

THE ENTREPRENEURIAL AND INNOVATIVE HIGHER EDUCATION INSTITUTION

A REVIEW OF THE CONCEPT AND ITS RELEVANCE TODAY¹

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ABSTRACT

Higher education institutions are required to demonstrate the ways in which they respond to the social and economic needs of society, such as enhancing graduate employability, facilitating social mobility and wider access to higher education, contributing to national economic growth and local development in short and long term, stimulating new enterprises and innovation in existing firms. In addition, higher education institutions must continuously adapt and respond to new challenges to maintain standards of excellence and be competitive on international education markets. These challenges have, in sum, raised questions about the shape and constitution of the sector, with some scholars urging transformation, and questioning in particular the relevance of traditional conceptual and organisational models.

Being, or becoming, an entrepreneurial and innovative higher education institution is a response to this. There is no "unique" approach, but a variety of ways in which higher education institutions behave in an entrepreneurial and innovative manner, for example, in how they manage resources and build organisational capacity; involve external stakeholders into their leadership and governance; embed digital technology into their activities; create and nurture synergies between teaching, research and their societal engagement, and how they promote entrepreneurship through education and business start-up support as well as knowledge exchange to enhance the innovation capacity of existing firms.

Substantial high-profile work, undertaken over the last few years, underlines how digital transformation and the ability to integrate, optimise and transform digital technologies underpin, catalyse and sustain the development of an entrepreneurial and innovative higher education institution.

¹ This paper was prepared with contributions from Allan Gibb, Andrea-Rosalinde Hofer and Magnus Klofsten. The authors gratefully acknowledge comments by Alain Fayolle, Maribel Guerrero, Marek Kwiek, David Urbano, Olivier Toutain and Kerstin Wilde. The updated version of June 2018 was prepared by Martin Wain, with contributions from Jim Devine, Anusca Ferrari, Zsuzsa Jávorka and Veronica Mobilio.

² The 2014 version of this concept note provided a baseline and highlighted the rationale behind the creation of HEInnovate reflecting on the concept and relevance of entrepreneurial and innovative higher education institutions. In June 2018, due to new emerging themes and topics, there was a need to update this concept note and provide a more complete background paper for HEInnovate.

1. Introduction

Higher education institutions are required to demonstrate the ways in which they respond to the social and economic needs of society. This crosses multiple areas: their actions to enhance graduate employability, how they facilitate social mobility and wider access to higher education in particular for disadvantaged groups, their short- and long-term contribution to national economic growth and local development, and the ways in which they are stimulating the setting up of new enterprises, and innovation in existing firms. The complexity of our world is constantly adding new challenges for higher education institutions. Not all of them require direct responses or can be solved by higher education institutions. Yet, in their totality, these challenges raise questions about the current shape and constitution of the sector. Some scholars call for a "deep, radical and urgent transformation" (Barber et al., 2013), questioning in particular the relevance of traditional conceptual and organisational models of higher education institutions.

Being, or becoming, an entrepreneurial and innovative higher education institution is a response to these challenges, and one that can take many different shapes. There is a variety of ways in which higher education institutions can act entrepreneurially and innovatively in their strategies and practices, and it is key that this is seen from a whole-of-institution perspective. For example, higher education institutions may demonstrate entrepreneurialism and innovation in how they manage resources and build organisational capacity; how they involve external stakeholders in the leadership and governance of the institution; how they embed digital technology into their activities; how they create and nurture synergies between teaching, research and their societal engagement, and how they promote entrepreneurship through education and business start-up support as well as knowledge exchange to enhance the innovation capacity of existing firms. The challenges and opportunities presented to all sectors of the economy by the continual development of digital technologies also affects higher education.³ In fact, digital transformation and capabilities underpin, catalyse and sustain the development of an entrepreneurial and innovative higher education institution (OECD, 2017).⁴ The renewed EU agenda for higher education (European Commission, 2017)⁵ stresses the need for higher education institutions to address digital transformation, implement digital learning strategies and exploit the potential of technology to the benefit of their staff and students.⁶ In line with the 2017 communication, the subsequent Digital Education Action Plan (2018)⁷ consolidates various ongoing initiatives and launches new actions addressing three main priorities which are of high importance for inclusive, connected, effective and efficient higher education systems: making better use of digital technology for teaching and learning, developing the relevant digital skills and competences, improving education systems through better data analysis and foresight.

