



Supporting Graduate Entrepreneurship in Wielkopolska and Kujawsko-Pomorskie, Poland



OECD Reviews on Skills and Competences for Entrepreneurship

FOREWORD

Supporting entrepreneurship in universities is increasingly important for governments as they seek to develop more innovative and entrepreneurial economies. Given the youth unemployment challenge that is currently faced in the European Union, young people need to be entrepreneurial in starting their own businesses or as entrepreneurial employees to increase their ability to enter the labour market. Universities have an important role to play in supporting this agenda by providing entrepreneurship education and business start-up support offers.

The OECD is undertaking a series of reviews of entrepreneurship support in universities and vocational training in selected regions and countries as part of its activity on skills and competencies for entrepreneurship.

The reviews on university entrepreneurship support are built on the Guiding Framework for the Entrepreneurial University, developed jointly by the OECD with the European Commission, Directorate-General for Education and Culture. To know more about the reviews and the Guiding Framework, please refer to:
<http://www.oecd.org/cfe/leed/skillsandcompetencesforentrepreneurship.htm>

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EXECUTIVE SUMMARY

The context of the study

Entrepreneurship skills include both the entrepreneurial mind-set as well as the set of skills that are needed to start and successfully operate a business. These skills are increasingly important to help the labour force adjust to the changing needs of the economy and universities can play a significant role in helping their students acquire these skills. Entrepreneurship skills will be beneficial for all, regardless of whether they go on to start a business or not because entrepreneurial behaviour can be an asset in any workplace.

Supporting the development of entrepreneurship skills is a timely issue, as many governments in the European Union and beyond are looking for methods of achieving job creation and economic growth. Entrepreneurship can be part of the answer. It is particularly important for Poland which is poised to take a greater economic role in the European Union. The timing is right to examine these issues because preparations are underway for the next programming period of the European Structural Funds. There is an opportunity for Poland to seek support for projects that will grow the support for entrepreneurship in higher education.

This study aims to review university practices in promoting and supporting entrepreneurship in Wielkopolska and Kujawsko-Pomorskie regions in Poland. It is part of a series of reviews on Skills and Competences for Entrepreneurship carried out by the Local Economic and Employment Development (LEED) Division of the Organisation for Economic Co-operation and Development (OECD) that assess current practices in higher education institutions in entrepreneurship education and specialised business start-up. This review project has been undertaken by the OECD LEED Division with the support of the Polish Ministry of Infrastructure and Development.

This review is based on the “Guiding Framework for the Entrepreneurial University” that was developed by the OECD LEED Division and the European Commission, DG Education and Culture. This framework outlines good practice criteria related to institutional strategies for entrepreneurship, university approaches to entrepreneurship education and specialised business start-up offerings. An OECD-led international expert team assessed current practices in Polish higher education institutions (HEIs) against this framework, collecting information through interviews with university leaders, professors and students at the following universities:

- Poznań University of Economics (Uniwersytet Ekonomiczny w Poznaniu)
- Adam Mickiewicz University in Poznań (Uniwersytet im. Adama Mickiewicza)
- Poznań University of Technology (Politechnika Poznańska)
- Kazimierz Wielki University in Bydgoszcz (Uniwersytet Kazimierza Wielkiego w Bydgoszczy)
- University of Technology and Life Science in Bydgoszcz (Uniwersytet-Technologiczno Przyrodniczy w Bydgoszczy)
- Nicolas Copernicus University in Toruń (Uniwersytet Mikołaja Kopernika w Toruniu)

In addition, the review team also met with national and local government officials and other local stakeholders. The results of the case study visits were complemented by online surveys of university leaders and students who have participated in entrepreneurship training or start-up support offerings.

Key messages

National Government is encouraging adoption of university entrepreneurship support

A number of findings are drawn from the results of the one-week study visit. First, the national government supports entrepreneurship in higher education through a number of strategies and programmes related to higher education, scientific research and innovation rather than through a single entrepreneurship strategy. This support includes inserting entrepreneurship in the National Qualifications Framework for Higher Education to ensure that a broad base of students receives entrepreneurship education. Several national ministries, including the Ministry of Infrastructure and Development and the Ministry of Science and Higher Education, demonstrate a keen interest in increasing their support for entrepreneurial learning and strengthening linkages between the higher education sector and the business sector which is necessary for creating appropriate conditions for universities to increase their activities related to entrepreneurship.

The universities vary in the degree to which they support entrepreneurship strategically

However, the enthusiasm for entrepreneurship displayed by the national ministries is not matched at the majority of universities in Wielkopolska and Kujawsko-Pomorskie. In Kujawsko-Pomorskie, the institutional strategy at the University of Technology and Life Sciences in Bydgoszcz aims to build co-operative relationships between the university and the private sector, business incubators and science parks, as well as supporting entrepreneurship in the curricula. However, there is no evidence of strategic support for entrepreneurship at Nicolas Copernicus University and there are few entrepreneurship-related activities. Overall, there is a much higher level of awareness about entrepreneurship among the university leaders in Wielkopolska. Entrepreneurship is viewed as a strategically important at the Poznań University of Economics, Adam Mickiewicz University in Poznań and Poznań University of Technology and each of these universities actively engages with the business sector and external organisations (e.g. business incubators) to promote and support entrepreneurship activities.

Entrepreneurship education is under-developed in both regions

Entrepreneurship education offerings are not well-developed in the six universities visited. None of the universities visited have professors of entrepreneurship, nor do they have a chair of entrepreneurship or any research programmes focussing on entrepreneurship as an academic subject. This suggests that entrepreneurship is not viewed as an academic discipline on par with science. Only Poznań University of Economics offers an entrepreneurship course, which is an introductory course at first cycle level (i.e. bachelor's degree). Instead, entrepreneurship education is embedded within other subject areas at the other universities to meet the requirements of the National Qualifications Framework. However, the scope and depth of entrepreneurship learning is very limited at all six of the universities visited and there is no evidence of international best-practice methods used in entrepreneurship learning activities. A small number of external stakeholders (i.e. non-university organisations) such as InQbator offer entrepreneurship courses and other learning opportunities to learn and experience entrepreneurship (e.g. camping, coaching). These offerings often incorporate international best practice methods.

Start-up support is good but co-ordination could be improved

Specialised business start-up support services are readily available in the regions visited. Students looking for business start-up support have an abundance of options. The primary mechanism of start-up support in the universities in Wielkopolska and Kujawsko-Pomorskie is the network of Academic Incubators of Entrepreneurship, which has a presence at five of the six universities included in this case study. Many of these centres are quite small and the services offered resemble pre-incubation services rather than a comprehensive suite of start-up support services. The career centres at the universities also play an important role by referring students interested in entrepreneurship to the large number of external support organisations and off-campus business incubators. Despite the many supports available to graduate entrepreneurs, the student survey that was conducted indicates that students are either unaware or uninterested in using these services. This suggests that there is room to improve both outreach and the quality of services offered.

Strengths of entrepreneurship support in HEIs in Wielkopolska and Kujawsko-Pomorskie

- The universities have large degree of freedom to act, which provides opportunities to develop their own entrepreneurial agenda to meet their specific situation and context.
- Internal and external stakeholders are valuable members of the university community. Some non-university stakeholders support entrepreneurship teaching with international good practice methods and their involvement improves the relevance of the material taught.
- Entrepreneurship is included in curricula related to the National Qualifications Framework for Higher Education for most fields of study, at all levels.
- The entrepreneurship ecosystem is well-developed around the HEIs.
- The network of Academic Incubators of Entrepreneurship (AIP) is a well-known, wide-reaching network that can be leveraged to increase awareness of entrepreneurship on campus and strengthen links with external start-up support.

Areas for improvement

- There is a need to increase the level of interest in entrepreneurship among universities leaders and staff. Entrepreneurship is not viewed as an academic discipline that is on par with the natural sciences and therefore receives little resources.
- Entrepreneurship is not yet integrated throughout the whole university environment and is not a visible and integrated part of the HEIs' strategies. Accordingly, the governance of entrepreneurship needs to be strengthened within HEIs.
- There is a lack of incentives for staff to act entrepreneurially. Current funding systems are focused on rewarding traditional research and teaching outcomes and do not encourage staff to engage in entrepreneurial activities such as launching external partnerships, filing patents or commercialising their research.
- Entrepreneurship trainers do not receive entrepreneurship training. As an academic discipline, entrepreneurship appears to have a low status and legitimacy, or no legitimacy at

all. This lack of support impacts the quality of education delivered and is a barrier to further legitimising the field and growing entrepreneurship education offerings.

- The start-up support systems within the HEIs in Wielkopolska and Kujawsko-Pomorskie vary in quality and would benefit from more co-ordination between the universities and off-campus support organisations.

Key recommendations

- The national government needs to increase interest in entrepreneurship in HEIs for entrepreneurship education and start-up support activities to gain traction to make an impact. This could be achieved by:
 - Awarding funding to HEIs the development and implementation of entrepreneurship strategies. This can be organised through a competitive process, with support from the European Social Fund (ESF);
 - Creating a culture of change among university leaders, at the individual level, with leadership seminars and workshops, using support from the ESF; and,
 - Increasing staff interest in entrepreneurship by supporting entrepreneurship research and by introducing entrepreneurship-related criteria into the tenure process.
- Universities should embed entrepreneurship in their strategy and mission statements. This can be achieved by:
 - Encouraging and providing incentives to HEIs to embed entrepreneurship in university strategies and mission statements with additional funding that rewards entrepreneurship activities; and,
 - Providing incentives to HEIs to appoint a strategic position at the university (Vice President or similar), which has the overall responsibility to implement entrepreneurship as part of the university strategy and mission statement.
- Develop training programmes for teachers and researchers in the field of entrepreneurship. This can be done at the national level or at the level of each university. The goal is to improve the quality of entrepreneurship education, which is an important first step before scaling-up the offerings. This can be achieved by:
 - Using the ESF to finance collaborations with entrepreneurship teacher training programmes around the EU to inform Polish teachers of current good practice teaching methods and adapt them to the Polish context;
 - Developing entrepreneurship teaching materials for Polish teachers through international collaborations and networks that facilitate good practice exchanges, with the support of ESF funding; and,
 - Stimulating and supporting the development of networks of entrepreneurship educators and researchers, with support from the ESF, to facilitate dialogue to ensure that entrepreneurship education materials and teaching practices remain up-to-date.

- Continue to open-up universities to the business community to strengthen linkages between research and private industry. This will increase the amount of entrepreneurship activity on campus and will help develop positive attitudes towards entrepreneurship on- and off-campus. Moreover, the linkages can be exploited by the HEIs to provide students with higher quality and more relevant start-up support services, including coaching and mentoring. This can be achieved by:
 - Developing regional networks between entrepreneurship teachers, researchers and the business community with support from the ESF;
 - Involving the business community in the development of teaching content and methods, as well as business start-up support services;
 - Increasing the opportunities for students to interact with the business community through course work, short-term projects and business competitions using support from the ESF; and,
 - Increasing the use of incentives (e.g. research vouchers, ESF funding for multi-disciplinary projects) for universities and the business community to work together.
- Improve monitoring and evaluation of entrepreneurship activities undertaken by HEIs. There is a need for a better understanding of the impact of current activities to understand where efforts can be scaled-up. This can be achieved by:
 - Making better use of existing online tools such as HEI Innovate and U-Multirank;
 - Using the ESF to develop a comprehensive monitoring tools; and,
 - Increasing the use of more sophisticated evaluation techniques for entrepreneurship activities.

International learning models

Inspiration for the development of a graduate entrepreneurship strategy, the incorporation of current international entrepreneurship teaching methods and methods to increase the profile of entrepreneurship can be drawn from practices that work well in other countries as long as they are appropriately adapted to local conditions. Relevant initiatives outlined in the report include:

- The Entrepreneurial University Leadership Programme, UK: The programme for university leaders increase their understanding of the way in which universities can play a more leading role in enhancing the competitive capability of regions and countries by developing entrepreneurial institutions that are more devoted for output-related characteristics such as patenting and spin-off ventures.
- U-Multirank, EU: This is an assessment system that aims to produce more accurate measures of the performance levels of different universities and higher education institutions, accounting for different contexts. It is an easily adaptable model that can improve quantitative measures and the understanding of university performance.

- Measurement tool for entrepreneurship education, Finland: This is a project that developed indicators to measure teaching performance and collect student feedback on entrepreneurship education at all levels of education. It also developed manuals and guides for users and was supported by the ESF.
- East Sweden Business Region, Sweden: This co-operative model aims to promote regional growth development by engaging stakeholders to develop specific growth objectives in a regional strategy document.
- Learning to think like an entrepreneur, France: This experiential learning process aims to learn about the success factors of start-ups and to develop an entrepreneurial awareness from different perspectives. It is a short-term model that can be adapted to any scale and context.
- Coventry University, UK: This university offers a wide variety of different entrepreneurship education experiences using a wide variety of delivery vehicles, including specialised centres and institutes.
- SMILE, University of Leipzig, Germany: This programme is an extra-curricular programme that aims to develop entrepreneurial mind-sets and skills through seminars, workshops and one-off events in which participants are given the opportunity to find out about, to develop and to fulfil themselves. This is supported by the ESF.
- Engaging alumni in entrepreneurship activities at the University of Strathclyde, Scotland: This university actively seeks to engage and exploit alumni in their entrepreneurship education and business start-up activities using clubs and recognition programmes.
- Technical University of Munich (TUM), Germany: This university has adopted a market-oriented approach to foster a supportive environment for innovation and business start-up. The model includes supporting the commercialisation of research and the involvement of alumni in business support services.
- “A Nation of Entrepreneurs”, Germany: This initiative aims to develop, bundle and promote activities which strengthen the entrepreneurial culture in Germany by strengthening relationships across stakeholders in a decentralised environment. This is supported by the ESF.

INTRODUCTION

Entrepreneurship in higher education

Many different inputs are required for successful entrepreneurship, one of the most important being entrepreneurship skills. Motivated people need the right skills to identify entrepreneurial opportunities and to turn their entrepreneurial projects into successful ventures. Successful entrepreneurs often follow a life-long learning journey, which starts while they are in education and continues with learning-by-doing processes, including both formal and informal learning, which occur inside and outside the firm.

Higher education institutions (HEIs) provide unique environments for nascent entrepreneurship. Tailored practices have emerged in educating future entrepreneurs and in helping them to take their first steps in starting-up and growing a business. To best support entrepreneurship, HEIs themselves need to be entrepreneurial. Promoting and supporting entrepreneurship is very likely to have an impact on what most HEIs today perceive as their first, second and third missions, and what the best linkages are between education, research, and promoting social and economic development in terms of internal governance, positioning in local, national and global levels and strategic partnerships.

HEIs should aim to promote an entrepreneurial culture and to create entrepreneurial mind-sets among staff and students. This combination of tangible and intangible outputs presents great challenges for universities and policy-makers that require tailored and systematic approaches, with both short-term and long-term goals. The success of this support depends upon the close co-operation and integration of the internal university support with the external entrepreneurship support system in the local environment.

Central to HEI support for entrepreneurship is entrepreneurship education which has at least three important roles in the development of an entrepreneurial society. First, it can present entrepreneurship to students as a possible career choice as well as acting as a general advocate for the mind-set and type of creativity employed in entrepreneurial endeavours. This holds regardless of whether students start businesses or forge a career as a paid employee. Second, it can assist students in developing the technical and business skill-set that is essential to having a successful entrepreneurial career. Third, professional educators can assume the responsibility of advancing the body of knowledge associated with the entrepreneurial phenomenon. Their findings should not only be disseminated to students but also to policy-makers and the public at large.

While the emphasis in HEI entrepreneurship support, to date, has principally been on entrepreneurship education, the concept of the university as an important contributor to the entrepreneurial process chain (*awareness* → *creation* → *competence building* → *action*) is gaining traction. Entrepreneurship education cannot stand alone if universities want to create the right environment for nascent entrepreneurs and dedicated spaces, such as incubators. This implies, however, close interaction and co-operation between higher education institutions and private and public support structures outside the university. Successful local entrepreneurship support systems rely on easy access through clear referral and tailored support.

Facilitating access to financing, premises and networks, as well as enhancing teambuilding, mentoring and access to research results are key pillars of start-up support provided by HEIs. Such support requires engagement from a number of university stakeholders, including alumni to act as mentors and to facilitate access to the local economy and business networks. Local businesses can contribute as guest lectures to present case studies and participate in student projects and entrepreneurship events. The financial industry and investors should also be present on campus and involved in entrepreneurship activities so that students have the opportunity to not only seek financing for entrepreneurial projects, but also start to develop long-term relationships with investors and financial institutions.

Finally, entrepreneurship is a concept that can benefit not only those that wish to create new organisations but also those that wish to work in existing organisations. Organisational renewal that incorporates innovation, venturing and risk-taking relates to the concept of intrapreneurship. The pursuit of intrapreneurship in established organisations arises from the need to avoid stagnation and decline by helping companies deal with change, develop innovation, and improve their adaptive capacity in servicing the marketplace.

The entrepreneurial university

Entrepreneurship can be influenced, educated and trained in many different ways and universities can play an important role in each of these three interrelated areas. The concept of the entrepreneurial university was developed in the early 1980s and has developed as method of examining the way in which higher education institutions (HEIs) can contribute to wealth creation and economic growth (Etzkowitz, 1983; Clark, 1998; Klofsten and Jones-Evans, 2000; Gibb and Hannon, 2006; Guerrero and Urbano, 2012).

Many attempts have been made to define the concept of an entrepreneurial university and a single, generally accepted consensus has yet to arise. One of the most recent definitions explains that an entrepreneurial university is “a new type of institution which is evolving as a result of the intensive interaction between university, industry and government... [and it] also integrates economic development into the university as an academic function along with teaching and research” (Tuunainen, 2005). Other important elements of the concept include innovativeness as an organisation, particularly in its ability to self-finance and how it works in partnership with private enterprises (Etzkowitz, 1983; Clark, 1998).

Therefore, it should not be controversial to say that universities today are not isolated organisations. They are indeed highly connected with local, regional, national and international communities. Through these connections with the rest of the world, universities can – which is most essential in an entrepreneurial process – create value not only beneficial for the own organisation but also for society at large (Svensson, Klofsten and Etzkowitz, 2012).

To have impact, universities could be involved in many different activities such as executing various research collaborations with industry, filing patents, founding of new spin-off firms or training of highly skilled entrepreneurial oriented individuals to the regional labour market (Slaughter and Leslie, 1997, Klofsten and Jones-Evans, 2000, Shane, 2004). Through such activities, universities can have a significant positive impact on regional development in terms of business creation, the transfer of knowledge to industry and the attraction of well-educated people and economic activity in the long-run (Saxenian, 1994; Etzkowitz and Klofsten, 2005).

The entrepreneurial university is a broad concept. The management of the university not only has to deal with the internal environment but also the management of relationships with a wide range of external stakeholders of the private and public sectors. Furthermore, universities compete with each other, not only in domestic market but also in the global arena (Gibb *et al.*, 2009). To face the competition of resources universities must to a greater extent than before demonstrate that they can add value for the society as well as be able to assess such values (Gibb *et al.*, 2009).

Other challenges are related to the employability and skills development of students for the global labour market place (Leitch, 2006), to strategically handle to the “massification” of demand for higher education (Smith, 1999; Shattock, 2000), increased demands the universities to meet the demands of the external environment for solutions to social as well as economic problems (Charles, 2003; Arbo and Benneworth, 2007) and the degree of autonomy and future funding of universities (Darling *et al.*, 1989; Armbruster, 2008).

The Guiding Framework for the Entrepreneurial University

The methodology used in this series of OECD review projects is based on “The Guiding Framework for the Entrepreneurial University”, which was developed collaboratively between the OECD LEED Programme and the European Commission, Directorate-General for Education and Culture. The Guiding Framework outlines the issues, characteristics and good practices that are central for entrepreneurship support in HEIs in a set of 41 indicators under seven themes (see Figure 1). For more information on the Guiding Framework, please see Annex A or visit www.heinnovate.eu.

Figure 1. The entrepreneurial university



The OECD review

Objectives

This study is part of a series of reviews on Skills and Competences for Entrepreneurship carried out by the OECD LEED Programme. This series of reviews aims to assess current practices in higher education institutions in entrepreneurship education and specialised business start-up support and to

recommend actions that HEIs can take to improve their offerings, as well as steps that policy makers can take to support the development of entrepreneurship support in HEIs.

This review project seeks to contribute to the continuing development of entrepreneurship education and start-up support in HEIs in Wielkopolska and Kujawsko-Pomorskie, Poland, and to look for lessons that can be relevant for other regions in Poland and elsewhere in the OECD membership. The OECD LEED Programme has undertaken this project with the support of the Polish Ministry of Infrastructure and Development.

The aims of this review study are:

1. To promote the successful graduate entrepreneurship through entrepreneurship education and start-up support at universities;
2. To assess universities practices in promoting and supporting entrepreneurship; and,
3. To engage university stakeholders in the issue of the promotion of entrepreneurship in higher education.

Research questions

This project aims to answer a number of research questions:

Overarching questions:

- How far have the HEIs in Wielkopolska and Kujawsko-Pomorskie adopted the features of an entrepreneurial university?
- What plans to the HEIs have to further adopt the features of an entrepreneurial university?
- What policy support and the national and local levels are required to promote the entrepreneurial university in Wielkopolska and Kujawsko-Pomorskie?
- What steps have been taken to improve policy support for the entrepreneurial university?

Strategies for the entrepreneurial university:

- To what extent is entrepreneurship promotion a strategic objective of the HEIs in Wielkopolska and Kujawsko-Pomorskie?
- To what extent is there a commitment to supporting entrepreneurship at the HEI leadership level?
- How visible is entrepreneurship on HEI campuses?
- How visible are HEI activities related to entrepreneurship in the community?
- Do the universities have a strong commitment to collaboration and knowledge exchange with the business sector?

- Do the universities actively seek to attract international staff for teaching and research?

Entrepreneurship education:

- What proportion of students participates in entrepreneurship education?
- What teaching methods are used in entrepreneurship learning?
- How appropriate are entrepreneurship teaching methods?
- What level of interest do the students have in developing entrepreneurial mind-sets and skills?
- Do the students find the entrepreneurship education to be relevant and useful?

Pathways for entrepreneurs:

- Do the HEIs in Wielkopolska and Kujawsko-Pomorskie offer business start-up support services?
- Are business start-up support services offered internally by the university or by external partner organisations?
- Do universities have business incubators or entrepreneurship centres on campus?
- What resources (i.e. human resources, financial support) are devoted to business start-up support?
- Do the students find the business start-up support to be relevant and useful?

Project method

To complete this review, the OECD collected information for this review study from four sources:

1. A background report;
2. A one-week study visit;
3. A survey of HEI leadership; and,
4. A survey of students that have participated in entrepreneurship education or start-up support programmes.

A background report was prepared by Dr. Dominik Antonowicz, an expert on the Polish higher education system. It provides an overview of the higher education system in Poland, as well as regional and local economies, labour market and demographic characteristics and trends, and profiles of the universities visited. This report was used to prepare for the study visit and sections of the background report have been incorporated in this report.

An OECD-led team of international entrepreneurship experts visited six HEIs in March 2013 to conduct in-depth interviews with university rectors, professors, staff involved in start-up support activities, students and other stakeholders in the local entrepreneurship support system to learn about entrepreneurship education activities, specialised business start-up supports services offered, universities strategies and plans. The six HEIs covered in the study visits were:

- Poznań University of Economics (Uniwersytet Ekonomiczny w Poznaniu)
- Adam Mickiewicz University in Poznań (Uniwersytet im. Adama Mickiewicza)
- Poznań University of Technology (Politechnika Poznańska)
- Kazimierz Wielki University in Bydgoszcz (Uniwersytet Kazimierza Wielkiego w Bydgoszczy)
- University of Technology and Life Science in Bydgoszcz (Uniwersytet-Technologiczno Przyrodniczy w Bydgoszczy)
- Nicolas Copernicus University in Toruń (Uniwersytet Mikołaja Kopernika w Toruniu)

Two online surveys were used to complement the information obtained in the background report and the study visit. One questionnaire was addressed to HEI leaders to investigate the nature of entrepreneurship training and start-up support, strategies, plans and resources allocated for entrepreneurship activities. This questionnaire was administered in April 2013 and May 2013.

A separate questionnaire was sent to students who participated in entrepreneurship education programmes to examine the teaching methods and entrepreneurship skills acquired or in business start-up programmes to investigate the support desired and the support received. This survey was administered in May 2013 and June 2013.

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CHAPTER 1: THE POLISH CONTEXT

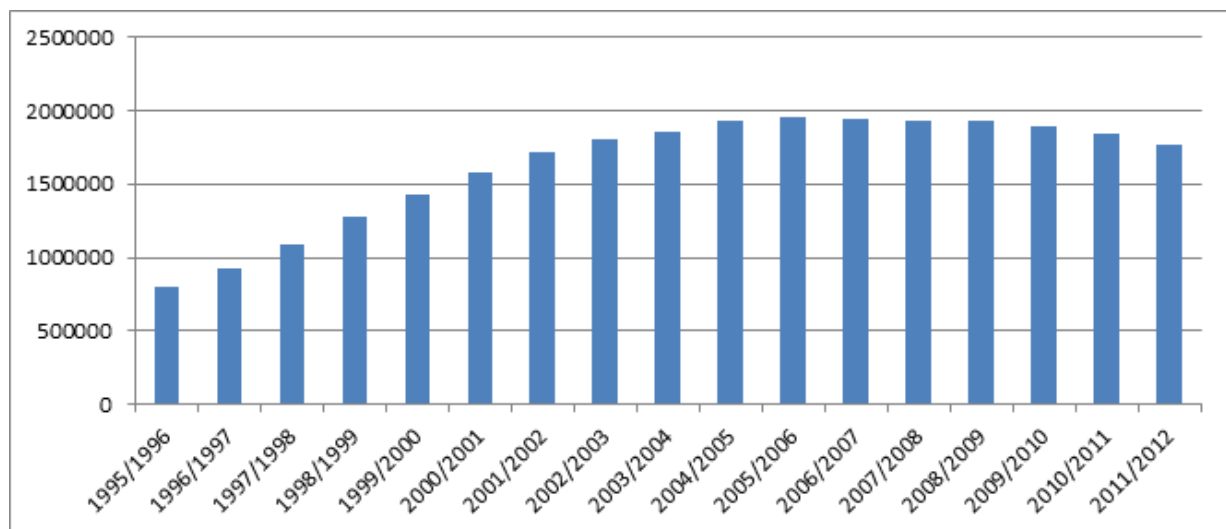
1.1 Higher education in Poland

The higher education system in Poland has undergone a substantial change over the past 25 years. This period is marked by the approval of laws on higher education by the Polish Parliament, in 1990, 2005 and 2011, which led to a shift from a system where relatively few had access to higher education to a system that is much more open.

Higher education institutions (HEIs) are either public institutions or non-public institutions, as outlined in the Law on Higher Education (2005). There are 460 HEIs in Poland, of which 132 are public and 328 are non-public. Public HEIs tend to be larger and offer a broader array of programmes of study. Research activities are almost exclusively found in public institutions. Non-public HEIs are generally smaller and focus on teaching activities, often specialising in a limited number of subjects. Both public and non-public institutions operate on a not-for-profit basis.

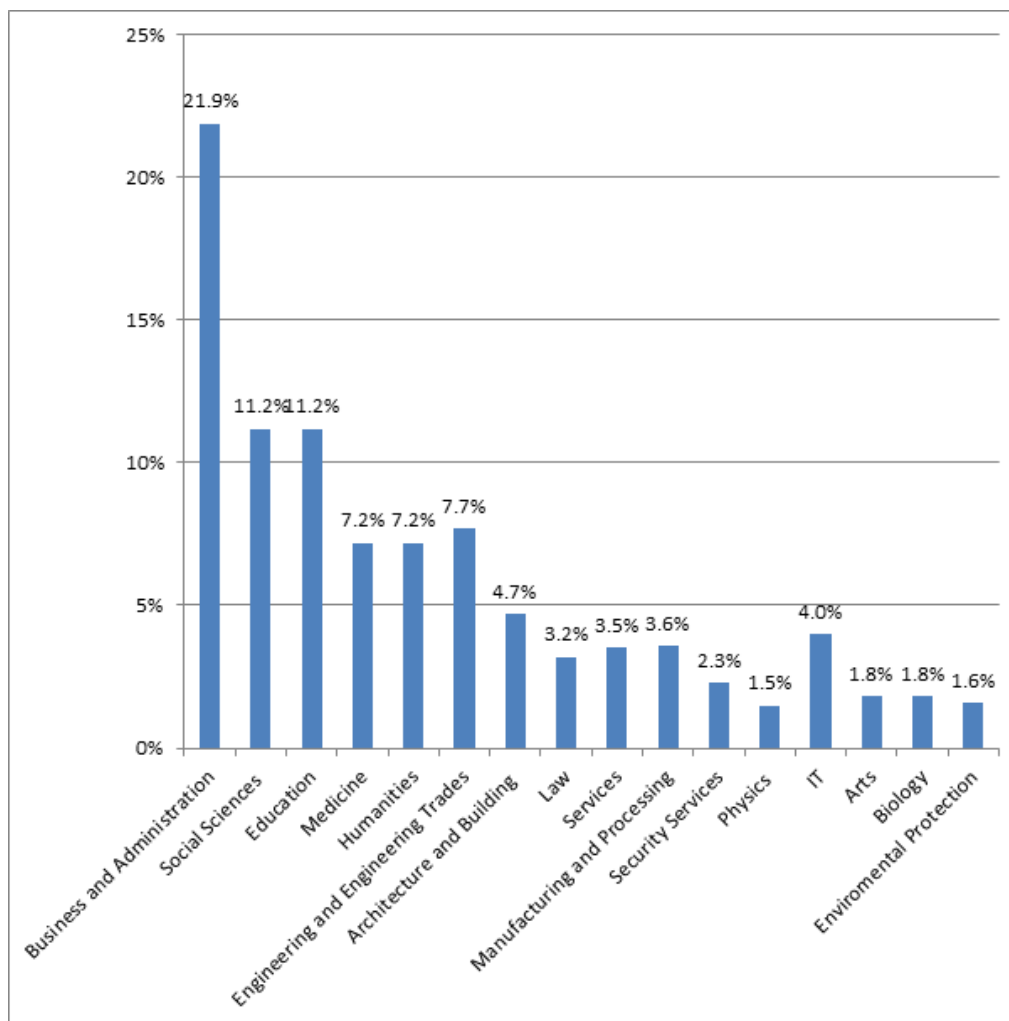
The vast majority of students (70%) are enrolled in public HEIs. The total number of students enrolled in HEIs in 2011 was approximately 1.75 million, which is the lowest level since 2001 (see Figure 1.1). The peak of the recent expansion of the higher education system was in the academic year 2005-2006, when the total number of students reached 1.95 million. This academic year also marked the year where the share of students enrolled in non-public institutions also reached its peak (640 000). Approximately one-third of students in Poland study business and social sciences (see Figure 1.2).

Figure 1.1. Total number of students enrolled in HEIs in Poland



Source: GUS (2011), *Szkoły Wyższe i ich Finance*, Warszawa.

Figure 1.2. Distribution of university students by field of study



Source: GUS (2011), Szkoły Wyższe i ich Finance, Warszawa.

Students generally do not pay tuition fees to study at public HEIs in Poland, as guaranteed in the Constitution of the Republic of Poland. However, public institutions are permitted to charge fees for “educational services”, which in practice results in students paying for part-time studies. Also, they are permitted to charge fees for second majors as of September 2013. All students at non-public institutions pay tuition fees.

Poland also introduced a three-tier system of education as a part of the Bologna System:

- *First cycle* (Bachelor’s degree:) programmes leading to the degree of “licencjat” shall comprise a minimum of 6 semesters, and first cycle programmes leading to the degree of “inżynier” shall comprise a minimum of 7 semesters
- *Second cycle*: the second degree requires an additional 3-4 terms of study in addition to a first cycle degree and students are awarded the degree of “magister” or equivalent ; and,

- Long-cycle (Master's degree programmes which last 9-12 semesters and lead to a degree of magister or equivalent)
- *Third cycle*: the third degree (up to 4 years) aims to prepare students for independent research and teaching and students receive the degree of doctor.

1.2 The Legal and Institutional Foundation of Higher Education

The national system of higher education in Poland is a centrally organised, unitary system that is grounded in national legislation. The following legislation shapes higher education in Poland:

- (a) The Law on Higher Education (27 July 2005, with further amendments);
- (b) The Act on the Academic Title and Academic Degrees (14 March 2003, with further amendments);
- (c) The Act on the National Centre for Research and Development (2010, with further amendments);
- (d) The Act on the National Science Centre (2010, with further amendments);
- (e) The Act on the Principles of Financing Science (30 April 2010); and,
- (f) The Act on Loans and Credits for Students (1998, with further amendments).

The Law on Higher Education is the principle law governing the higher education system. It determines which institutions can confer degrees according to the following five categories:

- Universities (generally known as “full universities”) have the authority to confer doctoral degrees in at least ten disciplines, including at least two fields of science, from the following groups: (1) humanities, law, economics and theology; (2) mathematical sciences, physical sciences, earth sciences and technological sciences; (3) biological, medical, chemical, pharmaceutical, agricultural or veterinary sciences.
- Universities of technology (uniwersytet techniczny) are HEIs with the authority to confer doctoral degrees in a minimum of ten disciplines, including at least six fields within the area of technological sciences.
- University (uniwersytet) with a specialisation (e.g. University of Economy) have the authority to confer doctoral degrees in a minimum of six disciplines, including at least four in the fields covered by the institution's specialisation.
- Polytechnic (politechnika) is an HEI in which the academic units have the authority to confer doctoral degrees in a minimum of six disciplines, including at least four in the technological sciences.
- Academy (akademia) is an HEI that has the authority to confer doctoral degrees in a minimum of two disciplines.

The content of higher education is based on the National Qualifications Framework for Higher Education (NQF for HE) (Krajowe Ramy Kwalifikacji dla Szkolnictwa Wyższego), which is built on the European Qualification Framework. The Ministry of Science and Higher Education is responsible for the NQF for HE. However, universities have significant autonomy in adjusting their programmes to the guidelines for learning outcomes in compliance with the NQF for HE, as allowed for by the Law on Higher Education.

The core of the NQF for HE outlines learning outcomes for all levels of the education system, ranging from basic (Level 1) to advanced (Level 8). First and second cycle degrees are Levels 6 and 7 while doctoral degrees are Level 8. The descriptions of learning outcomes are specific to each level and include (a) knowledge, (b) skills and (c) attitudes. Entrepreneurship is categorised as personal and social competences for all higher education degrees. Some programmes of study make more specific references to entrepreneurship in their learning outcomes. For example, engineering graduates need to be able to “think and act independently, be creative and entrepreneurial”.

1.3 Key government bodies

The Ministry of Science and Higher Education has overall responsibility for the higher education system. Despite the great autonomy of HEIs, they are ultimately responsible to the Ministry for their performance. In practice, the Ministry has a stronger influence over public HEIs but non-public HEIs must also meet performance criteria set by the Ministry.

