to support the implementation of these activities, enhance institutional spill-over effects, and capture and measure the impact of the entrepreneurial agenda. The HEInnovate tool provides a useful framework for this.

Appoint a senior manager with responsibility for entrepreneurship, innovation and the third mission

Firstly, the temptation naturally exists for entrepreneurship, innovation and the third mission to be given either as an additional task to an existing manager or spread across the workload of a number of existing managers given the current volume of activity in the area by comparison to other jurisdictions. This approach should be avoided given the future importance being attached to the entrepreneurial agenda by both government and HEIs. It is recommended, in the short to medium term, that responsibility for management of the overall entrepreneurial agenda needs to reside with one senior manager, who is solely responsible for this, and who is given the appropriate authority and resources to deliver on the agenda.

Introduce viable resource allocation mechanisms to support entrepreneurship, innovation and the third mission, including incentives, an innovation fund and horizontal support services

Basic organisational and structural arrangements that nurture synergies between education, research and third mission activities should be supported by core funding. Revenue generated from third mission activities should go into strategic reserves which can then be deployed to support the development of strategic initiatives that strengthen the embedding of third mission activities into education and research with the aim to enhance their impacts.

Introduce professional development and mobility programmes for staff related to entrepreneurship, innovation and the third mission

Investment in staff mobility programmes for the purpose of gaining further knowledge and insight into business, industry and community requirements, as well as the expertise of international partner HEIs, will be essential components of any professional development programme.

Enhance the involvement of students and young researchers in entrepreneurship, innovation and the third mission

For students, a greater offer of education activities which develop entrepreneurship as a key competence and collaboration with student associations could enhance active involvement in third mission activities. For young researchers, active scouting activities could be developed to increase the number of research results that lead to transfer and application activities. Particular attention should be on students and staff returning from international mobility, as well as international students and staff. A promising way of raising interest in entrepreneurship is to promote role models and to celebrate their successes, for example in a public “Start-up Day” organised at the HEI. Student organisations can play an important role in this.

Provide basic support for new venture creation, well-embedded in the wider start-up ecosystem

Basic start-up support offered in HEIs should be connected with the more specialised support structures organisations present in the wider start-up ecosystem. To this end, the

HEI-internal support offer should be widely communicated inside and outside the HEI. Offering a smooth transition for new ventures from basic to advanced support services requires strong collaboration with local, regional and national organisations providing business start-up and development support.

Build capacity at institutional and individual levels to understand, document and measure impact

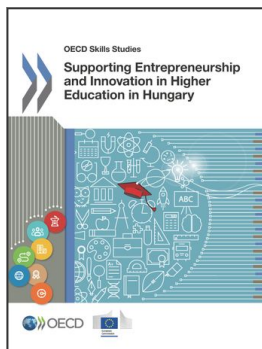
There is a significant gap in the availability of information about the quantity and quality of activities and their impact on learners, firms, and the HEI itself, to name but a few possible areas of impact. It is recommended to introduce training and support for staff and students to develop impact awareness and their ability to contribute to the HEI's efforts to capture and measure impact. This also includes effective mechanisms to reach out to alumni and former researchers later in their careers.

Notes

1. The HEIs were asked, in the questionnaire, whether and to what extent knowledge exchange, entrepreneurship or internationalisation were present in their strategy
2. Team Academy is based on the award-winning Tiimiakatemia approach, which was first introduced in 1993 by Johannes Partanen at Jyväskylä University of Applied Sciences in order to combine the worlds of business and education.

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