This paper seeks to engage the reader into a debate about the concept of an entrepreneurial and innovative higher education institution. It discusses why we need entrepreneurial and innovative higher education institutions and what their key constituents and their implications for institutional change are. The debate is mainly centred on Europe, but many of the challenges discussed here are of global relevance.

The paper also provides the analytical and conceptual background for HEInnovate.⁸ By grounding HEInnovate on an interwoven and beyond-business concept of entrepreneurship, innovation and

³ See for example Fitzgerald, M. et al., (2013). Oldham, G.R. & Da Silva, N., (2015), Piccinini, E. et al. (2015), and Leu et al. (2017) for discussions on this.

⁴ See Matt, C., Hess, T. & Benlian, A. (2015) for a more general discussion in this area.

⁵ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a renewed EU agenda for higher education, Brussels, 30.5.2017 COM(2017) 247 final.

⁶ Op. cit., p.6

⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan, Brussels, 17.1.2018 COM(2018) 22 final.

⁸ HEInnovate (www.heinnovate.eu) is a self-assessment tool that allows higher education institutions to map out their status quo on leadership and governance, organisational capacity, teaching and learning, pathways for entrepreneurs, knowledge exchange,

institutional change, we trust to counter the view that higher education institutions that behave entrepreneurially are becoming more commercially oriented and lose academic depth.

2. Entrepreneurship and higher education

Entrepreneurship is a concept for which more than a hundred definitions are currently in use. The European Commission's Entrepreneurship Competence Framework (EntreComp, 2016)⁹ defines entrepreneurship as a transversal key competence applicable by individuals and groups, including existing organisations, across all spheres of life:

*"Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social"*¹⁰

Two key aspects of the definition proposed are that entrepreneurship applies both to individuals and organisations, and that it concerns the innovative, forward looking and value-creating utilisation of resources.

Within complex organisations and their networked environments, entrepreneurship as a process can promote change and development through enhancing the capacity to recognise and act upon opportunities. As such, entrepreneurship has a long-standing presence in higher education reform initiatives, promoting, for example, the systematic crossing of disciplinary and knowledge boundaries in teaching and research and in engaging external stakeholders into leadership aspects and the organisational capacity of higher education institutions.¹¹

In an entrepreneurial and innovative higher education institution, teaching, research, and societal engagement are intertwined. Leadership, governance and external stakeholder involvement create a continuous synergy and dynamic exchange between these. A useful working definition of the entrepreneurial and innovative higher education institution, which is broad enough to cater for institutional diversity, is provided by Gibb (2013):

"Entrepreneurial higher education institutions are designed to empower staff and students to demonstrate enterprise, innovation and creativity in research, teaching and pursuit and use of knowledge across boundaries. They contribute effectively to the enhancement of learning in a societal environment characterised by high levels of uncertainty and complexity and they are dedicated to creating public value via a process of open engagement, mutual learning, discovery and exchange with all stakeholders in society - local, national and international."

Being an entrepreneurial and innovative higher education institution depends, to a large extent, upon individuals and innovative ways of doing things, and a supportive organisational culture. Often these are not labelled as such. Promoting the entrepreneurial higher education institution is not about re-labelling these, it is about recognising and building – in innovative ways – on what already exists.

Before entering the debate of why we need entrepreneurial and innovative higher education institutions, a note is made on the wide range of different organisations currently operating under the higher

internationalisation, measuring impact and digital transformation and capabilities. The objective is to provide higher education institutions with a guidance framework helping them to identify hidden opportunities and strategically develop their entrepreneurial and innovative potential.

⁹ Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016). EntreComp: The Entrepreneurship Competence Framework. Luxembourg: Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884

¹⁰ FFE-YE. (2012). Impact of Entrepreneurship Education in Denmark - 2011. In L. Vestergaard, K. Moberg & C. Jørgensen (Eds.). Odense: The Danish Foundation for Entrepreneurship - Young Enterprise.