The Ministry also has the support of other agencies that have specific delegated authorities and functions:

- The National Centre for Research and Development (NCBiR) (Narodowe Centrum Badań i Rozwoju) was established in 2007 and is the government agency responsible for policies related to national science, science and technology and innovation. One of the main tasks of the NCBiR is to create an effective dialogue between the scientific and business communities to support academic entrepreneurship and the transfer of technology to the private sector. The annual budget of the NCBiR has grown significantly over the last five years, increasing from PLN 627.8 million in 2008 (approximately EUR 188.0 million) to PLN 1 352.1 million in 2012 (approximately EUR 323.7 million). In 2011, the Centre assumed responsibility for three EU Operational Programmes: Innovative Economy, Human Capital and Infrastructure and Environment. The total budget for these Programmes (in addition to the Centre’s operating budget) is approximately PLN 1 195.3 million (approximately EUR 288.4 million).
- The National Science Centre (NCN) (Narodowe Centrum Nauki) is an agency that was founded in 2010 to provide funding for basic research. It is accountable to the Ministry of Science and Higher Education and performs the role of a research council. It provides funding for original experimental and theoretical research that is undertaken primarily to generate new knowledge of the underlying foundations of science, without any direct consideration for application or use. The budget of the NCN is approximately PLN 9 million (approximately EUR 2.1 million).
- The Polish Accreditation Committee (PKA) (Polska Komisja Akredytacyjna) was established in 2001 by an amendment to the Law on Higher Education. It has the responsibility of evaluating the quality of higher education (first and second cycle degrees) and has the power to conduct institutional audits that assess the quality of the third cycle degree programmes and postgraduate non-degree programmes.

1.4 Higher education reforms: 2008–2012

The first phase of reforms in 2008 changed the governance and financing mechanisms of academic research. Parliament passed five pieces of legislation (On the Principles of Financing Science, On the National Centre for Research and Development, On the National Science Centre, On Research Institutes and On the Polish Academy of Sciences) and the result was the establishment of two governmental agencies (the NCN and NCBiR) with clear tasks and responsibilities concerning academic research (see section 1.3 for further details on these government agencies). The rationale behind these reforms was to make the higher education system more transparent and to better match public funding with the research performance of institutions.

The second phase of the reforms occurred in 2011, aiming to address a wide range of issues, including:

1. Ensuring that funding mechanisms were appropriate to support quality research and teaching at HEIs.
2. Increasing the level of internationalisation of the national higher education system (i.e. proportion of foreign students). The ratio of foreign students to the population of native students in Poland is 0.5%, while it is higher in other countries in the region such as the Slovak Republic (0.9%), Hungary (3.3%) and the Czech Republic (6.3%).
3. Building stronger linkages between HEIs and their social and economic environments.

The 2011 amendment also had several implications for entrepreneurship education. This included the adoption of the NQF for HE, additional funding for HEIs that demonstrated strong links with the socio-economic environment, a system of financing that rewards best practice programmes in public and non-public institutions with additional grants and the ability for HEIs to establish spin-off ventures to better commercialise the results of scientific research, a criterion in the quality assurance process, measuring the level of educational links with socio-economic needs. The amendment also made tracking graduate employment outcomes obligatory for HEIs and introduced a practical profile of studies with a substantial participation of practitioners in educational process. On the basis of the amendment vocational higher education institutions have an obligation to create convents (collegial bodies) which involve representatives of regional authorities and employers. Their role is to support co-operation of HEIs with socio-economic environment.

1.5 Support for entrepreneurship

Several national actions aim to support entrepreneurship within universities. The Ministry of Science and Higher Education encourages academics and doctoral students to set up start-ups and commercialise their research outcomes through programmes such as “The Top-500 Innovators”. This is a national programme that provides training for 500 Polish researchers at leading international universities with the objective of increasing the knowledge and skills of Polish researchers to support knowledge transfer and the commercialisation of academic research. The Ministry covers all costs related to these study visits, including travel, stay, insurance and visas. Participants have the responsibility of disseminating the acquired knowledge and skills among their peers.

Another important ministerial project is the scheme of commissioned degree programmes, carried out since 2008. The purpose of the programme is to improve the attractiveness of university-level technical, mathematical and natural science courses through the creation of grant schemes for

contracted course students, innovative forms of teaching. Institutions selected in the contest receive additional resources for modernisation of curricula, internships organised by employers, study visits to companies. The implementation of the programme of contracted courses of studies has brought quantifiable results. The popularity of courses of studies regarded as a priority to the development of the economy is increasing among candidates.

Two other projects were launched in 2013. First, “Innovation Brokers” is a programme that aims to support innovation managers at Polish universities. The programme covers costs of hiring technology brokers by universities in order to help them commercialise selected research results. Public funds are going to finance the salaries of technology brokers at universities. Part of the funding will be conditional on the outcomes of commercialisation processes, additionally increasing motivation to close the sales or licensing deals.

Second, “Innovation Incubators” is a project where 12 innovation incubators will be selected in the new Ministry of Science and Higher Education competition. They will form a nationwide network that will help researchers implement innovative solutions. Each incubator will receive up to PLN 1.5 million (approximately EUR 376 000) to support the process of research and development work management, in particular in the field of commercialisation. The total budget of the programme, which will end in 2015, is PLN 18 million (approximately EUR 4.5 million). “Innovation Incubators” will search for entities interested in the implementation of research results and maintain a database of ongoing research projects and their application in practice. The selected entities will also carry out the analysis of market demand for specific inventions, valuation of industrial property rights, pre-production work, as well verifying the possibility of obtaining patent protection. The competition is part of a series of activities named the “+Package for Innovation+”. They are aimed at improving the transfer of research results into the economy and stimulating entrepreneurship.

The National Centre for Research and Development co-ordinates many projects in this field, including the LIDER Programme and Innovativeness Creator. The LIDER Programme helps young scientists learn how to plan research, manage and lead their own research team. This includes encouraging scientists to cooperate with the private business sector and exchange between research sectors, universities and research units. The Innovativeness Creator aims to stimulate the commercialisation of scientific knowledge by public research organisations and businesses through the development of public research unit-to-business R&D commercialisation systems, the provision of training related to commercialisation and the promotion of entrepreneurship among students, graduates, university staff and researchers.

One of the major actors in supporting the development of entrepreneurship in Poland is the Polish Agency for Enterprise Development (PARP) (Polska Agencja Rozwoju Przedsiębiorczości). PARP is a governmental agency with the primary objective of developing small and medium-sized enterprises (SMEs) in Poland. From 2007 to 2013, the Agency has been responsible for the implementation of measures under three Operational Programmes: Innovative Economy, Human Capital and Development of Eastern Poland. It offers training and funding (grant and loan schemes) to support new business start-ups and the development of small businesses. This support is also available to university spin-offs and academic start-ups. The Agency also supports business support institutions and organisations, including science and technology parks, incubators and technology transfer centres.

Another important actor is the Foundation for Polish Science (FNP) (Fundacja na rzecz Nauki Polskiej). It is a non-government not-for-profit institution that supports science. It is the largest source of non-government funding for science in Poland. It has recently developed several programmes dedicated to promoting entrepreneurship among academics. Since 1991, the Foundation has

contributed PLN 34 million (approximately EUR 8.1 million) to support innovation projects, mostly in the higher education and research sector.

In addition, the Polish Prime Minister's Office recently developed a long-term strategy for the development of Poland called "Poland 2030". This document identifies and describes ten key challenges facing Poland over the next 20 years and provides a diagnosis of the progress Poland has made over the last 20 years in these areas. The report outlines a pathway forward and makes recommendations for the directions of state policy around 9 strategies:

- Innovation and Efficiency of Economy Strategy;
- Human Capital Development Strategy;
- Transport Development Strategy;
- Energy Security and Environment Strategy;
- Efficient State Strategy;
- Society Capital Development Strategy;
- Regional Development Country Strategy;
- National Security Strategy; and
- Strategy for Sustainable Development of Rural Areas, Agriculture and Fisheries.

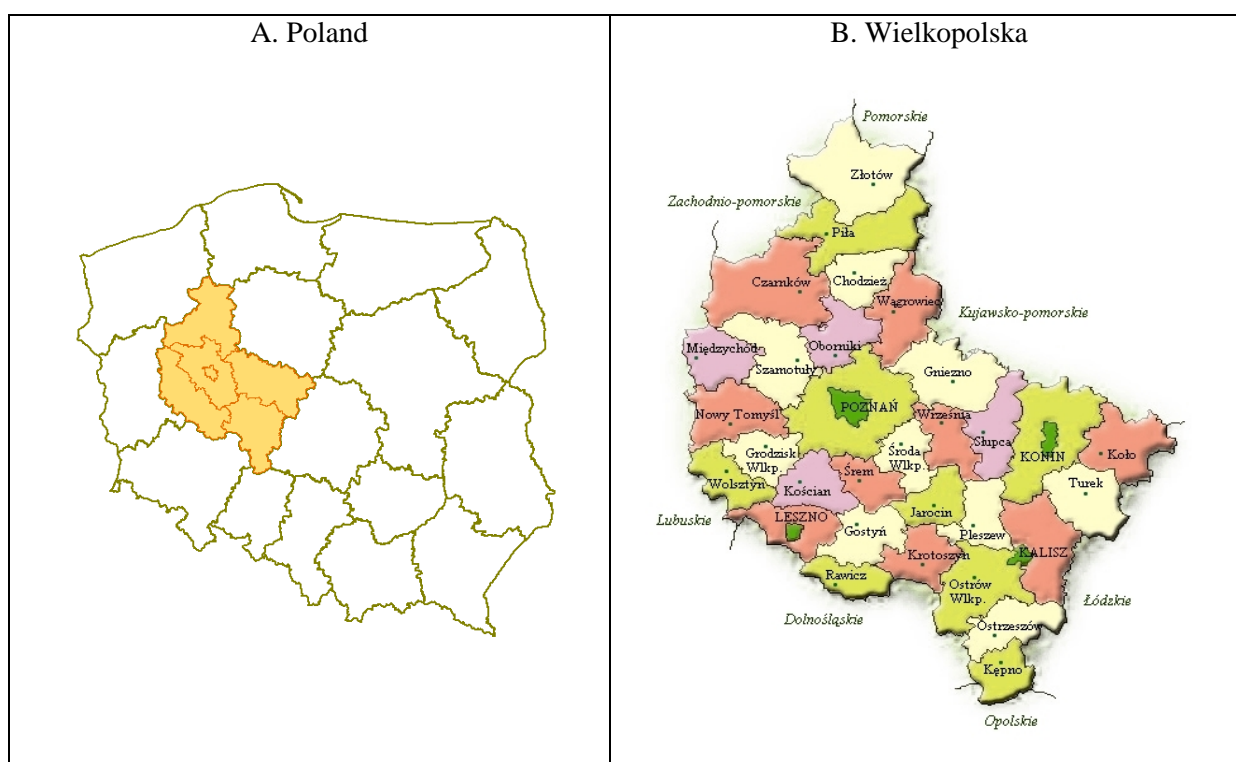
Entrepreneurship is a theme that runs throughout the Poland 2030 document as it can be part of the actions supported under many of the challenges identified, including growth and competitiveness; knowledge-based economy and intellectual capital development; solidarity and regional cohesion; social cohesion improvement; and social capital growth.

CHAPTER 2: THE REGIONS OF WIELKOPOLSKA AND KUJAWSKO-POMORSKIE

2.1 Wielkopolska

The Wielkopolska voivodeship is located in the west-central part of Poland. It is the second largest in terms of area and the third in population among Poland's 16 regions – it has an area of 29 826 square kilometres and a population of 3.4 million (8.9% of the population of Poland).

Figure 2.1. Map of Wielkopolska voivodeship and its administrative divisions



Sources: Podregiony województwa wielkopolskiego: http://www.stat.gov.pl/gus/5840_5990_PLK_HTML.htm (10.01.2013); Samorząd województwa: <http://www.poznan.uw.gov.pl/samorząd-terytorialny> (10.01.2013).

Wielkopolska is a region with an average level of urbanisation. At the end of 2010, the urban population was 55.9% (national average, 61%) of the total population of the region, of which the largest number of people were residing in Poznań (29% of the urban population of the region). The urban population is slowly but steadily decreasing (down by 0.2% compared to 2009 and 0.5% compared to 2008) and has mainly been caused by a change of residence from urban to small towns around Poznań.

According to data from the Central Statistical Office (GUS), at the end of 2010, the dependency ratio, that is, the number of people of retirement age (over 59 (f)/64 (m) years of age) per 100 persons

of working age, was the lowest in the country at 23.6% (Polish average, 26.2%). Taking into account the various counties in Wielkopolska, there is a wide variation in the dependency ratio. Such low levels of age dependency were observed only in the Eastern regions, Warmia and Mazury (22.7%) and Lubuskie (23.2%). Compared to 2009, there was an increase in Wielkopolska by 0.5% (national average, by 0.6%).

The regional economy

The GDP per economically active person in Wielkopolska (in current prices, when the ratio for Poland is 100%) accounts for 104.4% (GUS, 2011). The diversified structure of industries is dominated by the food processing sector. The most important and developing industry group is the production of motor vehicles, which is based in Poznań. Other sectors of major importance include moulding, pharmaceuticals, furniture, lighting equipment and household appliances, ceramic and glass, plastic products for the construction industry, tires, textiles and clothing. In the district of Konin, essentials also include coal mining, steel and power generation (Wielkopolska Agencja Rozwoju Przedsiębiorczości). The structure of the economy is presented in Table 2.1.

Table 2.1. Characteristics of the Wielkopolska economy, by firm size

	Total	0–9	10–49	50–249	> 249
Number of enterprises	393 884	372 364	17 838	3 183	499
<i>Region's share relative to Poland</i>	9.7%	9.6%	10.3%	10.2%	9.2%
Number of business entries (2011)	40 584	39 861	647	70	6
<i>Region's share relative to Poland</i>	10.0%	9.9%	10.5%	13.2%	5.1%
Number of business exits (2011)	36 648	36 008	567	66	7
<i>Region's share relative to Poland</i>	8.7%	8.7%	10.3%	9.0%	4.1%

Source: Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2010–2011. Warszawa: PARP.

Employment

In 2011, the employment rate of people aged 15–64 years in Wielkopolska was to 60.7%, similar to the national ratio of 59.7%. Higher levels of employment occur only in the Mazowieckie voivodeship (65.4%) and Łódzkie voivodeship (62.2%). Since 2007, the level of employment in the region has increased by 3.1%, slightly more than the national increase of 2.7% over the same period. The female employment rate was significantly lower (51.8%) than that of men (69.8%). (Wielkopolska Agencja Rozwoju Przedsiębiorczości).

The employment rate of people aged 15–24 years was higher than the Polish average by 5.2 percentage points (29.9% for Wielkopolska, 24.7% for Poland) and it also reached the highest level in the country (Wielkopolska Agencja Rozwoju Przedsiębiorczości).

Given the structure of employment by economic sectors in 2011, many people were employed, as in other regions, in the services sector (52.2%), while the lowest number worked in the agricultural sector (13.8%). The share of people working in industry amounted to 34% (Wielkopolska Agencja Rozwoju Przedsiębiorczości).

The share of employees in R&D in total employment in 2010 was at 0.96% in the region and was higher than the country average (0.81%) (Wielkopolska Agencja Rozwoju Przedsiębiorczości).

Unemployment

The registered unemployment rate in 2011 in Wielkopolska was 9.2% and was the lowest among all provinces (national average, 12.5%). The number of people registered as unemployed was 135 000, slightly lower than the previous year (by about 218 people). The spread between the lowest and highest levels occurring in the counties of the region is 10.9 percentage points (Ministerstwo Rozwoju Regionalnego, 2012). Wielkopolska has the highest share of unemployed women registered in labour offices – 58% (relative to the national average of 53%).

Analysing the structure of unemployment in Wielkopolska by education level, the largest group of people were those with vocational education (31.4%), and lowest is those with secondary education (9.8%) and higher education (all types of tertiary education) (11%). The structure of unemployment by education in the region was at the same level as the average for Poland (Ministerstwo Rozwoju Regionalnego, 2012).

Higher education

There are 165 694 students in the region, most of whom attend public HEIs: 114 240 (68.9%) versus 51 454 (31.1%) non-public. The majority of students in public institutions attend full-time programmes (70.1%), while those in part-time programmes only account for 28.9%. However, in the non-public sector, full-time students constitute the minority (15.5%), part-time students represent the vast majority (84.5%). Overall in the Wielkopolska region, there are 38 HEIs, among which there are 12 public HEIs and 26 non-public ones. The structure of the graduates is presented in Table 2.2.

Table 2.2. The Structure of Graduates in Wielkopolska

Type of degree	Number of Graduates
Graduates Total	47 865
First Cycle Programmes	27 927
Second Cycle Programmes	13 732
Unified Master Programmes	6 206

Source: GUS (2011), *Szkoły Wyższe i ich Finanse 2011*, Warszawa.

The City of Poznań

Poznań is a city in Western Poland with county rights, situated by the Warta River, at the mouth of Cybina River. As the historic capital of Greater Poland, it has been the seat of the Wielkopolska region and county of Poznań since 1999. The city is an important road and rail hub between Warsaw and Berlin, and it also boasts an international airport.

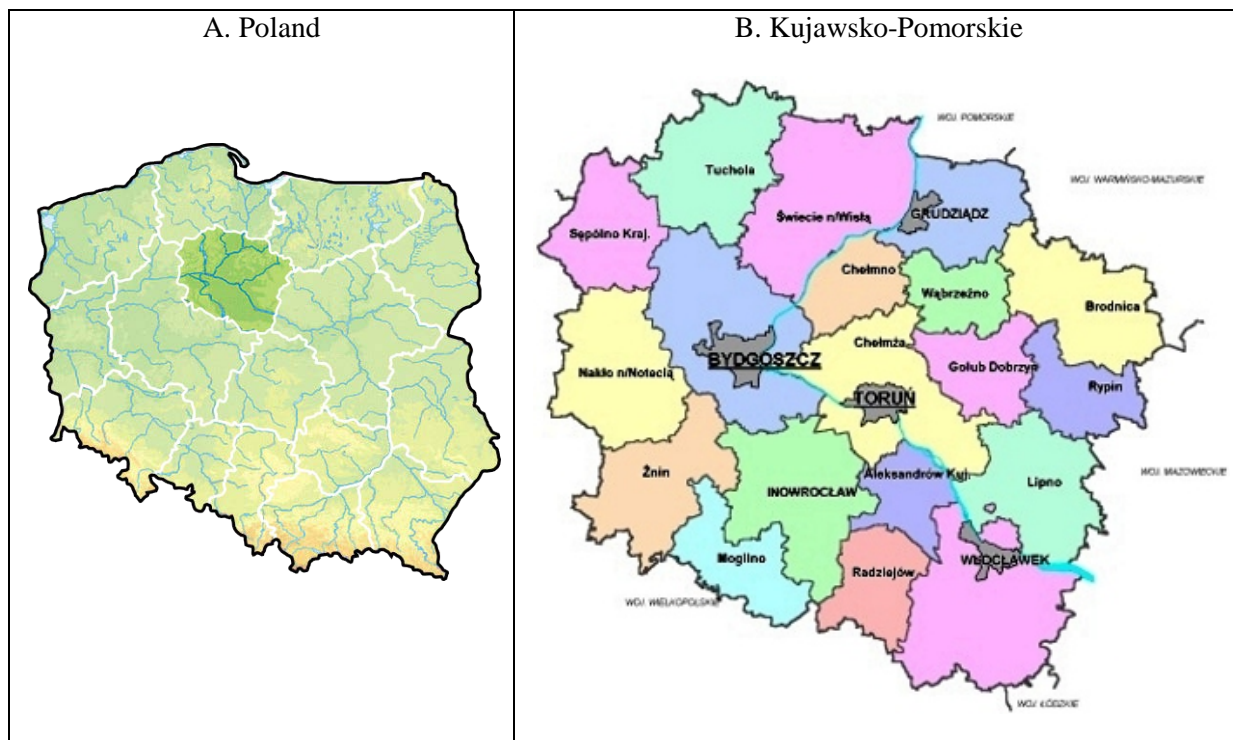
Poznań is the fifth most populous city in Poland (552 400 inhabitants) and seventh in terms of geographical size (262 square kilometres). The city is linked to the economy of the surrounding counties, forming with them the Poznań agglomeration, inhabited by more than one million people (GUS, 2012a). The city is a centre of industry, trade, logistics and tourism. Every year, the Poznań International Fairs are held in the largest and oldest exhibition centre in Poland. There are 27 HEIs, where 130 200 people study (GUS, 2012b). Its rich cultural infrastructure consists of an opera, philharmonic, ballet, theatres, cinemas, museums, art galleries, orchestras and folk bands.

Poznań is one of the largest economic centres in the country and is among the most attractive places to invest in Poland. It is estimated that the cumulative value of foreign direct investment in 1990–2010 was PLN 20.6 billion (approximately EUR 5.2 billion) (Urząd Miasta Poznania, 2010). In 2009, the GDP generated in Poznań converted into 1 inhabitant amounted to PLN 70 200 (approximately EUR 17 600) which covers 199.3% of the GDP per average Pole; this is the second highest level in Poland after Warsaw (Główny Urząd Statystyczny, Urząd Statystyczny w Katowicach, 2011).

2.2 Kujawsko-Pomorskie

The Kujawsko-Pomorskie (Kuyavian-Pomeranian) voivodeship lies in the north-central part of Poland. Its area is 17 972 square kilometres, representing 5.7% of the country. Offices and provincial-level units are divided between the two main cities of the region, Toruń and Bydgoszcz. The Governor's Office is located in Bydgoszcz, and the Regional Assembly and Executive are located in Toruń. The share of residents from Bydgoszcz and Toruń together is approximately 27% of the whole voivodeship, and these two cities dominate the region politically, economically and culturally.

Figure 2.2. Map of Kujawsko-Pomorskie and its administrative divisions



Source: Województwo kujawsko-pomorskie na mapie polski, http://pl.wikipedia.org/w/index.php?title=Plik:Kujawsko-pomorskie_%28EE_E_NN,N%29.png&filetimestamp=20050613174341 (11.01.2013);
 Podział administracyjny, http://www.kujawsko-pomorska.policja.gov.pl/portal/118215396446763cec4043a/STRUKTURA_KWP.html (11.01.2013).

Kujawsko-Pomorskie has a population of nearly 2.1 million people (5.4% of the Polish population) and nearly 61% of population of the region live in urban areas (1.3 million).

As for the dependency ratio (measured by the number of people at retirement age per 100 people of working age), the situation in the region is more favourable than at the national level. In 2010, the

dependency ratio was 24.8% (in comparison with the country's average of 26.2%). The highest dependency ratio occurs in Bydgoszcz (30.3%) and lowest is in the county of Toruń (18.7%). In comparison to the previous year, the demographic situation has deteriorated; the dependency ratio has increased both in the region and in the country (by 0.6%) (Biuletyn Informacji Publicznej Urzędu Miasta Poznania, 2011).

The regional economy

The GDP per economically active person in Kujawsko-Pomorskie (in current prices, when the ratio for Poland is 100%) is 86.4%, ranking 8th among voivodeships (GUS, 2011). Prime industry is significant in the region, providing 5.5% of national employment and 5% of the total value of the country's production (6th and 8th place among voivodeships). Also important is the export of local industrial products. Key areas of strength include the production of salt, synthetic fibres, paper, sugar, fat and nitrogen fertilisers (Zarząd Województwa Kujawsko-Pomorskiego, 2004). Kujawsko-Pomorskie is also characterised by above average growth of investment in renewable energy sources. In 2010, 39% of all Polish wind turbines were located in the area (producing 143 MW of electricity), as were 54 hydropower plants with a total capacity of 211 MW (Kujawsko-Pomorskie Biuro Planowania Przestrzennego i Regionalnego we Włocławku, 2010). The structure of the regional economy is presented in Table 2.3.

Table 2.3. Characteristics of the Kujawsko-Pomorskie economy based by firm size

	Total	0–9	10–49	50–249	> 249
Number of enterprises	195 075	184 446	8 684	1 689	256
<i>Region's share relative to Poland</i>	4.8%	4.8%	5.0%	5.4%	4.7%
Number of business entries (2011)	21 232	20 866	338	26	2
<i>Region's share relative to Poland</i>	5.2%	5.2%	5.5%	4.9%	1.7%
Number of business exits (2011)	21 937	21 648	251	31	7
<i>Region's share relative to Poland</i>	5.2%	5.2%	4.6%	4.2%	4.1%

Source: Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2010–2011. Warszawa: PARP.

The number of newly registered businesses in the region, per 10 000 of population, is well below the national average of 105. The voivodeship, in 2010, had 94 registered businesses, ranking 11th among voivodeships. Most businesses are being registered in the Mazovia region (127) and the lowest number in the Podkarpackie region (75). The number of closed businesses amounts to 75 entities per 10 000 residents. In the four counties (Grudziadz, Inowrocław, Mogilno and Żnin) in 2010, the number of businesses that closed down exceeded the number of newly registered entities.

Employment

The employment rate in Kujawsko-Pomorskie is estimated to be 45.8% and constitutes to lowest in Poland and this is down 3.7% from the previous year. In terms of youth employment, Kujawsko-Pomorskie ranks 12th among voivodeships (Kujawsko-Pomorskie Biuro Planowania Przestrzennego i Regionalnego we Włocławku, 2010).

The changes in the employment structure are visible in the increase of the share of the agricultural sector (2011) in the region. That sector employed 14.4% of the population (increase of 0.8% in comparison to the previous year). Services employment accounted for 54.1% (10th place among voivodeships), and the highest share of employment in services was recorded in Mazovia

(65.7%), while the lowest was in Świętokrzyskie (46.2%). The rest of the working population (31.5%) was employed in primary industry (decline by 0.6%) (Kujawsko-Pomorskie Biuro Planowania Przestrzennego i Regionalnego we Włocławku, 2010).

Kujawsko-Pomorskie is characterised by few people working in the R&D sector. In 2010, the share of employees in R&D in all working groups was 0.6%, which placed the region in 8th position among voivodeships (Kujawsko-Pomorskie Biuro Planowania Przestrzennego i Regionalnego we Włocławku, 2010).

Unemployment

According to the data from 2011, the registered unemployment rate in Kujawsko-Pomorskie was 16.9%, which puts this region among the three regions with the highest unemployment in the country with Warmia and Mazury (20.1%) and Zachodniopomorskie (17.5%). The situation varies across different counties in the region. The highest level of unemployment is in Lipno county (28.5%) and Grudziądz (27.7%). 14 out of 23 counties in Kujawsko-Pomorskie have an unemployment rate in excess of 20% (Ministerstwo Rozwoju Regionalnego, 2012).

In Kujawsko-Pomorskie, the unemployed are characterised by a higher proportion of people with secondary or vocational education (73%), compared to the country's average (66.4%). It is worth noting the particularly high proportion of unemployed people with secondary education (32%). At the same time, the region is characterised by the lowest share of higher education graduates among the unemployed in Poland (7.6%) (Ministerstwo Rozwoju Regionalnego, 2012).

In 2011, 36.9% of registered unemployed people in the region had not had a job for a period exceeding 12 months, slightly higher than the national average of 34.6%. During the previous year, the ratio had risen by 6.8% (corresponding to the 5.5% increase in the country's average). Long-term unemployment is highest in the county of Włocławek, where nearly every second person remained unemployed for over a year (48.4%). In seven other counties, the long-term unemployment rate exceeds 40% (Włocławek – urban area, Radziejów, Lipno, Świecie, Wąbrzeźno, Inowrocław, Golub-Dobrzyń) (Ministerstwo Rozwoju Regionalnego, 2012).

In 2011, programmes for employment promotion were attended by nearly 23 100 unemployed people. At the end of their participation in the programmes, nearly 15 800 were employed. Therefore, the rate of re-employment in the region was 55.4%, which puts Kujawsko-Pomorskie in 8th position in the country. The average national re-employment rate in 2011 was 55.7%. The highest employment efficiency was obtained in the Lubuskie voivodeship (68%) and the lowest in the Mazovia region (44.7%)

Besides funds for start-ups, and retrofitting and equipping work placements that are characterised by 100% efficiency, the most effective form of support for the unemployed was intervention jobs (respectively, 71.4% in the region and 75.2% in the country). The county of Brodnica achieved 100% employment effectiveness due to this form of support. The high efficiency in Kujawsko-Pomorskie is also sustained with internships (59.1%). The least effective form of activation is community works (18.4%) (Zarząd Województwa Wielkopolskiego, 2011).

Higher education

There are 80 994 students in the region, most of whom attend public HEIs (56 002 or 69.14% versus 24 992 or 30.8% in non-public institutions). Of the 22 HEIs in the Kujawsko-Pomorskie region,

there are 5 public HEIs and 17 non-public ones (including 3 colleges for Catholic priests that also have the status of non-public institutions). In the public institutions, the majority of students study full-time (73%). However, in the non-public sector, full-time students account for only 11% of the student population. The structure of graduates in Kujawsko-Pomorskie is presented in a Table 2.4.

Table 2.4. The Structure of Graduates in Kujawsko-Pomorskie

Type of degree	Number of Graduates
Graduates Total	22 568
First Cycle Programmes	12 712
Second Cycle Programmes	6 460
Unified Master Programmes	3 396

Source: GUS (2011), *Szkoły Wyższe i ich Finanse 2011*, Warszawa: GUS.

The City of Toruń

Toruń is a city located on both sides of the Vistula River. One of the oldest Polish cities, with an area of 115.72 square kilometres, it is inhabited by 199 277 residents. Toruń is located in the immediate vicinity of Bydgoszcz, and both cities create together Bydgoszcz and Toruń City (BiTCity). There is great potential in the city in the cultural and tourism industries. The Old Town is a UNESCO World Heritage site and the city is visited annually by about one million people and the annual number of visitors is growing.

The most important industries are chemical, textiles, food, electrical engineering and construction. There are also a number of business-related institutions, such as the Chamber of Commerce, Regional Development Agency, Lodge of Business Centre Club and the Scientific and Technical Council (NOT) that support the development of enterprises through business consulting, consulting services, and the promotion of international companies. Nicolas Copernicus University (30 800 students) has a large role in the local economy by offering international experts in the fields of chemistry, economics, management, marketing, law and administration (System informacji Torunia, 2013).

The City of Bydgoszcz

Bydgoszcz is a city located in northern Poland, on the Brda and Vistula Rivers. With a population of 363 926, Bydgoszcz is the 8th largest city in Poland, occupying 174.57 square kilometres. The city is well-connected to the rest of the country and Europe by international airport railways that connect Silesia with ports on the Baltic Sea (Oficjalny Serwis Bydgoszczy, 2013).

In Bydgoszcz, there are 38 banks, including the headquarters of the Postal Bank. The city also boasts 37 insurance companies. JP Morgan Chase, one of the largest financial institutions in the world, has located its Polish branch in Bydgoszcz. Since 2000, the city has been annually subjected to international verification rankings. Its current rating from Fitch is BBB (stable estimate). In 2004, Bydgoszcz opened the Industrial and Technology Park on a 283-hectare property—an attractive, tax-free location (Wirtualna Bydgoszcz. Oficjalny Informator Bydgoski, 2013), which is viewed as contributing positively to the local economy.

Bydgoszcz is the biggest city in the region and one of its strengths is the diversity of specialisations of the higher education institutions. It is possible to undertake various types of studies,

including humanities, technical, agricultural, medical, artistic, tourism, environmental, management, information technology, administration and theology (Wirtualna Bydgoszcz. Oficjalny Informator Bydgoski, 2013).

2.3 Case study universities

Kazimierz Wielki University (UKW), Bydgoszcz

Kazimierz Wielki University (*Uniwersytet Kazimierza Wielkiego* – UKW) in Bydgoszcz was founded in 1969 as a teacher training college. In 2005, it was promoted to a university and since then it has seriously outperformed the competition in both teaching and research tasks. This is a public HEI and is the largest HEI in Bydgoszcz, employing over 700 academic teachers, including 150 professors.

UKW offers a wide range of studies covering 30 majors at 3 levels: bachelor, master and doctoral studies. The university comprises five faculties: (a) Faculty of Humanities, (b) Faculty of Administration and Social Sciences, (c) Faculty of Mathematics, Physics and Technical Sciences, (d) Faculty of Natural Sciences and (e) Faculty of Pedagogy and Psychology. The university grew out of a pedagogical institution and is still dominated by educational sciences and humanities, although it also offers some quality programmes in engineering. UKW educates approximately 13 000 students, among which 70% are full-time and 30% are part-time students.

The university is teaching oriented. In the most popular and prestigious university rankings run by Rzeczpospolita and Perspektywy, UKW is placed in 69th position among the HEIs in Poland (http://www.perspektywy.pl/index.php?option=com_content&task=view&id=3821&Itemid=835). In the last two decades, the university has undergone a fundamental transformation from a training college for teachers into a full university.

University of Technology and Life Sciences (UTP), Bydgoszcz

The University of Technology and Life Sciences in Bydgoszcz (*Uniwersytet Technologiczno-Przyrodniczy* – UTP) was established in 1951 as the first HEI in the city. It grew out of the Evening School of Engineering and was transformed into a regular HEI that also offered full-time programmes in four technological faculties in 1964. In the 1970s, the university was merged with some agricultural branches of the Agricultural School of Higher Education from Poznań, which created the University of Technology and Agriculture. Since then, the university has been based on two solid pillars of engineering and agriculture. In 2006, the University was finally re-named the University of Technology and Life Sciences.

Today, UTP comprises seven faculties; the inter-faculty units and administration employ about 1 300 people, 680 of which are academics, including almost 140 professors. Six faculties of the university are entitled to award PhD degrees, out of which three (the Faculty of Agriculture and Biotechnology, Faculty of Animal Breeding and Biology and Faculty of Mechanical Engineering) also confer the degree of doctoral habilitation. In 2011, 9 250 students studied at UTP, among which 6 680 were full-time students and 3 100 were part-time students. The university is ranked in 59th place in the most respectable ranking of HEIs, “Rzeczpospolita and Perspektywy” (the ranking covers approximately 90 academic institutions which are defined in the section on types of HEIs). Despite its low overall ranking, it is a leading Polish institution in the field of agriculture.

Nicolas Copernicus University (UMK), Toruń/Bydgoszcz

Nicolas Copernicus University (*Uniwersytet Mikołaja Kopernika – UMK*) in Toruń and Bydgoszcz is the largest and oldest HEI in the region. It was established shortly after World War II by academics who settled down in Toruń after being forced to escape the former Polish cities of Wilno and Lviv. The university developed steadily over time, with major changes between 1966 and 1976, due to the 500th Anniversary of Nicolas Copernicus' Birthday, which was celebrated as a national event. Thanks to the anniversary of the great astronomer, the university received central funding for a new campus on the outskirts of the city to develop a well-known centre of astronomy.