¹¹ A broad literature emerged around the concepts of "enterprising universities" (Williams, 1992), "entrepreneurial and innovative universities" (Clark, 1998, 2001, 2004), "self-reliant and successful universities" (Shattock, 2003) and "adaptive universities" (Sporn, 1999), to name just a few.

education banner. Legal frameworks vary between, and even within countries, despite growing efforts to harmonise and recognise academic credentials and to facilitate student mobility. In some countries public higher education prevails, whilst in others private institutions are quickly expanding their influence. Hierarchies exist in almost every country, often based upon age and academic rights, but increasingly also upon demand and resources. Differentiation also regards the disciplinary focus with specialist institutions for industry sectors, vocational subjects and different links into secondary and further education. Challenges, such as massification, resource availability, and external stakeholder engagement, as discussed further down, will affect higher education institutions in distinctive ways and lead to different reactions. The older venerable, often well-resourced, culturally and locally embedded institutions will perhaps be able to maintain their current position and ways of practice for sometimes longer, whereas others will increasingly find themselves confronted with the short-term need for reforms. Similarly, trust in digital technology, and the ability to harness and exploit it to the benefit of the institution, its students and staff will vary across different contexts and sometimes among and within the same institutions.¹²

3. Why do we need entrepreneurial and innovative higher education institutions?

The complexity of our world is constantly adding new challenges for higher education institutions. In the following paragraphs, nine key challenges are presented. In their totality they raise questions about the current shape and constitution of the higher education sector.¹³

3.1 Catching up with fundamental changes in knowledge production

During the last fifty years, knowledge production has fundamentally changed. What we today refer to as Mode 2 knowledge is "socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities" (Nowotny et al., 2003).¹⁴ It builds on essentially different circumstances, moving away from the strict division of disciplines and the ivory tower of science. As a result of this, higher education institutions are exposed to a "tectonic shift' in the relationship between science and the economy", bringing with it many challenges, but also new opportunities to create and diffuse new technologies (Etzkowitz et al., 2012).

'Borderless education' – one of the consequences of the globalisation and digital transformation – has been a key enabler for the paradigm shift in knowledge creation. No single university, and indeed the higher education sector as a whole, can any longer claim to be the paramount repository of, and discovery agent for, knowledge (Kwiek, 2012). While physical communication and travel boundaries have been broken down and altered between countries and continents, the global expansion of the sources of information and knowledge has greatly surpassed this.¹⁵ Academia has not fully kept up speed with these developments. Independence of academic discovery and teaching processes is still widely present alongside with the notion that higher education institutions are sustained by a mode of thought which is shared by all its members yet underpinned by a detachment of their members' motivations from the goals and functions of the organisation.¹⁶ Such independence has in many countries traditionally

¹² For broader discussion on technology and trust, see the work of the LSE Truth, Trust & Technology Commission <http://www.lse.ac.uk/media-and-communications/truth-trust-and-technology-commission>.

¹³ See, for example, Vukasovic et al. (2012) on a discussion of the trends in and effects of higher education reform, with examples from different countries across the world.

¹⁴ Mode 2 is in contrast to the so-called Mode 1 paradigm of scientific discovery, which is characterised by the hegemony of theoretical and experimental science, a divisionary taxonomy of disciplines and by the above autonomy of scientists and their host institutions from societal pressures. For further reading see also Gibbons et al., (1994).

¹⁵ See, for example, Barnett (2000), Observatory on Borderless Higher Education (2011).

¹⁶ See Haggis (2006) for the 'independence' of academic discovery and teaching processes.

been supported by government funding that is conditioned by the quality and extent of research and publications. Excellence has been viewed through the lens of peer review processes and particularly through the prism of publication in high-impact journals.

This is now being challenged. Universities, and higher education institutions in general, are increasingly impelled to enhance their capacity to focus upon ‘useful’ problem-centred sources of knowledge, create wider partnerships for learning, cross disciplinary boundaries and promote trans-disciplinarity, and to discover, exploit and share knowledge in new ways. There is a growing societal demand for universities to take up the role of translating and communicating knowledge to wider audiences. As Furedi (2001) solicits, commenting about the situation in the UK, "we need public intellectuals ... [and] institutions that are not ashamed of the idea that sometimes it is worthwhile developing ideas because it is exciting".

3.2 Reorganising teaching and learning

Governments, parents, students and employers increasingly consider higher education institutions to have an essential mission to stimulate and facilitate learning that results in graduates with cutting-edge, discipline-specific knowledge and broad social and transversal skills – now commonly referred to as T-shaped professionals.

At the same time, the ongoing digital transformation brings profound changes to teaching and learning in higher education. Teachers and students have to cope with the sheer volume of information which is freely available on the Internet, condensed and presented appealingly to students, enabling them to easily go beyond the recommended readings. Academic blogs, You Tube, Facebook, Twitter, and other forms of social media gained growing significance in teacher-student communication. Acting as new channels of learning, they question traditional approaches to teaching. One reaction to this are flipped classrooms: students are asked to ‘discover’ more of their learning and to use conventional lecturing, formerly delivered personally, from online sources. Students are challenged to become aware of and to use a wider range of knowledge sources and to find novel solutions, whereas the teacher becomes a facilitator of learning.