UMK comprises 17 faculties—Faculty of Biology and Environmental Protection; Faculty of Chemistry; Faculty of Earth Sciences; Faculty of Education Sciences; Faculty of Economic Sciences and Management; Faculty of Fine Arts; Faculty of History; Faculty of Humanities; Faculty of Languages; Faculty of Law and Administration; Faculty of Mathematics and Computer Science; Faculty of Physics, Astronomy and Informatics; Faculty of Political Sciences and International Studies; Faculty of Theology—and three faculties of Collegium Medicum in Bydgoszcz: Faculty of Medicine; Faculty of Pharmacy; and Faculty of Health Sciences. There are 33 areas of study covered and over 80 specialisations. In addition, 56 postgraduate and 12 doctoral programmes are also available.

The university ranks 9th in the Rzeczpospolity and Perspektywy rankings, the highest ranked in the northern part of Poland. The university is one of the biggest employers in the region, having around 4 330 employees, among which 2 210 are academic teachers. In 2004, the university was located in Toruń, but merged with the Medical Academy named by Ludwik Rydygier in Bydgoszcz, and as Collegium Medicum UMK, it became a semi-autonomous unit within the university structure. Today, the official location of the university is Toruń and Bydgoszcz. In 2011, over 31 000 students studied at UMK, among which 24 000 attended full-time programmes and 7 250 attended part-time programmes. The university also has a significant, and growing, number of doctoral students (approximately 800).

Adam Mickiewicz University in Poznań (AMU), Poznań

Adam Mickiewicz University in Poznań (*Uniwersytet im. Adama Mickiewicza w Poznaniu – AMU*) is one of the country's largest universities and is located in Poznań. It opened in 1919, and since 1955, it has carried the name of the Polish poet Adam Mickiewicz.

For the first 20 years, it educated students in law, economics, medicine, humanities, mathematics, natural sciences, agriculture and forestry. Today, it is a multi-disciplinary organisation comprising 15 faculties (including one in the city of Kalisz 150 km away from Poznań). The university has the following faculties: Faculty of English; Faculty of Biology; Faculty of Chemistry; Faculty of Educational Studies; Faculty of Geographical and Geological Science; Faculty of History; Faculty of Law and Administration; Faculty of Mathematics and Computer Science; Faculty of Modern Languages and Literature; Faculty of Physics; Faculty of Polish and Classical Philology; Faculty of Political Science and Journalism; Faculty of Social Sciences and Philosophy; Faculty of Theology Faculty of Pedagogy; and Fine Arts, in Kalisz.

In the 2010/2011 academic year, the university had approximately 44 000 undergraduate and graduate students, of which 30 000 attended full-time programmes and 13 500 attended part-time programmes. Furthermore, there were 1 300 doctoral students, and an additional 2 247 post-graduate students. The university offers education in a wide spectrum of fields that encompass 61 different

programmes for undergraduate and graduate students. The university belongs to the most prestigious and active in research HEIs in the country. Rzeczpospolita and Perspektywy rank Adam Mickiewicz University 3rd in Poland.

Poznań University of Economics (PUE), Poznań

Poznań University of Economics (*Poznański Uniwersytet Ekonomiczny* – PUE) is one of the oldest and most prestigious economic universities in Poland. It was established in 1926. Traditionally, it was an institution that focused on educating professionals (in economy), but over time, it has become more research-oriented. The university, which comprises five faculties, has a focused profile that covers economics, management, international trade and ICT.

In 2011, PUE had approximately 11 100 students, out of which 8 250 attended full-time courses. In addition, it has 433 doctoral students who also carry out some research duties. PUE is the only university in Poland to enjoy full academic rights in economic, management and commodity sciences. Education is provided in the form of first-, second- and third-level studies, and offers MBA programmes as well as postgraduate studies.

In 2011, PUE had an academic staff of 500, including 140 professors and associate professors. Among all HEIs, it is ranked 23rd, but it is 3rd among 11 universities of economics in Poland. It has an undisputed position as a leader in economic research, and is a major centre for applied research, expert evaluation, analysis and consultancy.

Poznań University of Technology (PP), Poznań

Poznań University of Technology (*Politechnika Poznańska* – PP) grew out of the State School of Mechanical Engineering, which was established in 1919. It is one of the oldest and most prestigious technical universities in Poland. A turning point in the history of the institution was 1955, when it was upgraded to Poznań University of Technology, which injected a new spirit into the campus and accelerated institutional development. This was the beginning of the elevation of its reputation to the prestigious and demanding label that it enjoys today. In 1995, PP became the first Polish university of technology to join the prestigious organisation CESAR (Conference of European Schools for Advanced Engineering Education and Research), which, in principle, groups together the most prestigious polytechnics and universities of technology.

PP is divided into 10 faculties that cover a wide range of issues, such as architecture, chemical and mechanical engineering, electronics and telecommunications and transport. It is a highly respected public HEI in Poland and is ranked 21st nationally, but among technical universities, it is in 7th position. PP offers bachelor, master's and doctorate courses in Polish and English. Moreover, there are postgraduate courses for people interested in updating their technical knowledge.

In 2011, PP employed around 1 200 academic staff members conducting research as well as carrying out educational tasks. They provide their knowledge and expertise to approximately 20 000 students, out of which 14 500 attend full-time courses and 5 600 attend part-time ones. PP offers 24 different programmes at all three levels of tertiary education.

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CHAPTER 3: NATIONAL LEADERS' AND STUDENT SURVEYS RESULTS

3.1 Results from the HEI leaders' survey

Methodology

The OECD HEI leaders' survey aims to provide an overview of entrepreneurship support in Polish HEIs. It investigates the nature of entrepreneurship training and start-up support provided at each HEI by collecting both quantitative and qualitative data. As well, the survey investigates approaches taken in institutional strategies, plans and resource allocation for entrepreneurship activities.

The questionnaire was administered online in April 2013 and May 2013. It was sent to Rectors in 152 institutions and responses were received for 27 institutions (18%). The response rate is lower than achieved in other review studies as part of this programme of work, suggesting that there is a low level of interest in entrepreneurship among university leaders in Poland. It is suspected that HEIs that responded to the survey are likely to be more active in the area of entrepreneurship than those that did not. This may result in a self-selection bias that over-represents the quantity and quality of entrepreneurship activities in HEIs.

HEIs that responded to the survey tended to be either very small institutions or large, prestigious institutions. Approximately two-thirds of the HEIs had a traditional academic focus while one-third offer more applied or vocational studies.

Of the six HEIs that were visited during the study visit, the Poznań University of Economics, the Poznań University of Technology and the University of Technology and Life Science in Bydgoszcz responded.

Strategic support for entrepreneurship

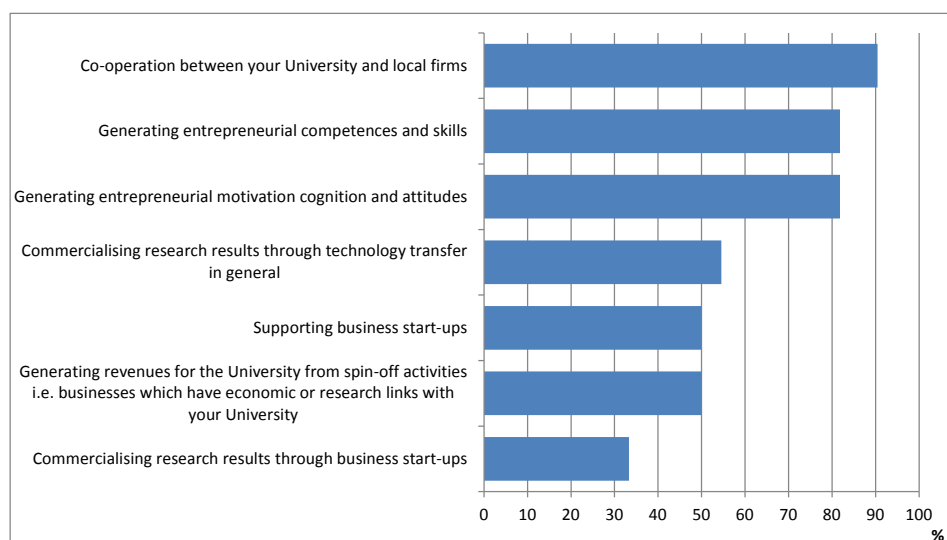
As shown in Figure 3.1, the vast majority of HEIs report that generating entrepreneurial attitudes, motivations, competences and skills are strategic objectives. The development of co-operation with local industry is also reported by nearly all HEIs participating in the survey, which is a signal that universities are integrated with their communities and local economies.

However, only half of the responding universities aim to commercialise research through technology transfer or generate revenue from spin-off ventures, and one-third believe it is strategically important to transfer technology through business start-up activities. One barrier in the respect is a lack of clear regulations and guidelines concerning the commercialisation of research management of copyrights and industrial property rights – 50% of responding HEIs do not have clear regulations concerning commercialisation of scientific research, 46% concerning industrial property rights and 29% concerning copyrights.

Half to the HEIs that responded to the survey report that it is a strategic objective to support business start-ups; there is room for improvement in this regard. One approach is to provide incentives

for HEIs to undertake these activities, including allowing HEIs to hold shares in start-up companies that are supported. In Poland, 21% of HEIs reported that they could hold shares in student start-up companies and 13% reported that they do hold shares. It is important to recognise that it is not always necessary to offer start-up directly as a university because many support services are available from external non-university stakeholders. If these technical, infrastructure or financial supports are offered by external non-university providers, it may be more appropriate for HEIs to strengthen linkages with these organisations rather than duplicate supply within the university.

Figure 3.1. HEI objectives related to entrepreneurship



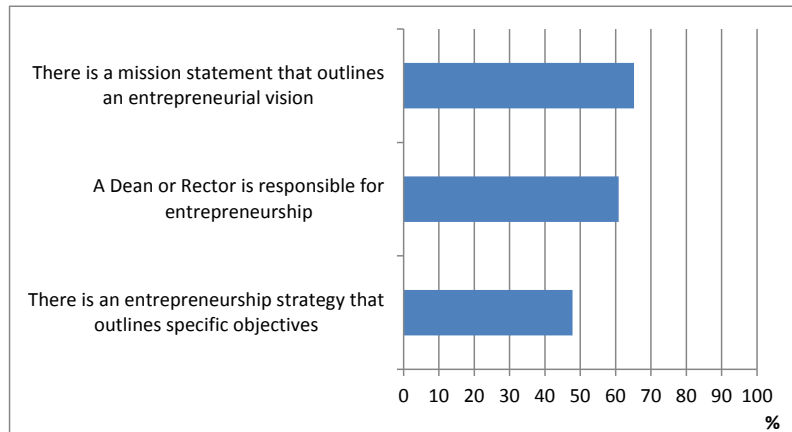
n = 22

Source: OECD, HEI leaders' survey Poland, 2013

Two-thirds of responding universities have a mission statement that outlines an entrepreneurial vision and more than 60% have a Dean or Rector that is responsible for entrepreneurship activities (Figure 3.2). These are strong signals that many HEIs view themselves as having a role in promoting and developing entrepreneurship.

However, fewer than half of the universities that responded to the survey have an entrepreneurship strategy with specific objectives. The process of developing a formal strategy is important because it will identify and prioritise actions, as well as responsibilities for different stakeholders. It is most effective to include non-university stakeholders in this process.

Figure 3.2. High-level commitment to entrepreneurship



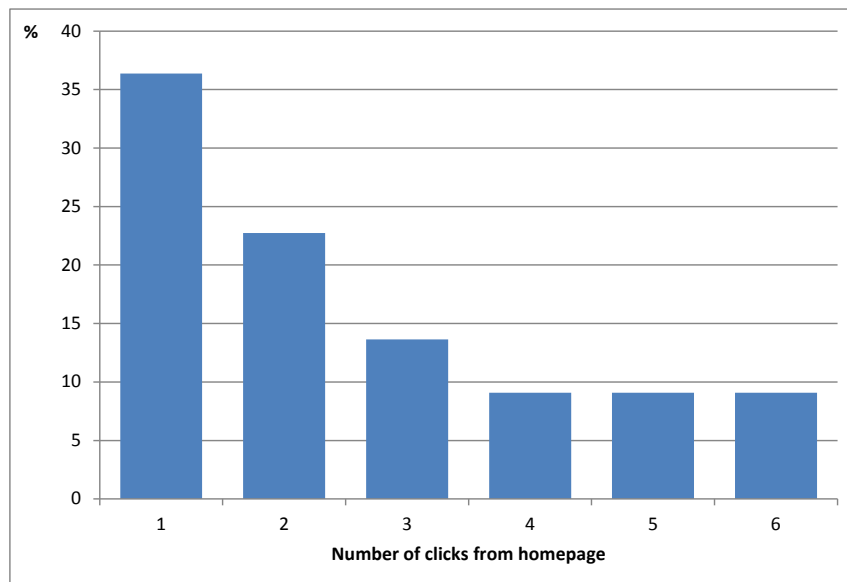
n = 23

Source: OECD, HEI leaders' survey Poland, 2013

Visibility of entrepreneurship

Many of the responding universities make standard information on entrepreneurship support available to students and the general public through the university's main website. There are nonetheless varying degrees of accessibility of this information from the university entry page. Information on entrepreneurship is within "one click" of the university homepage in more than one-third of the responding universities (Figure 3.3). However, it takes four or more "clicks" in nearly 30% of responding universities.

Figure 3.3. Number of clicks to obtain entrepreneurship information



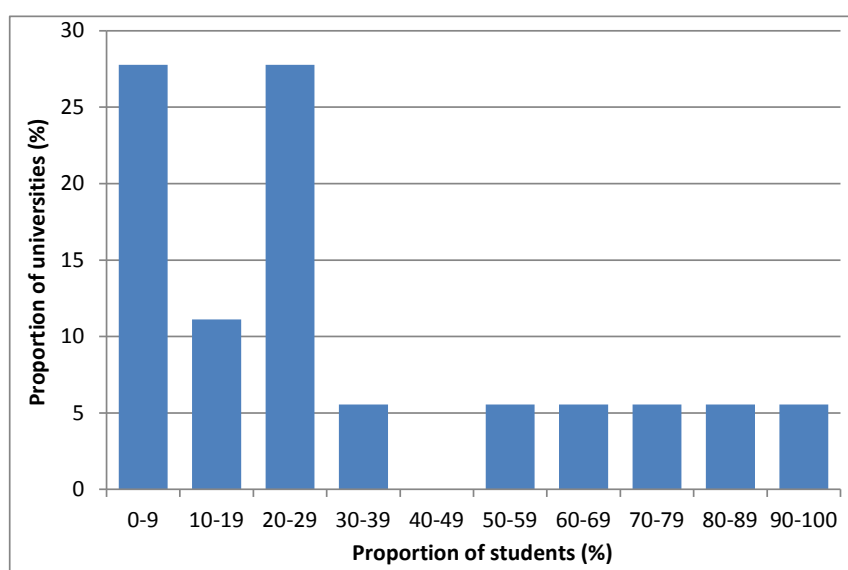
n = 22

Source: OECD, HEI leaders' survey Poland, 2013

Entrepreneurship education

95% of the HEIs that responded to the survey report that they offer entrepreneurship education (n = 19). Of these HEIs, 26% offered entrepreneurship education in the curricula, 16% offered it outside of the curricula (e.g. clubs) and 58% offered it both inside and outside of the curricula. In the majority of responding HEIs (68%), these education activities were interdisciplinary. However, there is scope to increase the number of students that take part in entrepreneurship education as less than one-third of students receive entrepreneurship education in the two-thirds of HEIs that participated in the survey (Figure 3.4).

Figure 3.4. Proportion of students that receive entrepreneurship education



n = 18

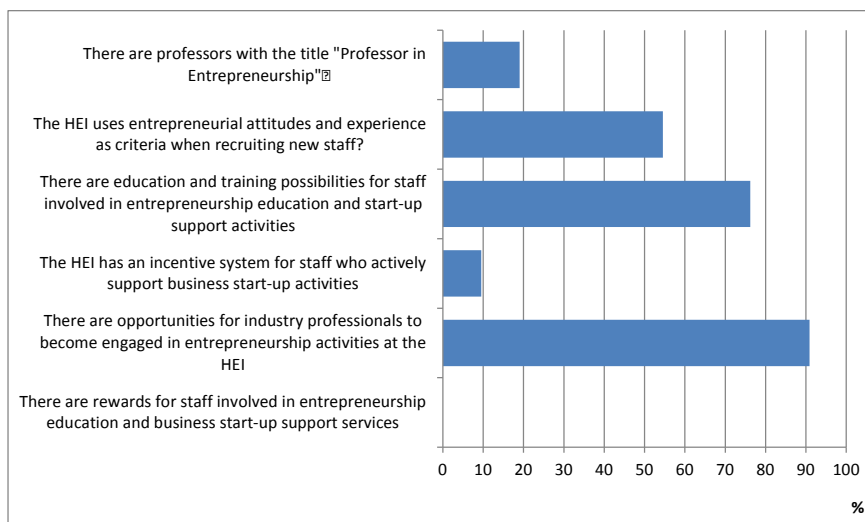
Source: OECD HEI leaders' survey Poland, 2013

HEIs that responded to the survey often do not have professors of entrepreneurship – less than one-fifth had professors with this title (Figure 3.5). It is however encouraging that more than half of the universities surveyed consider entrepreneurial attitudes and experience when hiring professors and staff. This suggests that while universities may not have professors of entrepreneurship, professors across the university are likely to have positive attitudes towards entrepreneurship, if not experience with entrepreneurship. Industry professionals are used in the teaching of entrepreneurship in 90% of HEIs in the sample, which is important for providing students with the opportunity to learn from “real” experiences and to help students begin to develop business networks through interactions with industry professionals.

The teaching methods used in entrepreneurship education in the surveyed HEIs are varied, providing students with different ways to develop entrepreneurial mind-sets and skills (Figure 3.6). It is positive that entrepreneurs are used widely in the classroom and that nearly 80% of HEIs use business games, simulations and case studies in entrepreneurship teaching. One method that could be used more frequently is case studies of business failure as learning from mistakes is often one of the most effective methods. Many entrepreneurship programmes in the EU have had great success

developing case studies on failure that involve the “real” entrepreneur from the case who can share the rationale behind decisions and actions taken and provide detailed contextual information.

Figure 3.5. Human resources used for teaching entrepreneurship



n = 22

Source: OECD HEI leaders' survey Poland, 2013

Figure 3.6. Teaching methods used



n = 18

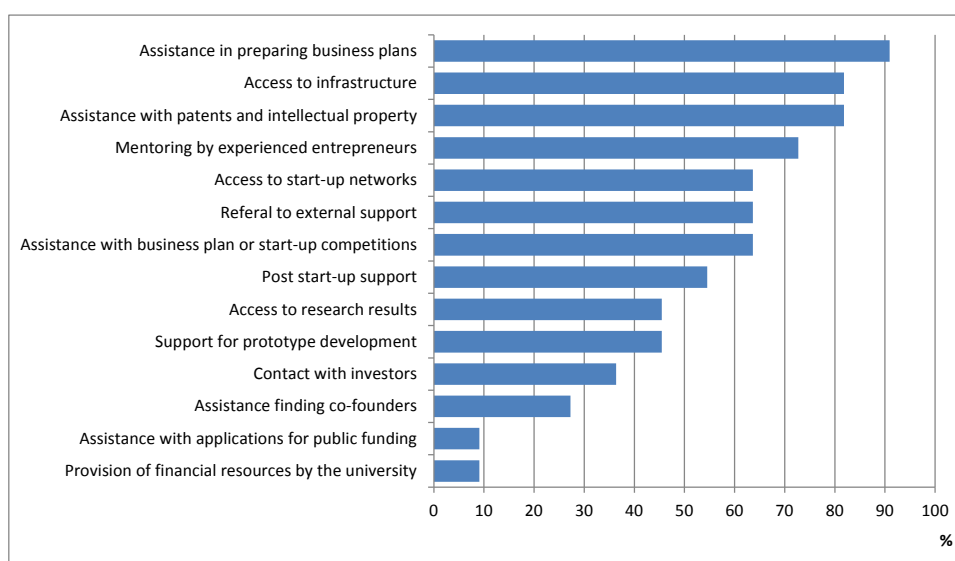
Source: OECD HEI leaders' survey Poland, 2013

Start-up support offerings

Special start-up support services such as providing information on the financial, technical or legal aspects of starting a business; providing resources or training to entrepreneurs or potential entrepreneurs; or providing referrals to external support organisations are offered by 76% of HEIs in the sample. In 92% of these HEIs, this is service is provided by a permanent centre such as an entrepreneurship centre or career centre.

The specialised start-up services offered focus on the development of human and social capital (Figure 3.7). More than 90% of the HEIs surveyed provide assistance in writing business plans. Other common services include access to infrastructure (82%), assistance with patents and intellectual property (82%) and mentoring by experienced entrepreneurs (73%). However, what is largely absent from start-up support is assistance in accessing start-up financing. This is often one of the most challenging aspects for student entrepreneurs when starting a business because they typically lack savings and a credit history that can be used to access financing. Many entrepreneurial universities facilitate this by developing relationships with local and regional investors and financial institutions. Investors often partner with universities to organise business start-up competitions or other short-term events and provide sponsorship funds and prize money for awards.

Figure 3.7. Start-up support services offered by HEIs

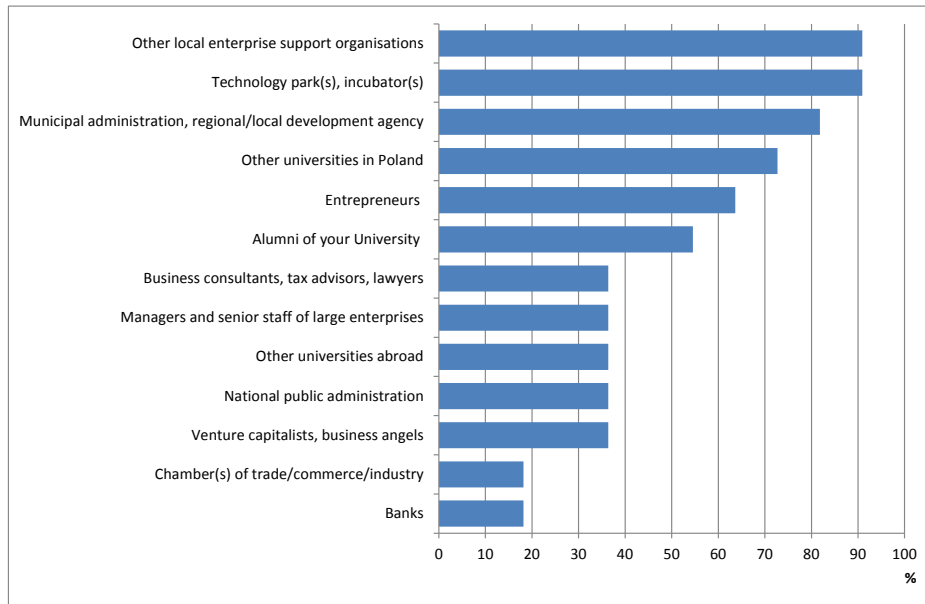


n = 11

Source: OECD HEI leaders' survey Poland, 2013

HEIs in the sample partner with a range of stakeholders in delivering start-up support services, notably technology parks and incubators (91%), local development agencies (82%) and other universities in Poland (74%) (Figure 3.8). However, few stakeholders in the financial industry are involved and this is one area for improvement.

Figure 3.8. Partners in delivering start-up support



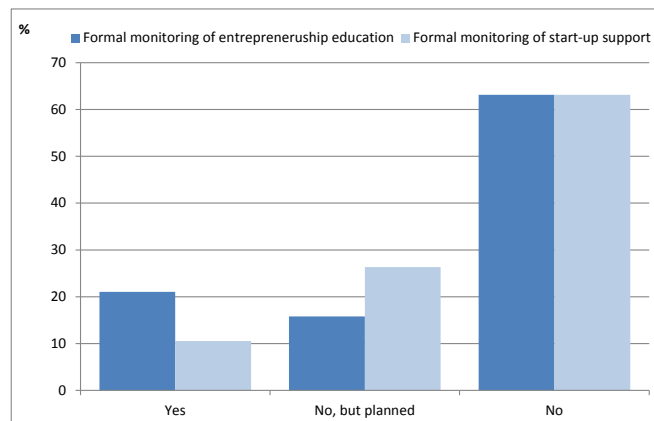
n = 11

Source: OECD HEI leaders' survey Poland, 2013

Monitoring impact

Another area for improvement in the support of entrepreneurship by Polish HEIs is to make more use of monitoring and evaluation – only 20% of HEIs surveyed undertake formal monitoring of entrepreneurship education activities and 10% undertake formal monitoring of start-up support (Figure 3.9). It is often difficult to measure impact in these areas since the benefit is often realised in the future, not immediately following the education or start-up support activity. However new requirements for Polish HEIs to track graduates will help in this regard.

Figure 3.9. Monitoring of entrepreneurship activities



n= 19

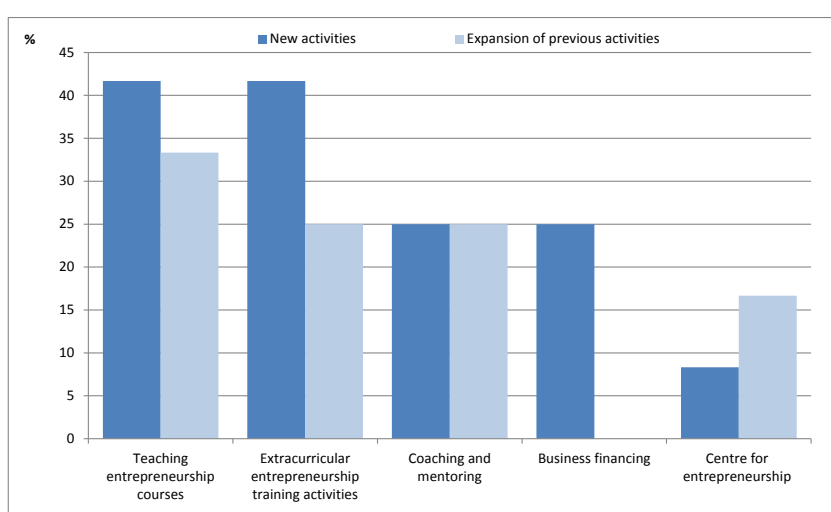
Source: OECD HEI leaders' survey Poland, 2013

Use of the European Social Fund

Approximately half of HEIs surveyed use the European Social Fund (ESF) to fund entrepreneurship activities (Figure 3.10). The majority of projects funded were new activities although these were also many expansionary projects. The focus of ESF projects is on teaching entrepreneurship, extracurricular training and coaching and mentoring, which address human and social capital development.

HEIs were much less likely to fund business start-up support activities using the ESF. Three universities used ESF funds for business financing projects and one university used the fund for new activities of an entrepreneurship centre, while two universities used it to expand previous activities in an entrepreneurship centre.

Figure 3.10. ESF funded activities



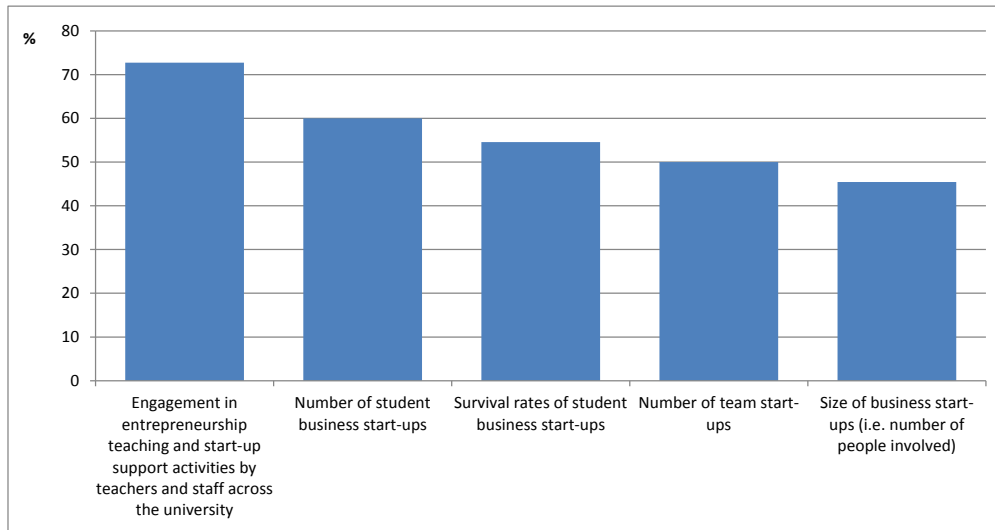
n = 12

Source: OECD HEI leaders' survey Poland, 2013

Overall, HEIs report that the ESF funds are having a positive impact on university activities that promote and support entrepreneurship (Figure 3.11). This would appear to suggest that ESF funded activities should be scaled-up to have a greater impact but none of these activities appear to have been rigorously evaluated. Therefore this is not robust evidence that would support scaling-up of these activities. A deep understanding of which aspects of different activities are working well and which are not is needed before undertaking any significant up-scaling efforts.

Despite the positive outcomes for ESF funded projects, HEIs have strong views on how the implementation and management of ESF projects can be improved. All of the HEIs surveyed indicated that they would like more autonomy (Figure 3.12) and more than 90% indicated that they would like less bureaucracy and paperwork. More than 80% of HEIs in the sample reported that they would like more funding and facilitated mutual funding. In addition, two-third would like more guidance on project implementation.

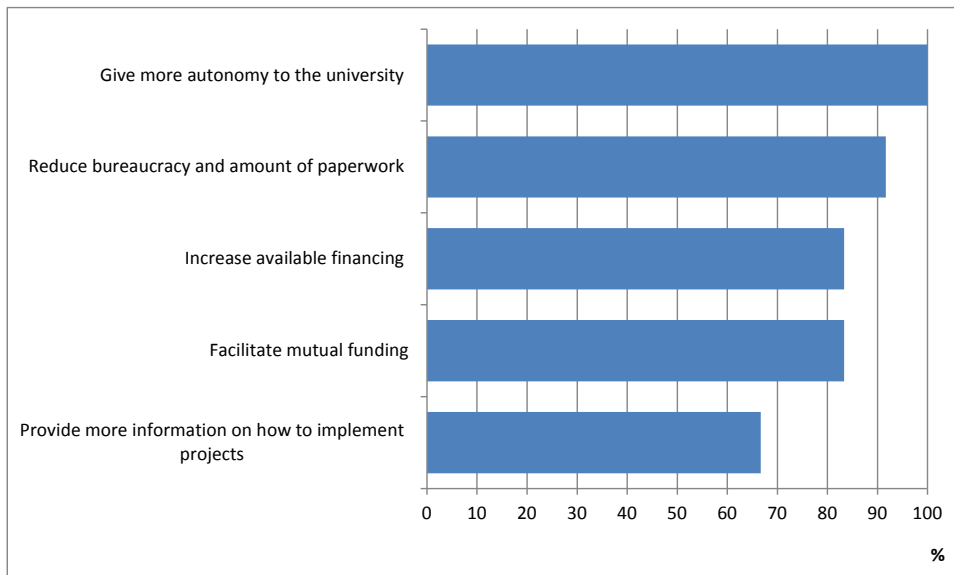
Figure 3.11. Proportion of outcomes influenced positively by ESF funding



n = 11

Source: OECD HEI leaders' survey Poland, 2013

Figure 3.12. How the ESF projects can be improved



n = 12

Source: OECD HEI leaders' survey Poland, 2013

3.2 Results from the student survey

Methodology

A second questionnaire was sent to students who participated in entrepreneurship education programmes or business start-up support programmes in all universities across Poland. The survey asked questions about the type of learning activities that they participated in, the types of business start-up support used and their impressions of these offerings. The results provide an indication of the strengths and weaknesses of entrepreneurship offerings in HEIs which provide context for the case study in

This survey was administered online in May 2013 and June 2013. 297 students registered to complete the survey; however responses were received from only 193 students from 12 universities. Of these respondents, 111 were from universities in Wielkopolska and Kujawsko-Pomorskie (Adam Mickiewicz University in Poznań and Nicolas Copernicus University in Toruń). Results are reported for students within the case study region and for students in other regions. There is, however, no reason to expect any difference in results.

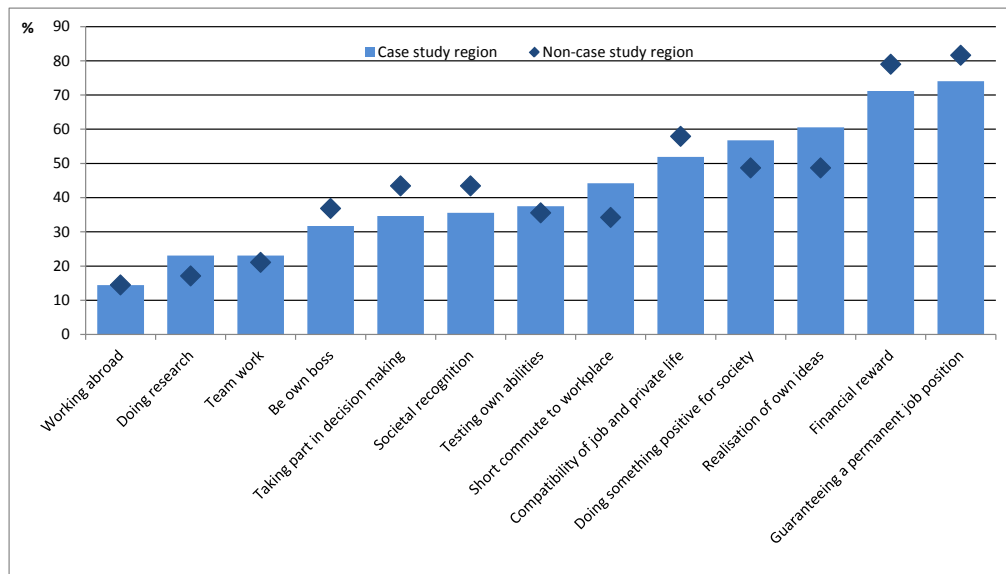
Nearly two-thirds of respondents (62%) were pursuing first cycle programmes, 35% second cycle and 3% third cycle. Approximately 10% of students were at the beginning of their studies, 53% in the middle, 36% at the end and 2% had recently completed. The majority of students (59%) had work experience, most often as an employee in a private sector firm (31%), an intern in public administration (23%) or as an intern in a private firm (20%).

Expectations of future employment

Figure 3.13 shows the characteristics that students considered to be important in a future job. Slightly more than half of students surveyed report that realisation of their own ideas and compatibility of job and private life are important, which are often both characteristics of self-employment. Students surveyed in Wielkopolska and Kujawsko-Pomorskie were slightly more likely to value the realisation of their ideas than students in other regions (61% vs. 49%) but were slightly less likely to value work-life balance (52% vs. 58%).

The overwhelming majority of students, both in Wielkopolska and Kujawsko-Pomorskie and in other regions of Poland, report that a permanent job position is important characteristic of a future job (74% in Wielkopolska and Kujawsko-Pomorskie and 82% in other regions). This indicates a strong preference to work as employees. Only 32% of students surveyed in Wielkopolska and Kujawsko-Pomorskie indicated that it will be important to be their own boss, which is a slightly lower proportion than those in other regions (37%).