The potential for wider student learning has been further enhanced by the growth of Massive Open Online Courses (MOOC), attracting many thousands of students worldwide. Much of the wide-ranged study offer is through private companies and consortia in the United States and Europe, often set up by university staff, however, increasingly with formal institutional backing.¹⁷ Although for the majority of courses there are no widely accepted certificates, and completion rates are on average low, MOOC present a challenge to the individual member of staff in a less prestigious university, whose students may be able to listen to lectures on the same theme delivered by world-famous professors. Developments in and use of digital technologies provide opportunities for innovative curriculum design and delivery, and it also enables new ways of tracking and assessing progress.¹⁸ Moreover, field of studies such as learning analytics have a big impact on the measurement, collection, analysis and reporting of data about the progress of learners – and the context in which learning takes place.¹⁹

Responding to these challenges and opportunities entails a different approach to teaching. It requires a "rethinking of the education mode" (Etzkowitz et al., 2012) and a significant organisational innovation effort. Tying different sources of information and knowledge together into a dynamic and open learning environment – where teachers and students interact, reflect and create knowledge – requires also interdisciplinary and flexible study programmes. These developments are stimulating the spread of

¹⁷ See Department of Business Innovation and Skills (2013) for a literature review of MOOCs.

¹⁸ See Beetham, H. & Sharpe, R., (2013) for broader discussion on assessment in the digital age and Gibson, D. et al., (2015) for a discussion of digital badges in higher education.

¹⁹ See Sclater, N., & Mullan, J. (2017) for more about Learning Analytics

‘virtual’ academic institutions, reinvigorating, in turn, the need for part-time study arrangements, flexible modes of credit accumulation and mobility between institutions.²⁰

3.3 Making research relevant and accessible

The amount and significance of new knowledge and technology emerging in research practising assign higher education institutions with a unique role in enhancing development, well-being and economic and social sustainability. Acting upon this potential is, however, not a given consequence, but requires enterprising individuals and an environment that enables transfer application and exchange of knowledge and technology with the outside world.

Many economies in Europe face the challenge of how to make academic research relevant and accessible for society.²¹ Turning research results into products and services requires higher education institutions to be open and receptive to real world problems, to enable researchers and students to (jointly) develop innovative solutions, and to be able to diffuse these widely. All this sums up to the entrepreneurial and innovative capacity of a higher education institution. Learning alongside and with external stakeholders, as will be discussed below, is important to develop this capacity. This implies a move away from the hitherto narrow focus upon ‘knowledge transfer’ to a network-based approach of knowledge exchange.

Digital transformation is not only challenging teaching and learning, but also the way that academia conventionally reaches its audience and gains reputation. Both public and private funders of research pressure higher education institutions to make research findings more readily and quickly available, for example, through free-access on the Internet. There is a notable substantial increase in on-line academic journals and a movement in some countries to place the onus and cost of an individual’s publication with her/his academic home institution. Also, the number of individual academics who publish their own work on the Internet is growing. Digital transformation is triggering innovations within each step of the research and scholarly communication process, as well as the academic publishing market, and this topic has seen growing interest and attention (Ponte, D., Mierzejewska, B.I. & Klein, S., 2017). For example, digital transformation affords more possibilities for citizen science, with the ability to open access to datasets, and to create platforms for reporting. In terms of publishing, online services, such as Google Scholar and ResearchGate, as well open access, have re-shaped knowledge production, evaluation and dissemination (Ponte, D., Mierzejewska, B.I. & Klein, S., 2017).

3.4 Enhancing graduate employability and educating ‘enterprising’²² individuals

The needs of the labour market are rapidly evolving. Employers seek individuals adept in business and customer awareness, problem solving, team-work, communication and literacy, application of numeracy and information technology, and who demonstrate a ‘can-do’ approach as well as openness to new ideas and the drive to create value from these. ‘Employability requirements’ overlap with the competences and skills associated with entrepreneurship, both in a broader sense of being ‘enterprising’ as well as in terms of starting-up and running a business. Achieving these learning outcomes require learning environments and teaching strategies that offer students opportunities to experience and exploit tacit knowledge and that encourage them to take ownership of the learning process.

Unemployment and underemployment of graduates are currently high in many countries. This raises – once more – the question as to whether higher education institutions, on their own, are capable of

²⁰ See for example the Rethinking Education initiative of the European Commission, at http://ec.europa.eu/languages/policy/strategic-framework/rethinking-education_en.htm.

²¹ Perkmann et al. (2013) provides a literature review of academic engagement and commercialisation.

²² In the English language the expression ‘enterprising person’ can clearly be distinguished from an ‘entrepreneur’. An enterprising person demonstrates behaviours, attitudes and attributes, which are often associated with the entrepreneur, but not constrained to him and therefore can be observed in any context. See Gibb (2002) for a review of the rationale for these definitions.

developing the critical and reflective abilities that empower and enhance graduates to find rewarding employment and to survive and grow in a dynamic and increasingly global labour market.²³ Enhancing graduate employability requires more synergies between education, research and practice and more network structures between higher education institutions and their employment contexts, which may or may not be local. Most of all, however, it requires educational responses to graduates, who are likely to be less risk-averse than their predecessors, more open to exploring new professions and new ventures, and who are better internationally connected (Etzkowitz et al., 2012).

3.5 Making the most out of the digital transformation

Digital transformation offers many opportunities to entrepreneurial and innovative higher education institutions (OECD, 2017) but it also creates new challenges. Digital capabilities, defined as the ability to integrate, optimise and transform digital technologies in all possible processes and activities is becoming a key element fostering innovation in higher education institutions.

The entry point for digital transformation in higher education institutions was connected to online teaching and learning, however digitalisation covers much more than the online delivery of content. As with the concept of entrepreneurship, digital transformation is a broad domain, and there are many areas that higher education institutions should consider. There has been a significant amount of high-profile work in the last five years that examined the principles of digital transformation within higher education institutions across the world.²⁴ The work has collectively focused on two main dimensions:

- The need to consider how digital capabilities of higher education institutions can be best leveraged to support the institutions' different missions in new and creative ways
- The use or uptake of digital technologies in higher education institutions and the different modes of implementation

The uptake of digital technologies should not be based on a 'tick-box' approach to implementation, but should be based on a holistic, well-designed and integrated strategy that considers technologies as a key enabler and addresses specific, relevant institutional issues and requirements.²⁵ It is in this context that the concept of *digital-first thinking* has been developed to indicate a shift in organisational culture, which embraces the opportunities offered by digital technologies, and shaping activities and working practices accordingly.

3.6 Building partnerships

Higher education institutions are complex pluralistic organisations with each department and discipline facing different stakeholder environments with varying degrees of complexity and actual or potential involvement in knowledge creation, exchange and utilisation processes.²⁶

Moving from passive interdependence to active stakeholder engagement is a complex process. The capabilities of higher education institutions to recognise opportunities for collaboration, to communicate these to, and engage with stakeholders must be developed as stakeholders normally do not approach higher education institutions on their own (Klofsten, 2013). Much of the academic and

²³ See Mevlin and Pavlin (2012) for a cross-country overview of current practices to enhance graduate employability, and Moreland (2007) on the employability perspective in promoting entrepreneurship.

²⁴ For example DG EAC and the JRC's European Framework for Digitally-Competent Educational Organisations (DigCompOrg), JISC's digital capabilities framework and digital capability discovery tool, digital readiness models piloted by some KICs and the EIT, the Hochschulforum Digitalisierung framework, and the US EDUCAUSE Core Data Service.

²⁵ A broader discussion on this can be found in Kane G. C. et al (2015).

²⁶ See Moses (2005) for a discussion of institutional autonomy, and Watson (2008) for an overview of the engagement of higher education institutions with society.

wider public debate on the notion of the engaged higher education institution has focused on the Triple Helix Model of triangular partnerships with business and government, lately also embracing the wider society.²⁷ Promoted by public policy, particularly in the sphere of technology development from science and engineering activity, partly neglected the humanities departments on the assumption that these lie outside of the entrepreneurship paradigm, despite the growing practice of many departments and their students being highly engaged with external stakeholders.²⁸ It is important to stress that the 'entrepreneurial and innovative university' is a whole-of-institution concept, spanning all disciplines.

When carefully managed, the process of opening higher education institutions to stakeholder engagement can turn them into learning organisations, who are "porous to learning" at all levels and in all forms both within and outside the institution (Gibb, 2013). In this sense, external stakeholder engagement, however, may also challenge the notion of academic excellence being judged solely through the eyes of peers and moves it to one of excellence as perceived by the wide range of stakeholders with whom the institution engages. Having a dynamic digital presence can also significantly boost visibility and outreach as well as the abilities and options for building partnerships.