Figure 3.13. Importance of future job characteristics



n = 104 for case study region; n = 76 for non-case study region

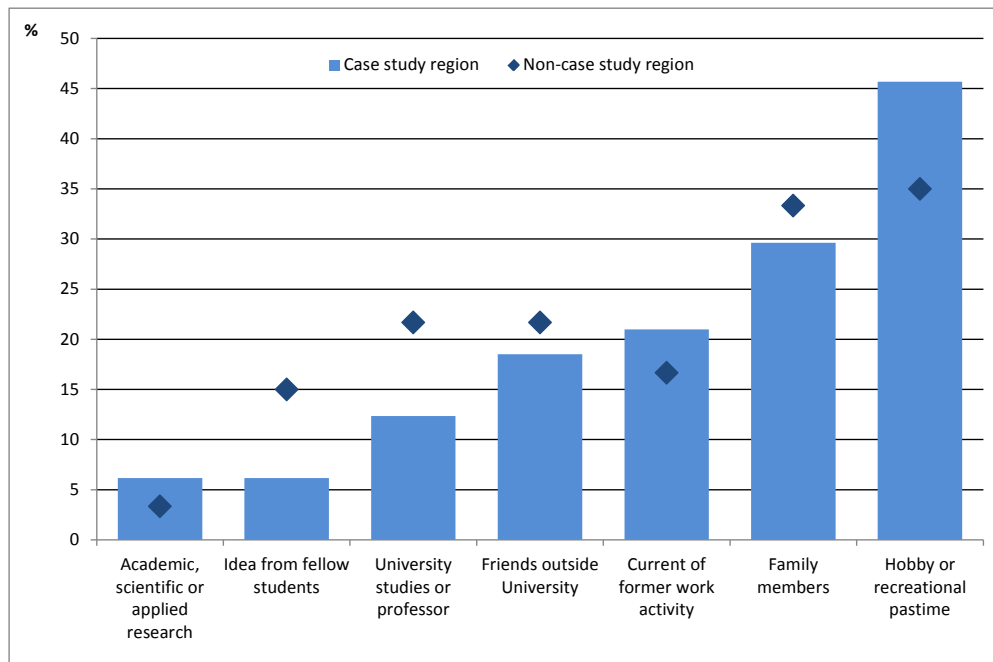
Source: OECD HEI student survey Poland, 2013

Motivation for business creation

4% of students have started a business and a further 7% of students had plans to start a business and of these less than half had concrete plans with clear ideas on the steps and timing of involved in realising their start-up.

Students report a variety of sources of potential ideas for business creation (Figure 3.14). The most important sources were hobbies (46% in Wielkopolska and Kujawsko-Pomorskie and 35% in other regions) and family (30% and 33%). HEIs and academic research were not identified as having a significant role in generating ideas for business start-ups.

Figure 3.14. Idea source for business creation



n = 81 for case study region; n = 60 for non-case study region

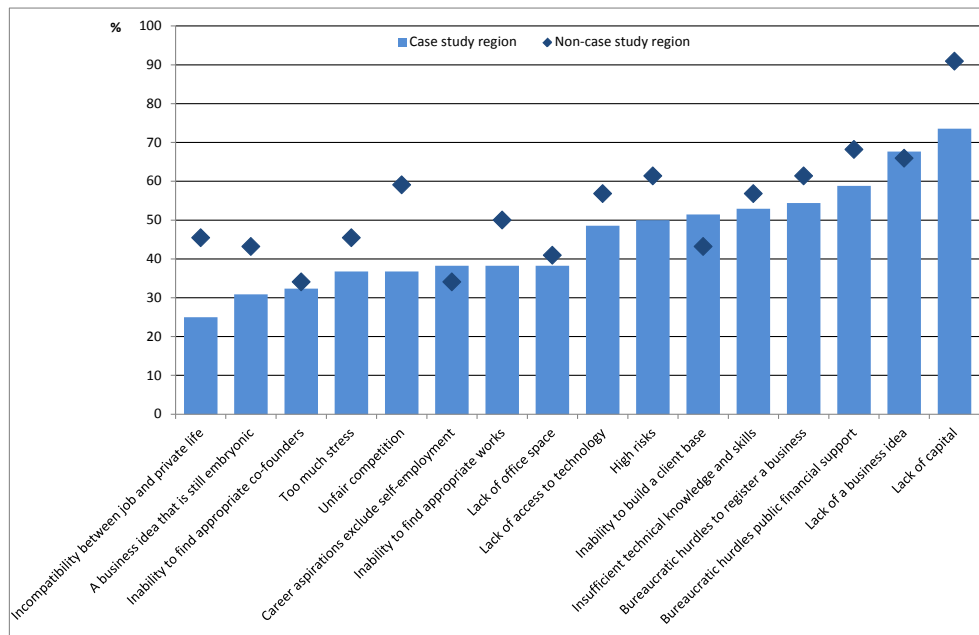
Source: OECD HEI student survey Poland, 2013

Student views on barriers to business start-up

Figure 3.15 shows the barriers that students believe they face in business creation. Many of these barriers can be alleviated with appropriate entrepreneurship education and start-up support in universities.

The greatest proportion of students surveyed was concerned by the problem of finding capital to start a business. This appears to be relatively less of an issue in Wielkopolska and Kujawsko-Pomorskie as 74% agreed or fully agreed that lack of capital is a barrier to business start-up whereas 91% of students in other regions agreed or fully agreed. Other important barriers for the students surveyed included lack of a business idea, lack of access to technology, bureaucratic hurdles and insufficient technical knowledge and skills.

Figure 3.15. Barriers to business start-up



n = 68 for case study region; n = 41 for non-case study region

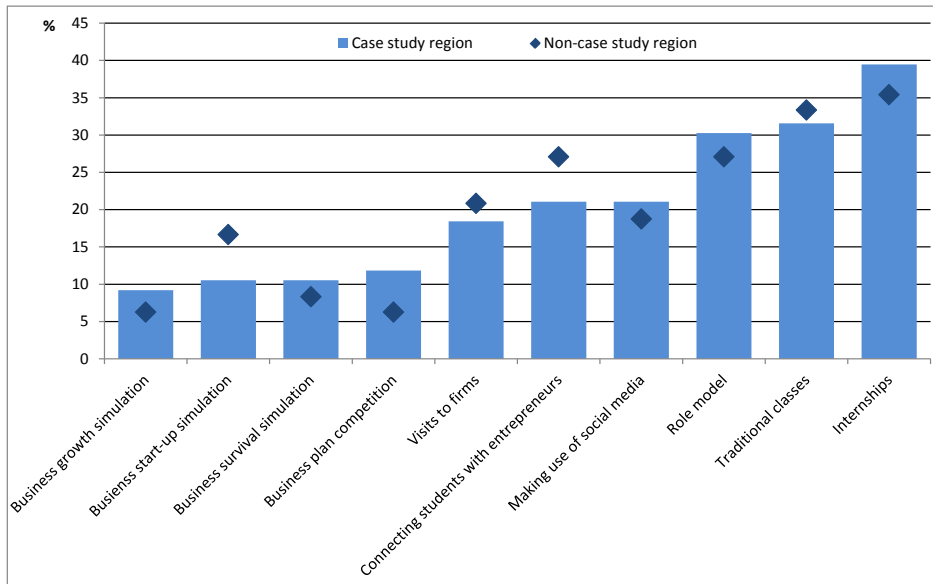
Source: OECD HEI student survey Poland, 2013

Student experiences of entrepreneurship education

Figure 3.16 sets out the types of entrepreneurship education the students in the sample had been exposed to and shows the degree to which they considered that the support had a positive influence on their interest in business start-up. Substantial proportions of students surveyed reported a positive influence of entrepreneurship education on their entrepreneurial intentions, particularly in Wielkopolska and Kujawsko-Pomorskie. This can be considered as a positive outcome to the extent that entrepreneurship education helps students to form more realistic expectations of the advantages and disadvantages of business and the barriers and opportunities they will face. The teaching methods that had the most positive impact on increasing interest in business start-ups were internships (40% reported a positive influence in Wielkopolska and Kujawsko-Pomorskie and 35% in other regions), traditional classes (32% reported a positive influence in Wielkopolska and Kujawsko-Pomorskie and 33% in other regions) and role models (30% reported a positive influence in Wielkopolska and Kujawsko-Pomorskie and 27% in other regions).

All of the subjects that were taught as part of entrepreneurship education were seen to have more of a positive influence than negative on improving the knowledge of students in ways relevant to business creation (Figure 3.17). The topic which had the strongest positive influence was communication and negotiation. 16% of students surveyed in Wielkopolska and Kujawsko-Pomorskie and 27% in other regions indicated that it has increased their knowledge “a lot”. Branding and marketing was reported by students surveyed in Wielkopolska and Kujawsko-Pomorskie as being the least effective; only 7% of students reported that studying this topic increased their knowledge. However, approximately half of the students surveyed reported that they do not receive any education related to these topics.

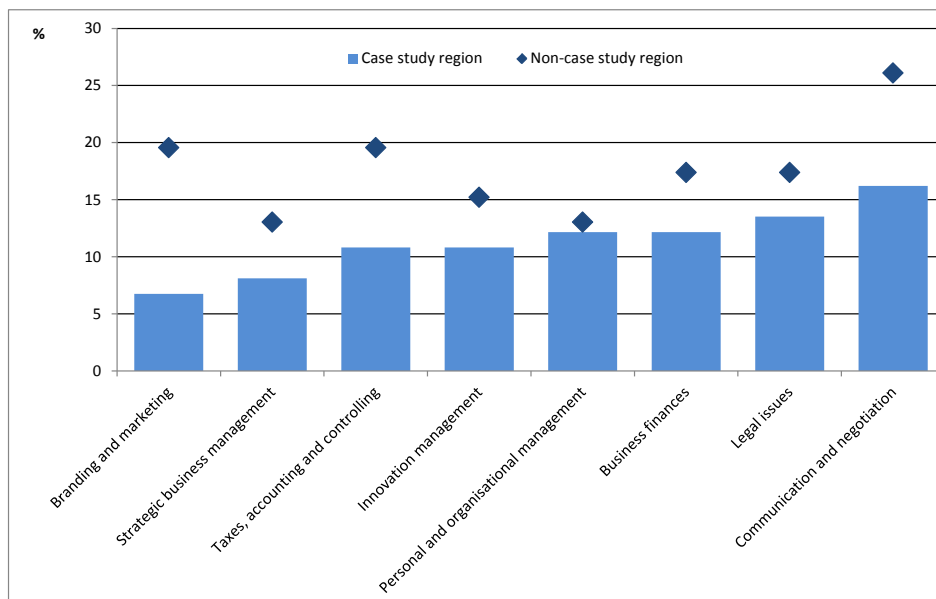
Figure 3.16. Influences in student interest in business start-up



n = 76 for case study region; n = 48 for non-case study region

Source: OECD HEI student survey Poland, 2013

Figure 3.17. Topics taught that greatly increased students' knowledge on business start-up



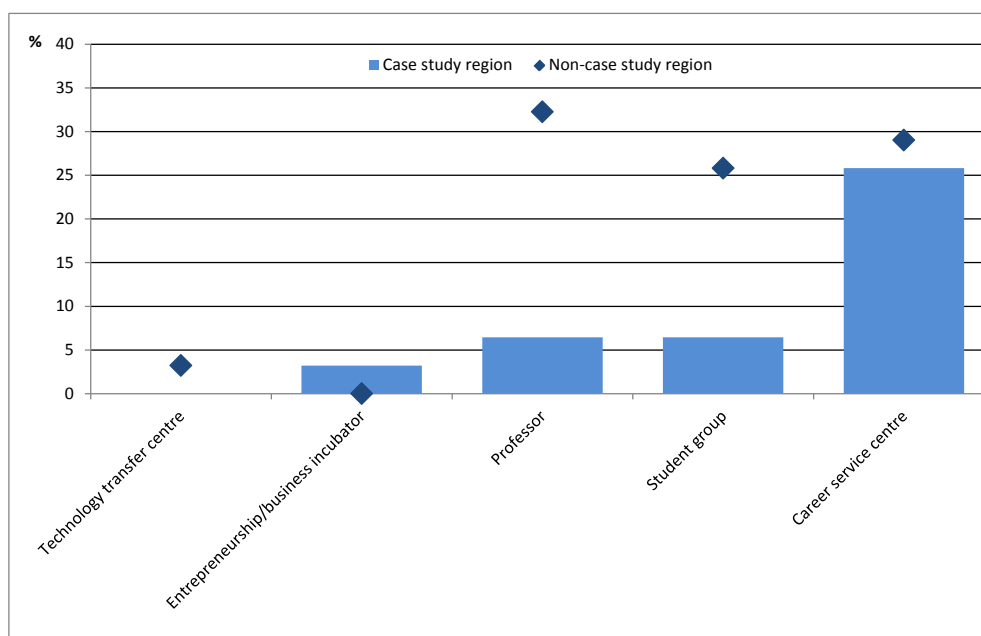
n = 74 for case study region; n = 46 for non-case study region

Source: OECD HEI student survey Poland, 2013

Student views on HEI support for entrepreneurship

Figure 3.18 shows the sources of advice and support provided by the university that were used by the students considering starting a business. The career service centre was the most commonly used source in Wielkopolska and Kujawsko-Pomorskie (26%). Few of the students surveyed used other supports such as student groups (7%), professors (7%) or entrepreneurship/business incubators (3%). Students in other regions were much more likely to use professors (32%), career service centres (29%) and student groups (26%).

Figure 3.18. University entrepreneurship advice used by nascent entrepreneurs



n = 31 for case study region; n = 31 for non-case study region

Source: OECD HEI student survey Poland, 2013

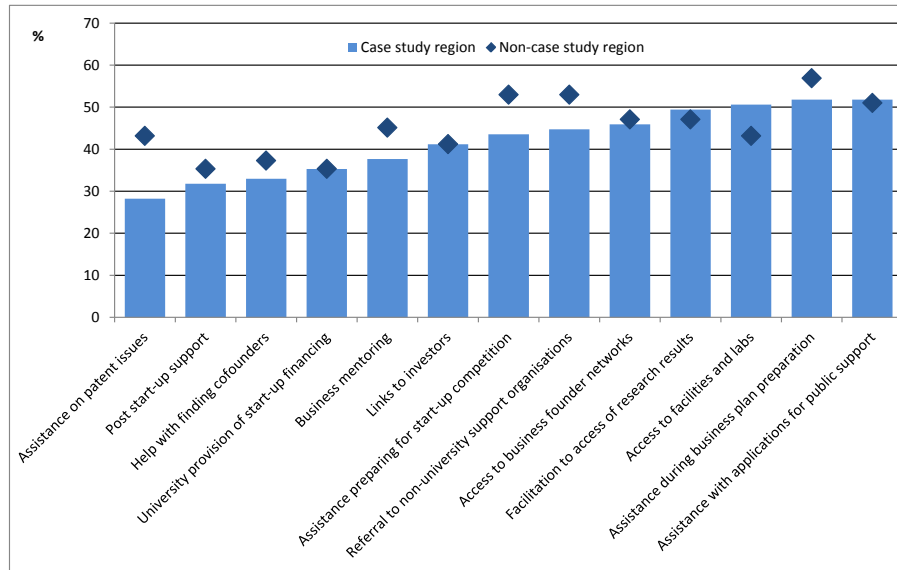
Figure 3.19 shows the start-up support services offered by HEIs and the proportion of students who found them helpful. Of those responding students with an interested in business creation, approximately half found many of these services helpful or very helpful. The most beneficial offerings were those related to assistance with accessing public support, business plan creation and access to facilities.

While the support services were generally rated similarly by the students surveyed in Wielkopolska and Kujawsko-Pomorskie and other regions, some differences are evident. More students outside of Wielkopolska and Kujawsko-Pomorskie provided positive ratings to assistance with patent issues (43% vs. 28%), assistance in preparing for business competitions (53% vs. 44%), referrals to non-university support organisations (53% vs. 45%) and business mentoring (45% vs. 38%).

However, students in the sample were critical of the quality support services offered. Only 3% reported that the services are “very good” and 14% reported that they are “adequate”. Figure 2.20 shows the types of services that students felt were in need of improvement. Students surveyed in

Wielkopolska and Kujawsko-Pomorskie wanted to see improved assistance for participating in a business ideas competition (44%), improved assistance with applying for public support (39%) and increased provision of university financial support (38%).

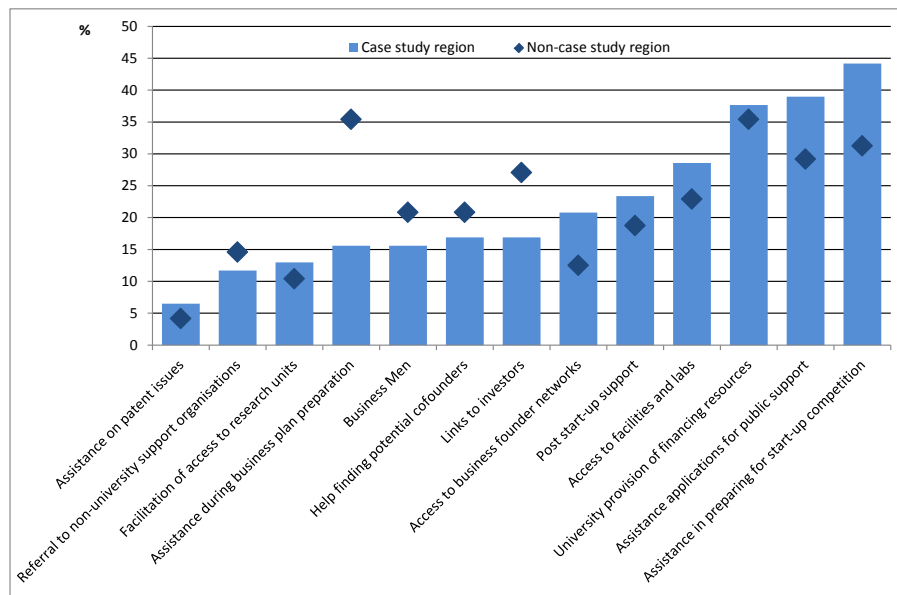
Figure 3.19. Proportion of students who find start-up services helpful or very helpful



n = 85 for case study region; 51 for non-case study region

Source: OECD HEI student survey Poland, 2013

Figure 3.20. Services which students would like universities to improve

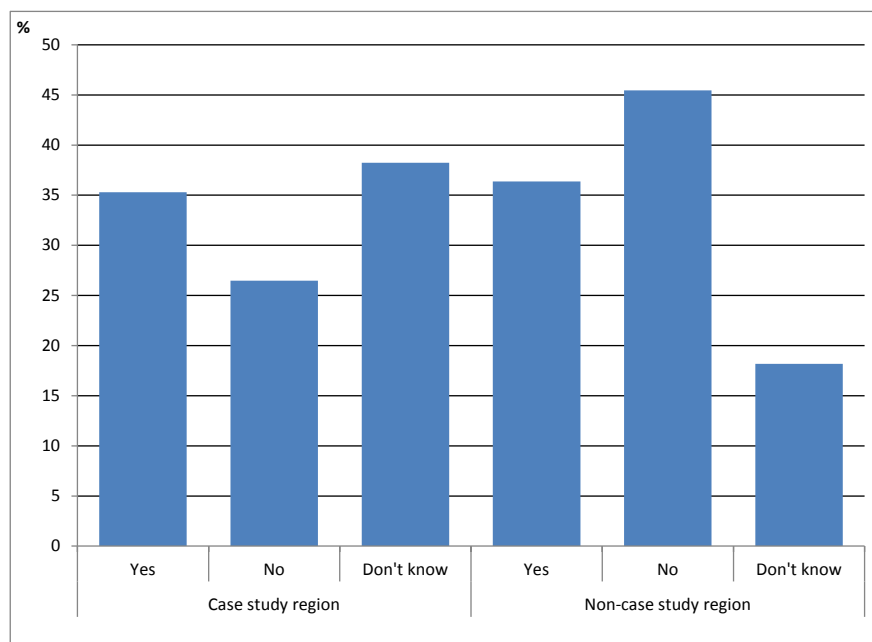


n = 77 for case study region; n = 48 for non-case study region

Source: OECD HEI student survey Poland, 2013

Students from the case study region who participated in the survey often did not know if they were participating in a project that is supported by the European Social Fund (ESF) (38%) (Figure 3.21). Of the remainder of students in the case study region, 35% identified that they had participated in an ESF supported project while 27% had not. In the non-case study region, students participating in the survey were equally as likely to indicate that they had participated in an ESF supported entrepreneurship project (36%) but were more likely to indicate that they had not (46%) than those studying at one of the case study region HEIs.

Figure 3.21. Student participation in entrepreneurship projects supported by the European Social Fund

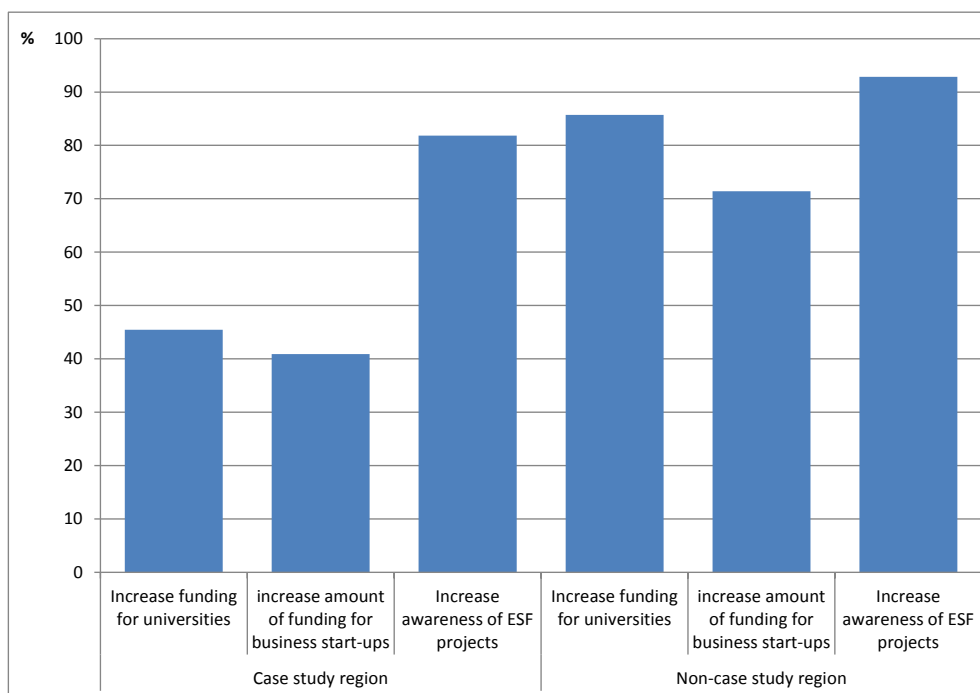


n = 68 for case study region; n = 44 for non-case study region

Source: OECD HEI student survey Poland, 2013

All of the students responded that the ESF funding was beneficial to their education. However, the vast majority of students surveyed indicated that there is to increase the awareness about ESF entrepreneurship projects among students (82% in the case study region and 93% in the non-case study region) (Figure 3.22). Students surveyed in the non-case study region were much more likely to suggest funding increases to universities (86%) and to supports for new business start-ups (71%). This is nearly double the proportion of students who make the same suggestions in the case study region (46% and 41%). It would be expected that the results would be similar in both regions and it is not clear why there is such a strong divergence in opinions.

Figure 3.22. Potential improvements to ESF supported projects



n = 22 for case study region; n = 14 for non-case study region

Source: OECD HEI student survey Poland, 2013

3.3 Conclusions

The surveys of HEI leaders and students provide evidence on the foundation of entrepreneurship education and support in Polish HEIs. They also suggest directions for future actions that will help to fill gaps and increase quality in graduate entrepreneurship support so as to favour better entrepreneurship outcomes. However, an important conclusion that can be drawn is that there is still much work to do in increasing interest in entrepreneurship among HEI leaders as the response rate to the HEI leaders' survey was low relative to other review studies in this project.

There are clearly strengths of current entrepreneurship education and start-up support offerings in Poland that can be built upon. Entrepreneurship is recognised as a strategic objective by the majority of the universities that responded to the survey and entrepreneurship education is offered by nearly all the universities across a wide range of faculties. While few Professors of Entrepreneurship have been established, entrepreneurial attitudes and experience are considered when recruiting new staff. Moreover, industry professionals are widely incorporated in entrepreneurship teaching.

The emphasis now needs to be placed on filling gaps and improving quality in university entrepreneurship education and start-up support. The survey responses suggest that there are two main priorities: to increase the depth and quality of entrepreneurship education and to increase the provision of complementary business start-up resources, particularly facilitating access to start-up financing.

University entrepreneurship education is growing but has yet to reach a significant proportion of students. Moreover, it is lacking in intensity in certain areas. Students report that the topics taught

have a positive impact on their knowledge and skills but half of the students indicate that these topics are not taught, suggesting that entrepreneurship education does not cover the breadth topics related to business start-up and development. The depth of entrepreneurship education therefore needs to be increased, at least for those with a real interest in entrepreneurship. In part, this means increasing contact time and in part it means using new more adapted teaching methods. There also appears to be a need to introduce entrepreneurship education at higher levels (i.e. second and third cycle degrees).

The surveys suggest a number of ideas for actions in this respect. There is scope to increase business relevance by bringing local business contacts and university alumni who have started businesses into course development and involving them as teachers, role models and gateways to networks and resources. More training of entrepreneurship teachers could be provided. In some universities, information covering university entrepreneurship support and the practicalities of entrepreneurship could be made more accessible on university web pages.

The other priority is to improve the provision of financial, technical and infrastructure resources for those ready to start a business. In doing so, an emphasis is needed on providing services that help students to overcome the barriers they face to business creation: finance to start a business, sources of business ideas, navigating bureaucratic and regulatory requirements, developing technical knowledge and skills, and managing risk. Access to finance was identified as the greatest barrier by students but this is not an area where HEIs are active. Partnerships with investors and the financial sector can be strengthened and further developed to help students gain access to financing. Successful approaches include private sector sponsored business competitions that award prize money for the best ideas or “pitching” events where student entrepreneurs are provided access to investors to make a “pitch” for funding.

Many of the other support services are provided in business incubators or entrepreneurship centres. While nearly all universities reported having an incubator or entrepreneurship centre, nearly three-quarters of students reported that they did not use or have access to these services. This suggests that there is an issue of accessibility, which could be related to awareness or capacity. It has to be recognised that services such as these are costly and cannot be provided to all students. However, there is a good case ensuring that these services are accessible for a set of students who are the most motivated and capable of proceeding to start-up and who have the business projects with the greatest orientation to growth and scale.

Furthermore, it would be helpful to more widely recognise the potential of graduate entrepreneurship for supporting the commercialisation of university research, for example by encouraging start-up teams bringing together researchers, professors and students. In cases where this can be encouraged, it could help meet the twin objectives of promoting university research commercialisation and supporting and mentoring students in business creation.

CHAPTER 4: STRATEGIES FOR THE ENTREPRENEURIAL UNIVERSITY

4.1 Key strategic issues when establishing an entrepreneurial university

An entrepreneurial university aims to promote an enterprising culture across its campus and within its community. Entrepreneurship is often not distinguished as a specific, isolated subject but rather permeates all the activities of the university. This includes undergraduate and graduate courses where students can learn more about entrepreneurship as a subject itself, both in theoretical and practical terms. Courses are often for ECTS credit (although this is not the only approach) and cover, for example, entrepreneurship and the creation of new business, the entrepreneur and the legal environment, business development, and financing business start-up.

In addition, entrepreneurial universities offer specific training programmes for individuals who wish to start their own firms or develop on-going businesses. Different approaches include, for example, incubator facilities and growth programmes. Training is primarily “hands on” and typically does not give any ECTS-credit.

Moreover, it is important for entrepreneurship to be central to university research and outreach activities. This includes entrepreneurship as an academic subject and as a way of behaving for the institution, for example, by working collaboratively with the private sector.

To successfully integrate these activities, to promote an entrepreneurial culture on campus and to develop as an organisation that acts entrepreneurially and supports entrepreneurship activities for its staff and students, universities need to develop strategies to identify priorities and co-ordinate actions. Activities in an entrepreneurial university work in parallel and enrich each other. For example, it is most probable that a variety of courses in entrepreneurship will influence attitudes in a positive way towards starting new firms and further develop an entrepreneurial culture. Building relationships with the private sector can help integrate entrepreneurs into teaching who can give valuable contributions to courses in the form of case studies and lectures.

4.2 Presentation and analysis of findings

National actions

There are several national initiatives that support entrepreneurship and innovation across Poland but also several that specifically focus on academic entrepreneurship. This has a wider significance including, for example start-ups, patents and external consulting (c.f. Klofsten and Jones-Evans, 2000).

At the national level, there are several initiatives under the auspices of the Ministry of Science and Higher Education aimed to encourage academics and doctoral students to set up start-ups and commercialise their research. One of those examples is “The Top 500 Innovators” who offer international study visits for 500 Polish academics at highly ranked international universities. The state covers the costs related to travel, stay, and insurance. Another example is the Polish Agency for

Enterprise Development, which supports the development of the small and medium-sized enterprises in Poland. Among its activities are training and education, as well financing of a wide range of businesses. Through these actions, co-financed by EU funds, the agency supports entrepreneurship.

Despite these actions, there is currently no entrepreneurship strategy at a national level that the universities can build upon. Entrepreneurship is seen as a broad concept by all stakeholders, which is important for individual career development. University leadership is facing pressure to spread entrepreneurship to all parts of the organisation, but this task is still difficult to anchor and implement internally.

Most Polish universities are teaching oriented. Collaboration between academia and society is seen as important, and there are several formal and informal collaborations between universities and private companies. However, there is no clear incentive scheme aimed to promote an overall entrepreneurial behaviour. Traditional incentive systems are used where results of research and teaching is rewarded. Furthermore, there is currently no clear strategy for how universities should deal with intellectual property rights (IPR) issues. HEIs are currently responsible for developing their own policies and procedures regarding IPR but of the six HEIs visited, only Poznań University of Technology, Kazimierz Wielki University in Bydgoszcz and Nicolas Copernicus University in Toruń have done so.

University leadership and governance

There is an overall alertness within universities of the importance of supporting entrepreneurship and the potential it holds for value creation within the university, as well as for society. The universities are in their own ways involved in several interesting and well-functioning initiatives to support entrepreneurship. Bottom-up initiatives of students and faculty are valued and encouraged and university management supports such projects and offers resources to develop and expand them. University management also play an important role in diffusing ideas and projects throughout the university and the surrounding community.

Despite these on-going activities, entrepreneurship is not explicitly written into the university strategy in all of HEIs included in the case study. In Kujawsko-Pomorskie, the University of Technology and Life Science in Bydgoszcz stresses the importance of co-operation with private sector companies in the region, supporting business incubators, technology parks and industrial clusters, as well as including entrepreneurship in the curriculum in its strategy for 2011-2020. The Kazimierz Wielki University in Bydgoszcz aims to promote and disseminate the idea of entrepreneurship and innovation among students and academics in its statute (2012). In Wielkopolska, the Poznań University of Technology's strategy up to 2020 aims to support an environment to develop students' entrepreneurship and the Adam Mickiewicz University in Poznań outlines an intention to have entrepreneurial graduates and to support academic entrepreneurship in its strategy for 2009-19.

As highlighted above, entrepreneurship is in many cases seen as an approach to manage the outreach activities of the university. It is also viewed as an important activity to attract external funding.

However, entrepreneurship is not integrated throughout the whole university environment. There is, for example, no chair oriented towards entrepreneurship, which means that there is a risk that dedicated research as well as internally developed courses in entrepreneurship will be absent. Moreover not having a senior academic in the field may make it difficult to maximise the full potential of external relationships, which is crucial to enable the development of practical insights and

entrepreneurial learning. There is also a risk that external stakeholders focusing on entrepreneurship support do not have an area-specific counterpart within the university to co-operate with. To achieve this objective the university should have a critical mass of scholars and practitioners mutually devoted to theory and practice of innovation and entrepreneurship, a significant proportion having dual roles in the academic and business sides of the university and in the university and various organisations in the larger society.

One explanation could be the lack of internal consensus on what entrepreneurship really is. For example, some universities and university stakeholders view entrepreneurship as the process of business start-up while others view it more broadly within the context of skills for employability. Few see entrepreneurship as a human behaviour that can be embedded throughout the entire university organisation. The lack of a common understanding of the concept of entrepreneurship is a barrier to further developing support for entrepreneurship within universities because differences in the concept of entrepreneurship could result in diverging activities with different objectives. As a result, entrepreneurship activities are often isolated initiatives that cannot achieve their potential because the university cannot fully exploit the ideas and initiatives that are generated. The ESF could be a tool used to address this issue by training university leaders and faculty that will allow universities to build their own vision of what entrepreneurship means to their institution.

The universities have large degree of freedom to act, which provides opportunities to develop their own entrepreneurial agenda to meet their specific situation and context. It has the ability to renew itself by initiating new research, teaching and entrepreneurship programmes in order to take advantage of opportunities as they appear and close old ones as they become less significant.

University faculties also have quite strong autonomy to act and there are many programmes and activities jointly run with external organisations, aimed to promote entrepreneurship. This includes for example, incubators and science parks. However, many of these collaborations and activities appear to be at the working level and university management did not always have knowledge of these activities.

The universities do not yet take a clear and leading role in regional development. This represents missed opportunities for both the university and the region. There was a strong sense from many university professors and stakeholders the HEIs can be a much stronger actor and a driving force for entrepreneurship within the region. Many of the universities do not actively participate in the regional strategic planning process. Instead, universities are still seen as “ivory towers” that remain dedicated to science and research and have yet to achieve their potential to make contributions to society.

But at the same time, all stakeholders recognise the on-going entrepreneurial activities at the universities and had positive views on their efforts. Although many of the actions are on a relatively small scale, the universities often have a central role in implementing the activities. Stakeholders saw potential to have an impact on firm creation, increasing the number of patents and potentially job creation.

Organisational capacity, people and incentives

Although there are national (and EU) funding opportunities for different entrepreneurial projects nearly all universities and stakeholders perceive funding as a major concern. There is a strong dependence on external funding and it was often reported that funding is not large enough to undertake significant new actions and that the funding was too focussed on short-term actions. It is therefore difficult to launch and develop long-term sustainable entrepreneurship projects because initial

participation levels cannot justify the costs. It takes time to develop these projects into sustainable programmes.

None of the universities have a chair in entrepreneurship, which is common at European entrepreneurial universities, and there were no research groups that systematically focus on entrepreneurship research. Existing research groups focus on related fields such as economics and business management and it was implicitly understood to cover entrepreneurship but there was no evidence to demonstrate that this research was on-going. The presence of entrepreneurship researchers would also provide the university with entrepreneurship teaching capacity and the important practical link between theory and practice that is critically important in entrepreneurship research. Despite this, students have at many of the visited universities the opportunity to read a number of entrepreneurship courses and these are carried out in co-operation with (and in some cases externalised to) external organisations such as incubators and other support organisations.

Polish HEIs lack an incentive system that supports an entrepreneurial agenda. The current system in Poland has a classic design that gives academics credits for research output (e.g. publications and citations) and quality of teaching. Establishing collaborative projects with industry is seen as positive, but in practice such work has little effect on the development of an academic career. Current incentive systems are focused on rewarding outcomes related to research and teaching and do not encourage staff to launch external partnerships, file patents or commercialise their research. Therefore, there is a risk of losing the potential of profitable synergies between research, teaching and external partnerships, which combined, are attributes of a modern academic work. By narrowing the academic tasks and reward structures, the university is missing opportunities to take full advantage of its human potential.

Relationships for knowledge exchange

The universities demonstrate many good examples of external partnerships and positive relationships with stakeholders. Stakeholders are considered to be valuable members of the university community, not simply as holders of resources for the university. This relationship appears to be one of mutual advantage based on reciprocity and trust.

Many universities demonstrate an active involvement in partnerships and relationships with different stakeholders in the private as well the public sector. These partners are primarily located in the local area, which is important to drive multi-disciplinary research in the HEIs. This is happening but there is room to increase the number and scale of multi-disciplinary projects undertaken by universities because they more often lead to outputs that can be commercialised. There are also several partnerships with national and international organisations such as banks and larger technology-based companies. Such international collaboration is of course an important role model for the future, which shows that international partnerships could include a variety of activities where entrepreneurship could be a key issue.

Another source for collaboration mentioned is the alumni. HEIs recognise the importance of this group and indicated that they can act as ambassadors for the university and be potential collaborative partners in the future. Some of the universities have quite well-developed activities to keep in-touch with their alumni, especially those academic environments visited in Poznań. It is expected that relationship with alumni will be strengthened in coming years given the recent implementation of requirements to track graduates.

The method of organizing stakeholder partnerships is quite decentralised and locally operated within the universities. For example, the dean's office in many universities uses an advisory board in which stakeholders are represented. Single research groups often have their own networks of external partners – mainly in the industry – especially for researchers within the technical faculties and departments. External partners are not just active in research projects, they are also often used as guest lecturers.

Most universities are quite active at working with stakeholders on entrepreneurship-oriented activities. Several good examples of well-functioning partnerships were demonstrated, particularly in Poznań, aimed at supporting individuals who carry ideas and intend to start businesses or researchers on ways to commercialise their research. Many of these initiatives have a high standard that deliver quality support.

Developing as an internationalised institution

The universities in Wielkopolska and Kujawsko-Pomorskie generally do not have internationalisation as a key part of its entrepreneurial strategy. However, the universities have several international collaborations both within the EU and on the global market. As noted earlier, some of these collaborations contain an element of “entrepreneurship” but overall, these collaborations generally have a wider scope that is related to scientific research, innovation and technology development. For example, Nicolas Copernicus University is developing technologies with Fujitsu and inLAB, which bridges the gap between scientific research and the private sector. For more information on inLAB, please see Box 4.1.

Box 4.1. inLAB - Innovative laboratory science and business co-operation

inLAB is a project that facilitates links between universities and businesses by increasing interaction between scientists and entrepreneurs and supporting the commercialisation of research. It is attached to two universities, the Nicolas Copernicus University and the University of Economy in Bydgoszcz, and it aims to help clients implement research that has been developed at the university and also helps facilitate the development of new solutions by working with customers to articulate their needs. inLAB is operated by research teams (scientists) and funded largely by the Human Capital Programme implemented under Priority VIII under the supervision of the Office of the Marshal of Kujawsko-Pomorskie. This public funding makes the project much more attractive to the private sector since the activities are funded. Students are involved in the project, both in terms of the research but also in terms of working with clients. This represents a good learning opportunity to understand how to bring ideas to the market.

The entrepreneurship support organisations (e.g. incubators, training centres of patent offices) appear to have a good knowledge of current activities in the international arena in terms of education, training and other forms of support of entrepreneurship and there is a high level of awareness of international good practices. However, the approach taken appears to be informal as there is little organised exchange in terms of staff mobility, shared projects or dedicated network development.

Measuring impact

There are no clearly defined impact measures at the university level to measure the impact of success of on-going entrepreneurship activities. Implicit performance measures are only used on programmes or projects and are often simple metrics such as the number of participants and the

number of firms started in start-up programmes. Longitudinal and more qualitative measurements are not used to measure the long-term effects of the entrepreneurship support activities.

There is an absence of relevant metrics and indicators, which are designed to measure the results of entrepreneurial efforts. University management therefore has no control instruments in its determination to become an entrepreneurial university. New qualitative and quantitative metrics are required that take into account the process of development as well as the inputs and outputs of the university's local and regional role. Thus intermediary measures focusing on the quality of engagement and interface with stakeholders are required as well as formative and summative evaluations of intentions and results.

4.3 Recommendations

Exploiting the research findings identified earlier in this report and aligning them with the observations from the study visit the following are the recommendations:

Government should ensure that HEI funding supports the third mission

Public resource provision to academia should be allocated to achieve all three universities missions (i.e. education, research, contribute to society), both individually and in combination with each other. Thus research programmes should include translational resources and measures to encourage collaboration among stakeholders from different disciplines, rather than being oriented solely to traditional academic objectives. The objectives of academic research should be to contribute to society rather than creating knowledge for the sake of knowledge.

To achieve this result, a significant proportion of funds should be allocated according to the vision of research council programme managers, with the authority to organise projects that bring all necessary public, private and academic resources together to accomplish joint projects with innovative objectives, with peer review an advisory function rather than in a guiding role. A competitive process could be used to provide incentives and rewards universities for increasing the scale and scope of activities that fall under the "third mission". For example, a competition could solicit strategies and implementation plans for increasing each university's contribution to society. A jury would review the plans and funding could be awarded to those with the most ambitious, but achievable, plans. Such a competition should be held at regular intervals (e.g. 5 years) to give universities enough time to implement their plans and demonstrate results. The ESF could be used to co-finance a competitive process to award funds in this manner.

Government should appoint research chairs in entrepreneurship and innovation

Appoint a critical mass of chairs in entrepreneurship and innovation across Polish HEIs with the responsibility to build research action teams to stimulate multi-disciplinary research projects. This network of research chairs would take the lead in developing both the scientific and outreach elements of the entrepreneurial effort. A proportion of these positions should be joint chairs with traditional subject matter disciplines as well as professors of practice (c.f. Etzkowitz *et al.*, 2011) with half-time academic and societal roles in public private and civil society organisations. They will jointly take the lead in developing the scientific part of the entrepreneurial effort as well as undergraduate, PhD-programmes and executive programmes in entrepreneurship and innovation. This would also foster cross-disciplinary research projects that can be commercialised. It is crucial these groups have close collaboration with the Vice President position (office) as suggested above. Of great importance is that

the entrepreneurship researcher's work close with incubators, science parks and other stakeholders that promote entrepreneurship in the region.

Ministries can support the appointment of research chairs by ensuring that the legal framework allows for these developments and encourages exchanges between universities, industry and government. This could include for example, incubation of prototype firms within academic research groups, joint positions (50%) between academic, industry and government, and restructuring of funding programmes among the agencies to achieve macroscopic, yet specific, innovative objectives. Government can also provide financial resources for these chairs and the ESF could be used for this purpose. A single person in the government should be appointed as a champion to guide these programmes and initiatives.

Use the European Social Fund to support activities that stimulate interest in entrepreneurship amongst university leaders

The national government should seek to increase interest in entrepreneurship amongst university leaders. This can be accomplished with a two-pronged approach. First, a cultural change is needed. The government could organise seminars and workshops for HEI leadership to demonstrate the benefits of entrepreneurship for HEIs, including how it can improve university performance on traditional activities such as research. Seminars and workshops can be held regionally or nationally, and it would be effective to invite reputable guests from other EU countries or the United States demonstrate the positive effects of supporting entrepreneurship. See Learning Model 1 for an example of an approach used in the UK that is open to international participants. Key actions in this example are the development of seminars using respected international experts to teach about entrepreneurship and the value that it can bring to traditional university activities. Seminars and workshops constructed in short sessions that are held regularly over one year, allowing time for participants to reflect on the teaching and discussion in between sessions. An important goal of such a project would be to create a network of champions that can influence other HEIs in Poland.

The second element is to attach more funding for HEIs to entrepreneurship activities. An approach that is used in Germany and supported by the European Social Fund (ESF) is a strategy competition between HEIs as part of the EXIST Programme (i.e. EXIST IV “Culture of Entrepreneurship”). A panel of judges select winning HEIs based on written strategy submissions and the winners receive additional special funding to implement their strategy. This approach can be effective because funding often gets the attention of HEI leaders. However, the provision of short-term funding is not enough to drive cultural change on its own because it only impacts the winners, and only for a short time. This approach should be paired with other initiatives to seek buy-in from HEI leadership. Please see Learning Model 10 for more information (in Chapter 6).

Use the European Social Fund to improve monitoring and evaluation of entrepreneurship activities

Government and HEIs need to work together to improve monitoring and evaluation of entrepreneurship activities, including tracking of alumni in a standardised manner. This would provide a better understanding of the impact that entrepreneurship activities are having. Impact assessment can be viewed in six steps. Monitoring activities should be conducted on an on-going basis and cover the first three steps of impact assessment, which are take-up rates, recipients' opinions on the intervention and recipients' views on the impact of the intervention. Evaluation provides a more in-depth view on impact and should also be done regularly but not necessarily on an on-going basis. Evaluations are typically designed to cover the final three progressive steps of impact assessment: a comparison of

assisted subjects relative to typical non-assisted subjects, a comparison of like subjects who received assistance and not, and a comparison that adjusts for selection bias.

It is critical for both monitoring and evaluation to first define key performance indicators related to entrepreneurship education and start-up support and to collect data on these indicators over time. This will lead to a better understanding of the system's areas of strength and weakness, as well as changes in performance over time. The key performance indicators should focus on outcomes rather than inputs so that impact can be measured. For example, key performance indicators for entrepreneurship education would include skills and knowledge gained and perception of usefulness. Examples of indicators for start-up support would include the propensity of students to start a business.

To work towards achieving these objects, Polish universities should conduct regular student surveys about entrepreneurship courses (i.e. content and teaching methods) and start-up support. At the same time, it is advised that universities increase their knowledge about their own activities, including their entrepreneurship offerings and strengths and weaknesses them. A useful tool to start with is the HEI Innovation online self-assessment tool (www.heinnovate.eu) that was developed by the OECD and the European Commission. A more comprehensive tool is the multi-rank tool, which is described in Learning Model 2, which is a broad set of performance university measures and allows for comparison across universities. More advanced approaches to monitoring and evaluation include conducting student focus groups, tracking student start-ups and undertaking more rigorous evaluations. Alternatively, Learning Model 3 describes a measurement tool that was recently developed in Finland with ESF support. Although it focusses on teaching entrepreneurship in lower levels of education, it provides examples of key performance indicators.

The final step in improving monitoring and evaluation of entrepreneurship activities is to introduce more sophisticated evaluation methodologies. Policy makers and the HEIs need robust evidence that can illustrate where further actions are needed and where efforts are not achieving their intended impacts. Government can require HEIs to undertake such studies as a condition of funding. Another option could be to participate in international benchmarking studies, which would allow for a deeper understanding of Polish performance relative to other countries.

Use the European Social Fund to develop a more positive attitude towards entrepreneurship within the academic community.

The European Social Fund can be used to create academic networks for the purposes of encouraging entrepreneurial attitudes among professors, developing and promoting innovative ideas, growing and supporting business development initiatives in universities and developing multi-disciplinary knowledge that can be commercialised. This could also be used to develop a common understanding of the concept of entrepreneurship within the context of the Polish academic community.

Networks could start with a core group of approximately 3 or 4 universities, building on a group of interested academic professors, or existing academic networks could be leveraged (e.g. SEIPA, see Box 5.1). Network activities could be built around workshops and conferences on entrepreneurship for academic staff, as well on-line promotion and training courses to increase awareness about entrepreneurship and foster a positive attitude towards entrepreneurship. A more ambitious network could launch a publication to stimulate and showcase entrepreneurship research results. The European Social Fund supports similar initiatives in Spain (e.g. the University Entrepreneurship University Network in Catalonia, which consists of eight public universities).

Encourage HEIs to embed entrepreneurship in university strategies and mission statements

Universities should clearly embed entrepreneurship in its strategy and mission statement. Through the process of developing a formal strategy, universities should: i) define what is meant by “entrepreneurship”; ii) explain how entrepreneurship should be integrated across the whole university environment; iii) explain how entrepreneurship should be handled with stakeholders regarding roles and resources; and iv) outline an incentive system that incorporates entrepreneurial aspects of all three university tasks (teaching, research and outreach).

To achieve these objectives the university can be embedded together with its stakeholders in an organisational framework for brainstorming, consensus formation and implementation of jointly developed ideas and projects for regional renewal and growth. Governance of universities, as well as regions, thus becomes increasingly lateral rather than hierarchical.

HEIs should appoint a strategic position at each institution that is responsible for entrepreneurship

HEIs should appoint a strategic position at their institution (Vice President or similar), which has the overall responsibility to implement entrepreneurship as part of the university strategy and mission statement. This function should include: i) developing a clear role for the university within the regional context; ii) identifying relevant indicators aimed to measure the entrepreneurial efforts; iii) facilitating collaborations within the university as well as with external stakeholders; and iv) actively attracting long-term funding for entrepreneurial activities. Entrepreneurship and innovation thus must be conceptualised as being on an equal plane with academic and education objectives. Only by having its champion within the administration and mutual respect among all parties can the next stage in academic development be achieved, that is a university in which research teaching and entrepreneurship are complementary and interwoven in university missions and objectives. Thus the third mission should be taken as a core academic mission rather than as a peripheral academic task. Please see Learning Model 4 for an example of how universities work strategically with other stakeholders with the purpose of driving innovation and growth in a region.

4.4 International learning models

Below are three learning models that can be used to further develop organisational support to advance HEIs towards becoming entrepreneurial universities in Poland: 1) The Entrepreneurial University Leadership Programme; 2) U-Multirank; 3) Measurement tool for entrepreneurship education; and, 4) East Sweden Business Region.

1) The Entrepreneurial University Leadership Programme, UK

Rationale and objectives

Organisations of today are subjected to very dynamic stresses due to the e-globalisation forces. Rapid changes in the internal and external environments of organisations demand a new type of leaders. The new leaders need to be entrepreneurial in their approach to lead and apply and commence changes. The traditional role played by universities as mentioned earlier in this report been subjected to change and development. There is more demanded today from universities, including to be more entrepreneurial and play a more leading role in enhancing the competitive capability of regions and countries. Thus, the entrepreneurial endeavour of universities has been more devoted for output-related characteristics such as patenting, development of products and services emanating from research, number of spin-off firms and the extent of private and public partnerships. This challenge has

led to the launch of a new UK-based programme called “The Entrepreneurial University Leadership Programme” which is a pioneering executive development programme for senior university leaders.

The programme is hosted by Said Business School (University of Oxford) and is organised in partnership with other UK universities and international experts. While some government financial support is provided, but participants pay a fee and cover their variable costs of travel and accommodation.

The programme seeks to provide such training for leaders of organisations and in particular leaders of academic institutions and universities, e.g. rectors, vice rectors of external affairs and other persons in leading positions at the universities. The goal is to provide tools to participants to help them effectively, and in an entrepreneurial way, implement change in their organisations, academic institutions and universities. The concept of entrepreneurial leadership is now emerging as a powerful idea to help universities adapt rapidly to the increasingly complex and urgent set of pressures and challenges being created by economic, global and domestic uncertainty.

Activities

The Entrepreneurial University Leadership Programme is executed over a year and constitutes of the following four three-day modules: i) the idea of the entrepreneurial university; ii) entrepreneurial leadership in the university; iii) exploring good concept and practice in depth; and iv) strategic planning for entrepreneurial development. As such the programme is highly devoted for practice and is entirely designed to satisfy the needs of the participants. The programme is carried out in terms of workshops where invited speakers present their experiences during hands-on group work sessions that are related to the participants’ experiences and needs.

Resources

The programme involves experienced vice chancellors, experts, visionaries, practitioners and policy makers in the field of university education. In addition to Said Business School, other core organisations are the National Council for Graduate Entrepreneurship (NCGE), the University of Nottingham, the Council for Industry and Higher Education (CIHE), the University Entrepreneurship Networks (UEN) and the Leadership Foundation. Professor Allan Gibb (Durham University Business School, UK), who has a long experience in the area of entrepreneurship education and training, has a leading role in the programme.

Relevance

This case demonstrates how a programme aimed to support the management level of the university can be designed and executed. It also shows the importance of having different national and international resource people involved when running such a programme. Participation in this programme not only facilitates learning of strategic issues of developing an entrepreneurial university but also the extended network that can be established among the participants in the programme. The programme will contribute in the development of the current university strategy in which entrepreneurship is an essential part, as well as improving stakeholder management is also an important part of the programme.

The programme has been running for four years, and has received a lot of attention for the opportunities and the challenges that universities will face in the future. The UK-based programme could well be an inspiring source for similar initiatives in Poland. It is however important to be aware

that a major challenge is likely to be convincing the initial cohort of participants to join the programme. Rectors are busy people who could have some difficulties to allocate time for participation. This was one of the challenges in the UK-based program initially when the first participants were to be recruited.

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2) U-Multirank

Rationale and objectives

Assessing and ranking universities according to their performance is not always well-received by universities. Rankings are often controversial because they do not account for different contexts or university objectives.

The European Commission (DG, Education and Culture) has developed a project called U-Multirank in co-operation with the Consortium for Higher Education and Research Performance Assessment (CHERPA-Network). It aims to improve the existing ranking assessment systems and to produce more accurate measures of the performance levels of different universities and higher education institutions, accounting for different contexts. Three objectives for the development of the new measurement system are to be multidimensional, transparent and global. In addition, it aims to be user-friendly, free from language barriers and provide free access to results of self-assessments.

The project includes the development and testing of a new transparency instrument for higher education and research organisations. More explicitly, the focus has been on “a transparency tool that will enhance our understanding of the multiple performances of different higher education and research institutions across the diverse range of activities they are involved in: higher education and research institutions are multi-purpose organisations and different institutions focus on different blends of purposes and associated activities.”

Activities

U-Multirank developed a range of indicators that will enable the user of to make comparisons through five dimensions related to: i) teaching and learning; ii) research issues, iii) knowledge transfer, iv) international orientation; and v) regional engagement. Each of these dimensions is broken down in to 15 indicators to help the users to create a performance profile by encompassing the indicators within the five dimensions above. Detailed information on these dimensions and indicators could be found at the U-Multirank homepage (www.u-multirank.eu).

Two different rankings are made – a focused institutional ranking and a field-based ranking. The first compare the performance among institutions and the second compare the performance in relation to selected fields for example issues related to individual aspects of teaching, research and outreach activities. Another previously introduced tool, which is integrated in U-Multirank, is U-Map. This user driven tool allows a selection of comparable institutions on the basis of activity profiles, fields or disciplines in which they are operating.

The project has been executed in six different steps: i) review of current ranking systems; ii) a proposed design for a new ranking system; iii) selection of indicators; iv) data collection and

establishment of a data base; v) testing the new ranking system on a pilot sample; and vi) evaluation of first results and presentation of a first version of the assessment tool.

Relevance

U-Multirank is an example of an assessment tool for universities and other academic environments. The interesting aspect of this system is that it includes a range of indicators that describe not only the traditional metrics but also indicators related to entrepreneurial processes and relationship with external stakeholders.

The results of U-Multirank are now published in a report by the EU-Commission and available on the web (see web-address below). The project has received considerable attention from European universities and many of them have started using the assessment tool as inspiration and base to develop its own indicator system. The model is that it is quite easy to use, and covers the breadth of responsibilities that are carried out within universities. The model is easily adaptable to local settings.

Contact:

www.u-multirank.eu

3) Measurement tool for entrepreneurship education, Finland

Rationale and objectives

This tool was a 4-year ESF project that developed a set of indicators and a manual to monitor entrepreneurship education in basic education and at the secondary level. The set of indicators were developed to support teachers and principals in the teaching of entrepreneurship and to support local and national policy makers in their decision making.

Entrepreneurship education has been included in the curriculum in Finland at all levels of education for many years. However, it has been a challenge for teachers to develop teaching content and understand how improvements could be made.

The goal of the set of indicators is to facilitate the long-run development of entrepreneurship education by improving the understanding of the concept of entrepreneurship and to support the development of teaching methods and material. Thus, it is a tool for entrepreneurship teachers and supports the continuing education of teachers.

Activities

The project was co-ordinated by Lappeenranta University of Technology and implemented in part by *Kerhokeskus – koulutyön tuki ry* (Centre for School Clubs). In addition to the ESF, the measurement project received funding from the Finnish National Board of Education and Yksityisrittäjien Säätiö, a private foundation for entrepreneurship. Other project partners include several municipal governments and Finnish educational organisations.

The first step in the project was to recruit approximately 30 teachers from various levels of education (basic education, upper secondary and vocational secondary education) with the objective of forming a working group that would lead the development of the tool. Their objective was to provide

feedback on the tool and indicators throughout the tool's development to ensure that the indicators were reliable and relevant.

The development of the tool focused on producing a tool and indicators that would develop:

1. Teaching methods and content;
2. An easy to use measurement tool that could be used on a regulation basis; and
3. A mechanism for feedback on teaching content and methods, with suggestions for improvement and teaching material to assist.

The tool and indicators were developed in iterative stages and during the final stage, the working group of teachers was expanded to confirm the intelligibility and transferability of the indicators. The outcome is a measurement tool for entrepreneurship education and a manual to support teachers. It can also help schools and policy makers track the state of entrepreneurship teaching.

The tool was implemented during the course of the project through teachers in the trial group. In the trial stage, the tool was applied by the trial group and their organisations. At the end of the project, the tool and manual were published for use at the national level.

Relevance

This measurement tool is an example of how the ESF can be used to support the development of a national performance management tool for entrepreneurship education. While this example focuses on secondary education, it could be adapted and applied to higher education.

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<http://developmentcentre.lut.fi/english.asp?show=yrittajyyskasvatus>

4) East Sweden Business Region

Rationale and objectives

East Sweden Business Region (ESBR) is a co-operation model aimed to promote regional growth development in East Sweden. The model is a common trademark for a collective growth strategy developed by a group of regional actors, where the regional university has a core role. This work is presented in a shared regional strategy document.

The aim of project is to achieve specific growth objectives in line with the regional strategy document. Entrepreneurship and innovation is seen as key elements within the strategy document and constitutes of four sub-strategies concerning: i) how to create a strong innovation culture; ii) how to achieve a fruitful innovation environment; iii) how to keep an innovation work focus; and iv) how to accomplish an effective use of public resources.

Activities

At the outset there was awareness at the regional government level of the necessity of having an efficient and effective co-ordination of actors at both the local and regional levels. The project is currently operated by two selected process leaders; the regional government (Östsam) and the regional university (Linköping University). These process leaders were selected by the steering committee of ESBR. These actors (represented by two people) have a significant role in co-ordinating and promoting the activities tied to the project. The other actors (see the next section) have to appoint a contact person(s) to grant the communication to the process leaders and the rest of the actors involved in ESBR. With this approach, regional actors are more organised and can work together in a more effective way, have clearly defined roles and responsibilities that leads to synergies between their support activities. This likely lead to better use of public resources and strengthen the overall regional competitiveness.

Resources

ESBR activities involve a broad set of public actors including the County Administrative Board, East Sweden Region, Linköping University, the County Council, Almi (a regional development organisation) and all municipalities in the region. The university leadership role is crucial to involve universities in regional development and to access research results. Through the involvement of the university, other sub-organisations within universities (e.g. innovation office, incubator) support the regional development work.

Relevance

This case provides insight into how universities can take an active role in the development of their region. The ESRB-model shows how different regional public sector actors with clearly defined roles collaborate to achieve common goals in promoting regional economic growth and development. Other key benefits of the co-operation include achieving a more efficient use of public resources, avoiding duplication of existing well-functioning activities and creating fruitful networks among actors. The ESRB does not provide a budget so each member organisation finances their participation; process leaders are funded by their respective employer organisation.

The results obtained include increased communication and collaboration between regional public sector actors. It has also increased transparency between actors. The challenge is not to be overly dependent to single individuals (the process leaders), to keep all actors involved as much as possible and to create long-term continuity.

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CHAPTER 5: ENTREPRENEURSHIP EDUCATION

5.1 Teaching entrepreneurship

Within the study of entrepreneurship, there is an ongoing debate as to whether or not entrepreneurship can be taught. One side of the debate is that “entrepreneurs are born and not made” (Kirby, 2006), while others argue that entrepreneurship is a practice that can be learned (Drucker, 1985). Gibb (1987) proposed that while the entrepreneurial role can be both culturally and experimentally acquired and is consistently influenced by education and training. Complicating this debate is the dilemma faced by educators of whether to teach “for” entrepreneurship or “about” entrepreneurship (Blenker *et al.*, 2006). This decision is closely related to the question of whether education seeks to improve the student’s ability to perform entrepreneurial action as a practical activity or whether to learn about entrepreneurship as an academic subject.

Given the current economic challenges facing many countries, the notion of engendering greater indigenous entrepreneurial activity has become a prominent goal for many national governments. However, the challenge facing policy-makers is to identify ways in which they can develop such indigenous entrepreneurial potential and thus renew the local economy by building competitive advantage (European Commission, 2008). Within this discussion, it has been broadly agreed that education plays a key role in cultivating future entrepreneurs.

The aim of entrepreneurship education at the university level should be to develop entrepreneurial capacities and mind-sets among students. Taatila (2010) pointed to evidence that academically educated entrepreneurs are more important in developing regional economies (than entrepreneurs with a lower level of education) as they provide the greater potential for high-growth firms and therefore more jobs. Pajarinen *et al.* (2006) and Minniti and Levesque (2008) suggest that academic education provides people with the opportunity to develop additional skills and exposes them to new developments, thus resulting in further innovation and the supplementary use of new business models.

Entrepreneurship education is not synonymous with general business and economic studies; its goal is to foster creativity, innovation and self-employment (European Commission, 2008). Courses in entrepreneurship equip students with the skills for creativity, problem-solving, analytical business skills, communication, networking and evaluation of a project. Consequently students have greater self-confidence in undertaking their business idea. In addition, students can benefit from this education even if they do not go on to start businesses because employees often value these skills in employees.

5.2 Recent trends in entrepreneurship education

Recent cognitive research in entrepreneurship draws upon literature from social cognition to describe the entrepreneur as a “motivated tactician”, who can be characterised as a “fully engaged thinker who has multiple cognitive strategies available” (Haynie *et al.*, 2010), and the ability to shift and choose rapidly from among them based on specific goals, motives, needs and circumstances, leading to the ability to act (or not) in response to perceived entrepreneurial opportunities (McMullen

and Shepherd, 2006). This is significant, because it explains in part the cognitive skills that help entrepreneurs engage in so-called “adaptable decision-making”, or the ability to shift rapidly from one mode of thinking, and analysis to another in making decisions under unpredictable and rapidly changing circumstances (Schraw and Dennison, 1994), an important factor in the development of entrepreneurship skills to grow a business.

It is widely acknowledged that there is a need for higher education institutions (HEIs) to move from traditional “instruction” to experiential learning. It is increasingly recognised that teaching entrepreneurship should be interactive and that it should include local case studies, games, projects, simulations, real-life actions, internships with start-ups and other hands-on activities that involve interaction with entrepreneurs. Entrepreneurs and professionals can act as role models, as well as coaches and mentors, thereby fostering an entrepreneurial spirit in the university and providing a link with the local community. Using active learning methods requires skill and trust to get students more involved in the learning process, fostering innovation and creativity, while learning from success and failure needs to be encouraged (Huovinen and Tihula, 2008). This process requires developing effective educators including professors, entrepreneurs, alumni, business professionals and students (Volkman et al., 2009).

A significant development in recent times in entrepreneurship education and training has been the role of transformative learning (i.e. effectiveness), whereby much of its theory has focused on the relationship between personal change and learning. This approach primarily involves shifts in one’s perspectives and frames of reference by challenging prior habits of mind, old assumptions, and established patterns of behaviour (McAteer, 2010).

Transformative learning theory is also “learner-centred” and highlights the importance of “experience” and active engagement in the learning process. Transformative learning is learning that induces more far-reaching change in the learner than other kinds of learning, especially learning experiences which shape the learner and produce a significant impact, or paradigm shift, affect[ing] the learner’s subsequent experiences (Clark, 1993). However, a more recent understanding of transformative learning has incorporated both psychological and societal elements of a deep, structural shift in the basic premises of thought, feelings, and actions (O’Sullivan, 2003). Such a shift involves the understanding of (i) individuals and individual contexts, (ii) relationships with other humans and with the natural world, (iii) relations of power in interlocking structures of class, race and gender our body awareness, (iv) visions of alternative approaches to living; and (v) possibilities for social justice, peace, and personal joy. This approach suggests that transformative learning is not viewed as an “add on” to traditional forms of education or training, but rather as being the very essence or purpose of education which is to help an individual to become a more autonomous thinker by learning to negotiate his or her own values, meanings, and purpose rather than uncritically acting on those of others (Mezirow, 1997).

The acknowledgment of the role of cognition in entrepreneurship and the desire of many to move towards a system of transformative output has significant repercussions for the supports provided by universities. Both trends require deeper interaction with course participants through more personalised learning goals and closer interaction with the service providers. This can be complemented with mentoring or coaching support services but this requires a substantial investment in terms of personnel. A new model of entrepreneurship education considers “effectiveness” as the key outcome rather than learning (Rae, 2012). Figure 4.1 illustrates this model and highlights that entrepreneurial mind-sets and skills also have value in employment.

Figure 5.1 - Entrepreneurial effectiveness



Source: Rae, 2012.

One of the more exciting developments in recent times within the entrepreneurship education community is the multiplicity of ways in which entrepreneurship education and training can now be delivered. The approach has moved much towards workshop-styled programmes which incorporate the opportunity for experiential learning. Online learning modules and social media channels are increasingly viewed as positive support tools for entrepreneurship which has created a wide variety of interactive methods that can be tailored and adapted for any group of participants. Working with undergraduate business students requires a very different approach to postgraduate science and technology students, but the latest teaching methods enables a customised approach to be designed for every type of student.

5.3 Presentation and analysis of findings

Objectives of entrepreneurship education and training

HEIs in Wielkopolska and Kujawsko-Pomorskie take a broad view on entrepreneurship. It is considered to be an essential skill for students entering the labour market, signally the value of an entrepreneurial mind-set and attitude and as such it is embedded in the National Qualification Framework for Higher Education (NQF) for most students. This broad view is important for developing an entrepreneurial culture, including raising awareness of the potential of entrepreneurship among students and developing positive attitudes towards these behaviours. It is important to build on this by doing more to encourage business start-up and raising aspirations for growth-oriented behaviour.

However, the objective of entrepreneurship education is not well-defined. Different universities and different stakeholders have a different view on how entrepreneurship should be taught and what the contents of the education should be. As a result, the subject matter is split up and taught in different disciplines in different ways. Some viewed entrepreneurship education as teaching for business start-up while others saw it as preparing students for employment. In practice, it often appeared as a combination of business economics, project management and innovation.

Universities did not agree on who the target of entrepreneurship education should be. Some universities indicated a desire for entrepreneurship teaching to be available widely, while others indicated that it should be more targeted. For example, entrepreneurship educators at the Poznań University of Technology (PUT) indicated that the students who should be taught entrepreneurship are not business students but science, engineering and technology students. This is an example of how a university perceives itself as supplying the market with well-qualified employees when at the same time, there is an enormous opportunity to deliver entrepreneurship education to students who have the potential to be highly innovative and to start enterprises that can offer new products or services based on cutting-edge research. Persuading universities and faculties to introduce entrepreneurship education to a wide base of students would create an economic environment that is heavily populated with highly-qualified, innovative, opportunity-seeking young graduates, which would benefit the regional and national economies. For this vision to be realised, universities need to be proactive in the process.

Non-public universities appear to have made more progress in developing and implementing business start-up education than public universities. For example, students at the University of Economy in Bydgoszcz learn about entrepreneurship from the beginning of their studies as an obligatory subject. This university has an entrepreneurial nature and philosophy and approximately 10% of their students started their own business after graduation. However, it must be noted that these institutions are smaller in size and generally offer a much more limited range of courses. This makes them more flexible institutions and more demand-driven. It is therefore much easier to implement new programmes such as entrepreneurship education in these universities. Nonetheless, these experiences demonstrate the potential for public universities and offer lessons on how to implement this type of education.

Entrepreneurship education offerings

Recognising the importance of entrepreneurship, it was included in the NQF that is used to build the curricula (see Table 5.1). HEIs have a great deal of autonomy in designing their courses around the NQF and are no longer obligated to follow a centrally planned list of courses with compulsory content. In designing courses, educators can profit from good practices already existing on national level. For example, the Academic Network of Entrepreneurship Educators is a national support programme and experience exchange platform for educators implementing entrepreneurship education in academic educational institutions (see Box 5.1). The network offers support for launching university programmes in entrepreneurship (mainly innovation based) and gives possibility to exchange experiences and good practices among entrepreneurship teachers. Poznań University of Technology, Nicolaus Copernicus University in Toruń, and Adam Mickiewicz University in Poznań are part of this network.

Table 5.1. Insertion of entrepreneurship in the National Qualification Framework (First Cycle Studies)

Fields of study	Categories of learning outcomes <i>Academically-oriented profiles</i>			Categories of learning outcomes <i>Practically-oriented profile</i>		
	Knowledge	Skills	Competences	Knowledge	Skills	Competences
Humanities						
Social Sciences	X		X	X		X
Exact Sciences	X		X	X		X
Natural Sciences	X		X	X		X
Technical Sciences	X		X	X		X
Veterinary Sciences	X		X	X		X
Medical Sciences	X			X		
Arts						
Engineering studies			X			X

Box 5.1. SEIPA: Academic Network of Entrepreneurship Educators

Since 2006 Poland has been conducting “grassroots” activities in order to support academic initiatives to implement educational programmes in the field of entrepreneurship. This has led to the formation of an informal Innovative Academic Entrepreneurship Education Network.

This informal initiative was supported by two training projects that the Ministry of Science and Higher Education ran on innovative entrepreneurship between 2007 and 2011 – “Support for innovative academic entrepreneurship” and “Innovation creator -- support for innovative academic entrepreneurship”. 45 lecturers and 6 business advisors were provided with counselling and with the materials and tools necessary to conduct a didactic programme: a textbook “Entrepreneurship for the ambitious: How to start up your own business”, and a website that contains additional materials and tools. This training helped build a network of entrepreneurship educators.

In the latter years of the programme, 2009 to 2011, the programme was delivered in workshops conducted in group workshops and training on business plans that was delivered by business advisors. In the years following the training for trainer, many participants encountered challenges implementing the material that they learned because university authorities did not always support entrepreneurship training. However, there are examples of success such as the Warsaw University of Technology where the two entrepreneurship courses – “Innovative entrepreneurship” and “Technological entrepreneurship” – were taught between 2009 and 2011.