3.7 Embedding internationalisation into strategy

Internationalisation is widely practiced today by the majority of higher education institutions worldwide. There is a general consensus that internationalisation can offer, when part of a broader strategy, valuable benefits to students, faculty and the institution as whole. It can spur on strategic thinking leading to innovation in modernising pedagogy, stimulate greater student and faculty collaboration, and can open up new avenues for research collaboration. International mobility of scientists and students can also enhance academic entrepreneurship through exposure to new research environments and application opportunities.²⁹

A widely practiced approach to internationalisation is setting up partnerships with higher education institutions abroad that facilitate virtual and physical staff and student exchanges, collaboration in research and development, international joint degree programmes and the opening of campuses abroad. Opening up wider links through distance learning approaches, globalisation of curricula, building stronger linkages with local international businesses and closer engagement with alumni abroad are also growing practices.³⁰

At the same time several challenges come along with internationalisation. Higher education institutions are competing with each other to attract students and staff. In Europe students can move with little effort across national boundaries, not only in pursuit of different degree offers and life experiences but also in search of value for money. The traditional flows of students and young academic staff from outside the developed world area into Western Europe and North America are increasingly under threat by the growth of the higher education sector in emerging economies. This provision is often to high standards, with a growing course offer in English language. As a result, there is positive pressure for Western institutions themselves to be more sensitive to cultural differences and the ways of teaching, learning and research in emerging economies.³¹

²⁷ See, amongst others, Shinn (2002), Etkowitz and Klofsten (2005), and Etkowitz (2008).

²⁸ See Benneworth and Jongbloed (2010) for a stakeholder perspective on valorisation and commercialisation in humanities, arts and social sciences.

²⁹ Krabel et al. (2009) conclude from a large-scale investigation of foreign-born and foreign-educated scientists that they are more entrepreneurial than their 'domestic' peers.

³⁰ See OECD (2012) for institutional guidance on internationalisation in higher education.

³¹ See King et al. (2010) for a discussion on whether elite universities are losing their competitive edge in international student mobility.

3.8 Promoting business start-up through education

Of the many inputs and circumstances contributing to the success of an entrepreneurial venture, having the right skills and competences is of particular importance. Motivated people need the right set of skills to identify opportunities and to turn their entrepreneurial projects into successful ventures. Starting early in getting familiar with the idea that running one's own firm is a potential career option is important and education can play a core role in this.

It is now widely recognised that starting up and developing a new firm, or any kind of organisation, involves a considerable learning process, which can be enhanced by appropriate education and training. The debate has moved on from why higher education institutions should promote entrepreneurship to the exploration of "how" this might be best organised.³²

Entrepreneurship education should be organised in a dynamic way, taking into account research and real business needs. To ensure this, regular performance assessment exercises are useful, including feedback sessions with people from the business community and surveys among students and alumni with entrepreneurial careers. It is important that entrepreneurship education is taken seriously by both students and teachers (which does not mean it cannot be fun), but it should also help to fulfil the academic requirements for both sides. It is important to build and expand linkages between research and teaching, for example by getting doctoral students to work on an entrepreneurship education related research topic. Inviting international visiting entrepreneurship professors or representatives from the business sector on a regular basis strengthen the research base, the education efforts as well as the training.

In many higher education institutions, entrepreneurship education is anchored in business schools. This can create barriers to its institution-wide offer and take-up. The business school treatment of the entrepreneurship concept tends to be focused upon the business context of new venturing and enterprise growth and not necessarily taking into account the context of the departmental discipline.

Regardless of these institutional aspects of entrepreneurship education, a deeper debate is ongoing about the effects of entrepreneurship education upon an individual's intention to start-up a business and the latter's performance.³³ Surveys rarely unpick and portray the different offers and intended learning outcomes of entrepreneurship education activities. This constitutes a major challenge, particularly to measuring the ultimate impact of the education offer on the intentions, competences and skills of students and the quality and numbers of new ventures. Impact evaluation is further complicated by the potentially wide range of other factors that will shape ultimate motivation, action and success and the current research understanding that actual business start-up practices are likely to happen several years after graduation.

3.9 Handling financial stringency

In Europe, on average, two-third of the income of higher education institutions come directly from public sources (EUA, 2013). As public funding becomes increasingly constrained, an immediate pressure exists for many higher education institutions to raise revenue and to cut costs. In many countries, block grants remain the core form of basic funding, but allocation becomes increasingly competitive through output-oriented and performance-based criteria and allocation indicators. This has an impact on strategic decisions and on the resource capacity to attract future funding. At the same time, European higher education institutions increasingly use multiple funding streams to balance their budgets with non-core income sources. Managing multiple funding streams is, however, time and resource intensive

³² See NIRAS Consultants (2008), OECD (2007, 2008, 2010) and EC (2013) for short case study presentations of entrepreneurship education and start-up support practices in higher education institutions in different countries.

³³ See Fayolle and Gailly (2013) for a discussion on whether entrepreneurship education programmes really influence participants' attitudes and intention toward entrepreneurship and what influence does past experience have.

and, most of all, it requires a full costing approach. Adopting the latter confronts many higher education institutions with an immediate need to overcome internal barriers (e.g., resistance to a more managerial approach, lack of qualified/trained personnel) and external obstacles, such as legal barriers and a lack of stakeholder management experience.³⁴

Financial stringency has been an enabler for higher education institutions to behave in an entrepreneurial and innovative way (Shattock, 2010). Too much of it can, however, be inhibitive, in particular in the absence of initial investment or legal framework conditions that higher education institutions need to establish and manage multiple funding streams (Williams, 2009).

4. What constitutes an entrepreneurial and innovative higher education institution?

The challenges described above are significantly impacting upon many aspects of higher education institutions, in particular upon their governance and management.³⁵ Many of the responses noted above are embraced piecemeal within the silos of established departments or professional services inside higher education institutions. Yet they all impact upon each other.

This raises the potential for bringing them together into a 'holistic' approach for exploring the entrepreneurial and innovative potential of the university as the basis for change and future development.³⁶ For this to happen, a certain degree of autonomy is needed both at the level of individual staff as well as for the organisation itself. Tying this back into a common vision of what being entrepreneurial and innovative means for the institution is crucial. Autonomy at faculty and individual levels needs to be grounded on shared academic values and a common vision in order for the organisation as a whole to become "biased toward adaptive change" (Clark, 1998).

Hence, building a common and shared understanding of what being an entrepreneurial and innovative higher education institution means for a specific institution within a given socio-economic context and policy framework is the main starting point. This will be a progressive and reflective process relating to the particular focus of the higher education institution in quest. Views of entrepreneurship will be considerably influenced by culture and the ways of doing things. Also, there are widely different governance and organisation structures which impact on the capacity to change. Different countries also have different imperatives, cultures, traditions, frameworks and public policy influences which will influence their view of the entrepreneurial and innovative higher education institution.³⁷ There is no single model, but a magnitude of unique responses to promote "entrepreneurship as method".³⁸

In all the diversity, we trust that there are some key characteristics that an entrepreneurial and innovative higher education institution embodies. These are presented as eight dimensions in HEInnovate³⁹ and can be summarised as follows:

- **Leadership and governance** are two critical and challenging factors in developing entrepreneurial and innovative higher education institutions. Positive and responsive leadership is what maintains a dynamic and successful organisation, particularly in times of uncertainty, unpredictability and complexity. Leadership and governance can stimulate innovation of all kinds in an organisation that is held together by a shared vision and culture, not overloaded with

³⁴ See EUA (2013) for an overview of full costing processes and their application in European higher education institutions.

³⁵ See Kohler and Huber (2006) and Kogan and Bliedie (2007) for an analysis of how dominant organisational patterns in governance have changed from the classical notion of a higher education institution as a republic of scholars towards the idea of a stakeholder organisation.

³⁶ For a full academic review of this process see Gibb (2012).

³⁷ See Guerrero and Urbano (2011) for a comparison of two regions in Ireland and Spain.

³⁸ Sarasvathy and Venkataraman (2011).

³⁹ For each of the eight dimensions, Guidance Notes are available online on www.heinnovate.eu.

managerial systems, constantly striving for its autonomy via the entrepreneurial management of its various interdependencies with stakeholders.