Lecturers from Nicolas Copernicus University in Toruń, Poznań University of Technology and Adam Mickiewicz University in Poznań took part in this programme.

For more information, please refer to www.seipa.edu.pl.

Entrepreneurship education is offered at the undergraduate level, in some form, at all six of the universities visited. In many cases the teaching was integrated within the curricula of different fields of study, or it was offered outside the curricula. See Box 5.2 for an example of how entrepreneurship is covered in the subject “Business Innovation and Company’s Finances, which is a two-term, elective course for first-year students in Computer Science and Mechatronics at Kazimierz Wielki University, Bydgoszcz. It is clear that entrepreneurship is treated in a very practical sense, focusing on the necessities of business management.

Box 5.2. Business Innovation and the Company's Finances, Kazimierz Wielki University

Compulsory subjects for the first year of Computer Science and Mechatronics

BUSINESS INNOVATION AND THE COMPANY'S FINANCES (2 terms)

This subjects comprises 9 modules, 10 hours each:

- Business Innovation
- The Company's Self Presentation
- Intellectual Property Protection
- How to Become an Entrepreneur
- Outsourcing
- Obtaining EU Funds for R&D Activity and Innovative Projects
- Economic Basics of Business Activity
- Marketing in IT Organisation
- Finances in IT Organisation

Optional classes for the second year of Computer Science and Mechatronics:

BUSINESS RELATIONS AND HUMAN RESOURCES MANAGEMENT

These subjects consist of the following modules, 10h each:

- Business Negotiations
- Conflict Management Methods
- Management in Small and Medium- Sized Enterprises
- IT Project Management
- Management by Objectives
- Team Management

Website:

<http://www.innowacyjny.ukw.edu.pl/>

Contact:

Katarzyna Kazimierska Drobny, kkd@ukw.edu.pl

However, despite inclusion in the NQF, entrepreneurship education does not appear to reach a high proportion of students and there was little evidence to suggest that the broad student body was being encouraged to consider self-employment as a career option. The Poznań University of Economics was the only university visited that offered an elective course on entrepreneurship as part of the curriculum (there are no mandatory courses on entrepreneurship) which is taken by approximately 25% of students.

Entrepreneurship teaching was also limited for students at the second and third cycle levels. Two faculties at the Poznań University of Economics (Management, and International Business and Economics) and two at Poznań Technical University (Civil and Environmental Engineering, and Machines and Transportation) offer entrepreneurship education for students at higher levels. This highlights the disconnect between entrepreneurship education and entrepreneurship research.

It is also evident that there are difficulties experienced implementing sustainable entrepreneurship education in Polish universities. Nicolas Copernicus University previously had an entrepreneurship course offered by the faculty of political studies and international relations. It did not grant any ECTS credits but was popular with the students. The offering ended when the initial project funding ended

after the initial two cohorts. However, Nicolas Copernicus University is currently planning entrepreneurship training for students outside of the curriculum. See Box 5.3 for more details.

Box 5.3. Entrepreneurship training at Nicolas Copernicus University

Nicolas Copernicus University in Toruń is planning a new entrepreneurship training course that is outside of the curriculum. The Career Centre is organising the session, which aims to help students discover their entrepreneurial potential and develop a business plan around their idea. The first edition of the training lasts from May 2013 till September 2014 and is targeted at students from Faculty of Chemistry, Faculty of Biology and Environmental Protection, Faculty of Physics, Astronomy and Informatics, Faculty of Mathematics and Computer Science, and Faculty of Fine Arts.

The training sessions are provided by professional trainers and academic staff and are organised in four phases. The first phase of training, "Discover entrepreneur in yourself" is provided to 50 students who receive 18 hours of training aimed at developing their entrepreneurial motivation, attitudes and behaviour. After this phase 25 students (i.e. half of those from the first phase) are invited to participate in phase two of the training, "Create your business plan". This phase includes 48 hours of training on business planning followed by the online training on specific elements of business plan. The third phase, "Check your idea", all students from phase 2 have their ideas evaluated by local business experts. The 10 student plans that are judged to be the best, provided and provided opportunities to participate in study visits and internships related to their idea. In the final phase, "Prove yourself in practice" students launch their business ideas.

Entrepreneurship training is also available through bottom-up approaches such as training organised by student associations, which can be found in Poznań at the Poznań University of Economics and Poznań University of Technology (see Box 5.4). Another approach is to engage students through short-term training offered by university career offices. At Adam Mickiewicz University, the career office offers "Entrepreneurship Development Academy" which provides workshops, coaching sessions and opportunities to meet entrepreneurs, representatives of corporations and financial institutions. These bottom-up approaches are encouraging because they demonstrate an interest among students in entrepreneurship and provide students an opportunity to take responsibility for their own learning and development.

Box 5.4. Enactus

Enactus is an international community of students, academics and business leaders who take entrepreneurial actions to transform lives and shape a more sustainable world. Teams are formed and based in HEIs but are not governed by the HEIs. There are now 14 Enactus local teams in Poland, including teams at Poznań University of Economics and Poznań University of Technology.

Through this community, students can launch or become engaged in projects that focus on addressing social problems or promoting sustainability, but are also economically viable. The only criterion to set up a local team and to become associated with the international community is to find a faculty adviser for the entrepreneurially-minded students. Local teams chose their own faculty advisor, who is a member of teaching staff at the university. Each year local teams participate in national competition (presentation of the projects) during which the best team is selected to represent country during world cup (39 countries). Students do not receive extra credits or any form of financial reward for their work.

For more information, please refer to: www.enactuspoland.org/

Content of entrepreneurship education

The universities included in this case study all aim to educate students for employment and within this objective, entrepreneurship education was often viewed as delivering skills to improve the employability of students. This view underscores the importance of developing entrepreneurial mind-sets for all students.

Entrepreneurship education in Wielkopolska and Kujawsko-Pomorskie can be characterised as be focused on the practical elements of starting and operating a business. There is a clear focus on the development of the business plan. This can be a useful tool for teaching about business start-up but can result in students filling-out templates without fully understanding the thought process. The courses offered do not help students create or discover entrepreneurial opportunities. As a consequence, students do not work on their entrepreneurial ideas or ventures. This runs the risk of discouraging entrepreneurial action in future. Current best-practice teaching methods go beyond teaching about business plans and include active learning through business competitions and business start-ups. These teaching methods are not often used in the visited universities. However, there is a good example from the Poznań University of Economics that leverages an international collaboration to improve the quality of entrepreneurship learning (see Box 5.5).

Box 5.5. Entrepreneurship education at the master's level

Poznań University of Economics, in co-operation with University of Sevilla in Spain, launched a programme within its master's degree in management studies called "Entrepreneurship in small and medium enterprises". The co-operation results in a broader scope of teaching interventions, including international guest speakers, business games and meetings with entrepreneurs. Students of this specialisation may receive a double diploma and can apply for internship in Spain. The programme has a strong economic profile (with an emphasis on economic knowledge) but also develops students' creativity and entrepreneurial thinking. While this is a programme within a management degree, it is a good example of how international collaborations can improve the quality of entrepreneurship education in Poland.

Entrepreneurship education is most often presented as an economic phenomenon impacting development of economies, related to growth, innovativeness and competitiveness. However, entrepreneurship also belongs to human sciences, as the entrepreneur and entrepreneurial behaviour are central issues in entrepreneurship. This includes entrepreneurship as a driver towards active citizenship and democratic empowerment. These issues are, however, absent from entrepreneurship education in Wielkopolska and Kujawsko-Pomorskie.

Similarly, social and sustainable entrepreneurship are not included in entrepreneurship education in any of the six universities. Inclusion of these themes helps teach students that outcomes and impacts of their actions belong to whole community or society they live in. Entrepreneurship is connected to creation, innovation, creativeness, and problem solving. These are universal values which contribute to sustainable socio-economic development of nations, are desired in society and ensure long-term integration and co-operation of regions.

Alternative views on venture creation, such as theories of effectuation, are not included in entrepreneurship teaching in the universities visited in Wielkopolska and Kujawsko-Pomorskie. Educators do not familiarise students with any idea generation techniques, such as mind mapping. As a result, students may get an impression that there is only one, very linear and rational type of

entrepreneurial thinking and acting. This may result in a lack of identification with entrepreneurial behaviour among some students leading to loss of interest in entrepreneurship in general.

Entrepreneurship education is also disconnected from entrepreneurship research and universities are not active in conducting academic research in the fields of entrepreneurship or entrepreneurship education. Therefore, students do not gain insights on entrepreneurship theories and research methods. As a result, students perceive entrepreneurship as less scientific and less important than other fields of study. This view is exacerbated by a lack of coherent programmes in entrepreneurship and a lack of degrees in entrepreneurship.

Delivery of entrepreneurship education

The variety of teaching methods and pedagogical tools used in entrepreneurship education in investigated universities is limited. Pedagogy is rarely action-oriented and does not have any experimental or innovative character that would allow students to collect unique learning experiences and be stimulated to take action entrepreneurially.

A passive, transmission approach dominates in entrepreneurship education as was found in Wielkopolska and Kujawsko-Pomorskie. Thus learning is mostly dependent on and governed by the teacher. In practice, this results in traditional lectures where students' have only a passive contribution to the learning process and the learning outcomes are evaluated according to traditional criteria that favour memorisation over creative thinking. Many entrepreneurship teachers in the case study HEIs are not familiar with the concept of learning-by-doing (Cope and Watts, 2000), experimental learning (Kolb, 1984; Politis, 2005), learning stepped out of the classroom (Cooper *et al.*, 2004) or self-regulated learning (Zimmerman, 1990). Courses often take the form of lectures, which hinders the use of more interactive teaching methods. New interactive learning platforms such as social media or Moodle are not commonly used. There is also a limited use of case studies and business games during entrepreneurship courses. As a consequence, the learning environment does not enable students to handle uncertainty and risk, experience change and failure, or learn how to make entrepreneurial decisions.

Entrepreneurship education often has a mass character. Lectures are provided for large groups of students and students rarely receive assignments that require teamwork. This promotes individualistic learning rather than collaborative and social learning that is commonly used in entrepreneurship education.

Entrepreneurship teaching in Wielkopolska and Kujawsko-Pomorskie is often based on Polish textbooks and journals on entrepreneurship, which are limited in number. There is little attempt to include material from leading academic entrepreneurship journals. While it may be difficult to assign readings to students that are in other languages, entrepreneurship teaching would be greatly enriched if it drew on these other materials. The teaching would be more topical and could be better tailored to the interests of students in different areas of study.

One of the most significant challenges is a lack of training for educators. In Wielkopolska and Kujawsko-Pomorskie, the only current training for teachers available is offered through the Quality of Education Council of the Adam Mickiewicz University. Beginning in the 2013-14 academic year, training will be available for 40 lecturers that teach entrepreneurship classes in the various departments. A "Train the Trainer" type of programme is not available more widely for professors and as a consequence, teachers and researchers do not have many opportunities to enter inter- and cross-disciplinary collaborations with peers from other regions and countries.

A small number of external stakeholders are involved in delivery entrepreneurship training for university students. For example the Chamber of Commerce in Toruń offers free training on running a business. This is available to university students, but there is currently no “ABC” course on entrepreneurship offered. Business incubators and science parks also offer some entrepreneurship training (see Box 5.6). However few training programmes focused on preparing entrepreneurs to successfully operate growth-orientated enterprises and there is little focus on international trade.

Box 5.6. Poznan Science and Technology Park

Poznań Science and Technology Park of the Adam Mickiewicz University Foundation organises entrepreneurship training for doctoral students, research staff and graduates of the university. The training offer covers entrepreneurial thinking and pre-incubation of entrepreneurial ideas. In addition, business competitions (“First step in business”) are organised for participants and consulting support is provided. The best business ideas received the support in applying for seed funding. Four editions of the competition were organised so far.

Measuring the impact of entrepreneurship education

The criteria for evaluating students during entrepreneurship courses or trainings are traditional. For example, assessment is often made with a written test at the end of a course, which emphasises memorising rather than creative thinking and learning through experience. Learning outcomes are often associated with economic and financial literacy, or commercialisation strategies and do not cover aspects of human development. Many entrepreneurship programmes in the EU include students’ journals and assessments of experience in group projects as methods of capturing and evaluating personal development.

Monitoring the effectiveness of entrepreneurship education, as well as following the entrepreneurial careers of graduates, is in the early stages of development at the HEIs in Wielkopolska and Kujawsko-Pomorskie. This is expected to improve in the near-future because the universities are interested in creating new methods and methodologies of measuring the impact of entrepreneurship education as required under the 2011 reforms of the Law on Higher Education. These reforms introduced an obligation to follow professional lives of the graduates.

Developing an entrepreneurship culture

The objective of university support for HEIs in Poland is to prepare students for employment and this was particularly true in the older and more venerable HEIs. There are a number of reasons this, including the historical background of the universities and the broader social and political history of the country. As a result of this context, the entrepreneurial culture in Poland is in the early stages of development.

Enthusiasm is growing among HEIs towards contributing to the growth of entrepreneurial culture and many of the universities have initiatives to promote the awareness of the value and importance of developing entrepreneurial abilities. This is very positive but the quantity and quality varies substantially across the institutions. Adam Mickiewicz University in Poznań was the most active HEI in this regard, which works activity with many partners to promote and support the concept of entrepreneurship, including many awareness and training activities that are delivered by InQbator (see Box 5.7). Another example is the contributing to the growth of an entrepreneurial culture is Kazimierz Wielki University in Bydgoszcz, which participates in Global Entrepreneurship Week. Through this

activity, UKW promotes the idea of setting-up a business and offers training and workshops for students who might be considering self-employment.

Box 5.7. Entrepreneurship training at InQbator

Poznan Science and Technology Park of Adam Mickiewicz University Foundation have been cooperating since 2009 with Adam Mickiewicz University to deliver entrepreneurship classes for students and doctoral students. Starting in the 2013-14 academic year, a new form of co-operation has been introduced.

The specialists from the Incubator team conduct optional entrepreneurship classes for the students of five Departments of the A. Mickiewicz University:

- The Faculty of Polish and Classical Philology
- The Faculty of Modern Languages and Literatures
- The Faculty of Educational Studies
- The Faculty of History
- The Faculty of Geographical and Geological Sciences

The classes are attended by 25 students from each department and address the following themes: what it means to be an entrepreneur; business models; a meeting with an entrepreneur (a visit to an Incubator); venture financing; formal requirements of business operation (registration, offices, accountancy, forms); and skills related to presenting ideas. The classes take the form of presentations and workshops. Throughout the whole term students work on a developing a business plan and present them during the final class. Students' business ideas are evaluated and the best ones are awarded with prize money.

The classes conducted by the Poznań Science and Technology Park of Adam Mickiewicz University Foundation are optional and appear in the curriculum of the different departments. Students obtain the ECTS points for taking these courses.

One of the strongest examples of promoting an entrepreneurship culture came from a university stakeholder, the City Hall at Bydgoszcz. The creation of a seven-year strategy (“Academic Entrepreneurship”) that encompassed the entire cycle of education could be replicated not only across other cities in Poland, but in most European cities. The strategy takes into account the relevant national, regional and local economic strategies, plus ensured that a broad spectrum of stakeholders contributed to the plan. The result is a list of approximately 150 actions to be taken for the city to become a centre for entrepreneurial behaviour. The strategy takes a broad view of entrepreneurship and recognises that students should be equipped to cope with any problems in life and that entrepreneurship education supports this philosophical goal.

5.4 Recommendations

Based on the information collected during the study visit and with the two surveys, the following recommendations are made to government and universities:

Clarify and disseminate entrepreneurship objectives within the university

One of the strategic objectives of the universities should be to clarify the concept of entrepreneurship and priorities for the university in this respect. In particular communication and awareness-raising actions should be organised about the meaning of entrepreneurship.

This can be accomplished through conferences or round tables with the universities, renowned national and international experts, regional government and the local business community. It is critical to include the business community in these dialogues so that university activities are relevant to the local and regional areas. The next step is to disseminate the outcomes and the strategies priorities for the universities. Media campaigns in campus, regional and national outlets could be used, as well as university and government websites.

Use the European Social Fund to develop and support awareness and training programmes for teachers and researchers

Train professors and researchers in entrepreneurship at either the national level or university level. Training should be focussed on current best practices, and successful ESF approaches often complement entrepreneurship training for teachers with compendiums of good practice as well as regular publications of up-to-date research findings and teaching material that can be easily implemented in teaching. This provides teachers and researchers with hands-on reference material that can be used in the work. An example of such an approach is the YES centres in Finland. One of the strengths of the YES project is that it organises interactions, consultation and co-operation amongst teachers and researchers specialised in entrepreneurship, as well as with the business community, through regular meetings and workshops. Mechanisms such as the YES centres provide a platform teachers researchers and the business community to exchange on general problems, present and discuss their research work or invite teachers from other universities to share experiences and best practices. This approach also supports multi-disciplinary research that is relevant for the business community, improving the chances of developing projects that can be commercialised. In Poland, the Academic Network of Entrepreneurship Educators is an existing network that could be further exploited for this purpose. This network already contains resources and teaching material and could be used as a more formal good practice exchange forum.

Increase and improve the entrepreneurship education offer

Improve the quality of entrepreneurship education by incorporating learning methods that encourage problem solving and group work. Move away from traditional lectures and place less emphasis on the business plan. See Learning Model 5 for a learning approach that can be easily adapted into any context.

Offer an introduction to entrepreneurship and self-employment to all undergraduate students during their first year. In addition, each university should give all students the opportunity to attend seminars and lectures in this subject rather than offering it as only very short modules within other disciplines. See Learning Model 6 for an example of how a university can develop a comprehensive approach to entrepreneurship education.

Moreover, there is a need to develop entrepreneurship education at the second- and third-cycle levels. This will develop entrepreneurship as an academic field and will generate academic research that can be fed back into the teaching. It will also raise the profile of the field and help attract more external funding into the universities through consultancy projects.

Use the European Social Fund to develop teaching material for Polish HEIs.

There are many examples of ESF projects that support entrepreneurship training, including projects in Germany, Estonia and Malta, which represent a wide variety of approaches. One of the approaches taken in Germany is a well-respected programme called SMILE at the University of Leipzig (see Learning Model 7), which offers entrepreneurship training through an extra-curricular programme that focuses on personal development and self-learning. It offers a series of seminars, workshops and events that inform students about entrepreneurship, increasing awareness among students and helping them recognise opportunities. It then supports students in the development of entrepreneurial ideas and projects with coaching and team-building activities according to individual plans developed for each student. This approach could be adapted to Poland by incorporating lessons from the newly launched module for students in biotechnology and the life sciences.

Encourage universities to appoint a reference teacher.

A reference teacher should be appointed in each university to help with teaching, research and to guide students in their relationship with external actors. They would be responsible for the activities related to entrepreneurship on the campus and would work closely with the AIPs. A key function would be to participate in networks and disseminate information across faculties.

Improve incentives for universities and faculties

A barrier in expanding entrepreneurship education is the incentive and reward system for universities. Funding is awarded according to traditional criteria such as research publications. There is very little dedicated funding and support for teaching entrepreneurship outside of short-term project funding that often comes for the European Union. The enthusiasm for entrepreneurship observed within the Ministries, university stakeholders and professors was shared by university management but they are in a difficult position in terms of acting on this enthusiasm as funding is tied to more traditional research activities which are not consistent with developing and implementing entrepreneurship activities

Set up incentive systems to motivate and reward faculty staff in supporting students interested in entrepreneurship, and acknowledge the academic value of research and activities in the entrepreneurial field (too much is dependent on the AIPs and little incentives are given to academic staff to engage in entrepreneurship education). Successful approaches include reduction of teaching or increased workspace (i.e. laboratories).

Promote and celebrate research in the field of entrepreneurship.

Promoting and celebrating entrepreneurship researchers can address several challenges at the same time. First, it will increase the number of professors of entrepreneurship who can develop and teach entrepreneurship courses. Second, it can attract increased research funding into the universities, which can be used to create and grow entrepreneurship programmes at the second and third cycle levels. Third, supporting research will advance the field of entrepreneurship and will improve the quality of entrepreneurship education available in the regions HEIs.

This can be accomplished by offering awards that are attached to a small amount of funding research or international exchanges. Research awards could be granted in sub-fields of entrepreneurship such as innovative entrepreneurship, social entrepreneurship, etc. HEIs in Wielkopolska and Kujawsko-Pomorskie (and all of Poland) could participate in international research

projects, which will increase linkages to other universities in the European Union and further abroad. Government could support such research projects with funding.

Improve monitoring of students after graduation

Improve monitoring of entrepreneurship outcomes, particularly tracking of alumni. The universities can do more to track those graduates who received entrepreneurship education and start-up support to better understand the outcomes achieved, to provide appropriate follow-up support across the range of support offerings and to use student entrepreneurs as a resource to support university entrepreneurship activities. Alumni represent an important resource that can be incorporated into entrepreneurship education through guest lectures and the preparation of case study material.

See Learning Model 8 for approaches used at Strathclyde University to build strong relations with alumni. It is important for universities to maintain contact with students after they graduate and to find as many alternatives for keeping them engaged in university activities as possible. This could include, for example, giving guest lectures, participating in research projects, support commercialisation and spin-off activities and participating in start-up events or business competitions. To ensure that alumni engagement is ongoing, HEIs need to ensure that recognition of alumni contributions is made. Many low-cost options are available, including annual dinners, awards ceremonies or a hall of fame on campus.

5.5 International learning models

Below are three learning models that illustrate different approaches to entrepreneurship education: 5) EMLYON Business School; 6) Coventry University; 7) SMILE; and 8) Strathclyde University.

5) Learning to think like an entrepreneur, EMLYON, France

Rationale and nature of programme

Learning to Think Like an Entrepreneur is a two-day experiential learning process based on the evaluation of business plans. The main objective is to develop among students/participants a good awareness about entrepreneurship and the key success factors to start-up a new firm. The students/participants have to develop in teams of 4 to 5 people a method to assess business plans for start-ups accordingly to a specific point of view (e.g. bankers, venture capitalists) and to apply the method to a sample of three real-life business plans before to make an investment decision. The students/participants are coached by a professor, who can coach up to 5 teams).

Activities

First half-day: Introduction that outlines the objectives, case study to be used, the learning process and organization of the course. The teams and coaches are defined in the first half-day.

Second half-day: Team begin to work, preparing their presentations, covering their method, decisions and analysis of strengths and weaknesses for each different business plan. Coaches interact and work with the teams.

Third half-day: Teams make their presentations and discuss them. A jury, including the professor, evaluates the presentations. It is also possible to involve the entrepreneurs from the case studies or a venture capitalist or a banker on the jury.

Fourth half-day: The professor provides feedback from the jury, including: a) the decisions made by all the working teams and the story of the entrepreneurial projects; b) right and wrong analysis in evaluating business plans and working as a team; c) what should be done to effectively assess entrepreneurial projects. A final lecture is given to get the point of view of an entrepreneur. Ideally one of those concerned by the business plans at the heart of the case study delivers a lecture on their experience and thought processes.

Evolution of the programme

This programme has been designed and proposed for the first time at EMLYON Business School to MBA students in 1993. Since that date, it has been regularly adapted and offered to all the EMLYON Business School students / participants (Bachelors, Masters, EMBA's, IMBA's, Executives) as a first awareness course in entrepreneurship. The minimum size of the class is 25, the maximum size depends on the level of human and material resources. At EMLYON Business School the programme has been proposed up to 400 students. Several types of entrepreneurship stakeholders have been (still are) involved in the programme.

Resources

The programme requires one pedagogical leader, usually an entrepreneurship professor having a good knowledge of the field. It also requires one coach (professor or stakeholder) for 25 students/participants (five groups of five). At the material level, it requires a small room or space for each team and Internet access.

Achievements

Based on our experience, the greatest times are a) the end of the second half day where the students are working late (sometimes up to midnight) and hardly on their evaluation methodology and their presentation; b) the third half day during the presentation/discussion session; c) the feed-back session and the final lecture from an entrepreneur.

Success factors

Three real-life business plans mixing success and failure, technology and service having been developed from 2 to five years ago. In relation to this, having the possibility to invite one of the entrepreneurs concerned by the business plans. Take time to brief the coaches about their role (they don't bring solutions or technical advice, but they feed the process of reflection and elaboration of a business plan evaluation method depending on the objectives chosen by the team and the context).

Challenges

Develop a group of coaches including academics, entrepreneurs, VCs and other stakeholders. Renewing regularly the business plans. Negotiate the best logistics (having enough small rooms in relation to the number of students involved in the programme).

Contact

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Elisabeth Gelas, Assistant, EMLYON Business School (gelas@em-lyon.com)

6) Coventry University, UK

Rationale and objectives

At Coventry University, enterprise is an important part of their education philosophy and is embedded into their teaching, research and people with the University selected as winner of the category “Entrepreneurial University of the Year” at the Times Higher Education Awards 2011. Every year the university engages with more than 3 000 students and graduates and currently support over 9 000 small and medium-sized enterprises (SME’s) and over 500 larger companies.

Activities

The University offers the following:

1. Institute of Applied Entrepreneurship

They have a dedicated Institute of Applied Entrepreneurship, which supports students in a variety of ways such as enterprise skills development, networking, workshop events, ideas and planning, venture creation and business start-up. The Institute has been nominated for numerous awards.

2. Teaching

They provide individual support for any student or recent graduate who is thinking of becoming self-employed, starting a business themselves or joining a micro business. A student can take a bachelor’s degree (Hons) Enterprise and Entrepreneurship course that helps them to set up and run their own company “for real” alongside academic study or they can just take a couple of entrepreneurship modules as part of the Add+vantage scheme. Last year some 535 students took these modules.

3. Practical advice, space and funding

The University offers pre-incubator space and professional advice for students in the early stages of setting up a business. Students will receive mentoring through the local Institute of Directors and can apply for small grants to fund start-up costs. There is the opportunity to bid for larger sums from the Coventry University panel of investors chaired by their Chancellor, Sir John Egan. At any one time the University will have approximately 80 students trading through their own companies.

4. Protecting Business ideas

The University can help students protect their designs or models through patents and also negotiate licence agreements on their behalf with companies who wish to commercialise their ideas (intellectual property).

5. Graduation and beyond

The entrepreneurial help is also available to all graduates of the University. The University can advise on relevant funding packages, give access to advisors and even office space. For example, graduates in art or performance can join as freelancers the university companies that the University has set up to promote their work.

6. Institute for Creative Enterprise

The Institute of Creative Enterprise (ICE) is a building which brings together researchers, graduates, businesses and enterprise support professionals to collaborate, share ideas and to help grow the region's cultural and creative sectors. Creative Enterprise is a new project aimed at supporting both emerging creative talent and existing businesses in the region. ICE offers a range of free services, including:

- a. Business advice, guidance and mentoring
- b. Business development training and workshops
- c. Mentoring from a professional in your field
- d. Consultancy and access to specialist research and knowledge
- e. Hot-desking space and computing services
- f. Events and networking opportunities

Creative Enterprise is aimed at graduates, new start-ups and existing creative enterprises from across the West Midlands

7. Add+vantage Modules

Entrepreneurial skills are important to all graduates, whether they work in a large or small organisation. New ventures are being created constantly inside big companies, in public bodies, in the not-for-profit sector and by business start-ups. The Entrepreneurial Graduate suite of modules has been specifically designed to support, and give academic credit, to those students who wish to begin the process of setting up their own venture. The modules include "Business Idea Development" for students who have not yet developed their business idea though to IPR and funding opportunities for those whose business is further developed. The concepts and skills are equally applicable to business and social enterprises.

8. The Entrepreneurial Learner > The Entrepreneurial Graduate

If a student aspires to (i) work for themselves and potentially employ others, (ii) work within an organisation and work their way up extremely quickly by using their entrepreneurial skills, (iii) using their enterprising aspirations within "not-for-profit" organisations, the creative industries or smaller-sized enterprises, then they can take one of the many Entrepreneurial Modules and see if any of these can inspire him or her to give them the "Add+vantage".

Resources

The work of entrepreneurship education within the University was deliberately taken outside of any specific faculty and an independent unit was created that serves all of its stakeholders so that the modules could be delivered across all faculties without any one faculty appearing to “own” the courses. Staff members within the Unit were selectively employed for a particular expertise that they could bring to the team and together they now deliver wide-ranging services to existing students, former students and local businesses. The unit is strongly supported by the University in terms of funding, strategic position within the activities of the university, staff development, and business development. It is an approach and commitment that is relatively unique in terms of its holistic approach.

Relevance

There are three keywords to Coventry’s activities - employability, enterprise and entrepreneurship. Coventry is an evolving and innovative university with a growing reputation for excellence in education. Independent surveys show that they provide a caring and supportive environment, enriched by a unique blend of academic expertise and practical experience. By seeking to enhance the strong vocational emphasis of their courses and bolstering their links with the very best industry organisations, they are firmly focused on preparing students for successful entrepreneurial futures.

This year, Coventry University has risen 30 places to 53rd overall in the Sunday Times University Guide 2012, making it the second highest climbing university in the UK. While this remarkable achievement cannot be solely attributed to its entrepreneurship-related activity, there is no doubt that winning the “Entrepreneurial University of the Year” at the Times Higher Education Awards 2011 was a significant contributory factor. This strategy is potentially replicable by any university in Poland.

The most challenging obstacles faced by the organisation were internal where many staff members were resistant to change. This was partly why the University chose to locate the entrepreneurship activities outside of any particular faculty and thereby create a new set of working practices. As with all organisations, generating funds continues to be a struggle but its recent success in winning “Entrepreneurial University of the Year” and improved rankings have aided this activity.

Website

<http://www.coventry.ac.uk/research/research-directory/business-management/institute-of-applied-entrepreneurship-2/?theme=main>

Contact

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7) SMILE, University of Leipzig, Germany

Rationale and objectives

Since August 2006, the SMILE (Selbst Management Initiative Leipzig) initiative has been working to establish the entrepreneurial spirit at Leipzig’s universities and research institutes. SMILE

is a co-operation project between the universities and research institutes in Leipzig, and is funded by the European Social Fund and the free State of Saxony.

SMILE arranges seminars, workshops and one-off events in which participants are given the opportunity to find out about, to develop and to fulfil themselves. Students, graduates and academic personnel at Leipzig's institutes of higher education who have entrepreneurial ambitions receive support in the form of individual, comprehensive coaching sessions on various aspects of the pre-start-up phase. Their business ideas are analysed, developed and accompanied through to their realisation. The focus of the programme's activities is on the personality and goals of the individual, who are encouraged and prepared for a life of self-employment and lifelong learning. Participants learn key skills and information and discover how to apply them as the basis of personal autonomy, whereby the individual's own potentials and capabilities are identified and promoted in the long-term. Between 800 and 1000 participants take part in approximately 80 activities of different types each semester. The ratio of men to women is virtually equal.

Activities

The SMILE project was created in spring 2006 and has been bringing students, graduates and academic staff together in an interdisciplinary, intercultural and creative forum, and supporting their entrepreneurial ideas and ambitions since then.

SMILE has a modular project structure. The modules build on each other and include activities to raise awareness and scout for ideas that awaken and focus the participants' interest in entrepreneurship. These are paired with activities expanding skills and teaching the key capacities needed by potential entrepreneurs with a concrete interest in setting up their own business. The core of entrepreneur coaching and team-building activities is formed by specialist coaching sessions for individuals and small groups designed to aid and assist the realisation and implementation of individual plans. The network has a broad base and is open to entrepreneurs in all branches of industry. The range of activities offered also includes a specialist module called SMILE.medibiz which is de-signed especially for the biotech and life sciences cluster in the Leipzig region.

The activities offered by the entrepreneur initiative have three main centres of focus: recognising + discovering potentials and aptitudes; expanding + developing potentials and aptitudes; realising + using potentials and aptitudes. Participation in all SMILE activities is on a voluntary basis and according to personal interest. Most events and workshops do not require prior knowledge or experience and can be joined at any time.

Recently, the specialised module SMIL.medibiz dedicated to entrepreneurship in biotech and life sciences has seen 35 technology-oriented businesses established offering innovative services and products. SMILE entrepreneur teams have raised more than EUR 15 million in funding and equity.

Resources

SMILE is a co-operation project involving the following universities, colleges and research institutes in Leipzig: University of Leipzig, Leipzig University of Applied Sciences, HHL Graduate School of Management, AKAD Hochschule Leipzig and the Helmholtz Centre for Environmental Research. The initiative has offices in 8 locations throughout Leipzig.

The SMILE team is composed of 13 specialists who come from different backgrounds, giving the team expertise in a well-rounded range of areas. The initiative is involved in co-operations and regular

joint activities not just within the participating universities and research institutes but also with academic partners, technology transfer centres, the private sector (banks, venture capitalists) and regional interest groups beyond the immediate SMILE network.

With funding from the European Social Fund and Saxony's State Ministry for Economic Affairs, Labour and Transport, and the Ministry for Higher education, research and the arts, participation in SMILE's activities is free of charge.

Relevance

The SMILE Entrepreneurship programme places the learner at the centre of its activities and takes that as its starting point. The particular emphasis is on discovering the talents within the individual and developing them. SMILE is about helping young people to discover themselves and to make decisions regarding their lives. This is consistent with the broad view of entrepreneurship taken by HEIs in Poland.

SMILE activities are rooted in the current challenges in the organisation of education and training, and they focus on the productive application of knowledge. SMILE offers its participants a learning environment which puts them in a position to decide what and how they want to learn. There is deliberately little teaching of "pure" knowledge; the goal instead is to put the personality of each participant at the focal point, to strengthen, develop and prepare it for life. At the heart of the events and learning principles lies a social-constructionist approach which forms the basis of all SMILE's entrepreneurship activities.

The programme has demonstrated successes. Approximately 5 900 individual participants have passed through the initiative since its inception in 2006. 120 businesses have grown out of the business ideas that the project has worked with, while more than 170 freelancers have been supported on their path towards self-employment. The real number of business start-ups among freelancers is in fact higher as not every entrepreneur needs support right through to registering their business.

Website

www.smile.uni-leipzig.de

Contacts

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Prof. Dr. Helge Löbler, lecturer in-charge, loebler@wifa.uni-leipzig.de

8) Engaging alumni in entrepreneurship education and specialised start-up support services at the University of Strathclyde, UK

Rationale and objectives

The University of Strathclyde is a technological university based in Glasgow in the West of Scotland, a region that relied on heavy industry from the Industrial Revolution until rapid de-industrialisation in the 1980's. The University was one of the pioneers at encouraging university spin-outs and opened one of the UK's first university business incubators in the 1990s as part of its vision to create a "place of useful learning". It has since become a recognised leader in entrepreneurship

education, research and knowledge exchange. By engaging with alumni, the University can maintain a life-long relationship with mutual benefits. Many alumni are in leading, influential positions in business and industry. As “Enterprise Partners”, selected alumni can help the University deliver relevant and quality start-up services to students and other alumni at relatively low cost, help keep entrepreneurship education relevant and inspiring, and inform the University on current trends in the entrepreneurial eco-system.

Activities

1. Broad university-wide engagement

Strathclyde holds an annual day-long “Celebration of Entrepreneurship” launched with inspirational events for students, staff, alumni and local people. This started in 2002 as a joint venture of the Hunter Centre and the Department of Design, Manufacturing and Engineering Management (i.e. the Engineering faculty) with support from the Careers Office and Technology Transfer Office. It is currently run by students from across the university as part of a Vertically Integrated Project for credit, working with Strathclyde Entrepreneurial Network and the Hunter Centre. A full colour newsletter called “Enterprise Matters” was produced every quarter and distributed to entrepreneurial alumni under two successive SEEKIT programmes using Scottish Government and ERDF funding from 2005 until funding ended in 2011.

2. Engagement in teaching

For several decades, the University has relied on alumni as guest speakers and role models in teaching entrepreneurship, with case studies on alumni written and taught by faculty and sometimes by alumni themselves. Several alumni have become honorary lecturers or honorary professors. Strathclyde Entrepreneurship Initiative, a teaching unit providing elective courses in entrepreneurship education across all faculties, was renamed Hunter Centre for Entrepreneurship in 2000 following a GBP 5 million (approximately EUR 8.2 million) endowment for the unit from Sir Tom Hunter, alumnus, entrepreneur and philanthropist.

3. Engagement in start-up support

In 1990, Strathclyde opened Scotland’s first university incubator (Strathclyde University Incubator: SUI) with equal funding from the university, an enterprise agency, a bank and a venture capital house. The incubator has since launched innovative services involving alumni, including the Upstarts programme that links researchers with a technology that has commercial potential with alumni who have relevant business experience, and an angel investment arm: Gabriel Investments.

In 2003, Strathclyde 100 (S100) was launched, which is an exclusive invitation-only network of successful alumni and friends of the university. It meets 3 or 4 times per year to listen to students, staff and alumni pitch their new businesses and to give feedback and advice. S100 is led by the Alumni and Development Office and supported by Technology Transfer Office and Hunter Centre staff. The management board of S100 is chaired by the principal of the University. Currently, 45 S100 members serve as voluntary Enterprise Partners to mentor other Strathclyde early-stage entrepreneurs in their own time. Being alumni of the same University creates a unique sense of trust and altruism. Many S100 members have invested in or joined the board of ventures that presented at S100. We have even had experienced S100 members pitch their latest ventures at meetings.

Further, the Strathclyde Entrepreneurial Network (SEN) was launched in 2005 for entrepreneurial students and young alumni. SEN is a series of networking events run by TTO and Alumni office staff and student interns. GBP 950 000 (approximately EUR 1.4 million) was raised from the Scottish Government and the European Regional Development Fund through the SEEKIT programme to grow services to young alumni entrepreneurs and underpin provision to entrepreneurial students. Funding was renewed for further 3 years in 2008. Since then staffing provision has reduced with the University funding the cost of core staff from its own resources, and increased reliance on students to help deliver events.

4. Recognition of alumni

In 2007, the first Strathclyde Enterprise Awards Dinner was held with first of biennial Enterprise Challenge awards; alumni feature heavily in awards alongside students and staff. The Awards Dinner provides another opportunity for promising young entrepreneurial alumni to meet potential mentors in their older peers. In 2011, the Strathclyde Academy of Distinguished Entrepreneurs (a Hall of Fame) was launched, honouring entrepreneurial alumni past and present.

Resources

The university has received unsolicited approaches from alumni with offers of help with its enterprise agenda but has also worked hard to engage with enterprising alumni, honour their achievements and get them involved. A wide range of internal, local, regional, national and international funding sources have been tapped for this work. With the exception of the GBP 5 million (approximately EUR 8.2 million) endowment by Sir Tom Hunter, contributions from alumni have been mainly but not wholly in-kind e.g. through time commitments to Hunter Centre entrepreneurship education programmes, S100, the Enterprise Partner scheme, or direct investments in student, staff or alumnus start-ups. Spending has been spread through many units rather than centrally directed and has not come from a single source. With the increased range of activities, co-ordination has necessarily become more formal, through the Enterprise Forum, an internal co-ordination committee with representatives of units engaged in different aspects of Strathclyde's Enterprise Agenda, chaired by a senior officer of the university.

Relevance

The University has a relatively small endowment and there is not a strong tradition of alumni "giving back" to their university, which is similar to the current situation in Poland. Honouring alumni is an effective method to create goodwill and develop long-term partnership with alumni.

Websites

Hunter Centre for Entrepreneurship <http://www.strath.ac.uk/huntercentre/>

Strathclyde Entrepreneurial Network <http://www.strath.ac.uk/sen/>

Strathclyde 100 <http://www.strath.ac.uk/s100/>

Strathclyde University Incubator <http://www.suilt.com/>

Enterprise Matters archive: <http://www.strath.ac.uk/sen/media/enterprisematters/>

Contact

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CHAPTER 6: PATHWAYS TO ENTREPRENEURSHIP

6.1 Business start-up support

Entrepreneurship as an academic discipline and a function of the university has a quite short history of development. The focus of university entrepreneurship activities has largely been on the traditional university activities, namely teaching and research. However, many now view this as insufficient. Universities are increasingly expected to fulfil a “third” mission which anticipates impacts on society such as contributing to employment creation and economic growth. One way in which universities can make contributions in this regard is through support for entrepreneurship and business creation. If universities are to fulfil their potential in this respect they must recognise entrepreneurship promotion as a strategic objective for the institution and need to develop appropriate entrepreneurship activities to strengthen linkages to the outside community. One critical element of this is to support graduate entrepreneurs in their start-up activities, either by bringing expertise on campus or by building strong linkages to the external business support services.

Although business start-up support within HEIs in Wielkopolska and Kujawsko-Pomorskie are in the early stages of developing their support for entrepreneurship, off-campus business start-up support is quite extensive in the two regions (see Figure 6.1). A business support system was launched in the early 1990s and has grown rapidly and now includes a wide variety of specialise services, including business and innovation centres, incubators, business and innovation funds and business service providers that provide advisory services, training and information sign-posting.

Business services for start-ups are supported by several national ministries, including the Ministry of Science and Higher Education, National Centre for Research and Development, Polish Agency for Enterprise Development. Financial support for these services is provided by the European Union under two Operational Programmes: Innovative Economy and Human Resources Development. These programmes aim to develop innovative companies and improve the entrepreneurial capabilities of entrepreneurs and students. Other national funds and regional funding complement the EU funds.

Figure 6.1. Business incubators in Poland



Source: PARP

6.2 Presentation and analysis of findings

Components of the start-up support system

Academic Incubators of Entrepreneurship

Academic Incubators of Entrepreneurship (AIP) are the primary vehicle for supporting start-ups by university students in Poland. It is a network of entrepreneurship support centres that are situated within universities across the country. The network is operated by the Foundation of Academic Incubator of Entrepreneurship (see Box 6.1) and receives financing from the universities. AIP centres offer various services to support start-ups, including training, legal advice, accounting services and premises and these offerings greatly vary from one centre to another.

Box 6.1. Foundation of Academic Incubators of Entrepreneurship

The Foundation of Academic Incubators of Entrepreneurship operates the network of AIPs under agreements with HEIs. The Foundation is headquartered in Warsaw and represents the legal entity for each of the individual centres. It provides financial and administrative services for the incubators in the network and their projects, including an offer of seed capital for appropriate projects.

The Foundation of Academic Incubators of Entrepreneurship also operates “Business Links”, which is a network of 5 locations that provide a virtual address, co-working space, technical and organisational support, networking and pro-innovative services, to entrepreneurs and their companies during the pre-incubation and incubation phases. These centres differ from AIPs in that they offer space for student entrepreneurs to operate their business. There is one centre in Poznań.

The academic incubators that make up the network can be viewed according to their activities. In 2012, the network consisted of 73 pre-incubators and academic incubators, including 31 intramural incubators, 7 extramural incubators and 45 affiliates of the Academic Incubators Foundation.

Intramural academic incubators function as interdepartmental units at HEIs, often associated with academic technology transfer centres or with career centres even though that are independent. The defining characteristic of an intramural academic incubator is that they are located on the campus of an HEI. They offer foundation services, counselling, professional training, assistance in technology transfer, access to databases, access to funding, networking. These services are available for up to two years and entrepreneurs are not required to register their business during the incubation period. Entrepreneurs do not pay for these support services but instead share half of the start-ups profits during the incubation period.

The offerings vary from one centre to another. For example, the AIP at Kazimierz Wielki University operates a project called “The Programme of Transferring Innovation into Business- the Innovators”, which aims to prepare students, doctoral students and researchers to operate start-ups and to help develop a positive attitude towards entrepreneurship in the academic community. Adam Mickiewicz University has a small AIP that offers pre-incubator, providing training and basic support. The AIP at Poznań University of Technology is situated in the Technology Transfer Centre and offers co-working space, a virtual address for start-ups and access to university laboratories and resources. Beginning in 2012, it has provided training for researchers and potential graduate entrepreneurs called “Scholarships and training - the way to knowledge commercialization”.

Extramural academic incubators operate within technology parks and technology incubators and work to provide potential entrepreneurs and their start-ups contacts with business environment and the access to all the services, including the area for business activity. The defining characteristic is that they are located off-campus. However, the services are targeted at graduate entrepreneurs. Several examples of extramural incubators exist in Wielkopolska and Kujawsko-Pomorskie. For example, the extramural incubator in Poznań was established in 2004 by students, graduates and doctoral students of various HEIs in Poznań, with the support of various student associations. It is located downtown, off-campus, and promotes and supports entrepreneurship projects for students and young researchers, by organising professional training, conferences, individual counselling and access to funding. A second example is CloudCube, which is a business incubator that offers premises, meeting rooms, business idea assessments, training, bookkeeping services and assistance with accessing finance.

In addition to the AIPs, more traditional business incubators operate in Poland. The services are available to all and not targeted at students. These incubators offer similar services, including production and office space and business support services for start-ups and growing companies. As seen in Figure 6.1, there are 58 incubators. There are 3 business incubators in Wielkopolska, located in Ostrow Wielkopolski, Ostrzeszow and Poznań. There are also 3 located in Kujawsko-Pomorskie in Solec Kujawski, Swiecie and Wloclawek.

The academic incubators of entrepreneurship are the primary support services for graduate entrepreneurs in Wielkopolska and Kujawsko-Pomorskie. This is wide-reaching network of support centres is well-known among students and the business community. However, the centres offer very basic services that resemble pre-incubation services. The centres are very small and few resources have dedicated to business start-up support services within the universities. For example, UMK has over 30 000 students but there are only 2 people are employed full-time in their AIP office. To be more effective, stronger links between AIPs, career offices and external support organisations are needed.

Technology Incubators

Technology incubators aim to support new innovative companies with a wide range of services. The typical technology incubator offers premises for business activity, common areas where entrepreneurs can interact, office support services, accounting services, business counselling, training and informative services, assistance accessing capital and help with technology transfer. More than a half of these incubators also offer pre-incubation services that aim to increase awareness of entrepreneurship, provide basic start-up training and help potential entrepreneurs become “investor ready”.

These support centres are the oldest form of business support in Poland, appearing in Poznań in 1990. The development of these incubators expanded after Poland’s accession to the European Union in 2004. In 2012 there were 29 technology incubators operating in 12 of the 16 provinces. Approximately 80% of the residents are new start-ups and university spin-outs account for approximately 10%. Students, doctoral students and university researchers operate approximately 40% of the start-ups in Technology Incubators.

In Wielkopolska, technology incubators operate in the business incubator in Kalisz Foundation, and in InQbator at the Poznań Science and Technology Park (see Box 6.2). There are no technology incubators in Kujawsko-Pomorskie.

Technology incubators have been developed largely with public funds, which lead to an uncertainty after the current EU programming period. For technology incubators to thrive, sustainable funding is needed. However, a greater challenge for these incubators is build a client base. There is a lack of interest in commercialising research results within the scientific community and there is little co-operation between researchers and the business community. Stronger links are needed to create a demand for the services of technology incubators. Another challenge is that incubators do not appear to undertake monitoring of their clients after they have left the premises. Having more success stories to tell can help secure public funding in the future and can help the incubators reach out to the scientific and business communities to demonstrate their success.

Box 6.2. Technology InQbator (Adam Mickiewicz University Foundation)

Rationale

Technology InQbator is part of the Poznań Science and Technology Park of Adam Mickiewicz University Foundation. It fills a market need by specialising in support for new and aspiring entrepreneurs who provide products and services that are based on the implementation of new technology.

Activities

InQbator provides support for new start-ups including office space, consulting services, training, networking events and promotional support. One of the unique services offered is the “Innovation Audit” which is conducted with the science and technology park “Technopark Glisice” helps entrepreneurs reach their potential.

InQbator also actively promotes entrepreneurship in the community through entrepreneurship events, training and pre-incubation services. Notable programmes include “First Step into Your Own Business”, which is a training and advisory programme for students, graduates and university researchers in the Wielkopolska region and the “Summer School of Entrepreneurship” which is a study trip for people who are interested starting a business. Another important activity for InQbator is Poznań Academic Entrepreneurship Days, which is organised with the City of Poznań, University Centre of Innovation and Technology Transfer AMU and Poznań Academic Business Incubator. The event hosts workshops and activities aimed to promote and support entrepreneurship.

InQbator plays a role in delivering entrepreneurship education for Adam Mickiewicz University. Optional, one semester classes are provided for students and PhD students, covering theoretical and practical knowledge on Virtual InQbator – an e-learning portal dedicated to people who think of starting a business activity and to beginning entrepreneurs. It will help you to quickly and easily understand the complexities of running a company.

InQbator has several unique approaches to inspiring entrepreneurship amongst students and the local community including a weekly radio programme and the production of a 10-episode television programme. In addition, it produces IQ Quarterly, which is a magazine for science, business and foreign innovation centres to exchange experiences.

Website

www.inqbator.pl

www.afera.com.pl

www.pdpa.pl

www.youtube.com/user/InQbatorPPNT?feature=watch

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Technology Transfer Centres

Technology Transfer Centres (TTCs) provide advice and information to university start-ups, particularly in the field of technology transfer. Members of academic staff, doctoral students and students are a significant client group for TTCs, accounting for nearly two-thirds of clients. TTCs receive approximately 90% of their funding from public financing. Approximately half of the operating funding comes from national grants and projects and approximately 20% comes from EU grants. The revenue generated from their own activities covers less than 10% of their operating costs, half of which comes from licensing fees, commercial orders and rental of premises. In 2012, there were 69 TTCs operating in Poland.

TTCs can be viewed in two groups. One group is composed of “academic” TTCs, which function within a university or as separate legal entities connected with a university. Academic TTCs often play the role of pre-incubators and they support the creation of new companies based on technological developments at the HEIs. There are 13 academic TTCs in Poznań, including centres that operate at Adam Mickiewicz University and Poznan Technology University. There are 3 academic TTCs in Kujawsko-Pomorskie. There is 1 academic TTC in the Bydgoszcz-Regional Innovation Centre at the University of Technology and Agriculture and 2 in Toruń. One is at the Enterprise Europe Network of the Regional Development Agency and the second is in the Interdisciplinary Centre for Modern Technologies at the Nicolas Copernicus University. The second group of TTCs are those that are not directly connected with HEIs and are situated off-campus.

TTCs have an important role to play in the development of innovative companies. While many have been started in Wielkopolska and Kujawsko-Pomorskie, there are some challenges to their ongoing development. First, the legal framework around technology transfer is unclear to many since the treatment of intellectual property rights varies by HEI. Second, the funding systems in the scientific research community tend to support theoretical research and the publication of research articles. Commercial activities are not promoted which results in a low level of interest among researchers.

Technology Parks

Technology parks aim to build co-operative relationships between the business and scientific communities, support the creation of new technology companies and develop local business networks

and clusters. They provide entrepreneurs with premises as well as access to technical infrastructure. This includes access to technology incubators at two-thirds of technology parks and access to science laboratories in nearly half of technology parks. In addition, business development support services are provided, including business counselling, technology transfer support and support with network building. Co-operation between technology parks and financiers such as venture capitalists, business angels and other investors is growing, but these partnerships are in an early stage of development.

In 1995 the first technology park was set-up in Poland: the Poznan Science and Technology Park of the Adam Mickiewicz University Foundation. There are currently 54 technology parks at various stages of development in Poland. Technology park residents are comprised of nearly entirely of small and medium-sized enterprises. University spin-offs and spin-outs account for slightly more than 10% of residents.

Technology parks in Poland are financed largely from grants and subsidies. Municipal authorities and academic institutions are the biggest investors in the partnership enterprises which govern the parks. In addition, 18 HEIs have taken capital participation in technology parks.

There are 6 technology parks in Wielkopolska. Three are in the city of Poznań, and 3 in the Poznań agglomeration that includes Złotniki, Dąbrowa, Swadzim. One of the parks was created by the City of Poznań and four were founded with private investment. The Poznań Science and Technology Park of the Adam Mickiewicz University Foundation is the most active technology park in the region and is a key actor in the region's innovative development. It co-operates with scientific institutions, enterprises, local administration and central authority, and with the foreign partners, including International Science Park Association. The Poznań Science and Technology Park is a model for other technology parks in Poland.

There are 3 parks operating in Kujawsko-Pomorskie, located in Bydgoszcz, Toruń and Warsaw. The Technology Park in Toruń is located at Nicolas Copernicus University and offers many typical services but specialises in innovation development services. It is a member of the Enterprise Europe Network which provides residents access to large networks. A new innovative business accelerator called "Smart Space" is under development at the park facility. The accelerator will offer nearly 1 000 m² of space for start-ups, targeting IT and mobile technology companies.

The performance of technology parks is benchmarked by the Polish Agency for Entrepreneurship Development. This process identifies both the strengths and weaknesses of the parks. One of the areas for improvement is to further develop the services that support entrepreneurship and technology transfer. To date, many technology parks focus on providing access to technical infrastructure.

Access to finance

In Wielkopolska and Kujawsko-Pomorskie various sources of financing are available to graduate start-ups, including public resources (i.e. subsidies, grants), bank credits, seed capital, business angels and venture capital funds.

The AIP Seed Capital Programme provides start-up companies within AIPs investments in the amount of PLN 100 000 (approximately EUR 23 600), in exchange for a 15% stake in the start-up. The AIP Foundation also introduces graduate entrepreneurs to potential investors.

A new start-up financing programme "First Business- Support at the Start" was recently launched by the Bank of National Property (Bank Gospodarstwa Krajowego). The aim of the programme is to

develop start-ups by graduate entrepreneurs. University students in their last year of studies and graduates who are unemployed can apply for funding within 48 months from the date of graduation. The programme is national and will be implemented in stages. It will be implemented in 2013 in Małopolskie, Świętokrzyskie and Mazowieckie followed by implementation in the remaining provinces in 2014.

A number of local and regional funding options are also available in Wielkopolska. For example, the Wielkopolska Agency for Entrepreneurship Development Company Ltd., which was established by locally to support start-ups and business development, offers small loans and grants (www.warp.org.pl). Local Employment Agencies provide non-refundable grants from the Labour Fund of up to PLN 20 000 (approximately EUR 4 700) for business start-ups. These however, will be replaced with low interest credits in 2014.

There are also a large number of business start-up financing initiatives in Kujawsko-Pomorskie. For example, the Kujawsko-Pomorskie Local Guarantee Fund Company Ltd. was created in 2003 by the Marshall Office of Kujawsko-Pomorskie and Bank Gospodarstwa Krajowego. The fund provides guarantees for working capital loans to micro, small and medium- sized enterprises, by facilitating the access to credit or bank loans. One year later, the Kujawsko-Pomorskie Loan Fund Ltd. Company was created. It was set up by the Provincial Government and the Toruń Agency for Regional Development. The company makes loans directly to micro and small enterprises, and also provides business development services to help entrepreneurs grow their businesses. The company is a not-for-profit company whose earnings are redirected back into loan capital. The Toruń Agency for Regional Development also provides financial support for micro firms and SMEs that are less than one-year old under the Operational Programme “Innovative Economy”. The Agency also offer loans of PLN 4 million (approximately EUR 940 000) to PLN 20 million (approximately EUR 4.7 million) under a project called “Loans for the resourceful”, which aims to help the implementation of innovation in micro firms and SMEs for industrial applications.

There appears to be sufficient funding available for graduate entrepreneurs in Wielkopolska and Kujawsko-Pomorskie. However, students identify access to finance as a challenge to starting a business. At the same time the financial industry points to a lack of entrepreneurial culture and a dearth of good ideas. One way to address both of these issues is for HEIs to be more involved in organising business plan competitions. Some of the HEIs do have small competitions, but these should be scaled-up and it would be beneficial if they were organised in collaboration with the financial sector. This would provide students with an opportunity to interact with investors and it would allow investors to be exposed to the entrepreneurial ideas of students.

Co-ordination of the start-up support system

Overall, the entrepreneurship support system available to students of HEIs varies widely according to the institution a student happens to attend. The support system tends to focus on the very early stages of business development. One of the challenges that the system faces is a lack of co-ordination and leadership in the provision of business start-up support. There is room for the HEIs to play a more significant role in this regard. Only one university demonstrated a desire to have a leadership, which was AMU.

University career centres play an important function in disseminating information and they face a difficult task in linking students to the support systems because university activities are not well-integrated with the existing support systems. The reasons for this lack of start-up support and integration with existing external support providers are: (i) a focus of entrepreneurship support on

entrepreneurship education at HEIs (in other words, on promoting skills and motivations rather than business creations), (ii) a lack of understanding that entrepreneurship can be a professional career, which results in some HEIs not using their well-developed linkages to industry to promote graduate entrepreneurship, but instead focusing on general student placements and wage jobs.

One attempt to address this challenge is the creation of “Promoters of Academic Entrepreneurship” within the universities. This is a research or administrative worker whose task it is to search for and gather information about the possibilities of co-operation between university and the economy, as well as providing information for enterprises and institutions which are interested in the co-operation. The promoter also helps the entrepreneurs and scientists to commercialise a given object of the offer. Each university has a promoter, which is a good initial step taken.

Outside of the universities, there are a small number of organisations that play a co-ordinating role. One such example is the Polish Business Innovation Centres Association (see Box 6.3). It was created to build links between many of the support organisations and it has been quite successful. There is an opportunity for HEIs to strengthen their linkages to the support eco-system by building stronger linkages with these organisation.

Box 6.3. Polish Business Innovation Centres Association

The Polish Business Innovation Centres Association (PBICA) was founded in 1992 to promote academic entrepreneurship. PBICA has initiated operations at the national and regional level, indicated directions of development and supported the construction of academic business incubators, technology transfer centres and science and technology parks. Specifically, the experts of PBICA prepare feasibility studies and they also build concepts of operation for these centres. In addition, they prepare material such as the textbooks “Academic Business Incubator Guide for Managers and Developers”, “Academic Entrepreneurship: International Experience”.

PBICA was the initiator of technology parks benchmarking studies in Poland and launched the annual report “Business Innovation Centres in Poland” in 1994. The report is now published under auspices of Polish Agency for Enterprise Development.

PBICA also holds an annual conference that serves as a forum for good practice exchange and dialogue concerning academic entrepreneurship.

Under the projects of Polish Nationwide Network of Technology Transfer and Innovation Support, and Effective Environment for Innovative Business, the PBICA experts have been training, advising and preparing textbooks for the employees of innovation and entrepreneurship centres. Currently, PBICA is working on the standards of practice for the Innovation and Entrepreneurship Centres.

Since 2002 PBICA has actively participated in the preparation of new programmes of financing innovation and entrepreneurship from the EU funds. The representatives of PBICA are the members of Monitoring Committees for these programmes.

The PBICA members are among others: the managers and employees of Academic Business Incubators, Technology Transfer Centres, Technology Incubators and Science and Technology Parks.

For more information, please see: www.sooipp.org.pl.

The local governments also play a key role in supporting the development of a business support system. For example, the City of Poznań and the Wielkopolska province have developed Academic and scientific strategy for the city of Poznan, Regional Innovation Strategy for the Wielkopolska region and the Development Strategy for the Wielkopolska region until 2020. In addition, the City of Poznań has created a number of web portals to disseminate information including the “Wielkopolska

Innovation Platform” and “Start It Up”. The City of Poznań also has programmes that strengthen the linkages between HEIs and the business communities such as “Researcher in Business – Training Practice for Research Workers in Enterprises” which provides short internships for researchers in companies so that they can learn about private sector enterprises. Another important event that brings all actors in the entrepreneurship support system together is “Poznań Entrepreneurship Days” which is an expansion on “Poznań Days of Academic Entrepreneurship”. Poznań Entrepreneurship Days launched in 2011 and has been held six times. It aims to promote entrepreneurship in the region and provides workshops for entrepreneurs and potential entrepreneurs.

In Kujawsko-Pomorskie, the regional government also plays an important role in co-ordinating actors in the entrepreneurship system through the administration of several programmes. The Regional Operational Programmes include “Developing Academic Entrepreneurship as a Way of Forming Innovative Personnel of Modern Economy and the Solutions for Using Research Results by Entrepreneurs” which aims to promote entrepreneurship and innovative start-ups. Another important project is the “Research Voucher” programme for micro, small and medium sized enterprises, which is a grant for buying research and development services to develop or improve the process, technology or product. Future plans include “The Torun Entrepreneurship Support Plan” which will be a one-stop shop for start-ups.

The University of Technology and Life Science in Bydgoszcz supports these co-ordination efforts through the Regional Innovation Centre. This is a platform for innovation information dissemination in Kujawsko-Pomorskie. It also aims to enhance university-industry co-operation by administering laboratories that serve both HEIs and the business community.

As in Wielkopolska, Kujawsko-Pomorskie uses entrepreneurship events to strengthen the linkages between the different components of the start-up support system. However, rather than hosting its own event, it hosts an event as part of Global Entrepreneurship Week. In 2012, there were 176 events in Global Entrepreneurship Week (103 in Bydgoszcz and 73 in Torun) with 1 776 participants. Bydgoszcz City Administration, Nicolas Copernicus University, Kazimierz Wielki University, University of Technology and Life Sciences were among 11 organisers. Despite the success of the 2012 event, sufficient funding could not be raised to hold the event in 2013.

6.3 Recommendations

The following is a series of recommendations to for improving business start-up support for graduates in Polish HEIs: Use the European Social Fund to support an expansion of start-up support offerings

Expand HEI start-up support offerings to include coaching, teambuilding and connections to alumni. In the short-term, this can be accomplished by developing relationships with external support organisations and referring students to these services. In the longer run, HEIs may consider expanding their internal support activities related to business start-up and business development. It is crucial that these supports be developed in a systematic, co-ordinated fashion to avoid duplication of support and to ensure that students have a clear understanding of where support can be received.

The Polish Ministry of Regional Develop can look to the ESF supported project “Growth Houses” in Denmark for inspiration. This projects provides individual coaching, mentoring and advisory services for students at VIA University College that have innovative business ideas that are ready for the market. To implement a similar project in Poland, the Ministry should select a small

number of universities to pilot the project. The project should be designed in consultation with experts involved in the Danish project.

Use the European Social Fund to strengthen linkages between HEIs and the business community

Much has been done but more efforts are needed to open-up universities so that business is aware of the services that HEIs could provide (e.g. providing the access to laboratories and instruments, consultations, expert opinions, conducting research). Programmes such as “Research Vouchers” are an innovative idea that could be very effective. If this approach shows signs of success, the programme should be scaled-up and expanded into other regions.

Investors should work more closely with HEIs to develop relationships with students and to support the development of their entrepreneurial projects. Investors and HEIs can partner in organising business competitions for students that award prizes to fund start-up activities. HEIs should also explore the potential of receiving sponsorships from the financial industry to help fund entrepreneurship events and projects. The ESF could support entrepreneurship events and business competitions on campus.

Use the European Social Fund to develop tailored support for high-potential graduate businesses

Provide tailored support for high-potential graduate businesses, particularly those with innovative ideas and ambitions to export. This requires better links between research at HEI and entrepreneurship activities as well as the above recommended better integration of internal and external support offers.

In order to enhance research-entrepreneurship links a service could be introduced within incubators to help students, graduates and teachers at HEIs to think about the commercialisation potential of research or even master theses. This would promote the idea of high-potential, in the sense of research-based graduate businesses within HEIs, while external support providers could offer tailored training, coaching and mentoring support. High-potential graduate businesses would also need specific financial support such as venture capital or business angels. The ESF can be used to facilitate many of these activities since these actions aim to strengthen pathways to the labour market for youth and improve their education,

Strengthen internal support activities for entrepreneurship

The network of AIP provides an effective mechanism for strengthen on-campus activities. The role of the AIPs could be expanded to include co-ordination of entrepreneurship support within HEIs, which is absent on HEI campuses. This should include greater cross-faculty collaboration in entrepreneurship support and better links between entrepreneurship education and start-up support provision should be developed, including linking with the numerous external support providers.

Enhance the linkages between various faculties and the technology transfer offices

University staff and students must recognise that there is a pathway from having a business idea in a classroom or laboratory to eventually commercialising that idea through licensing or full business start-up.

One mechanism to help achieve this goal is to offer Intellectual Property rights to the creator of the idea. For example, in the Dublin Institute of Technology (Ireland), the institution shares up to 75%

of net revenues received from commercialisation with the Creators, and assigns IP to Colleagues and Students in return for a negotiable equity stake for DIT of typically 15% in their start-up companies.

In addition, there is a need to integrate existing support offers into a joined-up policy and support approach. Current business support for (graduate) entrepreneurs is offered from different agencies, supported by different ministries and thus targeted at different groups. While collaboration between support providers and also associations seems to work well at local level, there remain some doubts as to how far this extends to ministry and government level, where national ministries have their own agendas for promoting entrepreneurship. One way towards an integrated and strategic policy and support approach for graduate entrepreneurship would be the bundling of existing activities both at national and local level and involving different stakeholders, as illustrated by Learning Model 10.

6.4 International learning models

Below are two learning models that can inspire action in Poland: 9) The Technical University of Munich; and 10) A bundled approach to promoting an entrepreneurial culture: “Germany – a Nation of Entrepreneurs” (“Initiative Gründerland Deutschland”).

9) Technical University of Munich (TUM), Germany

Rationale and objectives

As an entrepreneurial university, TUM’s market-oriented approach fosters a supportive environment for innovation. With TUMentpreneurship as a comprehensive plan of action, TUM and UnternehmerTUM GmbH inspire their members - from students to alumni - to awaken their entrepreneurial spirit. The commercial exploitation of research results has thus led to the creation of more than 11 000 jobs in spin-offs since 1990.

Activities

TUM is a high-profile research and teaching university with particular strengths in science and engineering, which has embraced its vision – TUM The Entrepreneurial University. This vision became a trend-setting element of TUM’s positioning in various policy initiatives by the German government directed at university institutions. An important nucleus of TUM’s entrepreneurial activities is the KfW-Chair in Entrepreneurial Finance endowed by the KfW-Bankengruppe, a German public law banking institution that supports new business formation and innovation projects. Unternehmer TUM (entrepreneurship means “unternehmertum” in German), the second core element of TUM’s university-wide entrepreneurial initiative, playing a role in the university’s profile in the “elite university competition” set-up by the German government.

Hosted by the KfW-Chair, over the last decade the university has developed a differentiated portfolio of teaching and support courses for students interested in entrepreneurship including seminars on venture capital, biotech venturing and social entrepreneurship and active-learning modules such as case study projects where students become consultants working on real-life entrepreneurial projects with business professionals and entrepreneurs. Under the organisation-wide roof of Unternehmer TUM, the university offers numerous entrepreneurial and intrapreneurial activities open to all departments, including business planning courses, participation in the Munich Business Plan Competition “manage and more programme”, a scholarship project for undergraduates and postgraduates building business and entrepreneurial skills to excel in future corporate intrapreneurial management roles, and an executive programme (innovation and business creation) for

business professionals to develop venture opportunities in corporate contexts funding and on-campus incubator facilities at the “gate” (Garching Technologie- und Gruenderzentrum).

1. Network

TUM entrepreneurs benefit from the university’s extensive network of partners in Munich, ranging from the business, government, politics and science sector. Entrepreneurs can test their business plan, learn from successful role models and share their experiences. And they gain further qualifications - for example, to embrace future leadership roles in the economy.

2. Entrepreneurial research

Entrepreneurship research at TUM is firmly established in the various departments and at the Centre for Entrepreneurial and Financial Studies (CEFS). Their insights ensure the quality of start-up support. They answer important questions: How do entrepreneurs make decisions? What role do their emotions play? How do I protect my invention and intellectual property?

3. TUM-entrepreneurship

TUM is creating many incentives for entrepreneurs. “TUM-entrepreneurship” mentors spin-offs in the four research fields of the future: information and communication technology, medical technology, CleanTech, and life sciences. They add more value to society and are full of potential for economic growth.

Website

<http://www.tum.de/en/tum-business/entrepreneurship/>

Contact

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10) A bundled approach to promoting an entrepreneurial culture: “Germany – a Nation of Entrepreneurs” (“Initiative Gründerland Deutschland”)

Background and rationale:

At the beginning of 2010, the Federal Ministry of Economics and Technology, Germany (BMWi), introduced the initiative “Germany – a Nation of Entrepreneurs”. Its main objectives are to develop, bundle and promote activities which strengthen the entrepreneurial culture in Germany. In this, the BMWi works together with the main umbrella business associations such as the DIHK (industry), the ZDH (craft enterprises) and the BFB (professions). The rationale for the initiative stems from one of the major shortcomings of the German support approach, namely its decentralised structure where federal organisations, state governments and local municipalities, together with private

support agencies, offer a multitude of (sometimes similar) measures and programmes without genuine coordination (Welter, 2009). Already in 1996 an evaluation of the German SME and entrepreneurship support system argued for such a strategic approach (Klemmer et al., 1996).

The project builds on earlier, related projects. The EXIST initiative started in 1997 and aimed to motivate and enable regions to stimulate and support the creation of companies out of universities and research centres, using regional networks. The motivation was the challenge that universities faced in commercialising research projects. The Federal Ministry of Education and Research launched a competitive call in 12 regions for projects that were conducted by regional partnerships, with at least one partner from business, one from science and one from policy. Submissions were required to include a business plan with binding commitment letters from all partners. From the participating regions, 5 winning partnerships were selected in 1998. These project received co-financing from the federal authorities. The federal budget for EXIST was EUR 21 million between 1998 and 2001 and eligible costs were labour costs, equipment and external expertise (e.g. consultants).

In 2000, the EXIST SEED programme was started. It was aimed at students, young graduates and university staff who could apply for financial grants for the purpose of covering one-year of living costs and a lump sum payment for business coaching. The programme was initially targeted at the 5 winning regions from the EXIST project but was expanded to all German universities in 2005.

In 2002, EXIST-transfer was launched. It included 10 additional regional partnerships that were selected by a jury to join the programme. The new regional partnerships operate in the same manner as the those in the original EXIST programme but the new partnerships received considerably less funding. EXIST-transfer had a total budget of EUR 10 million for the 10 partnerships.

Activities

The current initiative focuses on four areas, namely: (1) development of a new entrepreneurial culture, in order to foster awareness for and facilitate business creation, (2) targeted activities at schools and higher education institutions, in order to further promote entrepreneurship and new venture creation as career option, (3) targeted support for innovative and high-growth business start-ups, in order to foster economic renewal and competitiveness as well as employment growth, and (4) support for business succession, in order to facilitate the generational change in existing businesses. Target groups include the general society (area 1), students and pupils (area 2), high-potential entrepreneurs / businesses (area 3) and existing businesses (area 4).