- **Organisational capacity: funding, people, incentives.** Entrepreneurial and innovative higher education institutions continuously aim at developing their organisational capacity. To this end, incentives and rewards are in place for entrepreneurship champions, staff, students and stakeholders who are promoting the entrepreneurial agenda, and removing barriers and constraints within the organisation. The aim is to empower individuals throughout the organisation to own their own initiatives, engage in innovation and build personal trust-based stakeholder relationships across external and internal boundaries in search of synergy.
- **Entrepreneurial teaching and learning** requires something other than standard textbooks and ordinary classroom settings. An ‘entrepreneurial’ pedagogy seeks to enhance entrepreneurial capacities and capabilities amongst students by giving them more autonomy and responsibilities in the learning process through experimental, collaborative and reflexive learning.
- **Preparing and supporting entrepreneurs** entails teaching strategies and learning environments which offer targeted support for students and staff that aim at setting up a business. Higher education institutions can provide this support directly themselves or refer potential entrepreneurs to specialised start-up support services within the (local) entrepreneurship ecosystem.
- **Digital transformation and capability** cut across all aspects of modern higher education institutions. It is increasingly important that institutions make the most out of the opportunities afforded by digital technologies, which are a key enabler of innovation and entrepreneurship. Ensuring that higher education institutions are able to do so entails fostering a positive digital culture, developing and maintaining a fit-for-purpose and up-to-date digital infrastructure that serves the strategy and the missions of the higher education institution, and developing digital competences among staff and students to fully exploit the opportunities provided by digital technology and tools.
- **Knowledge exchange and collaboration** is determined by the perceptions of the respective "other". A negative attitude towards entrepreneurship, entrepreneurs and businesses within a higher education institution can limit and hinder network formation and collaboration with business partners. Communication that ensures that both sides of a knowledge exchange network have a clear understanding of respective expectations, limitations and requirements, is a major building block of the entrepreneurial and innovative higher education institution.
- **The internationalised institution.** Internationalisation is an important indicator for quality in higher education. It is not an end in itself, but rather is a vehicle for continuous change and advancement. Higher education institutions can internationalise through their activities in teaching, research and knowledge exchange, and through their staff and students. Becoming a truly internationalised institution will build on both.
- **Measuring impact** of certain practices on the entrepreneurial and innovative higher education institution is neither easy nor straight forward. To measure the impact of the entrepreneurial agenda, it is important to start by monitoring and reviewing entrepreneurship within the leadership of the higher education institution. This will help establish an understanding of how important entrepreneurship is to the governing and executive boards – compared to other strategic objectives, such as, for example, sustainability, excellence in research, attraction of international students. Excellence is judged through the eyes of all of its stakeholders in pursuit of the creation of public value.

5. Implications for institutional change

Achieving and maintaining these features may have significant implications for institutional design.⁴⁰ Overall institutional design may be structured in such a way to facilitate cross disciplinary teaching and research focused not only upon current problems but also with a vision of the longer-term issues of strategic importance.

Whole higher education institutions or their departments may be organised in this way breaking down traditional disciplinary silos. Responsibilities for graduate employability, alumni relationships, revenue raising, research and entrepreneurship may be placed with departments and faculties in recognition of the fact that each of them faces distinctly different stakeholders, employment and research pathways for its students and staff. Faculty and departmental heads will have to take on greater responsibility for performance in this respect and be prepared to defend risk taking behaviour and, at times, associated failure.⁴¹ Reward and promotion systems will also need to be geared to this scenario so that 'routes to innovation' of all kinds can lead to recognition and rewards.

There will also be challenges to the existing relationships between professional and academic staff with more pressure for academic staff to 'engage' directly with the wider world rather than have this done for them by professionals. Professional staff may become 'engagement facilitators' in assisting academics to actively cross boundaries.⁴²

Engaging academics into the entrepreneurial agenda requires commitment and continued support from leadership as well as an agenda that does not solely rest on a top-down approach. In every higher education institution there will be those who resist change – particularly the entrepreneurial notion of it – and those who find it challenging and exciting once the fears have been assuaged. Different departments will have different views, dependent upon the degree to which they are threatened by, or see opportunity in, their existing exposure to a wider stakeholder environment. Inspiring initiative and giving the academic community ownership of the entrepreneurial agenda are essential for success. Much will depend upon the presence of champions, who promote entrepreneurship and innovation and integrate these into higher education practice.

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⁴⁰ Kohler and Huber (2006) and Mora and Vieira (2009) for an analysis of how dominant organisational patterns in governance have changed over time.

⁴¹ Todorovic et al (2005) for a perspective "from within" in making university departments more entrepreneurial based on interviews with 40 faculty members.

⁴² See Coyle, Gibb and Haskins (2013) for an overview of different approaches and practices.

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