Area 1: Development of a new entrepreneurial culture.

Activities include an extended offer of information for new entrepreneurs (as well as existing small firms), much of it web-based, a focus on reducing (administrative) barriers for start-ups and specific actions such as the "German Entrepreneurship Week".

Area 2: Targeted activities at schools and higher education institutions

With relation to entrepreneurship education at school, the BMWi introduced a new webpage which bundles all projects and initiatives (currently 22) aiming to foster economic and entrepreneurship school education in Germany, offering a search function for teachers and pupils.

To support entrepreneurship education at universities, the EXIST programme was introduced in 1998, with the aim of supporting an entrepreneurial culture and environment at universities and

research institutes. EXIST is financed through the BMWi and the European Social Fund. Its activities include:

- EXIST programme line "Culture of Entrepreneurship" (EXIST IV) supports projects at universities to build up an infrastructure for providing skills and support for technology and knowledge-based innovative ventures. Universities are selected through a competition and receive a three-year allowance from the BMWi.
- EXIST Business Start-up Grants support the preparation of innovative business start-up projects at universities and research institutions. The grant aims to help scientists, university graduates and students to develop their business ideas into business plans and to advance their ideas for products and services. Grant holders receive a stipend to cover their living expenses, material and equipment costs and funding for coaching. The university or research institution has to offer them infrastructure during the pre-start-up phase and provides technical and start-up-related assistance. For more information, please see: http://www.exist.de/imperia/md/content/pdf_sonstiges/exist_business_start_up_grant.pdf.
- EXIST Transfer of Research promotes technology-based business start-up projects in the pre-start-up and the start-up stage. The first funding phase supports research teams to work on the technological feasibility of their ideas and to prepare the start-up. The second funding phase, once the business has been set up, includes further support for prototype development and to facilitate the search for external capital (e.g. through the High-Tech Capital Fund). For more information, please see: http://www.exist.de/imperia/md/content/pdf_sonstiges/exist_transfer_of_research.pdf.
- The EXIST Prime Cup is a game competition across German universities where interdisciplinary student teams compete against each other, solving business problems. It aims at increasing general interest in entrepreneurship.
- From January 2012 onwards, the German Silicon Valley Accelerator (GSVA) provides entrepreneurs with a three month intensive support and mentoring program in the Silicon Valley. GSVA aims at offering early support to internationalise a company, in particular focusing on the US market.

Area 3: Financial support for growth-oriented new ventures and support for innovative, ICT based venture ideas.

A venture capital fund, the "High Tech Gründerfonds" was set up in 2005, which targets young technology-oriented companies with significant growth and market potential. The fund focuses on early-stage financing, and also offers access to network and coaching. Investors of Gründerfonds II, launched in autumn 2011, include twelve large German companies, the KfW as public bank and the BMWi.

Related to ICT venture ideas, a special start-up competition (Innovative ICT start-up competition) was set up in 2010, open to all innovative business ideas based on ICT-based products and services, which includes manufacturing as well as cultural and creative industries. The competition is conducted twice a year. Prizes include cash awards and financial support for further training and coaching.

Area 4: Business succession.

“Nexxt” is a joint initiative of the BMWi, the KfW and representatives of business associations, the credit industry and the professions. The initiative includes a web portal with a matching service (www.nexxt-change.org) as well as awareness campaigns and workshops, information and planning tools (www.nexxt.org).

Relevance

The following key factors render this initiative interesting for Poland: (i) the approach to bundling support entrepreneurship offers by means of a webpage as a first step towards an integrated system (which also is easy to access for the customer), (ii) the public private partnerships behind many of the initiatives, which have become a necessity in periods of ever decreasing public budgets, (iii) the focus on all stages of entrepreneurship encouragement and business development support, including the creation of an overall entrepreneurial culture in a country and early entrepreneurship education at primary schools.

The initiative combines a decentralised approach to support with a strategic approach at the level of the federal government, together with a focus on public-public and public-private partnerships. Basically, “Initiative Gründerland” works through offering a joint virtual platform, where all participating programmes, agencies, projects and measures are listed according to the four categories mentioned above. It therefore allows the German government to offer comprehensive support in all important areas, ranging from creating awareness for entrepreneurship as a professional option to concrete support for graduate and student entrepreneurs as well as for those who want to grow or hand over their business. Although this initiative is partly compelled by declining public budgets, it offers at the same time the possibility to facilitate access to public support in different areas for those interested in entrepreneurship. A major challenge refers to the question how far the initiative represents a genuine strategic approach of the German government or just a bundling of different programmes, some of which have existed for a long time. Nevertheless, it also illustrates a first step towards building an integrated support system.

The successful implementation of an EXIST-type project in Poland will depend on a number of key factors:

- Development of an in-depth understanding of the German experience, which could start with a study mission to interview the Federal Ministry, regional partners and experts that were on the jury;
- Build a network of champions, both at the individual and institutional level, who can promote the project and stimulate interest among various actor participating in regional partnership. The must be prepared to fight negatives attitudes and comments such as “It’s a good idea, but this will never work in Poland”, “This concept is too new to work”, and “Nobody will be interested in co-operating”;
- Provision of adequate financial resources to provide enough of an incentive for potential partners to participate – leveraging ESF funds would likely be essential;
- Availability of adequate budget for programme management and rigorous evaluation of partnerships to ensure that funds are achieving results; and

- Involvement of experts from the German experience in the design of an EXIST-type project to ensure that their experience utilised.

Website

http://www.exist.de/englische_version/

CHAPTER 7: CONCLUSIONS AND THE WAY FORWARD

7.1 Key findings

Policy support for entrepreneurship in Poland is strong at the national, regional and local levels. There are many national strategies and programmes that aim to support entrepreneurship. For example, the National Qualifications Framework for Higher Education (NQF) requires entrepreneurship education for most fields of study, at all levels. This provides a mandate to HEIs to develop entrepreneurship education for a wide base of students. Further, HEIs have a large degree of autonomy, which allows them to tailor and implement entrepreneurship education and activities within their own context. This is enhanced by programmes that support and encourage the development of partnerships between HEIs and the business community. Support is also provided at the regional and local levels through a variety of strategies and programmes related to entrepreneurship and innovation. These provide frameworks for the development of an entrepreneurial culture at the local level and provide funding for business start-up support and entrepreneurship events.

The higher education institutions (HEIs) in Wielkopolska and Kujawsko-Pomorskie are in the early stages of implementing the characteristics of an entrepreneurial university and each is at a different stage of development. Entrepreneurship education is under-developed in the HEIs included in this case study. However, a business start-up support system well-established around the universities. The challenge is to improve co-ordination of these supports and to improve linkages with the universities. Further details are presented below.

Wielkopolska

The HEIs visited in Wielkopolska are generally further advanced in adopting the characteristics of an entrepreneurial university than those visited in Kujawsko-Pomorskie. The strengths observed during the case study visit include an acknowledgement of the importance of entrepreneurship by HEI leadership, which is often implicit in HEI mission statements. Some bottom-up support is evident on campus. Career service centres currently play an important role for students by directing them to appropriate support (including training) and student organisations are active at launching projects such as the creation of an academic incubator and supporting entrepreneurship activities. Off-campus, there is plenty of start-up support available for students. Many sources of financing are available in the region, particularly for innovative start-ups, which is complemented by many of start-up support services such as technology transfer centres, technology parks and business incubators.

These strengths, combined with the overarching national policy initiatives, lead to several opportunities that the HEIs can leverage moving forward. First, the autonomy that is given to HEIs allows them to develop and implement entrepreneurship education and activities that are pertinent to their student body. Second, the NQF explicitly gives HEIs the mandate to develop these on-campus activities. A third opportunity is for HEIs to build on the well-developed entrepreneurship support ecosystem in Wielkopolska. The support system provides students with many opportunities to seek support for their entrepreneurial ideas. HEIs can take advantage of this existing system by incorporating this expertise into on-campus entrepreneurship activities. The support system also offers

Wielkopolska a competitive advantage for attracting future entrepreneurial students. Fourth, the local and regional government is also active in supporting entrepreneurship with strategies and initiatives such as the Academic and Scientific Strategy for the City of Poznan and the Regional Innovation Strategy. These offer opportunities for HEIs to strengthen linkages with the local business community. The City of Poznań also helps promote entrepreneurship through events such as Poznań Entrepreneurship Days, which gives HEIs a platform to increase the visibility of their entrepreneurship activities within the community.

The weaknesses of the entrepreneurship support system in the HEIs in Wielkopolska are that few entrepreneurship learning opportunities are offered and those provided are often of low quality due to a lack of support and training for entrepreneurship teachers. Another factor in the low quality is that entrepreneurship research is isolated relative to entrepreneurship teaching. This contributes to a lack of legitimacy for entrepreneurship as an academic field, which is reinforced by the absence of professors of entrepreneurship. As a consequence, there are few resources available to support entrepreneurship activities.

Looking forward, a number of threats can be identified for the further development entrepreneurship support in HEIs in Wielkopolska. One is that the start-up support system involves many actors and could be perceived as complicated by students. This presents difficulties for potential and new entrepreneurs, particularly students who lack experience with entrepreneurship and in the labour market, who may be unable to find the support that they need. As a result, they may abandon their entrepreneurial idea which works against other efforts to build an entrepreneurial culture. Second, the sustainability of entrepreneurship initiatives is constantly under pressure since they are heavily reliant on public funds. A broader array of financing sources is needed and this could be accomplished by building stronger linkages with the private sector which can co-sponsor events and projects.

Table 1. SWOT Analysis: Wielkopolska

Strengths	Weaknesses
<ul style="list-style-type: none"> • Entrepreneurship is acknowledged in HEI missions. • Career service centres at the HEIs have a central role in the entrepreneurship support system. • Student organisations are active in organising entrepreneurship activities. • Many sources of financing exist for start-ups, particularly for innovative start-ups. • There are many technology transfer centres, technology parks and business incubators to support graduate entrepreneurs. 	<ul style="list-style-type: none"> • Relatively little entrepreneurship learning in HEIs; only AMU offers a course in entrepreneurship. • Lack of professional development for entrepreneurship teachers. • Separation of research and teaching. • There are no professors of entrepreneurship which reinforces the lack of legitimacy of entrepreneurship as an academic field. • There are few incentives for professors and staff to act entrepreneurially.
Opportunities	Threats
<ul style="list-style-type: none"> • HEIs have the autonomy to introduce entrepreneurship activities. • NQF provides HEIs an opportunity to increase entrepreneurship education. • A well-developed entrepreneurship ecosystem exists around the HEIs to support graduate start-ups. • Poznań Entrepreneurship Days promotes entrepreneurship in the community. • Strategies such as the Academic and Scientific Strategy for the City of Poznan and the Regional Innovation Strategy provide frameworks to support the development of entrepreneurship in the region. 	<ul style="list-style-type: none"> • A lack of co-ordination between entrepreneurship support services works against the development of an entrepreneurial culture. • Many entrepreneurship projects are financed with public funds and are not designed to be sustainable.

Kujawsko-Pomorskie

The HEIs in Kujawsko-Pomorskie that were included in the case study were less advanced in their adoption of the characteristics of the entrepreneurial university than those in Wielkopolska. Similar to the HEIs in Wielkopolska, those in Kujawsko-Pomorskie acknowledge entrepreneurship in their missions which gives the HEIs a mandate to be active in entrepreneurship activities. Career centres play an important role in directing students to appropriate training and support. Off campus, Regional Innovation Centres also help in this regard and co-ordinate many of the innovation activities in the region. An additional strength is the availability of finance to help launch graduate start-up, particularly innovative start-ups.

These strengths and the supportive policy environment create opportunities for the HEIs to build on for the future. The NQF requires entrepreneurship education for nearly all students and the Law on Higher Education provides a great deal of autonomy for HEIs to introduce entrepreneurship activities and initiatives. Similar to Wielkopolska, there is a well-developed entrepreneurship eco-system in Kujawsko-Pomorskie that can be used to support graduate entrepreneurs and the linkages between the business community and the HEIs can be strengthened through initiatives such as “Research Vouchers”.

Areas for improvement for entrepreneurship support in HEIs in Kujawsko-Pomorskie include: relatively few entrepreneurship learning opportunities, a lack of training and development for entrepreneurship teachers and a separation of entrepreneurship research and teaching. There are no professors of entrepreneurship which reinforces the lack of legitimacy of entrepreneurship as an academic field and further, there are few incentives for professors and staff to act entrepreneurially because the tenure system only considers very traditional activities such as research publications. Relative to Wielkopolska, there is less support in the entrepreneurship eco-system that surrounds the university. In other words, there are relatively fewer technology transfer centres and technology parks available to support graduate entrepreneurs and there are no technology incubators.

Entrepreneurship support in HEIs in Kujawsko-Pomorskie faces a number of threats to its further development. These are largely similar to the threats faced in Wielkopolska, but some of the consequences of inaction are already evident in Kujawsko-Pomorskie. First, there is a lack of coordination between the different business start-up support services that are available. Second, the sustainability of many entrepreneurship activities and initiatives is a challenge given the heavy reliance on public funding. Once the public funding is no longer available, initiatives tend to cease. For example, participation in Global Entrepreneurship Week in Kujawsko-Pomorskie was cancelled in 2013 because adequate funding could not be secured.

Table 2. SWOT Analysis: Kujawsko-Pomorskie

Strengths	Weaknesses
<ul style="list-style-type: none"> • Entrepreneurship is acknowledged in HEI missions. • Career service centres at the HEIs have a central role in the entrepreneurship support system. • Regional Innovation Centres co-ordinate innovation activities in the region. • Many sources of financing exist for start-ups, particularly innovative start-ups. 	<ul style="list-style-type: none"> • Relatively little entrepreneurship learning in HEIs. • Lack of professional development for entrepreneurship teachers. • Separation of research and teaching. • There are no professors of entrepreneurship which reinforces the lack of legitimacy of entrepreneurship as an academic field. • There are few incentives for professors and staff to act entrepreneurially. • There are relatively fewer technology transfer centres and technology parks, and there are no technology incubators.
Opportunities	Threats
<ul style="list-style-type: none"> • NQF provides HEIs an opportunity to increase entrepreneurship education. • HEIs have the autonomy to introduce entrepreneurship activities. • A well-developed entrepreneurship ecosystem exists around the HEIs to support graduate start-ups. • Research voucher programme can build stronger linkages between HEIs and industry. 	<ul style="list-style-type: none"> • A lack of co-ordination between entrepreneurship support services works against the development of an entrepreneurial culture. • Many entrepreneurship projects are financed with public funds and are not designed to be sustainable. There is a risk that past efforts will be lost (e.g. funding could not be raised for Global Entrepreneurship Week in 2013).

7.2 Using the European Social Fund to address priority actions areas

Based on the results of the case study analysis and discussions that occurred in a workshop for HEIs that participated in the case studies, two priority areas of action have been identified. First, there is a need to increase interest in entrepreneurship among HEI leadership so that they can support and drive the entrepreneurial agenda on their campuses. Second, there is a need to improve the quality of entrepreneurship teaching so that it can have a greater impact on the development of an entrepreneurial culture and on the development of entrepreneurial skills for students. The European Social Fund can be an important tool for supporting both areas of action.

7.2.1. Increase interest in entrepreneurship among HEI leadership and staff

The priority for government should be to increase interest in entrepreneurship among HEI leadership. This can be accomplished by taking several simultaneous actions.

Change the mind-set of university leadership

Most importantly, there is a need to focus on changing the mind-set of university leadership by demonstrating the benefits of promoting and supporting entrepreneurship, particularly how entrepreneurship can impact and improve traditional university activities and student satisfaction. This can be accomplished through top-down approach such as leadership training programmes. The goal is to demonstrate the benefits of entrepreneurship to HEI leaders, particularly on traditional university activities such as raising funds for research, improving the employability of students after graduation and making the university more attractive to students and staff. The following key actions are needed:

- Identify potential international experts who could assist in the design of leadership seminars and workshops;
- Identify qualified instructors, either Polish or international experts, that can lead and design leadership seminars;
- Develop content and working materials for leadership seminars and workshops;
- Build case studies of entrepreneurial universities that demonstrate the significance of entrepreneurship on traditional university activities;
- Identify potential participants, focusing on university leaders who are most likely to become champions;
- Design information dissemination channels to support the champions in delivering the key messages to their colleagues, which could include regional conferences;
- Conduct follow-up surveys of those participating in leadership seminars to identify where the seminars can be improved;

One approach could be to follow the example of Learning Model 1, which describes an international training programme in the UK. A number of Polish HEI leaders could be sent to this programme (or a similar one) and subsequently set-up workshops in Poland so that the participants can disseminate the information to their colleagues. This can be an effective approach if several leaders can become champions of entrepreneurship in Poland because Rectors may be more likely to listen to their peers than to the Ministry. An important message that needs to be delivered to Polish Rectors is that there is an opportunity for Poland to learn from the experiences of other EU universities to jump right to the leading edge and become internationally respected in the field of entrepreneurship.

Alternatively, a second option could be to work with the organisers of the leadership programme described in Learning Model 1 to develop a training project specifically for Poland and the Polish context. The advantages of this approach are that the training could be more targeted to the Polish context and it would reach a wider audience of Rectors at one time. It would be important to involve some high profile international scholars in such an event to act as role models with “star power” to help get the attention of Polish Rectors.

Stimulate bottom-up support for entrepreneurship

To complement efforts to change the mind-set of university leadership, the Polish government should support a bottom-up approach to influencing HEI leaders. Some of these activities would help promote entrepreneurship education and an entrepreneurial culture and could therefore be funded by the European Social Fund:

- Organise regional entrepreneurship conferences for students in collaboration with student organisations and the business community.

Provide funding to HEIs for entrepreneurship activities

Direct financing is an approach that has been used successfully in Germany, with the support of the European Social Fund, to attract the interest of HEI leaders and to provoke change. The EXIST programme (see Learning Model 10) provides funding for entrepreneurship strategies and activities through a competitive process. This approach has many strengths. First, it provides funding that attracts the attention of HEIs. Second, the competition element of the programme ensures that HEIs put effort into their proposals because only the best are funded. Thus, the quality of initiatives is higher. Third, the funding allows the initiatives to be implemented so that action can be realised.

- Undertake a study mission to Germany to meet with the German Federal and Regional Ministries, universities and other regional partners to learn about their experience. National government, regional governments and universities could participate in this exercise;
- Set-up an advisory group that would advise the national and regional governments in designing a programme for their context. Ensure that German experts are included to learn from their experience;
- Select appropriate regions in Poland to pilot test this approach in collaboration with regional governments;
- Select a jury, consisting of Polish academics and leaders in the business and research communities, that will evaluate project proposals;
- Promote the new funding mechanism to universities;
- Implement and scale-up a funding mechanism in phases to allow time for the necessary cultural changes in the academic community;
- Monitor the implementation of winning projects regularly; and,
- Rigorously evaluate winning projects once they are completed to measure impacts.

It is critical that this approach be complemented with the approaches outlined above so that cultural change can occur. Funding is only a short-term option and past experience in Poland indicates that sustainability is a challenge for entrepreneurship initiatives. For example, the EU-funded project “Scientis – Entrepreneur” at the University of Technology and Life Science in Bydgoszcz, which supported links between science and business, finished in October 2010 when funding ended. This underlines that funding can be effective for attracting interest and launching initiatives, it is not enough to maintain sustainable change.

7.2.2. Improve quality of entrepreneurship teaching

The second priority for improving entrepreneurship support in the universities in Wielkopolska and Kujawsko-Pomorskie is to improve the quality of entrepreneurship teaching. The National Qualification Framework for Higher Education (NQF) provides a great opportunity for HEIs to increase their entrepreneurship education offerings but there is need to improve the quality of the offerings before they are scaled-up.

Provide training for entrepreneurship professors and university staff

Entrepreneurship professors and university staff lack training on entrepreneurship, specifically on the development of teaching content and in delivery methods. Further, there is little training on supporting new business start-up projects. This includes both basic and advanced training. Basic training would cover what entrepreneurship is and why it is important so that teachers have an understanding of why they are teaching entrepreneurship and how they can be successful. This needs to be complemented with more advanced training on pedagogy.

- Identify entrepreneurship experts who are qualified to train professors and university staff, which could include international experts;
- Start a working group to develop training programmes for trainers that includes Polish academics as well as international experts with experience in training trainers (e.g. the ESF has supported teacher training at the University of Turku in Finland).
- Develop training manuals for trainers;
- Develop teaching materials and course content for entrepreneurship trainers to use for different levels of students and for different programmes of study;
- Embed entrepreneurship training in initial teacher training; and
- Build networks of entrepreneurship trainers to facilitate good practice exchanges. This could be accomplished by expanding existing networks such as SEIPA (see Box 5.1)

7.3. Other government actions to support priority areas

In addition to using the European Social Fund as a tool for improving entrepreneurship support in Polish HEIs, there are other actions that the national and regional governments can undertake:

Legitimate entrepreneurship as an academic field

Another option for seeking more interest and support for entrepreneurship from university Rectors, as well as professors and other staff, is to legitimate entrepreneurship as an academic field. Research is an important activity in Polish universities yet very little research on entrepreneurship is undertaken. More support for entrepreneurship research is needed to increase interest among professors in entrepreneurship because the existing reward and tenure systems do not consider entrepreneurship research, nor entrepreneurship activities more broadly (i.e. advancing pedagogy, developing relationships with industry, commercialising patents).

- Fund entrepreneurship research in Poland;

- Fund international entrepreneurship research projects to build linkages between Polish HEIs and HEIs in other countries and to build peer pressure for HEIs to become more entrepreneurial;
- Create a national prize for entrepreneurship research;
- Create “Professors of Entrepreneurship” to give status to Polish entrepreneurship professors and to help attract international entrepreneurship professors to Polish HEIs; and,
- Alter the criteria for achieving a tenured professorship could be expanded to include entrepreneurship and innovation activities.

Leverage student organisations in creating bottom-up support

Student organisations can have an important role to play in driving university agendas. With respect to entrepreneurship, one of the best-known examples is Aaltoes (Aalto Entrepreneurship Society) which is a student organisation at Aalto University in Finland. It was a driving force in increasing the support for entrepreneurship at Aalto University while the university was created.

- Fund existing student groups in Poland that are already involved in entrepreneurship activities (e.g. Enactus) to support them in expanding the scale and scope of their activities;
- Involve student organisations in entrepreneurship conferences and events;
- Fund regional networks of student entrepreneurs; and
- Fund the creation of student entrepreneurship clubs at each university.

Engage the business community in entrepreneurship teaching

The quality of entrepreneurship teaching can be improved with more involvement from the business community in the design and delivery of entrepreneurship education. The same is also true for alumni, who can be any accessible resource for HEIs since there is already a connection with the university. Incorporating these two resources in the design and delivery of entrepreneurship education will improve the content and methods, providing students more opportunities to learn by doing. An additional benefit of this is to improve the linkages between education and start-up support so that students with entrepreneurship projects have improved access to support services. The HEIs in Wielkopolska and Kujawsko-Pomorskie have already developed relationships with the local and international business community that can be expanded to increase the role of the business community in teaching.

- Increase the involvement of external entrepreneurs and others from the business community (e.g. investors, business support services) as guest lecturers (this already happens to a large extent in Wielkopolska and Kujawsko-Pomorskie).
- Engage the business community in the design and development of entrepreneurship teaching material;
- Involve the business community student entrepreneurship projects;

- Organise entrepreneurship events and start-up competitions in collaboration with the business community; and
- Involve the business community in business support services such as coaching and mentoring.

ANNEX A. GUIDING FRAMEWORK FOR THE ENTREPRENEURIAL UNIVERSITY

1. Leadership and governance

In order to develop entrepreneurial culture within the university environment, strong leadership is needed to drive the entrepreneurial agenda. The top leadership needs to be involved to serve as a forerunner for the other decisions levels and provide the necessary resources for forthcoming entrepreneurial activities within the university.

A common approach for universities is to include entrepreneurship as part of the university's strategy and explicitly mention it in the high-level documents such as the mission statement. This would clearly demonstrate commitment by university leadership to support for entrepreneurship within the university and to implement an entrepreneurial strategy.

It is also important for an entrepreneurial university to have an appropriate governance structure that encourages entrepreneurship across the university and facilitates entrepreneurial activities. An entrepreneurial university will have a model or mechanism for co-ordinating and integrating entrepreneurial activities at all levels across the university. Moreover, faculties and units should have autonomy to set up new structures that support entrepreneurship. For example, this could include projects with industry or interdisciplinary projects that allow students in different faculties to work together.

University leadership at an entrepreneurial university will seek to have an influence off-campus. For example, an entrepreneurial university will seek to be a driving force for entrepreneurship development in the wider regional, social and community environment.

2. Organisational capacity, people and incentives

It is important to be aware that a university might be constrained by their traditional structures as processes that inhibit implementation of entrepreneurial agenda. There might exist different opinions within the university regarding what entrepreneurship is and how the university should deal with the concept. Regardless of the approach taken, a university's entrepreneurial objectives need to be supported by a wide variety of funding sources/investment, often including investment by external stakeholders. It will therefore be important for an entrepreneurial university to have a sustainable financial strategy that supports entrepreneurial development.

Human resources are one of the most critical resources for a university. Entrepreneurial universities consider entrepreneurial attitudes, behaviours and experience when recruiting new professors and staff. To maximise the potential of their human resources, they offer clear incentives and rewards for staff that actively support the university's entrepreneurial agenda. They also invest in staff development to support its entrepreneurial agenda.

Moreover, entrepreneurial universities have mechanisms in place for breaking down traditional boundaries and fostering new relationships – bringing internal stakeholders together (staff and

students) and building synergies between them. It will give status and recognition to other stakeholders who contribute to the university's entrepreneurial agenda.

3. Entrepreneurship development in teaching and learning

Universities are expanding their entrepreneurship and entrepreneurial education offer to the institution as a whole, including all staff and students. There is a need for the organisational structure to support entrepreneurial development as well as to provide the right tools to deliver education and training opportunities both internally and via the external environment.

The entrepreneurial university has specific structures in place which facilitate entrepreneurial development across all activities. Structures are crucial for universities who wish to not only deliver entrepreneurial learning, but also want to be entrepreneurial in their approach. For example, entrepreneurial universities have posts such as "Professor of Entrepreneurship" or senior staff that are responsible for entrepreneurship at the unit/faculty level and contribute to the development of entrepreneurship strategies and plans for the university. Forward thinking universities also have student ambassadors and mechanisms in place for feedback and adjustment of strategy and courses. The staff and student structures may also be supported by investment funds and other internal exchange platforms.

There are many approaches to delivering entrepreneurial learning which can be adopted throughout a university. In universities committed to entrepreneurial learning, skills are not just delivered through traditional lectures; many other approaches are taken to produce the desired learning outcomes. Having a range is important, as different subjects/topics can be best served by different approaches. Students also respond differently to different methods. The key is to enhance the student's ability to think and respond entrepreneurially. There are numerous examples including the use of mentors, living labs, cross disciplinary learning, etc., in addition, students may also start up and run their own companies, have competitions and awards, be ambassadors for entrepreneurship and run clubs.

Further, entrepreneurial behaviour is encouraged and supported throughout teaching and in extra-curricular activities. It is also important to deliver entrepreneurship education with "real" entrepreneurs whenever possible and use a variety of teaching methods including; case studies, games and simulation, real experience reports by start-ups and studies of business failure.

Universities that value entrepreneurial learning commit to regular review, validation and updating of entrepreneurial course content. There should be mechanisms in place by which teaching staff have codified the expected learning outcomes in relation to entrepreneurship (knowledge, skills and competence) in all degree programmes. The learning outcomes should be validated at the institutional level through appropriate mechanisms (internal or external moderation for example) and given due recognition in courses. Students should have a clear understanding of the learning outcomes achieved.

An important but often under-exploited resource for the Entrepreneurial University is the collaboration with the external environment and its stakeholders. This includes partnerships with communities, local organisations, local government chambers of commerce and alumni. Collaborating with external stakeholders can provide new relationships and be an important source of expertise and experience that can be used in entrepreneurship education and support services. To score highly, universities should collaborate and maintain regular contact with external stakeholders, have up to date information on their location and activities, and have activities that integrate their experience and expertise into entrepreneurship education and start-up support services.

To stay up-to-date and relevant, the entrepreneurship education offer needs to be continuously reviewed and updated. One important aspect of this is to integrate the results of current entrepreneurship research into teaching. To score highly, universities should encourage staff and educators to keep the curriculum up-to-date with recent research findings and encourage the internal exchange of knowledge.

4. Pathways for entrepreneurs

The decision to commit to entrepreneurship is not a single act but a process. For universities to be entrepreneurial they need to support the pathways taken by would-be entrepreneurs (staff and students) from ideas to market growth or into employment and to support entrepreneurial behaviour of those who go on to careers in paid employment (i.e. “intrapreneurs”). This is not just a process internal to the university but one where a pluralistic approach is necessary providing access to internal and external opportunities and expertise.

Developing entrepreneurs is often focused on the provision of opportunities and facilities rather than the inspiration and motivation that is necessary for individuals to move from ideas to action. Creating widespread awareness amongst staff and students of the importance of developing a range of entrepreneurial abilities and skills is therefore an important function of an Entrepreneurial University. This is not just about the abilities which support new business ideas but also those which can support employability and career development. It is about creating value in many different areas of society.

To encourage entrepreneurial behaviour, universities must first highlight the benefits of developing capabilities and seeking out opportunities then follow this up by encouraging the uptake of opportunities. Universities should encourage staff and students to develop entrepreneurial mind-sets, behaviour and skills through a range of mechanisms which can be tailored to the individual.

Ideally all students should have access to a wide range of entrepreneurial learning opportunities in their courses of study. Increasing take-up rates will require both expanding and tailoring the offer in entrepreneurship education. The goal is to generate entrepreneurial intentions and to develop competences for entrepreneurship. Entrepreneurial universities offer in entrepreneurship education across the curricula within all faculties and it should be embedded within all relevant courses. Entrepreneurship teaching should be tailored to the different interests and needs of participants.

Universities need to ensure that their start-up education offer is well-known both on- and off-campus to ensure that the teaching and support is reaching a broad base of students. This will ensure that the university is helping to develop an entrepreneurial culture on campus and in the local region. Entrepreneurship courses should be offered to cover the range of skills and competences needed to successfully start and operate a business. Moreover, these skills and competences need to be tailored to the needs of all levels of students and should be taught with current best-practice methods. Entrepreneurship courses should be offered as an integrated suite that delivers the skills needed at each phase of entrepreneurship. It is also important to deliver entrepreneurship education with “real” entrepreneurs as much as possible and use a variety of teaching methods including case studies, games and simulation, experience reports by start-ups and studies of business failure.

Once staff and students understand the benefits of developing an entrepreneurial mind-set and of becoming entrepreneurial, the university should provide opportunities to experience entrepreneurship. This involves exposing staff and students to environments in which they are more likely to encounter challenges which can encourage the development of entrepreneurial skills. This may include staff training, entrepreneurs in residence who teach and engage with staff and students, access to real life

problems, as well as awards and other means of recognition. Education activities should be integrated with enterprise-related activities to ensure entrepreneurs are adequately prepared for creating start-ups through their education and that they have the support to put what they have learned into practice.

Having an idea is only one step on the road to becoming an entrepreneur. In order to convert an idea into action the university should provide individuals and groups with a range of support services and opportunities. To score highly, a university should provide support from the pre start-up phase through to the growth phase of business development including, for example, network development and mentoring. In addition universities should link their start-ups and companies with the wider entrepreneurial ecosystem.

Mentoring is an effective learning and business support tool that can be used to reinforce the entrepreneurial skills that students have acquired. Matching student and graduate entrepreneurs with experienced entrepreneurs will increase the business's chances of success as well as that of other support services. Entrepreneurial universities make mentoring services available to both student and graduate entrepreneurs. Mentors could be educators with entrepreneurship experience or dedicated business coaches, and often alumni are an important resource since they already have ties to the university.

Facilitating access to private finance, for both student and graduate entrepreneurs, is essential to help universities build links with industry and to develop an entrepreneurial eco-system. Entrepreneurial universities organise networking events for nascent entrepreneurs where they can meet investors as well as dedicated financing events that provide budding entrepreneurs with the opportunity to pitch their ideas to investors. Moreover, the institution should support staff, student and graduate entrepreneurs by helping them find private financing opportunities on an ad hoc basis.

Business incubation is an important tool that can be used by universities to support new start-ups and spin-offs, as well as building links to industry. Incubators often provide free or subsidised premises, access to laboratories, research facilities and IT services, coaching, mentoring, training and access to financing. Entrepreneurial universities have incubators on-site that provide these services, or provide assistance to staff, students and graduate entrepreneurs in accessing external facilities that provide this type of support.

5. Relationships for knowledge exchange

An entrepreneurial university plays an important role in the knowledge ecosystem by linking research, education and industry (i.e. the wider community) activities together. Therefore, interaction with a wide range of stakeholders is essential when developing an entrepreneurial university. Stakeholders are important for many different reasons, e.g. as resource providers, exchange activities and job-opportunities for students. These stakeholders include alumni, businesses, public sector, unions and investors.

An entrepreneurial university will have a strong commitment to collaboration and knowledge exchange with private industry, society and the public sector. It is actively involved in partnerships and relationships with a wide range of stakeholders, including strong links with incubators, science parks and other external initiatives to create opportunities for dynamic knowledge exchange.

Entrepreneurial universities also provide opportunities for staff and students to take part in entrepreneurial activities with business/the external environment. It supports staff and student mobility between academia and the external environment.

6. The university as an internationalised institution

It has been shown that an international perspective is often a key characteristic of an entrepreneurial university. For example, teachers and researchers may find it useful to set-up international partnerships to get access to certain knowledge and other type of resources. An entrepreneurial university integrates the international perspective as a key part of the university's entrepreneurial strategy. It seeks and attracts international and entrepreneurial staff (including teaching, research and PhDs) and provides explicit support the international mobility of its staff and students (including PhD students).

An entrepreneurial university also demonstrates internationalisation in its approach to teaching and actively participates in international networks at the university level, as well as at the department and faculty level.

7. Measuring impact

In order to understand the impact of change to become entrepreneurial, the university needs to develop different types of impact measures. These are important for several reasons. For example, it is important to demonstrate concrete results for stakeholders and to benchmark activities and results with other universities to learn about strengths and weaknesses.

An entrepreneurial university will assess the impact of its entrepreneurial strategy and is the strategy responsive to change. It assesses the level of engagement in entrepreneurial teaching and learning across the institution and regularly assesses the impact of entrepreneurship teaching and learning. Similarly, an entrepreneurial university will also carry out regular monitoring and evaluation of the universities' knowledge exchange activities and on the impact of start-up support services offered.

Further details on the Guiding Framework are available at: www.heinnovate.eu.



Supporting Graduate Entrepreneurship in Wielkopolska and Kujawsko-Pomorskie, Poland